FY 2020 PCAARRD LIST OF GRANTS-IN-AID PROGRAMS/PROJECTS

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Citrus Resources Research for Development in Cagayan Valley (CRR4DCV)	Project 5: Development and Verification of Soil and Water Management Strategies for Citrus	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project will increase citrus (Satsuma) yield by developing and fine-tuning science-based organic and inorganic fertilization rates, with combined optimum irrigation rates for the different fruit development stages of bearing citrus under Nueva Vizcaya conditions.	Y1 â€¢ Data on citrus famerâ€™s fertilization and irrigation practices â€¢ Identified two best fertilizer rates for maximum fruit yield to be used for the convergence experiment Y2 & Y3 â€¢ Identified the two best irrigation treatments to be used for the convergence experiment â€¢ Optimum fertilizer rate + best irrigation practice for maximum yield and water saving efficiency Product - Improved production protocol for citrus (best/optimum fertilizer and irrigation rates) Patent - 1 copyrighted guide on fertilization and irrigation management for Satsuma Publication â€“ 2 publications in refereed journal Places and partnerships â€“ 2 MOAs (1 with the farmer-cooperator for the fertilizer trial and 1 with the farmer-cooperator for the drip irrigation trial); 1 project site	NVSU	Citrus farmers; Researchers; Extension workers; Local and regional policy makers	1-Nov-17	31-Oct-20	COMPLETED	4,999,322.00	785,324.00
Development of Rubber-based Cropping Systems in Southern Philippines (Land Management of Diverse Rubber-based Systems in Southern Philippines)	Project 1. Effective Rubber-Based Cropping Systems in Agusan del Sur and North Cotabato	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will contribute to the reduction of poverty in marginalised upland communities through developing a rubber- based cropping system that sustainably increases smallholders farmers' income through crop diversification and improved soil nutrient management. The project supports the Philippine Development plan (PDP 2017-2022) which aims to expand economic opportunities to address poverty and inequality using rubber as a priority and value added crop.	Products:1 Rubber farming system model People Service: Trained Extension worker from LGU PGAS, CSU and other cooperating agency on the rubber farming system model. Partnerships: LGU PGAS, CSU, and BSWM	USM	Rubber stakeholders. policy makers, researchers, planters processors, traders	1-Jun-19	31-May-24	ONGOING	3,308,851.00	462,921.00
Development of Rubber-based Cropping Systems in Southern Philippines (Land Management of Diverse Rubber-based Systems in Southern Philippines)	Project 2. Land Suitability Analysis for Rubber Crops in Agusan del Sur	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will provide consistent up-to-date base mapping â€“ fundamental geographic data-sets such as geodetic control, elevation, drainage, transport, land cover, land tenure, suitability etc. in the rubber-based farms in Agusan del Sur.	Partners and Extension workers involved in the implementation and farmer cooperators Land Use Plan based on suitability classification for Implementation of Agricultural Programs in Agusan del Sur. 1 Database on land Use status, 1 database and report on the spatial variation in soil properties, land use, erosion, landscape types in one sub-catchment of Agusan del Sur. 1 technical transfer and capacity building in assessment of soil constraints and land suitability for rubber crops to extension personnel and farmers.	USM	Rubber stakeholders. policy makers, researchers, planters processors, traders	1-Jun-19	31-May-22	ONGOING	1,322,025.00	357,025.00
Development of Rubber-based Cropping Systems in Southern Philippines (Land Management of Diverse Rubber-based Systems in Southern Philippines)	Project 3. Developing Rapid and Affordable Soil Nutrient Test Fertilizer Formulation	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project will develop rapid and affordable soil nutrient test fertiliser formulation for rubber cropping system.	Experimental protocol on the study on Optimization of N and K for rubber plantations in Kabacan, North Cotabato and Agusan del Sur. 2. Experimental protocol on study on the Influence of Mucuna, Inorganic fertilizer and organic fertilizer in some soil properties and the growth and yield of rubber in Kabacan, North Cotabato and Agusan del Sur.	USM	Rubber stakeholders. policy makers, researchers, planters processors, traders	1-Jun-19	31-May-24	ONGOING	4,749,621.00	620,140.00
Development of Rubber-based Cropping Systems in Southern Philippines (Land Management of Diverse Rubber-based Systems in Southern Philippines)	Project 4. Development of Cost Effective Pest and Disease Management for Rubber and Intercrops	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will contribute to the increase of income of small-hold rubber farmers through the development of cost-effective pests and disease management strategies for rubber and its intercrops. The cost-effective pest and disease management strategies will endeavor to reduce the infestation of pests and severity of diseases of rubber as well as its intercrops. The reduction of infestation and disease infection will result to higher yields and higher income for rubber farmers.	Pest and Disease Profile of Rubber-based Systems in Agusan Del Sur and Kabacan b. Pest and Disease Management Protocol for Rubber and Intercrops c. Publications (articles for journal and IEC materials)	USM	Rubber stakeholders. policy makers, researchers, planters processors, traders	1-Jun-19	31-May-24	ONGOING	2,610,100.00	305,420.00
Development of Rubber-based Cropping Systems in Southern Philippines (Land Management of Diverse Rubber-based Systems in Southern Philippines)	Project 5. Economic Studies on Rubber-based Cropping System in Southern Philippines	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project provides the support for the economic and impact analyses of the other program components. It takes charge of the generation of baseline information about the rubber-based farming systems in Southern Philippines, particularly in selected municipalities of Agusan del Sur and the experimental sites on the said farming systems at the University of Southern Mindanao, Kabacan, North Cotabato. It is responsible for the documentation of the establishment, testing and analysis of the farming systems that the program will eventually promote to the rubber farmer stakeholders, including the set of technologies anchored on nutrient management and land suitability to improve sustainably the productivity of rubber in Agusan del Sur and in Southern Philippines. This project is also responsible for the quantitative impact estimation (or potential impact estimation) for the technologies to be introduced to some selected farmer cooperators and for the recommendation of future actions for the adoption of and monitoring of results from the technologies introduced by the program.	Publication: Written report, articles about the farming systems and practices of the rubber farmers in Agusan del Sur and/or Southern Philippines Partnerships: Continued partnerships with the Provincial Government of Agusan del Sur, the University of Southern Mindanao, the Upland Sustainable Agricultural Development Program beneficiaries, and the rubber farmers People: rubber farmers of Agusan del Sur and Southern Philippines Product: integrated survey questionnaire	CarSU	Rubber farmers in Southern Philippines, rubber industry, local government units	1-Jun-19	31-May-24	ONGOING	1,810,576.00	300,696.00
Development of Rubber-based Cropping Systems in Southern Philippines (Land Management of Diverse Rubber-based Systems in Southern Philippines)	Project 6. Capacity Building of Rubber Stakeholders and Role of Women and Children in Natural Rubber Industry in Agusan del Sur	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will contribute to the reduction of poverty in marginalised upland communities through developing a rubber- based cropping system that sustainably increases smallholders farmers' income through crop diversification and improved soil nutrient management. The project supports the Philippine Development plan (PDP 2017-2022) which aims to expand economic opportunities to address poverty and inequality using rubber as a priority and value added crop. To realized this objective, Project 6 will take part in capacitating smallholder farmers especially the men and women and their children in rubber farming communities at Agusan del Sur to boost their household income via capability building intervention on crop diversification & nutrient management .	1. Current rubber industry situation and profile of the role of women and children in the study areas 2. Qualitative and quantitative baseline data role of women and children in production and marketing of rubber ; 3. Evaluation and analysis of data and policy recommendations to address to needs of the rural stakeholders to strengthen and to uplift the economic well-being of rubber industry participants.	USM	Rubber (men, women & their children) stakeholders,policy makers, researchers & extension workers	1-Jun-19	31-May-22	ONGOING	1,613,789.00	499,293.00

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Good Agri-Aqua Livelihood Initiatives towards National Goals (GALING) - PCAARRD Kontra CoViD-19 Program	Employing Hydroponics and Vegetable Gardening Technologies to alleviate COVID-19 Threats to Food Security in Selected Municipalities in Region IV-A	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Through the DOST- Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD) initiative called GALING-PCAARRD Kontra COVID-19 Program which offers technologies from various R&D outputs. It is ultimately aimed to help alleviate hunger during this COVID-19 pandemic outbreak Through the adoption of these GALING PCAARD technologies, communities will be able to address their food requirements and also offer them alternative livelihood opportunities. Recognizing the value and potential of vegetable gardening to address those concerns, an initiative to provide assistance for capacity building and enhancing productivity through technology interventions could not be overemphasized. The creation of agriculture-based small businesses will stimulate the local economy and support the community by creating jobs allowing fresh, nutritious produce to become available to communities that have never had access in the past. To model these concepts, these two implementation sites will showcase the GALING PCAARRD Program.	Products â€¢ 2 Technologies adopted (DOST PCAARRD Community/backyard vegetable farming technology and Hydroponics technology â€¢ 3 Greenhouses in BK Center and at least 2 hectare vegetable gardens in Angono Rizal maintained â€¢ At least 2,400 kg vegetables produced per cycle (900 kg in BK and 1,500 kg in Angono) â€¢ Profitability Analysis produced on the livelihood established on both Project sites People and Services â€¢ Identify and train at least 80 beneficiaries (30 beneficiaries either as residents or community workers in the Bukid Kabataan Center who will benefit in the vegetable production and trainings to be conducted in the Center and 50 existing members of New Normal Farmers of Angono consists of senior citizens, unemployed husbands and wives with a common goal of strengthening their current vegetable production through a government program such as the DOST PCAARRDâ€™s GALING PCAARRD Gulayan sa Pamayanan) â€¢ Conduct at least 6 training/seminars on vegetable farming modules â€¢ Conduct technical advisory and consultancy â€¢ Employ at least 2 staff for project monitoring and at least 3 farm-workers who will oversee the Greenhouse Operation in BK Cavite â€¢ Strengthen technical and organizational capabilities of the project beneficiaries Places and Partnership â€¢ Strengthen Linkages and partnerships between DOST Agencies (DOST-CALABARZON and DOST-PCAARRD), Department of Agriculture IV-A, State Universities (CLSU, URS) and	DOST-IV-A	1. Bukid Kabataan Center, Barrio del Fuego, Brgy. San Francisco, General Trias City, Cavite 2. New Normal Farmers of Angono, Hillsdale Viilage, Brgy. San Isidro, Angono, Rizal	16-Nov-20	15-Nov-21	NEW	5,000,000.00	4,500,000.00
Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines (SARAI) - Phase 2	Project 1.1. Using Crop Simulation Models for Issuing Crop Advisories to Farmers	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Major crop growing province is divided into several land evaluation units (LEUs) defined in terms of more or less homogenous agro-ecological characteristics defined by climate, soil properties, topography. Each LEU has its characteristic input data on weather, soils, cultural management practices which are inputs to location-specific process-based crop models. Database for each LEU may be updated as new data and information become available. Soils data such as soil type, soil texture, soil depth, etc. for each LEU will have to be added to the database. Expected crop yield for each LEU is estimated using a crop simulation model based on variety-specific genetic coefficients and model input data for each LEU (e.g. weather data, soils data, planting date, planting density, etc.). Area planted for each LEU is determined using latest available satellite data that are freely accessible. Expected crop production for each LEU is estimated as the product of area planted and expected crop yield for the LEU. Crop production for the province is the sum of expected crop production for all LEUs within the province. Estimate(s) or recommendation(s) is provided for each LEU, and/or for the entire province. These data and information may be compared with official statistics, or recommendations or practices in the area. Methodologies and tools applied are based on the advances in science and technology such as information and	1. Crop variety-specific crop genetic coefficients for corn; 2. Validated crop simulation models for selected crops for specific locations (can be used to estimate crop yields), i.e. yield calculator; 3. Estimated crop yields (i.e. potential; nutrient-limited; water-limited yields) for specific crops in selected areas/ locations under different environmental and climatic conditions (i.e. average/ normal year; wet/ La NiÃ±a year; dry/ El NiÃ±o year); 4. Estimated cropped areas for specific crops in selected areas/ locations under different environmental and climatic conditions (i.e. average/ normal year; wet/ La NiÃ±a year; dry/ El NiÃ±o year); 5. Crop forecasting system and advisories for cereals for selected locations/ areas; 6. Location-specific crop simulation model, crop yield gap analysis; 7. Site-specific crop and water management protocols and advisories; 8. Site-specific of crop protection protocols and advisories given seasonal climate information.	UPLB	DA RFO personnel; LGU agricultural officers; Extension workers and technicians; SUC researchers; Farmer leaders; NGOs working with farmers	1-May-18	30-Apr-21	ONGOING	8,087,511.00	1,624,468.00
Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines (SARAI) - Phase 2	Project 1.2. Phenology Studies, Crop Management, and Model Development for Sugarcane and Coconut	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Coconut and sugarcane are two of the most important crops in Philippine economy. Sugar exports are valued at about US$ 87.3 million while coconut continues to be the top agricultural export valued at US$1180 million. The Philippines ranks second to Indonesia in coconut production and is among the top 40 countries in sugar exports. From 2014 to 2016, coconut production has fluctuated with 13.8 million MT in 2016 down from 14.7 million MT in 2015. On the other hand, 2010 to 2014 saw sugarcane production in the Philippines grew at an average of 11.6% with total sugarcane production estimated at 25.03 million MT in 2014 (Philippine Statistics Authority, October 2015). In the same period, area harvested grew by 5.5%. However, the past two years saw a decline in production that may be due to decrease in production area from 423,334 to 411, 502 hectares as of June 2016 (Sugar Production Bulletin for CY 2015-2016, SRA) and low farm productivity. The countryâ€™s average production is at 60 ton-canes per hectare, 25% lower than Thailandâ€™s 75 to 80. Thailand is the only ASEAN country in the five top sugar-producing countries worldwide. With too many sugar mills fighting for cane supply, mills operate at an average of 60% capacity only with lower sugar mill recovery. Recent years characterized by extreme weather events have posed challenges to the production of these two crops and hence the countryâ€™s economy. The years ahead bring bigger challenges to the due to dwindling farm areas and	Year 1 1. Database for upscale yield prediction models 2. Database for the development of site-specific nutrient manager 3. Database of crop phenology Year 2 1. Yield prediction model for Coconut and Sugarcane 2. Validation and field-testing of site-specific nutrient manager Year 3 1. Capacity-building to sustain the R&D activities over the medium- and long-term. 2. Site-specific nutrient manager for Coconut and Sugarcane 3. Scientific papers and other publications	UPLB	Policy and decision makers, academe (e.g. students, researchers, faculty members), private organizations, business community engaged in agro-industrial enterprises, smallholder farmers, local government units	1-May-18	30-Apr-21	ONGOING	8,557,191.00	1,390,065.00

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Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines (SARAI) - Phase 2	Project 1.3. Phenology Studies, Crop Management, and Model Development for Coffee and Cacao	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project is essentially a basic research towards model development as it studies reproductive physiology which constitutes the assumptions upon which models are based. Specifically phenology will be studied which is the study of the sequence of events leading to flowering, fruit set, fruit development, and maturation and their duration under different climatic regimes. At the same time it is an applied research as it tries to do the above in actual production sites or systems so it can eventually predict fruit or product availability in different production zones. The trees will also be manipulated or trained to manageable forms to increase labor efficiency and reduce production costs. The phenological studies need to be done under different climatic types as rainfall greatly influences leaf flushing and flowering and eventual fruit development. Inputs from weather stations will be needed. The observations on phenology will be done over three years to determine if they change as the trees grow older or as they experience climatic changes. Eventually, all these phenological and environmental data will be integrated into a model.	Year 1-Year 3 1. Characterized phenological growth stages of coffee and cacao; 2. Identify the crop maturation period of coffee and cacao; 3. Determine the effects of climate change on the phenology of coffee and cacao; 4. Scientific papers and other publications 5. Support to student research 3 MS/PhD students (Horticulture) 3 BS students (Horticulture)	UPLB	Policy and decision makers, academe (e.g. students, researchers, faculty members), private organizations, business community engaged in agro-industrial enterprises, smallholder farmers, local government units	1-May-18	30-Apr-21	ONGOING	8,140,995.00	1,641,699.00
Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines (SARAI) - Phase 2	Project 1.4. Phenology Studies, Crop Management, and Model Development for Banana	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project will focus on the model development of two banana cultivars Lakatan and Saba (Musa acuminata and Musa balbisiana) based on empirical and existing process-based models that had been developed in other countries. It will also monitor the existing fields based on the area identified by Project 2.1 for crop phenology in major crop producing areas. Soil parameters and daily weather variables like temperature, solar radiation and rainfall will also consider in the development of growth and physiological characteristic of banana using the process-based algorithms. Data set on crop coefficients generated from SARAI phase 1 will be used as baseline profile and will increased the sample population to have a better regression model. Basic and exploratory researches will also be conducted with interventions on soil nutrient and water management. The project will also monitor the effect of changing environment on the fruit quality of crop.	Year 1 1. Database for yield prediction models 2. Database of crop phenology Year 2 1. Model development Year 3 3. Yield prediction model for Banana cultivars 4. Scientific papers and other publications	UPLB	Policy and decision makers, academe (e.g. students, researchers, faculty members), private organizations, business community engaged in agro-industrial enterprises, smallholder farmers, local government units	1-May-18	30-Apr-21	ONGOING	10,919,994.00	1,724,338.00
Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines (SARAI) - Phase 2	Project 1.5. Evaluation of Crop Growth Simulation Model for Soybean and Tomato	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will closely work with Project 1.1 as soybean will be planted after corn. This consists of three study areas focusing on soybean (Glycine max). The first study will determine the crop genetic coefficients of selected local varieties of soybean using the existing crop growth simulation model. Using the crop genetic coefficients generated from the first study, the crop models will be validated using a different experimental data set. The simulated yield and observed yield will be analyzed statistically. When the crop model performance reaches the acceptable margin of error, computer-based experiments will be done to simulate the potential crop yield under a given climate scenario. The crop model will be applied to determine appropriate crop management strategies for a particular climatic condition.	1. Crop genetic coefficients of at least two local varieties of soybean using the existing crop growth simulation model 2. Validated crop growth simulation model for soybean 3. Integrated crop management protocol for specific local varieties of soybean generated from validated crop growth simulation models 4. Published scientific papers and technical papers 5. Individuals trained to use the validated crop growth models for soybean	UPLB	academe, researchers, students, farmers and farming communities, agro-industries, policy and decision makers, private organizations, local government units	1-May-18	30-Apr-21	ONGOING	6,122,896.00	1,882,581.00
Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines (SARAI) - Phase 2	Project 2.1. Community-Level SARAI-Enhanced Agricultural Monitoring System (SEAMS) and Dissemination of Crop Advisories	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The main objective of the project is to develop a community-based SEAMS. Specifically, it aims to 1. Integrate GIS/RS technology with indigenous knowledge from farming communities to: a. establish the characteristics of selected farming communities in terms of the historical and present farming systems, land use/land cover, landscape, water resources, and weather and climate; b. develop a community level monitoring, advisory and yield forecasting system; c. develop a community level DRRM; 2. Integrate the community-based SEAMS with SARAI; and 3. Train the communities and SARAI partners on the use of the community-based SEAMS	1. GIS-format database on historical and present characteristics of eight (8) farming communities in terms of farming systems, land use/land cover, landscape, water resources, and weather and climate; 2. Eight (8) community level monitoring, advisory and yield forecasting system incorporated into a GIS/RS structure; 3. Eight (8) community level DRRM incorporated into a GIS/RS structure; 4. Eight (8) community-based SEAMS integrated into the SARAI-ICMF network; and 5. Trained communities and partners on the use of CB SEAMS.	UPLB, ISU, CLSU, MinSCAT, WPU, BU, WVSU, CTU, CMU, USTP, USM, MMSU	PCAARRD Regional Consortia, Department of Agriculture, Regional Agricultural Officers, Municipal Agricultural Officers, eight (8) Farming Communities, two each for the four climatic types	1-May-18	30-Apr-21	ONGOING	61,051,546.00	21,726,556.73

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Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines (SARAI) - Phase 2	Project 2.2. Enhanced Operation and Connectivity of Automatic Weather Station and Unmanned Aerial Vehicle Units	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project aims to use, maintain and add intelligent farming instruments such as Automatic Weather Stations (AWS) and Soil Sensor Stations (SSS) and build an interconnected network of weather stations of projects under DOST-PCAARRD. The project also intends to use the Near-infrared Reflectance (NIR) imagery together with the Unmanned Aerial Vehicle (UAV) for crop monitoring and data validation of remotely-sensed and plant-specific data. Specifically, the project aims to: 1. Continue the maintenance of the SARAI AWS and SSS units 2. Set up additional AWS and SSS units at identified sites 3. Conduct regular calibration of the AWS and soil sensors 4. Conduct capacity building activities for weather and soil data and crop monitoring among partner agencies 5. Interconnect various newly installed and non-SARAI AWS and SSS units to the existing SARAI AWS network 6. Collate all the AWS and sensor data in a common database to be used for weather forecasting 7. Provide weather information and forecasts to different program components 8. Monitor state of identified SARAI crops using RGB and multispectral imaging mounted on UAV 9. Determine vegetation index values of the identified SARAI crops to create a database of spectral crop signatures for further processing 10. Compare the NDVI values of the various SARAI crops taken by the multispectral camera mounted on UAV	Automatic Weather Station (AWS) - AWS set up, installation, maintenance - Capacity building on AWS/SSS among partner agencies - Interconnection of SARAI AWS, additional SARAI AWS and non-SARAI AWS under DOST-PCAARRD to SARAI network Near Infra-Red (NIR) Imagery and Unmanned Aerial Vehicle (UAV) - Capacity building on NIR/UAV among partner agencies - Crop monitoring - Validation studies - Development of protocol for nutrient and crop protection applications of UAV	UPLB	PCAARRD Regional Consortia, Department of Agriculture, Regional Agricultural Officers, Municipal Agricultural Officers, Farming Communities and Academe	1-May-18	30-Apr-21	ONGOING	11,075,929.00	1,874,041.00
Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines (SARAI) - Phase 2	Project 2.3. Smarter Technologies for Crop-Water Management	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project intends to integrate the outputs from the water management component (Project I) of SARAI Phase I in developing an effective and smarter crop water management. Precise monitoring of soil moisture, crop water requirement, and water stress are achieved by utilizing ground-based sensors such as automatic weather stations, soil moisture sensors, atmometers, field spectrometers, etc. Furthermore, wireless transmission of soil, crop and weather data play a crucial role in the implementation of early warning and monitoring system for crop water stress and irrigation requirement. While these state-of-the art technologies have already been demonstrated in various exhibits and SARAI-sponsored trainings, field demonstration set-ups have not been established to validate its usability and efficacy. The proposed activities for this project will include (a) field testing and calibration of capacitance-type soil moisture sensors, (b) development of web/GSM-based version of Water balance-Assisted Irrigation Scheduler (WAIS), (c) field performance evaluation and calibration of atmometers in estimating evapotranspiration, (d) generation of spectral reflectance signature of additional crops in relation to water stress, and (e) establishment of field demonstration setups for hands-on trainings and technology transfers.	ï¿· Wireless SARAI Soil Moisture Monitoring System ï¿· Web-based version and mobile application of Water balance-Assisted Irrigation Scheduler (WAIS) ï¿· Locally fabricated atmometers that are adapted for use in many fields to assist in irrigation scheduling ï¿· Field Demonstration site featuring wireless soil moisture sensors, web-based decision support tool (WAIS) and automated irrigation system ï¿· Spectral reflectance database of priority crops under different water stress condition ï¿· Water management recommendations and advisories using web-based/mobile WAIS ï¿· Conduct of Trainings and Workshops ï¿· Paper presentations and publications ï¿· Student involvement ï¿· Patent	UPLB	Agricultural producers, field technicians, and researchers will benefit from the project. The use of sensors and irrigation decision support tool will give end users quick access to information on soil moisture status and irrigation recommendations. This will allow agricultural producers to better utilize water resources and reduce the impact of climate change and variability.	1-May-18	30-Apr-21	ONGOING	10,967,294.00	1,687,992.00
Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines (SARAI) - Phase 2	Project 2.4. Insect Pest and Disease Advisory System	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The SARAI Insect Pest and Disease Advisory System (IPDAS) will continue to address the pressing concerns in crop protection brought about by the changing climate. The project will develop and sustain a decision support system for the management of pests and diseases of corn, coconut, coffee, cacao, banana, sugarcane and vegetables. SARAI IPDAS shall implement surveillance and monitoring of pests and diseases which growth and spread are critically influenced by weather and climate patterns. Population and spread models will be developed to deliver forecasts of probable pest outbreaks and disease epidemics. IPDAS will also develop a database of common insect pests and diseases of SARAI priority crops and generate current and historical incidence maps for various regions	1. Predictive models Models for several major insect pests and diseases will be developed to provide risk prediction and management advisories. Study 1 - RICE - Rice tungro virus disease, Rice black bug, locust, armyworm, stem borer Study 2 - CORN - Locust, Corn borer, corn leafhopper, armyworm Study 3 - SUGARCANE - Stem borer, White grub, locust Study 4 - COCONUT - Coconut hispine beetle (Brontispa sp.) Coconut scale insect, Coconut bud rot Study 5 - BANANA - Banana Sigatoka, Fusarium wilt, Hispodonta sp., thrips, mealybug Study 6 - COFFEE and CACAO - Cacao pod rot, Vascular Streak dieback, helopeltis, Coffee rust, coffee berry borer Study 7 â€“ SOYBEAN â€“ brownspot, leaf blight, downy mildew, pod feeders and defoliators 2. Detailed database of common pests and diseases for the all the identified crops in various regions. 3. Region-specific maps of possible pest and disease outbreak areas for certain crops. 4. Pest management protocols	UPLB	PCAARRD Regional Consortia, Department of Agriculture, Regional Agricultural Officers, Municipal Agricultural Officers, Farming Communities	1-May-18	30-Apr-21	ONGOING	8,315,245.00	2,681,312.93

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Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines (SARAI) - Phase 2	Project 2.5. Soil Profiling and Characterization of SARAI Sites	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Soil sampling and profiling will be performed on the study sites. Soil samples will be sent to the laboratory for physical, chemical, and mineralogical analyses. The results obtained from the lab will be the baseline data that researchers will utilize for their fertilizer application and water and crop management. The same lab results will be utilized as baseline data by crop modelers for their crop model development. During the growth period of the crop, soil samples will be taken and analyzed as necessary or as requested by the researchers. Soil moisture sensors will be imbedded at different soil horizons and the changes in soils moisture will be continuously monitored. The data obtained from this monitoring will be forwarded to other researchers who need them for irrigation management or for crop modelling.	1. Soils database 2. Trained collaborators 3. Journal article	UPLB	1. Farmers 2. LGUâ€™s and government agencies 3. scientists, researchers, and students	1-May-18	30-Apr-21	ONGOING	7,082,564.00	1,690,375.89
Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines (SARAI) - Phase 2	Project 2.6. Drought and Crop Assessment and Forecasting (DCAF) Phase 2	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Just like its first phase, the 2nd phase of the Drought and Crop Assessment and Forecasting (DCAF) project will be implemented jointly by the Institute of Environmental Science and Meteorology (IESM), Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA) and Bureau of Soils and Water Management (BSWM). This time it is being proposed as one project component of the SARAI Project Phase 2 in order to integrate outputs from the different project components towards enhanced agricultural drought assessment, monitoring and forecasting. Figure 1 shows how DCAF connects with other sub-project components of SARAI. The inputs to DCAF include soil moisture data, AWS data, hydrological data and other datasets in SEAMS. On the other hand, agricultural drought onset and severity, which is the primary output of DCAF, will be provided as inputs to water management models, crop management and yield projection models and assessment of its possible contribution to pest infestation and crop diseases.	1. Database of satellite-derived and ground data of temperature, rainfall, evapotranspiration and vegetation indices, and soil moisture 2. Seasonal Forecast (temperature, rainfall, evapotranspiration, soil moisture, vegetation indices) 3. Crop damage estimate 4. Agricultural Drought Assessment, Monitoring and Forecasting 5. Agricultural Drought index	UPD, DOST-PAGASA, BSWM	â€¢ PAGASA, BSWM, agriculture officers/technicians, farmers and the general public	16-May-18	15-May-21	ONGOING	20,234,350.00	10,303,790.00
Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines (SARAI) - Phase 2	Project 3.1. Knowledge Portal and Mobile Application Development for Digital Agriculture	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The coverage of the project is threefold. First, is the continued enhancement of the SARAI knowledge portal by sustaining the real-time monitoring of weather data and continuous development of decision support systems to include additional crops and support more agricultural municipalities. Second, is to utilize the computing power of mobile technology to develop a variety of practical applications targeting farmers and farm managers as end-users. The technologies available online through the knowledge portal will be re-engineered to provide an accessible mobile application that can be delivered by province or to individual users to enable exchange and transfer of agricultural knowledge generated from research at national, regional and provincial levels. Lastly, is to develop, deploy and align the SARAI Knowledge Grid with the PCAARRD Knowledge Management System to facilitate online collaboration between and among the farmer groups, experts, extension workers and policy makers. Collaboration modules among experts will be developed and integrated with PCAARRDâ€™s Knowledge Management System to take full advantage of the decision support systems of the program. This platform will allow the various communities of practice to interact, share their experiences in adopting the technologies, exchange farming tips, and receive advisories and recommendations for best practices in farming. The same platform will be used to support access to indigenous knowledge as a heritage for new generations, and provide infrastructure to deliver	1. Real-time weather, climatic, and other environmental data monitoring and data storage system 2. Comprehensive data management (databases, data warehousing and knowledge bases) platform 3. Enhanced SARAI knowledge portal 4. Knowledge management system 5. Agricultural mobile applications 6. Capacity building to sustain the networking and systems development initiatives 7. Scientific papers and other publications	UPLB	Farmers, LGU Policy and Decision Makers, Agricultural Officers, Academe, Researchers, DA, PSA, Extension Workers, Students, K-12 STEAM Program	1-May-18	30-Apr-21	ONGOING	8,454,291.00	1,643,902.00
Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines (SARAI) - Phase 2	Project 3.2. Knowledge and Capacity Building	KRA 3: Rapid, Inclusive and Sustained Economic Growth	In line with the Capacity and Knowledge-Building on SARAI Phase I, the component aims to strengthen capacities and enhance the technical abilities of the farming communities/farmers and ensure that the outputs of SARAI will be translated into meaningful information and usable tools. Aside from the farmers and their communities, the project also aims to strengthen capacities and improve technical abilities of the persons involved in the different components of the program. In addition, different communication channels (electronic and print media) and learning frameworks will be used to transfer the information, technologies and systems to stakeholders. This also aims to update the stakeholders of the current SARAI Technologies and conduct trainings with the technologies and systems that will be developed.	1. Established links with partner SUCs, government agencies, LGUs and farming communities 2. Analyzed Training Needs Analysis for priority crops 3. Generated Information and Education Communication materials (print and electronic) 4. Developed training modules/manuals relevant to the crops and crop production system 5. Conducted capacity building activities 6. Developed training programs, and 7. Analysis of data collected from the field and validation activities	UPLB	Regional Agricultural Officers, Provincial Agricultural Officers, Municipal Agricultural Officers, Agricultural Extension Workers, Farming Communities, Academe, Private Sector	1-May-18	30-Apr-21	ONGOING	13,792,653.00	2,626,765.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines (SARAI) - Phase 2	Project 3.3. Integrating Research Results, Communication Planning, and Linking Science to Policy	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The main objective of Project 3.3 is to facilitate the creation of an active network consisting of the academe, NGAs, LGUs, and farming communities which will work towards seamless agricultural information sharing and processing protocols. Specifically, the project components aims to: 1. Maintain and expand the network of partners to ensure the sustainability of the program; 2. Facilitate the integration of all research results of the various project components; 3. Craft policy recommendations, and publish research results in peer-reviewed journals; 4. Develop and implement a communication plan to promote the scientific results of the program to various stakeholders in layman's terms and popular formats; and 5. Serve as the program management component of the program to ensure that the timelines are met, and that the outputs are delivered.	Systems/Networks: 1. SARAI network of partner agencies and SUCs 2. Information sharing protocols Publications/Documents: 1. Policy briefs 2. Scientific papers, books, and other publications 3. Communication materials (videos, story books, magazines, etc.) 4. ICT platforms (in collaboration with Project 3.1) 5. Communication plan	UPLB, PhilRice, PCA	PCAARRD Regional Consortia, Department of Agriculture, Regional Agricultural Officers, Municipal Agricultural Officers, Farming Communities	1-May-18	30-Apr-21	ONGOING	15,594,815.00	2,107,060.00
	Appropriate Instrumentation and Data Acquisition System for Performance Testing of Agricultural Machinery	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project will focus on the design and development of appropriate instrumentation and DAQ systems for agricultural and fisheries machinery testing in the Philippines. Development of a low-cost, reliable, compliant with standards instrumentation and data acquisition system will greatly improve testing of agricultural machinery by providing an efficient way of handling data and producing reports with the data gathered.	Products: instrumentation and DAQ system; fuel consumption meter Publications: 2 conference papers, 2 journal articles Patents/copyrights: none People Services: 1 graduate and 3 undergraduate students that would take up Instrumentation courses: ABE 147, AENG 270	UPLB	Though AMTEC will be the main beneficiary of the improved instrumentation and DAQ system, the system could also be used for research and instructions (faculty, researchers and students of UPLB). Moreover, the system could be used by farmers, farmer-groups or	1-Jun-20	31-May-22	NEW	4,994,150.00	3,420,075.00
	Design and Development of a Solar-powered Dryer for White Copra	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The widely available energy source of solar radiation has significant potential for drying coconut meat. To promote solar drying processes to coconut farmers in rural communities, a solar-powered dryer capable of producing good quality copra is hereby proposed for development. The proposed solar-powered dryer requires no external electrical sources because the heat requirement shall be tapped from heat collected by the solar panels. It would not only minimize labor and time cost of drying but also improve copra product quality.	Year 1: 1. Established sorption and isotherm models for solar dried copra 2. CAD model of the prototype of the solar powered copra drier design Year 2: 1. One (1) prototype model of solar powered copra dryer fabricated and tested. 2. Performance data from solar dryer testing and evaluation. 3. Economic analysis on the operation of solar powered copra dryer 4. Technology manual for operation and maintenance and standard drying schedule of copra using solar dryer	PCA-ZRC	Coconut farmer organizations, copra traders and machinery fabricators	1-Jan-20	31-Dec-21	NEW	5,000,000.00	2,419,156.00
	Design, Development and Optimization of an Automated Combined Mechanical Demucilager-Fermenter-Dryer for Cacao (Old Title: Design, Development and Optimization of an Automated Control Combined Mucilage Extractor-Mechanical Cacao Fermenter-Dryer)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This proposed machine continually process the fresh bean to produce dried fermented beans and incorporates the automation controls with built-in sensors in the system. Thus, this project will be undertaken to address the lack of cacao postharvest knowledge, appropriate equipment/facility for cacao postharvest process. It also addresses the reduction of the amount of heavy labor and dependence on good weather condition	2 patents (Utility model) of CCFD and cacao processing protocol filed 2 units of CCFD prototype fabricated and 1 unit upscaled/optimized model At least 2 cacao DA technicians trained At least 25 cacao growers trained on cacao processing Collaboration with Cacao Growers and Cocoa Phil Cooperative	USeP	Cacao growers, cooperative and machinery fabricators	16-Jul-19	15-Jan-22	ONGOING	4,945,925.00	1,417,138.20
	Development and Pilot Testing of Hand Tractor Driven Onion Harvester	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The study aims to develop a hand tractor driven onion harvester which will be pilot-tested in actual field conditions of Ilocos Region to come up with a technically and economically feasible final prototype that could be commercialized in the local market. It would utilize existing hand tractors to power the onion harvester thus increasing its utilization as it was mainly used in land preparation and transport operations. With the harvester, onion farmers would be more productive reducing manual labor problems in the harvesting operations which could also be operated timely reducing crop losses thus increases income. The hand tractor driven-onion harvester may also be used to harvest other similar root crops like potato and peanuts given some modifications. Aside from its benefits to farmers, it could also provide opportunities for the local manufacturing industry for further business endeavors. Hence with the attachment, increased income for both the onion farmers and would-be fabricators could be expected.	2 onion harvester implement 1 Technology Patent Applied/utility model 1 Indexed Journal Publication/ 1 Operators Manual/1 technical poster 1 BSABE student assisted/ 45 farmers (15 farmers/municipality) and 6 cooperatives (cooperatives/municipality) trained on the operation of onion harvester 1 accredited fabricator and 3 Municipalities (Bantay and Sinait, Ilocos Sur and Badoc, Ilocos Norte Recommendation for the creation of PAES for onion harvester implement	DMMMSU	The target beneficiaries of the proposed project are; (a) the individual onion farmers, (b) group of farmers or cooperatives, (c) Don Mariano Marcos Memorial State University and other interested institutions, agencies, and individuals for purposes of education in instruction, research, and study tours, and (d) other stakeholders who are engaged in manufacturing and or fabrication.	1-Jul-20	30-Jun-22	NEW	4,684,358.00	2,590,679.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Development of Nano-Biosensor Technology in Disease Surveillance and Diagnosis of Economically Important Crops (Old Title: Plant Disease Outbreak Prevention of Important Diseases in Selected High Value Crops through Nano-Biosensor-Based Biosurveillance)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The proposed project is an innovative concept with the following unique features: (1) the biosensor provides early detection of potential disease(s); (2) extraction of the causal organism from the sample is built into the MSUâ€™s proprietary magnetic nanoparticle (MNP) based assay and is visible to the naked eye due to the formation of a mat between the microorganism and MNP; (3) specific detection is facilitated by an amplification-free probe-gold nanoparticle (probe-Au) conjugate hybridizing with the target RNA/DNA that is visually observable through a color change; (4) end-to-end sample preparation to detection is completed in less than two hours and will cost less than Php100/test. After disease detection appropriate disease control measure will be employed for the disease and the insect vector if transmitted by a vector. Representative crops based on the priority crops identified by PCAARRD-DOST and important diseases associated with these crops will be included in the test, such as: banana (Plantation Crops); white potato, tomato (Vegetables); mungbean, and peanut (Grains and Beans). Important diseases of the representative crops will be identified and sample protocol will be established for triaging. These important diseases are as follows: Panama disease and bunchy for banana, fusarium wilt viral disease in potato, bacterial wilt in tomato, Cercospora Leaf Spot in peanut and Yellow Mosaic Diseases for mungbean. These tests will serve as model to be echoed to other crops and associated diseases. The nanobiosensor kit is economically viable in the production of the crops included in this project being proposed. Monitoring and surveillance of the important diseases of the crops will spare the farmers of employing control measures. Rapid detection using the kit will help in the decision making in applying control measures. If no diseases is detected then pest control action should be done. The cost of monitoring the disease using the kit will be way lower than the cost of employing pest control measures if no disease to control. Low farm management input will give the farmers additional income. Table 1 demonstrates the potential for lower overall pest management	Year 1 1. Publications ¡ Development of RNA/DNA probe design for the different diseases and pests included in the project (at least 5) 2. Patents ¡ IP of the Gold nanoparticles with specific RNA/DNA probe (Au probe) 3. People Services ¡ At least 5 graduate students 4. Places and Partnerships ¡ Concerned agencies like LGUs, DA, and academic institutions 5. Policy ¡ Policy brief governing the spread of invasive plant pathogens and their insect vectors Year 2 1. Publications ¡ Quick on-site detection of plant pathogens using nanobased kits (at least 2) ¡ Manuals, Guide, IEC materials for on-site detection (at least 3) 2. Patents ¡ Au-probe Process for each disease 3. Products ¡ The Nano-Biosensor Technology to be developed by this proposed project will produce a Biotechnology	DLSU	farmers, agricultural technicians, pest clinic laboratories	1-Jul-18	30-Jun-21	ONGOING	12,300,000.00	2,199,483.00
	Extraction of Phytohormones from Waste Coconut Water using Biochar Derived from Agricultural Residues	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Coconut (Cocos nucifera linn.) is a key agricultural crop of the Philippines besides rice, corn and sugarcane. In 2013, coconut production in the Philippines yielded 15.3 billion coconuts (Bureau of Agricultural Statistics, 2014), making the country the second top producer of coconut and the top exporter of coconut products worldwide. Coconut has been the major trade item of the Philippines, with 902,009 metric tons of coconut oil exported during the first three quarters of 2013 that resulted in $538.31 M income for the first half of the year (Coconut Industry Profile, Valencia, 2013). Unfortunately, the extraction process to produce coconut oil from dried coconut meat (copra) generates a huge volume of wastes that includes coconut husks, shells and coconut water (Philippine Coconut Authority [PCA], 2005). In particular, waste coconut water poses deleterious effects in the environment due to its high biological oxygen demand (BOD), and low pH value, resulting to fish kills, bad odors, and spoiled natural resources. However, no documented environmental problems due to untreated water discharge are available. The treatment necessary to reduce BOD of waste coconut water to acceptable levels before they can be discharged into the environment is much too costly (Asian Productivity Organization, 2006). The highly acidic pH of coconut water prevents it from being used as an irrigation water to rice paddies. Therefore, many coconut oil industries release their waste untreated, polluting the environment with unpleasant odor, kills aquatic life, and spoils soil and plants. This was a major concern of Peter Paul Philippines Corporation (PPPC) in Candelaria, Quezon, one of the largest desiccated coconut firms in the Philippines generating 80,000 liters a day of coconut water. In 1993, PPPC channeled its waste coconut water to Chia Meei plant in Taiwan for concentrating, freezing and final processing of coconut water as a commercial drink.	Publication 1-submitted publication on optimized biochar production and phytohormone extraction from waste coconut water 1- submitted publication on pre-scale up studies for phytohormone extraction from waste coconut water Products 1-Activated biochar for phytohormone extraction from waste coconut water 1-Phytohormone product extracted from waste coconut water People 1 PCAARRD GREAT Scholar- MS Chemical Engineering 3 Undergraduate BS Chemical Engineering 1 Undergraduate BS Chemistry Patent 1-Utility Model filed for extraction of phytohormone extraction 1-patent filed for Activated biochar for phytohormone extraction from waste coconut water 1-patent filed for Phytohormone product extracted from waste coconut water Upgraded laboratory that will be the front-runner in bioenergy, waste utilization and materials innovation research.	UPLB	Coconut farmers Coconut processors Cut flower industry	1-Jan-20	31-Dec-22	NEW	22,970,636.00	5,492,817.00
	Improving Agricultural Productivity and Sustainability of the Bustos and Pulilan Communities through Smart S&T-Based Technologies	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will be done in order to harness the available technologies of DOST-PCAARRD aligned with the councilâ€™s Strategic Industry S&T Program for Agri-Aqua Growth (SIPAG), in conjunction with other appropriate technologies, to promote resiliency and self-sustainability to the BYSMPI community in Bustos, Bulacan amidst the current threat of isolation / quarantine due to the SARS2-CoV pandemic, or other future emergency situations. The project will follow a holistic approach / scheme in which package of appropriate technologies will be provided to mold the community to be resilient and self-sustaining with little to no dependence to external support. Through the provision of SMART agricultural technologies, the BYSMPI community will be able to produce their requirement of carbohydrates (particularly brown rice), vegetables, fish, meat and table eggs necessary for a balanced and healthy diet for the growing children. Through this project, BYSMPI will be a model community in which the system of packaging the SIPAG interventions can be replicated to other communities. Similarly, available SMART S&T-based agricultural technologies will be harnessed thru the project in order to promote food sufficiency and/or self-sustainability to the RCMIâ€™s Nuestra Senora de Guadalupe Academy of Bulacan, Inc. located at Rafaela Homes, Pulilan, Bulacan amidst the current threat of isolation / quarantine due to the SARS2-CoV pandemic or other future emergency situations. These technologies, which include the Vertical Farming system developed by CLSU and the Edible Gardening technology conceptualized by DOST FNRI, will provide sufficient amount / volume of fresh vegetables, including high value crops such as strawberry, for the administrators, teachers and students of RCMI. In conjunction with the hydroponics technology already provided to the school, these technologies to be provided will also encourage their students to engage and appreciate the science behind the modern technologies available in urban agriculture and eventually	(6Ps) Products Established demonstration areas for S&T-based agricultural technologies on agricultural production in 2 areas of Bulacan. People Services a) At least 20 farmers identified and trained on the use of SMART S&T-based agricultural technologies; b) At least 300 students within the two communities deeply engaged on SMART S&T-based agricultural technologies; c) Three schools equipped with modern interactive learning systems; d) Three schools provided with S&T digital library; e) Employ at least one staff for project monitoring. Places and Partnerships a) Collaboration with two communities well-equipped with appropriate technologies to be resilient and self-sustaining; b) Partnership with DOST and other technology providers.	DOST-III	The primary beneficiaries of this project are: 1) Bahay at Yaman ni San Martin De Porres Compound, Brgy. Bonga Menor, Bustos, Bulacan 2) Nuestra Senora de Guadalupe Academy of Bulacan, Brgy. Taal, Pulilan, Bulacan	1-Oct-20	30-Sep-21	NEW	5,000,000.00	5,000,000.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Improving Food Security in Selected Areas in the National Capital Region as Response to COVID19 Crisis Thru Urban Agriculture	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Urban gardening technologies are easy to use and require little space for growing various crops. Provided there is enough sunlight in the area. Vegetables can be harvested within four to six weeks after transplanting. EPP and SNAP hydroponics requires minimal supervision and irrigation because both have reserved water for reuse. Even the elderly can adopt these technologies. EPP is composed of a container or vessel, potting medium or compost, and compost soil extract (CSE) , packaged in bundle of three vessels per set . SNAP hydroponics is a soil less culture that thrives on water plus nutrient solution. These technologies uses recyclable materials such as pet bottles, styro box (from grapes) styro cups & plastic lining.	IEC materials on care and maintenance of crops (EPP, SNAP, mushroom cultivation ; Vermiculture, dual drum composter, recipe book 7,600 EPP sets provided for 950 families 2 dual drum composters deployed in 2 barangays Containerized composting provided to 4 barangays 200 barangay representatives trained on various technologies to be deployed 950 families benefitted with EPP kits Partnerships/collaboration with the following : Local government units, the Manila Police - DOST-PCAARD, DOST-ITDI, DOST-FNRI,DA-BPI City of Manila,	DOST-NCR	1.Brgy. 649 (Baseco 2.Smokey Mt. Brgy. 128, Tondo, Manila 3.Brgy. 163, Manila 4.Brgy. 834 , Pandacan Manila 5.Brgy. Bagong Silangan, Quezon City 6.Brgy. 186, Caloocan City 7.Brgy. 187, Caloocan City	1-Sep-20	31-Aug-21	NEW	5,000,000.00	5,000,000.00
	Improving Production Efficiency and Cane Yield in a Sugarcane Block Farm Using an Automated Furrow Irrigation System	KRA 3: Rapid, Inclusive and Sustained Economic Growth	A PCAARRD funded-project on â€œSmart Water Management Strategies for Sugarcaneâ€ was implemented by CLSU to determine which irrigation application method and timing of application will give higher yield of sugarcane. The comparative study between subsurface drip irrigation (SDI), furrow irrigation and fully rainfed condition was conducted from 2014 to 2016 using PHIL 00-2569 sugarcane variety in a 5,000 sq m experimental area at the LAREC compound in Floridablanca, Pampanga. Single row planting with a planting density of 30,000 seedpieces per hectare was maintained in 5.2 m x 12 m plots. It has been established from the said research project that with supplemental irrigation, sugarcane production becomes economically viable and considerably increases the income of planters. From the field experiments, lowest yield came from fields that depended entirely on rainfall (75 tons/ha). Although furrow-irrigated sugarcane gave 20% better yield (194 tons/ha) than drip-irrigated crops (162tons/ha), the total amount of water applied in furrow irrigation is 62% higher than drip irrigation. The results gave a lower water productivity for furrow irrigation (29 kg/m3) than drip irrigation (63 kg/m3). Hence, this proposal shall aim to increase water use efficiency in furrow irrigation systems using precision farming technology for the sustainability of irrigated farming systems. This proposal on smarter irrigation for sugarcane block farms shall focus on the development of an adaptive real-time system for the automation and control of furrow irrigation.The system shall provide the sugarcane industry with an intelligent furrow irrigation system able to compete with the alternative pressurized systems of sprinkler and drip systems on capital cost, water and labor savings but without the high energy costs. Precision irrigation continues to be a cornerstone of CLSUâ€™s work.The precise control of irrigation water for improving water use is critical for the continuous improvement of sugarcaneproduction areas where water resources are normally scarce. Furrow irrigation is the predominant method ofirrigating sugarcane farms,	1. Accurate water deliveries and applications with an increase in water savings of 20% from manual furrow irrigation 2. Involvement of two (2) undergraduate/graduate students in the project 3. MOA with Sugar Regulatory Administration, DAR, ARBOs, BSWM, and DA RFOs 4. Publication in refereed journal 5. Patent application for the automated furrow irrigation system 6. Trainings conducted for the application of automated furrow irrigation system and fabrication of sensors and automated gates 7. Policy recommendation on the conversion of rainfed cultivation into irrigated cultivation	CLSU	1. Sugarcane Planters 2. Sugarcane Technicians 3. Researchers on Smart Farming Applications 4. Students	16-Apr-18	15-Jul-20	COMPLETED	5,000,000.00	864,193.60
	Optimization and Pilot Testing of the Mechanization Resource Mapping, Monitoring and Data Analysis System (M3DAS) for Mechanization Planning, Implementation and Policy Data Generation for Government Departments and LGUs	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The M3DAS is a system composed of a paperless cell phone based data capture app and a database and analysis system that can provide critical information through thematic maps, statistics and other GIS based information that will allow a more thorough understanding and appreciation of the mechanization situation in a particular locality. The use of M3DAS allows rapid updating of data and the various tools of analysis inherent in GIS programs allow diverse scenarios that allow planners and implementers a more in depth understanding of the mechanization situation being addressed. The generation of mechanization resource data in the past has often been done through projects every time such data is deemed for updates. Such has proven to be tedious, costly, time consuming and unsustainable. With M3DAS, data collection and analysis is more seamless. In the development of M3DAS, one of the major problems encountered was the vast number of actual machines as against known machine inventory records available from the various levels of the agricultural offices (regional, provincial and municipal). More often than not values do not match one another and information is almost always incomplete. Critical information such as machine capacity, efficiency, size of power units and other relevant information are almost always unrecorded. Considering that there is the provision within the AfMech Law to require registration of various agricultural machinery, the M3DAS system can allow the merging of such information by adding the registration details to other data already collected. The inventory will have the addedd dimension of location that further clarifies the status of mechanization of a certail locality when analysis on machine density versus machinery need is done.	Publications â€¢ At least 1 publication â€¢ 1 oral/poster presentation in local or international conference â€¢ 1 Training Manual â€¢ 1 Operations Guidelines â€¢ Publication in BIOMECH website Patents/IP â€¢ Customized Data Capture App Products â€¢ Optimized and Pilot Tested M3DAS System People Services â€¢ At least 3 URAs trained in system development and use of the M3DAS system â€¢ At least 26 government personnel from SRA, PLGU and LGU trained in the use of M3DAS â€¢ Initially deployed M3DAS system for pilot SRA areas Places and Partnerships â€¢ Working partnership with SRA, PLGU and LGUs covered in the pilot area Policy â€¢ Operational guidelines on use and deployment of M3DAS â€¢ Innovative approach to mechanization resource assessment and monitoring through the use of M3DAS	UPLB	1. Department of Agriculture Offices (SRA, National, Regional, BAFE) 2. Provincial LGUs 3. Municipal LGUs	1-Jul-20	30-Jun-21	NEW	5,000,000.00	5,000,000.00
	Pilot Testing of Peanut Postharvest Mechanization and Bulk Storage Technologies in Selected Regions in the Philippines	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project will pilot test the three prototype postharvest machines developed under the 3-year project: Postharvest mechanization and storage support system for peanut funded by DOST-PCAARD and implemented by the Cagayan State University. The Pilot Testing of the peanut stripper, peanut sheller, and automated aerated bulk storage system will be done to improve machine performance, economic viability, and social acceptance considering the varying consitions, and socio-economic environment in the regions.	1.One unit of commercial model of peanut stripper cum pod sorting machine 2.One unit of commercial model of peanut sheller cum sorter machine 3.One unit of commercial model of automated aerated bulk storage system for peanut pods	CSU	The target beneficiaries shall be the peanut farmers and processor/ trader in peanut sites. Also included would be the machinery fabricators and manufacturers in selected regions once the machines (peanut sheller, stripper and bulk storage system were ready for commercialization.	1-Jul-18	31-Dec-20	ONGOING	5,000,000.00	481,137.79

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Solar Powered Irrigation System: A Clean Energy Management Solution to Dairy Production in Marginalized Communities in Cagayan Valley (Solar-powered Pump Irrigation System: A Clean Energy Water Management Solution to Dairy Cattle Production in Marginalized Communities in Cagayan Valley)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project intends to develop and evaluate a solar-powered pump irrigation system for dairy cattle production in marginalized communities of Cagayan Valley.	Products 1. At least 50 tons (1,250 bags) green corn-based silage produced in an irrigated one-hectare green corn forage area in dairy producing marginalized communities of Region 02. 2. Green corn produced four times a year for silage production. 3. Corn silage available year-round 4. Environment pollution free model farm equipped with solar powered source of irrigation. 5. Availability of year-round clean water/source of irrigation for green corn production. People and services 1. Capacitated at least two marginalized dairy communities and graduating agriculture students on greening the dairy environment using solar powered source of irrigation in Cagayan Valley. 2. Provided additional employment opportunities and added source of income to marginalized dairy farmers. 3. Increased awareness on renewable energy, climate change effects, mitigation and adaptation by green corn farmers. 4. Women empowerment on alternative energy applications in dairy production in marginalized communities of Cagayan Valley. Publications 1. Studies on the efficient use of the two types of solar powered pump irrigation system (fixed type and solar tracker â€“ equipped) on green corn-based silage production for the dairy industry. 2. Drip irrigated and flooded irrigated green corn production.	ISU	All Dairy Stakeholders	1-Jun-20	31-May-22	NEW	4,999,904.00	3,060,542.00
	Toxicological Study and Pilot Testing of Nutrio™ Biofertilizer for Improved Production of Sugarcane in Regions III and VI(Old Title: Toxicological Studies of Newly Developed Biofertilizers for Various Crops)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The research will be conducted for toxicological evaluation of the newly developed biofertilizers for various crops. This research could assure the quality and guarantee the success of inoculation of new crop and acceptance by the farmer. The research will conducted at BIOTECH-UPLB.	1. Generation of data from results on the toxicity tests 2. Assured quality and guaranteed success of inoculation 3. Identified at least one metabolite from the component organism 4. 1 poster and oral paper 5. 1 publication	UPLB	Entrepreneurs, Farmers, LGUs, Researchers	16-Nov-17	15-May-20	COMPLETED	5,000,000.00	126,659.06
Banana Bract Mosaic Disease (BBrMD) in the Philippines: Geographic Distribution, Yield Loss Assessment, Virus Elimination, and Evaluation of Germplasm Collection	Project 1. Distribution, Diversity and Host Range of Banana bract mosaic potyvirus in the Philippines	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	This project will characterize the disease symptoms and pathogenicity and virulence properties of the BBrMV isolates from select region in the Philippines to better understand epidemiology of BBrMD and plant-BBrMV interaction. The knowledge of the pathogenic and virulence properties of BBrMV isolates from the different regions improves our understanding of the BBrMV strains present in the country, which also tells of possible region-specific strains.	1. Incidence and distribution maps of BBrMD 2. Optimized detection protocol for BBrMV 3. Genetic diversity of BBrMV from the Philippines 4. List of alternative hosts of BBrMV and symptom description 5. At least one journal article published	UPLB	â€¢ Plant pathologists, plant breeders, provincial and municipal agriculturists, extension workers, regulators (e.g. Burearu of Plant Industry â€“ National Plant Quarantine Services Division) and banana growers.	1-Sep-20	31-Aug-23	NEW	8,850,000.00	3,709,215.84
Banana Bract Mosaic Disease (BBrMD) in the Philippines: Geographic Distribution, Yield Loss Assessment, Virus Elimination, and Evaluation of Germplasm Collection	Project 2. Evaluating the Impact of BBrMV on the Yield of Selected Banana Cultivars in the Philippines	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Yield loss assessment caused by Banana bract mosaic virus and mitigate Banana Bract Mosaic Disease in the field through different nutrient management regimes. This project is initiated to expand the narrow information available on the extent of yield loss caused by BBrMV. Common banana cultivars consumed in the country along with two promising saba strains selected from a previous DOST-PCAARRD funded project will be used as test plants to generate a coherent data on their response to the viral disease.	1. Knowledge on yield loss in common banana cultivars due to BBrMD 2. Yield loss response of Lakatan, Latundan, Cardaba, and some other promising strains. 3. Nutrient management regime for BBrMD mitigation. 4. Published at least one article	UPLB	â€¢ Banana growers â€¢ Agricultural officers/technicians â€¢ Non-government organizations â€¢ Researchers â€¢ Students	1-Sep-20	31-Aug-23	NEW	8,074,999.60	2,698,928.44
Banana Bract Mosaic Disease (BBrMD) in the Philippines: Geographic Distribution, Yield Loss Assessment, Virus Elimination, and Evaluation of Germplasm Collection	Project 3. Virus Elimination and Production of Virus-Free Planting Materials of 'Saba' Varieties	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The limitations in the production and supply of disease-free quality planting materials of high yielding and promising â€¯Sabaâ€™ varieties will be addressed in this project. Continuous supply of quality disease-free planting materials will boost the existing production and will accelerate further expansion programs of the country in order to meet the growing demand of the â€¯Sabaâ€™ industry.	1. Optimized sampling technique for BBrMV indexing 2. Micropropagated virus-free indexed plants of Saba varieties 3. At least two protocols optimized for BBrMV elimination 4. Technology dissemination through trainings and seminars 5. In vitro bank of disease-free bananas 6. At least 1 publication	UPLB	â€¢ Farmers â€¢ Banana growers â€¢ Researchers â€¢ Tissue culture laboratories engaged in banana production â€¢ Agricultural workers	1-Sep-20	31-Aug-23	NEW	7,250,000.00	2,106,969.52
Banana Bract Mosaic Disease (BBrMD) in the Philippines: Geographic Distribution, Yield Loss Assessment, Virus Elimination, and Evaluation of Germplasm Collection	Project 4. Evaluation of Selected Irradiated Cardaba Mutants with Short Stature and Other Musa Accessions for Banana bract mosaic virus (BBrMV) Resistance	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Promising Saba strains had been identified in previous DOST-PCAARRD funded project but the reaction of these promising materials to BBrMV must be assessed and confirmed before mass propagation. All in vitro and in situ collections will be mass propagated and evaluated for reaction to BBrMV under greenhouse conditions. The reactions of promising materials will be confirmed under field condition where there is high disease pressure. The mechanism of resistance will be analyzed.	1. Confirmed reactions of Cardaba and Saba to BBrMD. 2. Confirmed reactions of in vitro and in situ germplasm collections to BBrMD. 3. Data on field performance of promising lines. 4. Information on the mechanism of resistance to virus and vector 5. Published at least 1 article in ISI-indexed journal	UPLB	â€¢ Banana growers â€¢ Agricultural officers/technicians â€¢ Non-government organizations â€¢ Researchers â€¢ Students	1-Sep-20	31-Aug-23	NEW	8,825,000.00	2,235,265.48

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Development of Integrated Crop Management (ICM-Tomato) for Increasing the Productivity of Fresh and Processing Tomato Production	Project 1. Development of Disease Management Technologies for Fresh and Processing Tomato Production	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Tomato (Solanum lycopersicum L.) is the fourth major vegetable crop in the Philippines. It is grown mainly for its fruits which are either consumed fresh or processed into paste. Tomato production provides an important source of livelihood to Filipino farmers. Many farmers grow tomato as a major vegetable crop because of its high crop value. Tomato production is a growing industry in the country with a production volume of 214, 576 MT (PSA, 2015). Tomato is grown all over the country and the top producing regions by volume of production are Ilocos Region (34%), Northern Mindanao (22%) and Central Luzon (11%). The other production areas contribute 34% of the total volume of production. The top producing provinces are Bukidnon (18.4%), Ilocos Norte (14.1%), Ilocos Sur (10.8%), Pangasinan (8.1%) and Nueva Ecija (5.7%). The Ilocos Region, particularly in Ilocos Norte and Ilocos Sur grows tomato mainly for processing, and it is where the only tomato processing plant, the Northern Foods Corporation (NFC), in the country is located. The NFC in Ilocos Norte supplies 4,000 tons (13.3%) amounting to PhP 232 M of the 30,000 MT demand for tomato paste in the country. The other 24,000 MT of the demand is imported mainly from China. The processing tomato is grown after rice in a total area of 800 ha involving about 2,000 contract growers, each with an average of 0.40 ha landholdings. However, tomato production is affected by several constraints including diseases (Fresco, 2001). Tomato leaf curl is the most serious and widespread disease of tomato in the country causing significant yield reduction in both fresh and processing tomato production. The disease is caused by a virus transmitted by whitefly which can build up their population at high level during the dry season when tomato is being grown.	1.At least two (2) publications in ISI-indexed journal 2.Disease profile in fresh and processing tomato production 3.Efficacy of healthy seedling technology for leaf curl management in fresh and processing tomato production 4.Determined the effective concentration and induction time of carrageenan application, and efficacy of the carrageenan technology for leaf curl management for fresh and processing tomato production 5.IEC materials on healthy seedling and carrageenan technologies, and ICM recommendation. 6.Trained manpower in the form of students BS (1 BS Agriculture - Plant Pathology and 1 MS (Plant Pathology) and their thesis research supported by the project	UPLB, NFC	Researchers will benefit from the generated scientific information about integrated crop management for fresh and processing tomato production using adaptable technologies and site specific disease management. Government extension agencies (RCPCs, SUCs, and LGUs) will benefit from the gained scientific information and generated products and technologies. Students and SUCs will benefit from the trained manpower that will be one of the outputs of this project. Tomato farmers will be the ultimate beneficiary of project outputs.	1-Nov-17	31-Oct-20	COMPLETED	6,726,305.10	1,383,864.04
Development of Integrated Crop Management (ICM-Tomato) for Increasing the Productivity of Fresh and Processing Tomato Production	Project 2. Development of Insect Pest and Weed Management Technologies for Fresh and Processing Tomato Production	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Tomato, second to eggplant, is the most widely cultivated vegetable in the Philippines. The crop is grown using varied cultural management practices and under different cropping systems, which include the highland, upland, lowland after rice cropping system and under protected structures. It has also special cultivars for specific market like table tomatoes, salad tomatoes and processing tomatoes. Production of the latter is restricted in the Ilocos region where the only operational processing plant in the Philippines is located, the Northern Foods Corporation (NFC), a government-owned and controlled corporation. Northern Foods Corporation supplies 4,000 tons (13.3%) amounting to PhP 232 M of the 30,000 MT demand for tomato paste in the country. The other 24,000 MT of the demand is imported mainly from China. The processing tomato is grown after rice in a total area of 800 ha involving about 2,000 contract growers, each with an average of 0.40 ha landholdings. Tomato production is a growing industry in the country with a production volume of 214, 576 MT (PSA, 2015). It is grown all over the country and the top producing regions by volume of production are Ilocos Region (34%), Northern Mindanao (22%) and Central Luzon (11%). The other production areas contribute 34% of the total volume of production. The top producing provinces are Bukidnon (18.4%), Ilocos Norte (14.1%), Ilocos Sur (10.8%), Pangasinan (8.1%) and Nueva Ecija (5.7%). Insect pests remain a major limiting factor in the profitable production of tomato. Though it has relatively fewer species of pests of major importance than on eggplant, early detection and correct diagnosis is much critical in tomato because of its more herbaceous growth habit and shorter productive period and more importantly, its susceptibility to several virus diseases. The crop is quite sensitive to injuries resulting from the feeding activity of the pests and has less time to recover	1.Site-specific insect pest succession pattern under a given crop growing environment (climatic and edaphic factors) and pest management (biological, cultural, behavioral and chemical control) in fresh and processing tomato production 2.Efficacy of modified release strategy of biological control agents and carrageenan technology to manage insect pests of fresh and processing tomatoes 3.Improved weed management strategies in fresh and processing tomato production 4.Field validated ICM recommendation 5.At least 3 scientific paper published in ISI-indexed journals and IEC materials on insect pest succession pattern and emerging insect pests, training materials on village-level mass production of biological control agents, crop protection technology recommendations (insect pest & weeds) 6.Trained at least 20 farmers in village-level mass production and utilization of Trichogramma, earwigs and NPV for fresh and processing tomato production for each site; Enhanced capability of RCPC biocon laboratory in mass production 7.Enhanced the capability of trained farmer leaders, extension and project personnel on information campaign strategies of biologically-based insect pest management 8.MOA with SUC, LGU and Cooperative. 9.Enhanced the capability of RCPC I in mass production of BCAs 10.Established network and collaboration with partners such as Mariano Marcos State University, Northern Foods Corporation, Regional Crop Protection Center I, local government units, Farmersâ€™s Leaders, Cooperators and Cooperative.	UPLB	Researchers and students will benefit from the generated scientific information about the site specific succession pattern of insect pests and biological control based crop protection technologies for fresh and processing tomato. Tomato growers and government extension agencies (DA-RCPCs, SUCs) will benefit from technologies, recommendations, and trainings on mass production of biological control agents.	1-Nov-17	31-Oct-20	COMPLETED	4,199,097.92	637,401.78
Development of Integrated Crop Management (ICM-Tomato) for Increasing the Productivity of Fresh and Processing Tomato Production	Project 3. Development of Site-Specific Nutrient Management Program for Tomato Production	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Tomatoes grow well in fertile soil with a lot of organic matter. The common fertilizer application rates for tomato under tropical condition is 60-120 kg N, 60-140 kg P and 60-120 kg K per hectare (PCAARRD, 2015). While some farmers, especially those that have been adequately provided with extension and technical assistance, follow the recommended rate, most farmers either apply excessively or below the recommended rate. In nutrient or fertilizer management, the amount, timing, and type of fertilizer to be applied are crucial in attaining optimum yields. Of equal importance, is the nutrient-supplying capacity of the soil which may vary with production area due to varying soil physico-chemical properties that affect the storage, release of nutrients and crop uptake of nutrients. Fertilizer recovery efficiency in tomato production areas is also important. This parameter is greatly affected by tomato crop and its interaction with environment (climatic & edaphic). Set target yield is also an important consideration in determining appropriate amount and ratio of fertilizer nutrients to be applied that will support the expected plant biomass and economic yields that have to be attained. Tomatoes are heavy feeders and need high amount of nitrogen, phosphorous and potassium within a crop cycle. A ton of fresh fruit will require about 2.5-3 kg N, 0.2-0.3 kg P, and 3-3.5 kg K (Hegde, 1997). The Philippines is reported to be self-sufficient in fresh tomato but not of the processing type. But despite self-sufficiency in fresh tomatoes, the potential to increase tomato yield, both fresh and processing is tremendous. One way to achieve this is through site-specific nutrient management (SNNM). SSNM approach advocates sufficient use of nitrogen (N), phosphorus (P) and	Year 1 â€¢Networking and coordination with NFC, LGUs, MMSU and farmers in the selected sites â€¢Baseline profiling of farmers nutrient and soil management practices/production systems â€¢Profiling, collection and laboratory analysis of soil characteristic â€¢Consolidated baseline data for use in the formulation of SSNM â€¢Set-up MOET and OPT in selected farmersâ€™ fields â€¢Identified yield-limiting nutrients in farmers field â€¢Estimated yield and various nutrient use efficiency parameters â€¢Estimated soil nutrient supplying capacity â€¢Determinated/formulated fertilizer rates for the SSNM treatment plot â€¢Formulated ICM incorporating specific fertilizer recommendation and disease, insect pest and weed management Year 2 â€¢Set-up ICM experiment in farmersâ€™ fields â€¢Monitored crop response to the integrated crop management strategy â€¢Estimated yield and various nutrient use efficiency parameters Year 3 â€¢Field validated ICM strategy and evaluation crop responses to the recommendation â€¢Estimated various nutrient use efficiency parameters â€¢Fine-tuned and calibration of ICM strategy â€¢Prepared manual and IEC materials on site-specific nutrient management technology â€¢Prepared and submitted articles on the result of the experiment for publication	UPLB	NFC which is the only processing company for tomato in the country will benefit from this technology as well as their farmer cooperators. Researchers will benefit from the generated scientific information and datasets that are basic inputs in the development of site-specific nutrient management program for tomato in selected tomato growing areas/domains in the Philippines. Government extension agencies (DA, SUCs) will benefit from the developed site-specific nutrient management program, that is generated from a decision-aided tool, and integrated in an integrated crop management for tomato. Students will benefit in terms of undergraduate/graduate reseach conduct, while government agencies in terms of capacity building within the area of nutrient management R & D and application of decision-aided tool in nutrient management as a component of tomato ICM. Trained manpower will be one of the major	1-Nov-17	31-Oct-20	COMPLETED	4,259,408.30	1,119,073.18

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Enhancing Competitiveness of Philippine 'Carabao' Mango through Varietal Improvement Program "Molecular Markers in 'Carabao' Mango Associated with Peel Color and Thickness, and Resistance to Anthracnose and Fruit Fly- old title"	Project 1. Characterization of 'Carabao' and other Mango Varieties with Red Blush and Thick Peel, and Development of Hybrids	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	'Carabao' mango, the country's only export variety, is one of the best varieties in the world. The distinct taste and nutritional value of the â€žCarabaoâ€Ý mango puts it above any other mango varieties in the world. Despite high production and the good climatic conditions to produce mango fruits all-year round, the export potential of this variety is hampered by small land holdings resulting to inconsistency in quality, low percentage of exportable quality production, and short shelf life. Constraint posed by these problems could be solved by varietal and genetic improvement to produce improved mango varieties with thicker peel and red blush color of skin, better shelf life, and smaller tree for easier management. On-site selection and identification of different varieties available in the country could also give us bright opportunities to offer and import wider range of mango varieties, which can suit different consumer preferences especially during off-season or lean months of 'Carabao' mango production. Peel thickness is also an important trait of mango because thicker peel renders the mango fruit more resistant to insect pest and disease development and longer shelf life	1. Validated 3 potential 'Carabao' mango strains/selections with red blush and 1 with thick peel from other mango varieties 2. Identified at least 1 stop-gap mango cultivar/variety for 'Carabao' mango 3. Produced 3 more putative hybrids by pairing/clipping method of hybridization 4. Established breeding blocks for mangro hybridization program 5. Fully characterized fruits of 3 hyrbids produced from the previous project 6. Published at least 2 papers in scientific journals	UPLB	1. Mango growers 2. Processors 3. Traders/Exporters 4. Researchers/Breeders	1-Nov-15	31-Oct-21	ONGOING	15,949,889.94	1,012,305.82
Enhancing Competitiveness of Philippine 'Carabao' Mango through Varietal Improvement Program "Molecular Markers in 'Carabao' Mango Associated with Peel Color and Thickness, and Resistance to Anthracnose and Fruit Fly- old title"	Project 2. Characterization of 'Carabao' and other Mango Varieties with Resistance to Fruit Fly and Anthracnose	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	In the past, evaluation of different mango varieties for resistance to different pests and diseases has been conducted through the project entitled: Improvement of â€˜Carabaoâ€™ mango fruit characteristics with resistance to insect pests and diseases. Potential resistance of different trees to major insect pests and disease were also identified. Based on the results gathered from the previous study, it is very important to verify and confirm the resistance of different selected materials especially the fruit fly and anthracnose resistant accessions. Such characteristics should also be utilized for the improvement of our â€˜Carabaoâ€™ mango and development of other stop-gap varieties.	1. Confirmed reaction of 3 'Carabao' and 2 other mango varieties resistant to anthracnose 2. Confirmed reaction of 2 'Carabao' and 1 other mango variety resistant to fruitfly 3. Confirmed reaction of 3 hybrids from the previous project and 3 new hybrids 4. Published at least 2 journal articles	UPLB	1. Mango growers/exporters 2. Researchers 3. Breeders	1-Nov-15	31-Oct-21	ONGOING	10,411,429.50	895,645.56
ENHANCING THE PRODUCTIVITY AND MARKETABILITY OF QUEEN PINEAPPLE	Comparative Field Performance of Tissue Culture-Derived Plantlets and Suckers of Queen Pineapple - Phase 2 (Old Title: Field Analysis of Tissue Culture-Derived Planting Materials and Sucker of Queen Pineapple in Leyte and Camarines Norte Conditions)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Field analysis will be done on the existing experimental set-ups on tissue culture-derived Queen pineapple planting materials and suckers established in two coconut densities (high density consisting of 100 or more palms per hectare and low density consisting of below 100 palm trees per hectare) under Leyte and Camarines Norte conditions. The conduct of this field analysis is a continuation of the project on comparative performance of tissue culture-derived planting materials and suckers of Queen pineapple in two Queen pineapple-producing provinces.	1. Adaptive, productive and high-yielding Queen pineapple populations suitable for coconut intercropping; 2. Protocol on the management of tissue culture-derived Queen pineapple planting materials, starting from the transferring of seedlings from the culture bottles to field planting, and; 3. IEC material on the production and management of tissue culture-derived Queen pineapple.	VSU	pineapple growers ins region 5 and 8, pineapple traders (local and export), pineapple processors, research institutions, LGUs/SUCs	16-Apr-19	15-Apr-20	COMPLETED	1,000,000.00	282,245.57
Improvement of Coconut Varieties through Genomics, Genetics and Breeding for a Competitive and Sustainable Philippine Coconut Industry	Project 4 -Phase II: Comparative Transcriptomics of Normal, Makapuno and Lono Coconut Endosperms	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The genomics program addresses the need for sustained development of coconut varieties with higher oil yield. This will be facilitated using the knowledge and modern tools of genomics and transcriptomics. Transcriptomics, the study of the whole set of RNAs (transcriptome) encoded by the genome of a specific cell or organism at a specific time or under a specific set of conditions, provides knowledge and information on gene expression and metabolic processes. Genomic and transcriptomic tools can accelerate improvement of breeds of crops and animals through better and more dedicated fundamental insights on specific processes such as oil biosynthesis and the occurrence of makapuno and lono phenotypes. The transcriptome from a given tissue and time reflect the set of gene products expressed or present. Characterization of these sequences will lead to the identification of genes that contribute in coconut oil biosynthesis, makapuno and lono phenotypes. This could also lead to the development of molecular markers that are most useful in marker assisted breeding. The results of the second phase would give a better and deeper understanding of the genetic and molecular mechanisms underlying coconut oil biosynthesis, makapuno and lono phenotypes. These would serve as the springboard for the development of molecular marker specific to these traits and eventually the genetic improvement of coconut. Highly improved coconut varieties mean higher oil yield and better endosperm types which translates to higher profit for the Filipino coconut farmers.	1. Identified genes and gene networks associated with normal, makapuno, and lono phenotypes; 2. Gene expression patterns of selected endosperm-related genes across developmental stages of normal Laguna Tall, makapuno and lono endosperms; 3. Cytochemical patterns across developmental stages of normal Laguna Tall, makapuno, and lono endosperm; 4. Reassembled and re-annotated transcriptome data via reference-guided assembly; and, 5. Developed DNA markers targeting differentially expressed genes.	UPLB, PCA-ARC	Direct beneficiaries will be molecular biologists and molecular breeders, as well as coconut farmers.	1-Jun-18	31-May-21	ONGOING	4,999,195.00	204,566.02
Improvement of Soybean (Glycine max (L.) Merr.) for Better Nutrition, Higher Income, and Enhanced Soil Health	Project 2. Soybean for Higher Income and Enhanced Soil Health Under Different Cropping Systems	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	While farmers are already convinced of the suitability and potential of soybean as rotating crop and intercrop, it is imperative therefore to establish scientific bases on the effects of soybean production on soil health and farm productivity under different cropping systems/patterns. Results of which will help farmers decide on what appropriate varieties and cultural management practices they will be adopting to achieve higher yield and income, hence this project will be conducted.	Publications(10),Different cropping system practices (corn-based, rice-based & cassava-based) and soil health if Refereed (2) if Non-refereed (3) if IEC materials (leaflets, posters, radio program) â€“ (5) Products (3) --- Technologies for optimum yield management under different cropping systems (rice-based, corn-based, cassava-based) for Regions 02, 10, 11 & 13 - (3) People & Services --- Trained farmers/stakeholders on the developed technology (900)	UPLB, DA-RFO 2, DA-RFO 10, DA-RFO 11, DA-RFO 13	a. Farmers in corn, rice, cassava-based farming communities will see the benefit of including soybean in their cropping system specifically its impact on soil health. b. Agri-entrepreneurs (SMEs)	1-May-18	30-Apr-21	ONGOING	15,744,919.00	1,935,924.80

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Improvement of Soybean (Glycine max (L.) Merr.) for Better Nutrition, Higher Income, and Enhanced Soil Health	Project 3. Enhancing the Sustainability of the Informal Soybean Seed Sector	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	An important challenge for the informal seed sector is maintaining seed quality on-farm. The success of any crop production enterprise depends on the quality of seeds for planting. A deteriorated seed will naturally result to poor crop growth and performance and subsequently, to lower yield. Therefore, what is already being done by the farmers should be enhanced by the current state of the art techniques. The project will focus on advancing farmer seed saving techniques, from seed selection to storage, and on developing sustainability mechanisms including expanding governance, developing local seed business, integrating with the local soybean markets, and enhancing linkage with the formal seed system.	Publications (14) a. Sustainability mechanisms i) Refereed papers: 1 ii) Conference papers: 2 iii) Guides, factsheets, technical info: 1 iv) Leaflets, posters, and related IECs in English and 1 local language: 1 b.On-farm seed processing and storage i)Refereed papers: 1 (shared with on-farm seed selection) ii)Conference papers: 2 iii)Guides, factsheets, technical info: 1 iv)Leaflets, posters, and related IECs in English and 1 local language: 2 c.On-farm seed selection i)Refereed papers: (shared with on-farm seed processing and storage) ii)Conference papers: 1 iii)Guides, factsheets, technical info: 1 iv)Leaflets, posters, and related IECs in English and 1 local language: 1 â€¢Patents â€¢Products (3) a.On-farm Seed Processing and Storage: 1 system recommended b.On-farm Seed Selection: 2 varieties purified, multiplied, and distributed â€¢People Services â€“ training a.Sustainability mechanisms: 3 farmer organizations assisted (related to partnerships) b.On-farm seed processing and storage: 100 farmers trained c.On-farm seed selection: the same farmers as in trained in seed processing and storage â€¢Partnerships: 3 MOAs with farmer organizations and LGUs	UPLB, DA-RFO 2, DA-RFO 10, DA-RFO 11, DA-RFO 13	1.DA and LGU policy makers might be encouraged to enhance support to informal seed systems for all crops 2.Farmers growing soybean and saving their own seeds will be assisted in saving better quality seeds 3.Agricultural technicians and extension workers promoting soybean production will have better understanding of soybean seed saving 4.Researchers and experts working on soybean and other difficult-to-store orthodox seed crops will be assisted in proper seed processing and storage 5.Entrepreneurs who may want to engage in the business of high quality soybean seeds 6.Genebanks (all crops) will benefit from the additional detailed information on seed anoxia	1-May-18	30-Apr-21	ONGOING	14,566,795.00	4,352,239.96
Improvement of Soybean (Glycine max (L.) Merr.) for Better Nutrition, Higher Income, and Enhanced Soil Health	Project 4. Soybean Variety Development for Large Seed Size, Higher Yields, and Enhanced Functional Properties	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Soybean in 2015 is mainly used for processing (61,733 mt) and roughly one-third is for food (22,408 mt). However, local varieties are less preferred for processing because of the small seed size. Meanwhile there is an increasing demand for soybean products because of their health benefits particularly as source of plant-based protein, antioxidants and for management of cholesterol levels and other cardio-vascular problems from its lunasin content. Manchuria is the preferred variety but yield is lower than the Tiwala Series. It has a narrower adaptation than Tiwala. It would benefit the farmers and the industry in general if Manchuria can be improved to have higher yield and wider adaptation including tolerance to pests and diseases. Overall, the industry needs soybean varieties with larger seeds, good processing quality and enhanced functional properties banking on the health effects of the flavonoids unique to soybean (isoflavones) and lunasin.	a.Two (2) variety recommendations for the 2 major agro-climatic zones b.Ten (10) stable soybean lines with large seeds, good processing quality, high yields and tolerance to diseases c.Two (2) soybean lines with enhanced levels of functional properties (isoflavones and lunasin) d.Three (3) publications e.Two (2) thesis students mentored	UPLB, DA-RFO 2, DA-RFO 10, DA-RFO 11, DA-RFO 13	a. Rice farmers with potential to grow soybean after the rice crop b. Corn farmers with potential to grow soybean after the corn crop c. Upland farmers	1-May-18	30-Apr-21	ONGOING	13,627,821.00	2,913,018.44
Improvement of Soybean (Glycine max (L.) Merr.) for Better Nutrition, Higher Income, and Enhanced Soil Health	Project 5. Improvement of Soybean in Surigao del Sur Through Enhanced Value Chains, Sustainable Seed Sector, and Better Varieties Under Different Cropping Systems	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Although soybean production is well established in the Tago river floodplains, its expansion has been limited by competing crops such as irrigated rice and corn and unfavorable supply chain and markets. Soybean is grown as a cash crop and volatile prices have discourage the farmers to continue its production. Moreover, local consumption and utilization is very limited. The DOST-PCAARRD is currently funding the implementation of the program entitled â€œImprovement of Soybean (Glycine max (L.) Merr.) for Higher Income, Enhanced Soil Health, and Better Nutritionâ€ The soybean technology to be developed will include soybean as essential component of a sustainable cropping system, improved seed maintenance and storage, and better varieties.	Publications â€¢ One (1) guide/factsheet/technical info â€¢ One (1) IEC material in English and in local language (leaflet/poster/related material) â€¢ Training People Services â€¢ Two (2) organizations assisted (related to partnerships) - with 20 households per organization â€¢ Twenty (20) students trained Partnerships â€¢ Two (2) MOAs with organizations	SDSSU	1. DA and LGU policy makers encouraged to enhance support to soybean production and utilization 2. Upland farmers assisted in growing soybean and saving their own seeds 3. Agricultural technicians and extension workers promoting soybean production will have better understanding regarding soybean production and utilization 4. Entrepreneurs encouraged to engage in the soybean business	1-May-19	30-Apr-21	ONGOING	2,499,500.00	1,092,717.00
Improvement of Soybean (Glycine max (L.) Merr.) for Better Nutrition, Higher Income, and Enhanced Soil Health	Project 6. Improvement of Soybean in Davao Oriental through Enhanced Value Chains, Sustainable Seed Sector, and Better Varieties Under Different Cropping Systems	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Although soybean production is well established in the Cateel river floodplain, its expansion has been limited by competing crops such as irrigated rice and corn and unfavorable supply chain and markets. Soybean is grown as a cash crop and volatile prices have discouraged the farmers to continue its production. Moreover, local consumption and utilization is very limited. The DOST-PCAARRD is currently funding the implementation of the program entitled â€œImprovement of Soybean (Glycine max (L.) Merr.) for Higher Income, Enhanced Soil Health, and Better Nutritionâ€ The soybean technology to be developed will include soybean as essential component of a sustainable cropping system, improved seed maintenance and storage, and better varieties.	Publications â€¢ One (1) guide/factsheet/technical info â€¢ One (1) IEC material in English and in local language (leaflet/poster/related material) â€¢ Training People Services â€¢ Two (2) organizations assisted (related to partnerships) - with 20 households for each organization â€¢ Twenty (20) students trained Partnerships â€¢ Two (2) MOAs with organizations	DOSCST	1. DA and LGU policy makers encouraged to enhance support to soybean production and utilization 2. Upland farmers assisted in growing soybean and saving their own seeds 3. Agricultural technicians and extension workers promoting soybean production will have better understanding regarding soybean production and utilization 4. Entrepreneurs encouraged to engage in the soybean business	1-May-19	30-Apr-21	ONGOING	2,499,500.00	1,097,617.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Reinvigorating the Philippine Coconut Industry through Coconut Somatic Embryogenesis Technology	Project 6b. Nursery Establishment and Distribution of Coconut Seedlings in Mindanao	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The project will initiate establishment of screenhouse and nursery at AROMAN Seed Garden, Carmen, North Cotabato. The establishment of seedling nursery shall be done accordingly to cater the coconut farmers that need replanting in their farms following the target production and distribution of somatic-derived plantlets of the program. The hardened seedlings from the nursery will be used primarily for planting in coastal locations as expansion areas, partly replacing senile palms and typhoon damaged palms in support to the 10-year replanting program of PCA. Identified varieties with resistance to diseases such as cadang-cadang and insect pest such as coconut scale insect shall be used in areas where infestations are prevalent.	1. Improved propagation technique for in vitro culture of coconut using CSet 2. Upgraded tissue culture laboratories of participating institutions 3. Trained laboratory personnel on rapid production of planting materials through CSet 4. Increased the current 80-120 seedlings per plumule production through enhanced PCA CSet protocol to 1000 seedlings per plumule 5. Distributed quality planting materials to farmers	PCA	The major beneficiaries are the smallhold coconut growers in Zamboanga del Norte, ARMM and Region XII who are dependent on coconut farming as their livelihood.	1-Oct-18	30-Sep-20	COMPLETED	6,560,449.00	2,177,502.00
	Abaca Genomics: Whole Genome Sequencing and Genome-wide Association Studies (GWAS) of the Philippine Endemic Abaca (Musa textilis Nee)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	This project will establish the whole-genome of the Philippine endemic abaca and provide wide-association between phenotype and genotype by employing NGS and GWAS.	1. Whole genome sequence of at least five (5) species: cv Abuab, Pacol, natural hybrid, traditional hybrid (Inosa) and BC2 hybrid (Y1) 2. Discovery of at least five (5) genetic variations contributing to economically important traits-fiber quality and disease resistance (Y1) 3. At least one (1) experimental protocol on tissue culture and in silico design of CRISPR/Cas9 guide-RNA system and other CRISPR/Cas9-related vectors, specific to Musa textilis (abaca) (Y3) 4. At least two (2) journal publications (Y3) 5. At least three (3) local conference paper presentation (Y2 and Y3) 6. At least one (1) international conference paper presentation (Y2 and Y3) 7. At least one (1) training and IEC awareness campaign for abaca farmers (Y3)	UPLB	plant breeders, abaca farmers, abaca exporters, fiber industry stakeholders	1-Jul-19	30-Jun-22	ONGOING	26,464,960.48	3,204,209.22
	Biological Control of Fall armyworm, Spodoptera frugiperda (J.E. Smith) (Lepidoptera: Noctuidae) Using Entomopathogens (i.e., bacteria, fungi, NPV)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Biological control studies of S. frugiperda in this project proposal will include Mass rearing studies using natural hosts and meridic diets in the laboratory (Study 1), Laboratory and field evaluation of nucleopolyhedrovirus against FAW (Study 2). Laboratory and field evaluation of entomopathogenic fungi (Study 3) and 4) Laboratory and field evaluation of entomopathogenic bacteria and nematodes (Study 4). The objectives will be geared towards generation of local data about S. on entomopathoges of S. frugiperda on corn and other commonly infested host plants in corn- growing areas in Luzon as bases for the development of IPM strategies that are climate change resilient, ecologically friendly and sustainable.	â€¢ Data on mass rearing technique for FAW â€¢ Preliminary evaluation of OAW and Cutworm entomopathogens against FAW under laboratory conditions â€¢ Preliminary efficacy testing of entomopathogens continued â€¢ Field tested effective entomopathogen/s â€¢ Shelf life, delivery system of entomopathogens â€¢ Mass produced effective entomopathogens	UPLB	1. Corn Growers 2. Researchers/ Breeders 3. Agricultural Technicians 4. R&D planners, researchers, policy makers	1-Feb-20	31-Jan-22	NEW	4,672,076.00	2,575,202.66
	Confirmatory Testing of Protein-based Marker Kit for Detection of Philippine 'Carabao' Mango in Commercial Mango Nurseries and Germplasm Collection (Old Title: Pilot Testing and Validation of Protein-based Marker Kit for Detection of Philippine 'Carabao' Mango in Commercial Mango Nurseries and Germplasm Collection)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	A protein-based detection kit for identifying true-to-type Philippine â€œCarabaoâ€ mango using antiserum generated from protein markers specific for the carabao mango variety has been developed. The kit was able to discriminate the 'Carabao' varieties from the non-carabao types. However, before this technology is brought to the users the performance of this dipstick should be strongly validated. This project will pilot test and validate this developed technology specifically for mango commercial nurseries and germplasm collection to evaluate sensitivity and effectivity of the developed kit in discriminating true-to-type â€˜Carabao' variety. The success of this technology will help ensure dispersal of quality planting materials of Philippine 'Carabao' Mango for sustained production of fresh fruits and quality raw materials for processing for the local and export market. This is also one of the identified priority strategies on â€œdedicated and consistent work on standardsâ€ to address Global Trade Barriers to support the global value chain of the Philippine Mango Industry.	1. â€˜Carabaoâ€™ mango specific antisera. 2. Working dipstick for identification of Philippine Carabao Mango. 3. Results of confirmatory testing in commercial mango nurseries and germplasm collection. 4. Trained 10 nursery operators and BPI personnel on the use of the dipstick kit.	VSU	Mango growers and nursery operators, researchers and extension workers	1-Oct-18	30-Sep-20	COMPLETED	5,000,000.00	1,289,742.57
	Cytological Mapping of DNA Markers for Insect Resistance and Other Important Genes in Coconut (Cocos nucifera L.) Through Flourescence In Situ Hybridization	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The DNA markers for insect resistance and other markers of significance for coconut improvement identified or developed from the â€œCoconut Genomics Program Project â€will be used as probe to locate the position of the DNA markers on the chromosomes. FISH would allow early screening of genes to specific location on a chromosome. Coconuts are difficult crops to breed as they have long generation interval (about 8-10 years), cross pollinating behavior of tall coconut varieties, inability to undergo vegetative propagation, low number of seeds produced by palm, and massive stature of the palm (Gupta, 2015). But with the aid of molecular techniques, specifically FISH, varieties with insect resistance genes and good agronomical traits can be identified at early stages as well as the selection for the potential breeding population.	Identified coconut accessions with genes for insect resistance and other important genes that are important in improving coconut varieties.	UPLB	Molecular biologists and molecular breeders, coconut farmers	1-Aug-18	31-Jan-21	ONGOING	5,000,000.00	422,396.36

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Development of a Detection System for Pest and Disease Resistance in Philippine Coffee Varieties	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Two coffee species, Coffea canephora (2n=22) and Coffea arabica (2n=44), contribute to the worldwide coffee bean production (International Coffee Organization, 2018). These yield the commonly known Robusta and Arabica varieties, respectively. In the Philippines, an additional species Coffee liberica (2n=22) with its two distinct varieties, Coffea liberica var. liberica and Coffea liberica var. dewevrei, are also cultivated which yields the Liberica (â€œBarakoâ€]and Excelsa varieties, respectively (Bureau of Plant Industry, 2015; Philippines Statistics Authority, 2018). The Philippines however is not a major exporter of coffee. In 2017, coffee production (Arabica and Robusta only) in the Philippines yielded only 200,000 60kg bags of the 159,663,000 60kg bags produced globally (International Coffee Organization, 2018). Recently however, the government has initiated a comprehensive program in propping up the local coffee industry, hoping to turn the Philippines from a coffee importing to a coffee exporting country (Cahiles-Magkilat, 2018). Unfortunately, the local coffee industry is still faced with one of the most common problems, which is pest and disease infestation. Coffee production in the Philippines for the 1st quarter of 2018 has been hampered by berry borers (Philippines Statistics Authority, 2018). There are also a variety of fungal diseases that plagued the coffee plant (Hindorf & Omondi, 2011). With climate change also contributing to the development of susceptible varieties, a repeat of the coffee industry collapse in the 19th century (Baconguis, 2007) is not far from happening. Hence, it is important that local authorities and stakeholders work together to safeguard our local coffee varieties from these modern day challenges. A detection system that can determine resistant varieties and consequently susceptible ones will aid coffee growers/farmers and researchers in planting those	Year 1: Designed and synthesized primers for pest and disease resistance in coffee. Year 2: Validated markers that can be utilized in designing a detection kit for resistance in Philippine coffee varieties.	UPD	Coffee growers/farmers, breeders, researchers and scientists from academe and industry	1-Nov-19	31-Oct-21	ONGOING	5,000,000.00	2,929,490.97
	Development of an Early Warning System against Fall Armyworm, Spodoptera frugiperda through Population and Distribution Modelling	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	In the Philippines, there are four species of noctuid pests under the genus Spodoptera , namely: S. exigua, S. exempta, S. litura, and S. mauritia. These species are considered highly invasive, polyphagous and economically important pests to approximately 36 crop species (e.g. maize, rice, sorghum, sugarcane and wheat, and other vegetable crops- cabbage and onion and cotton). Middle of this year, presence of another species of Spodoptera, Spodoptera frugiperda popularly known as fall armyworm (FAW) was detected in Cagayan and Ilocos Norte set an alarm to government agencies, academe and private industries due to its fast spread attributed to its strong migratory behavior. Fall armyworm, considered native to America got introduced and first reported in Africa in 2016. After 2 years it had crossed to the Asian continent. Presence of FAW was confirmed based from two (2) larval samples collected in Piat, Cagayan (Navasero and Magsino, 2019). Based from the confirmation for the presence of FAW in the Philippines, one of the grave concerns is to provide an Integrated Pest Management Program (IPM), specific for FAW. The first course of action for introduced and invasive species is to use chemical control. However, insecticides to be recommended for use should be properly selected taking into consideration the efficacy, residue profile and relative safety to non-target organisms. In addition, plants with insecticidal or repellent properties must be explored to increase available options among farmers since pesticide resistance occur at faster rate. This information is important in crafting Insecticide Resistance Management (IRM) program for FAW. Similar approach was done for onion armyworm, Spodoptera exigua, a major problem in onion production.	â€¢Model/s that can simulate population and number of FAW generations through time. â€¢Maps of potential spread and distribution of FAW in PH. â€¢Fall armyworm monitoring and early warning system. â€¢IEC materials containing potential population and distribution delivered to farmers and partners in government and private industry.	UPLB	1. Corn Growers 2. Researchers/ Breeders 3. Agricultural Technicians 4. R&D planners, researchers, policy makers	1-Feb-20	31-Jan-22	NEW	4,709,463.00	2,291,581.80
	Development of Biofungicide for the Control of Alternaria solani and other Fungal Pathogens of Tomato and Eggplant	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Early blight is a major fungal disease of tomatoes, eggplant, pepper and potatoes caused by the fungus, Alternaria solani. It is very common in the tropics especially under warm weather and very humid or wet conditions. The disease affects the older lower leaves and stems of the plants and eventually affects the fruits. It is estimated that global expenditure for the control of A. solani alone is around $77M annually. Chemical fungicides have been used to control fungal plant pathogens but these chemicals pose possible dangers to domestic and wild animals and can be harmful to beneficial insects. This proposal aims to develop a biofungicide composed of microbial enzymes that specifically target fungal pathogens. Unlike biocontrol agents that make use of whole, living cells whose effect take longer to be realized and which can be affected by harsh environmental conditions, this biofungicideâ€™s effects are faster and more direct in its target. It is envisioned that this biofungicide can become an alternative to chemical fungicides and play an important role in organic agriculture pest control since it is biodegradable, non-toxic to humans and animals and does not pollute the environment. This field presents many opportunities for development because 1) initial studies have shown great possibility for development of such biofungicides, 2) fungal cell walls are individually unique and require various types of enzymes, and 3) our countryâ€™s rich biodiversity offers an unlimited selection of microorganisms that can be optimized for laminarinase and chitinase production for a variety of applications. It is therefore the objective of this proposal to develop a concoction of the microbial enzymes, laminarinase and chitinase, that targets Alternaria solani and other major fungal pathogens of tomato and eggplant. This project has 3 main components: in Component 1, isolates with high levels of chitinase activity will be screened from culture collection isolates and from	â€¢A formulated preliminary concoction of the biofungicide containing preparations of laminarinase and chitinase enzymes as main ingredients â€¢2 journal articles Working titles of possible publications: 1. Characterization of a chitinase enzyme with antifungal activity against tomato fungal pathogens 2. Development of an enzyme-based biofungicide against Alternaria solani â€¢2 oral papers or poster papers presented in scientific conferences (see below for titles) â€¢1 MS Microbiology student and 2 undergraduate BS Biology students with thesis conducted on sections of the project	UPD	The target beneficiaries of the project research results are: 1. Organic/conventional farmers and vegetable growers who wish to use alternative pesticidal agents which are neither toxic nor harmful to the environment. 2. Academicians, scientists and students 3. General consumers Initial results of the concoctions will serve as basis for other formulations of enzymes for other vegetable fungal pathogens.	1-Jul-18	31-Dec-20	ONGOING	4,999,283.20	527,943.60

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Development of Improved Eggplant Varieties with New Plant Defense Genes for Multiple Insect Resistance using Innovative Technologies	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Eggplant, Solanum melongena L., is one of the most important and popular vegetable crops grown and consumed in the Philippines. For the past 10 years, it has remained as the leading vegetable crop grown in the country with an average total production area estimated at 21,481 hectares valued at Php 2.599B at constant prices (PSA, 2017). Eggplant production is severely constrained by two major insect pests, the eggplant fruit and shoot borer or EFSB (Leucinodes orbonalis Guenee; Lepidoptera: Crambidae) and leafhopper or LH (Amrasca biguttula (Ishida); Hemiptera: Cicadellidae). Yield losses from EFSB and LH infestations have been estimated at up to 90% and 50%, respectively, at severe pest pressure. Farmers use excessive amount of chemical sprays to control EFSB and LH because conventional breeding for resistance has failed to produce commercial varieties with acceptable levels of resistance to these pests. Other control practices are more expensive, impractical and/or ineffective. The preferred control method of heavy insecticide application significantly increases input cost by 25-30% and more importantly, poses immediate and long-term hazards on human health and the environment. It is expected that EFSB and LH infestations will be get more severe because of climate change and intensified production system for food security. Therefore, it is imperative to develop effective and environmentally sustainable solutions to control EFSB and LH. Consequently, this will improve farmersâ€™ productivity and consumer access to this important food crop. The release of insect resistant varieties remains the best option which researchers can provide to farmers. Through the years, Institute of Plant Breeding (IPB) of UPLB has maintained an active eggplant breeding program using both conventional and non-conventional breeding	1) A well characterized Philippine eggplant germplasm collection and database for local and global eggplant community 2) Eggplant insect resistance breeding pipeline consisting of parent lines, specialized populations, elite inbred lines, advanced breeding lines, and improved varieties with various combinations of defense gene/alleles for resistance to EFSB and LH for plant breeders, other researchers, students, farmers and/or consumers, seed companies; 3) Eggplant R&D resources and tools for scientists and academics: molecular maps and markers, genome/genes sequences of eggplant and target pests associated with plant defense mechanisms; NBT-related eggplant protocols 4) IT-based validated phenotyping apps and HTP screening technique for components of EFSB and LH resistance for entomologist, breeders, genebank researchers, students, extension workers; other relevant govt agencies; 5) at least five (5) publications in ISI journals and at least three (3) paper presentations per year in scientific meetings for other researchers, graduate students and the wider academic community; 6) at least three (3) MS graduates (Genetics, MBB, Plant Breeding, Entomology or Computer Science) and five (5) IPB researchers and (5) support staff with enhanced knowledge and training in marker technology, genomics, NBT and regulation and/or IT-based screening techniques 7) IEC materials and training activities specifically on NBT for other stakeholders and the general public.	UPLB, UPD	The target beneficiaries of the project research results are: ï¿· Public and private sector institutions â€“ academic and research institutes, SMEs involved in eggplant industry ï¿· Eggplant researchers â€“ plant breeders, gene bank managers, entomologists, geneticists, molecular biologist, ï¿· Students interested in plant breeding, entomology and agricultural sciences ï¿· Policy makers, regulators, agricultural extension workers - ï¿· Farmers/consumers â€“ long-term beneficiaries of profitable, less costly and safe varieties	1-Jul-18	30-Jun-23	ONGOING	36,668,412.00	7,962,128.73
	Development of Low Glycemic Index Rice Through Induced-Mutation and Marker-Assisted Selection (Old Title: Development of Low Glycemic Index Rice through Induced-mutation and Marker-assisted Backcrossing)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Glycemic index (GI) is a measurement carried out on carbohydrate-containing foods based on their tendency to increase blood glucose. It gives relative value on how fast carbohydrates in food is converted into glucose. On a nutritional point of view, a low glycemic index value is considered beneficial, especially to individuals suffering from diabetes. Rice, being one of the primary dietary sources of carbohydrates worldwide, especially in Asia, is of particular interest when it comes to assessing its glycemic index. The glycemic index (GI) of rice is known to be relatively high compared to other starchy foods. A GI of 96 for brown rice and a range of 58â€“104 for white rice was reported in the study of Jenkins et al. (1984). Miller et al. (1992) also reported GI value ranging from 64 to 93 for freshly cooked rice. Pure glucose has a GI of 100, which represents the standard value for index measurements. Another way of controlling type II diabetes is the consumption of foods rich in resistant starch (RS). Resistant starch are slowly digested and absorbed by the small intestines, hence, it decreases postprandial glucose or the glucose level in the blood after a meal (Raigond, Ezekiel, and Raigond, 2015). Aside from its positive effect on blood glucose level, RS also potentially protect against pathogen infection, diarrhea, inflammatory bowel disease, colon cancer, and chronic renal and hepatic diseases. These benefits are linked to the ability of RS to escape digestion and reaches the large intestines, where it is fermented by colonic bacteria producing short chain fatty acids (Carciofi, et al., 2012). Reports also show that RS consumption can increase satiety which may lead to reduction of calorie intake and helps in weight management. Rice is a staple food among Filipinos, and lowering the glycemic index in rice is a great measure to decrease the incidence of diabetes in the country.	Expected Outputs: 1.Publication â€“1 publishable scientific article 2.Patents/IP â€“ 1 copyrighted knowledge product leaflet on low glycemic index rice 3.Products â€“ 1 low glycemic index rice line and 1 knowledge product leaflet 4.People Services â€“ 1 BS and 1 MS students, farmers and other stakeholders who will be the recipient of the knowledge product leaflets 5.Places and Partnerships â€“ Memorandum of Agreement formed between DOST-PCAARRD, DOST-FNRI, Mariano Marcos State University and Philippine Rice Research Institute 6.Policy - Promotion of low glycemic index rice for possible adoption through partnership with FNRI	PhilRice-Batac	Filipino consumers, farmers, students, other stakeholders	1-Aug-19	31-Jul-22	ONGOING	6,948,772.00	2,961,716.32
	Development of New Hibiscus rosa-sinensis Varieties through Conventional Hybridization and Embryo Rescue in Hibiscus (Varietal Improvement and Development of Climate-resilient Flowering Bedding/Pot Ornamental Plants)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The study aims to develop new varieties of hibiscus, using both the conventional and the wide hybridization to produce novel, climate resilient, and plants with good morphological characters and aesthetic appearance.	1)To publish 2 ISI publications, 1 poster and 2 IEC materials 2)Minimum of 6 new Hibiscus rosa- sinensis varieties and 2 interspecific hybrids 3)To conduct 1 training in the production and multiplication of gumamela during entire project duration 4)To partner with the Institution that will partner in the launching and naming of the new varieties that will be derived from the project.	UPLB	The target beneficiaries of the project research results are: â€¢Plant nursery owners â€¢Landscapers and landscape engineers â€¢Ornamental growers â€¢Ornamental plantenthusiast/hobbyist â€¢Ornamental plant exporters/importers	1-Apr-20	31-Mar-23	NEW	4,996,479.80	1,766,317.64

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Effect of temperature and host plants on the life history traits of Spodoptera frugiperda (J.E. Smith) (Noctuidae: Lepidoptera)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	In the Philippines, the emergence and invasive pests has been reported but there are limited publications, or some cannot be accessed easily. There are several factors to consider in the rapid spread of invasive pests. Climate is one of these factors and it plays a major role in determining the distribution and abundance of insects (Walter and Hengeveld 2000). More specifically, climate plays two principal roles: as a limiting factor that determines the relative importance of various biotic factors of population dynamics, and as a source of environmental variation that affects physiological rate processes and mediates interspecific interactions. The first role is considered secondary in comparison to the latter, which regards the physiological requirements and tolerances of individuals within the population as the key determinants of survival and reproduction, and thus abundance (Walter and Zalucki 1999). There are studies that emphasized the role of biotic and abiotic (environmental) factors in structuring trophic interactions. Abiotic factors, such as inorganic resources and the ambient environment such as light, temperature can have significant consequences for natural populations, either directly or indirectly, by altering biotic quality and quantity manifested for instance in host-plant quality and number or insect abundance and distribution (Hunter and Price 1992). Studying the effect of these factors (biotic and abiotic) on the development of insect pest will be beneficial to understand better the population dynamics of an insect. This gives us a clue on the extent of infestation on different plant families and explain the mechanism or nature of polyphagy in this kind of insect pest.	Publications: Generate at least two peer-reviewed publications in a recognized scientific journal Web of Science or Scopus-indexed journal Patents/IP: Damage rating scale for field assessment Products: Alternate host plants Biology information of FAW to crops Management protocol for FAW People Services: At least three (3) undergraduate Two (2) graduate students Places and Partnerships: Partnership with NCPC and BPI Policy: Policy on management of FAW	UPLB	1. Corn Growers 2. Researchers/ Breeders 3. Agricultural Technicians 4. R&D planners, researchers, policy makers	1-Feb-20	31-Jan-22	NEW	4,986,964.00	2,837,482.28
	Establishment of Ten Hectares Abaca Hybrid Plantation at VSU and Evaluation of Fiber Quality for the Pulp Industry	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The project will produce and grow abaca hybrid seedlings on a large scale basis at VSU to produce 5-10 tons of fibers for testing at SPMI. This will be done to validate the pulping and fiber characteristics for pulp and paper industry.	Establishment of 10 ha area for the abaca hybrids; 2. Production of 16,000 abaca hybrid seedlings for the 10 ha area; 3. Assessment and evaluation of the abaca hybrids as to their fiber quality/pulping characteristics	VSU	â€¢ Farmers/Farmer Cooperatives â€¢ Nursery Operators â€¢ Local Government Units â€¢ Abaca Processor	1-Nov-16	31-Oct-20	COMPLETED	4,893,698.00	716,875.80
	Gene Expression Analysis during Coconut Embryogenesis	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	In the attempt to understand the developmental stages of the coconut zygotic and somatic embryos, the application of modern biotechnology tools such as transcriptomics to discover genes, evaluate their expression, and generate sufficient molecular markers for the various developmental stages will be explored. It is envisioned that this study could assist in the refinement and standardization of the protocol on coconut embryogenesis and eventually pave the way for the mass propagation of coconut.	1. Established contig assemblies of the transcriptomes of the different stages of coconut somatic embryogenesis; 2. Identified list of differentially expressed genes during coconut somatic embryos, as well as candidate genes and other relevant gene networks with potential roles in coconut embryogenesis; and, 3. Developed initial gene markers for the refinement and standardization of coconut response during in vitro culture.	PCA-ARC	The target beneficiaries are coconut researchers (molecular biologists and coconut tissue culturists), and eventually, coconut breeders and farmers.	1-Jun-20	31-May-21	NEW	5,000,000.00	4,821,129.92
	Genetic Structure and Morphological Variation Analyses of the Fall Armyworm, Spodoptera frugiperda (J.E. Smith) (Lepidoptera: Noctuidae) in the Philippines	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Recently, genetic comparison studies revealed a novel interstrain hybrid population of uncertain behavioral characteristics of the African FAW population (Nagoshi et al., 2019), indicating that host plant and plant utility is not a determinant for the identity of the colonizing strain. Thus, genetic analyses using molecular markers are necessary to design an efficient pest management strategy for S. frugiperda to prevent the occurrence of outbreaks in the Philippines. Molecular data are also necessary for the genetic characterization to identify strains and haplotypes, estimate the genetic structure and study the population structure of the Philippine populations of this invasive insect pest. These basic information are valuable in the establishment of monitoring (Cock et al., 2017) and forecasting systems (Salinas-Hernandez and Saldamando-Benjumea, 2011), determination of source of invasion (Lui et al., 2019), Nagoshi et al., 2019), migration behavior (Nagoshi et al., 2008; Nagoshi et al,, 2015; Nagoshi et al., 2018), distribution (Kuate et al., 2019), infestation levels (Nagoshi et al., 2012), susceptibility to insecticides (Storer et al., 2010), avoidance of the development of resistance to insecticides (Zhu et al., 2015), Bt crystal proteins (Cano-Calle et al., 2015), and Bt corn events (Niu et al., 2016). Furthermore, as the three final instars of FAW exhibit varying color patterns depending on the diet other factors (Hardke et al., 2015), a morphological-based identification key, in agreement with the molecular data that will be obtained in this study that correspond to the two strains, will also be developed in this study to facilitate the rapid FAW identification in the field.	â€¢ Specimen for morphological and molecular analyses â€¢ Morphological description of the identified strains/haplotypes â€¢ Identified FAW strains and haplotypes in the 5 major-corn producing areas â€¢ Amplicons of genetic markers for nucleotide sequencing â€¢ Nucleotide and amino acid sequences deposited in the GenBank â€¢ Global FAW phylogenetic tree â€¢ Nucleotide and haplotype diversity or polymoprhisms, sequence variations data Geographical map	UPLB	1. Corn & rice farmers & other agricultural sectors 2. Researchers/ Breeders 3. Agricultural Technicians 4. R&D planners, researchers, policy makers	1-Feb-20	31-Jan-22	NEW	4,999,999.00	3,045,428.11
	Identification and Preliminary Evaluation of Natural Enemies Against the Fall Armyworm, Spodoptera frugiperda (J. E. Smith) (Lepidoptera: Noctuidae), in the Philippines	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Natural enemies associated with fall armyworm have recorded including parasitoids such as Trichogramma pretiosum in Brazil (Figueiredo et al 2015), Chelonus insularis in Mexico (Rios-Velasco 2011), Aleiodes laphygmae and Campoletis sonorensis in Honduras (Wyckhuys and Oâ€™Neil 2006), Telenomus remus in Africa (Kenis et al 2019), Apanteles sp in Costa Rica (Schmidt-Duran et al 2014), Cotesia icipe in Ethiopia and Palexorista zonata in Kenya (Sisay et al 2018). Predators like earwigs and ground beetles are reported to be associated with lower fall armyworm population throughout the corn season in Honduras (Wyckhuys and Oâ€™Neil 2006). In the Philippines, initial field surveys indicated the presence of local natural enemies associated with fall armyworm - two species of hymenopterous parasitoids and one species of parasitic nematode (MVNavasero, personal communication, 2019). Based on the reported damage caused by the pest, the country has to be ready on the occurrence of any devastation caused by FAW. Measures for long term control should be prepared such as the use of existing biological control agents that poses less hazard in the environment. Augmentation of these biocon agents in the field could help reduce FAW population. This proposal aims to collect, identify and evaluate the effectiveness of biocon agents against fall armyworm in selected corn growing regions.	â€¢ Percent (%) field parasitism and predation by natural enemies on fall armyworm â€¢ Identified 1 or 2 potential predatory pentatomoids and ladybeetles against FAW based on effectiveness parameters. â€¢ Identified 1 or 2 potential Trichogramma, earwigs and green lacewings based on effectiveness parameters	UPLB	1. Corn Growers 2. Researchers/ Breeders 3. Agricultural Technicians 4. R&D planners, researchers, policy makers	1-Feb-20	31-Jan-22	NEW	5,000,000.00	2,852,586.88

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Insecticide Management and Susceptibility Studies on Fall Armyworm, Spodoptera frugiperda (J.E. Smith) (Lepidoptera: Noctuidae)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Natural enemies associated with fall armyworm have recorded including parasitoids such as Trichogramma pretiosum in Brazil (Figueiredo et al 2015), Chelonus insularis in Mexico (Rios-Velasco 2011), Aleiodes laphygmae and Campoletis sonorensis in Honduras (Wyckhuys and Oâ€™Neil 2006), Telenomus remus in Africa (Kenis et al 2019), Apanteles sp in Costa Rica (Schmidt-Duran et al 2014), Cotesia icipe in Ethiopia and Palexorista zonata in Kenya (Sisay et al 2018). Predators like earwigs and ground beetles are reported to be associated with lower fall armyworm population throughout the corn season in Honduras (Wyckhuys and Oâ€™Neil 2006). In the Philippines, initial field surveys indicated the presence of local natural enemies associated with fall armyworm - two species of hymenopterous parasitoids and one species of parasitic nematode (MVNavasero, personal communication, 2019). Based on the reported damage caused by the pest, the country has to be ready on the occurrence of any devastation caused by FAW. Measures for long term control should be prepared such as the use of existing biological control agents that poses less hazard in the environment. Augmentation of these biocon agents in the field could help reduce FAW population. This proposal aims to collect, identify and evaluate the effectiveness of biocon agents against fall armyworm in selected corn growing regions.	â€¢ Percent (%) field parasitism and predation by natural enemies on fall armyworm â€¢ Identified 1 or 2 potential predatory pentatomoids and ladybeetles against FAW based on effectiveness parameters. â€¢ Identified 1 or 2 potential Trichogramma, earwigs and green lacewings based on effectiveness parameters.	UPLB	1. Corn Growers 2. Researchers/ Breeders 3. Agricultural Technicians 4. R&D planners, researchers, policy makers	1-Feb-20	31-Jan-22	NEW	4,996,412.00	2,696,645.20
	Integrated Management of Sineguelas Leaf Beetle (Podontia quatuodecimpunctata (L.)) (Chrysomelida: Alticinae) an Introduced and Emerging Pest of Sineguelas (Spondias purpurea Blanco) in Batangas	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Sineguelas leaf beetle (Podontia quatuordecimpunctata (L.) 1867) (SLB) is an emerging and introduced pest of Spanish plum (Spondias purpurea Blanco) or locally known as â€œSineguelasâ€ in the Philippines. Mohamedsaid (2004) Catalogue of the Malaysian Chrysomelidae reported the insect as host of June plums (Spondias dulcis) (Anacardiaceae) and widely distributed in Peninsular Malaysia, India, Nepal, Myanmar, Thailand, Laos, and Cambodia. There is no current record of insect pests in the country. Most likely, the pest was recently introduced either through infested seedlings, fruits or other plant parts with eggs, larva, pupa or adult forms. The most likely sources are foreigners, tourists or Filipino migrant workers (OFWs). The Department of Agriculture, Regional Crop Protection Center-IV-CALABARZON (DA-RCPC-IV) first monitored the presence of the pest in Laiya, San Juan, Batangas in August 2016 and Agoncillo in 2017 (Sandoval & Manzanilla 2016, 2017) (Unpublished report). The main author temporarily identified the pest as a chrysomelid leaf beetle and withheld the true identity of the pest for further confirmation with experts abroad (Calcetas 2016). However, Ebora, et. al (2017) reported the pest from Bulsa, San Juan, Batangas as leaf-eating beetle or spotted beetle (Podontia sp.), their feeding damage was described and the life cycle was also studied. In 2019, three years after its reported introduction the pest brought havoc to fruit farmers in San Miguel, Batangas City, which is considered as the largest producer of the fruit in the whole province and Luzon. Based on the latest survey conducted by the City Agriculturist Office (CAO) of Batangas City, 14 barangays are dependent on Sineguelas as the major source of livelihood. This comprises a total of 343 affected farmers and with approximately 15,791 infested Sineguelas trees. The pest was also reported in Upper Balalang, Cagayan de Oro City, Misamis Oriental by DA-RCPC-X-Malaybalay, Bukidnon on September 2018. A farmer's forum and consultation were held on August 29, 2019 and the following information was gathered. Before the introduction of the pest, a typical tree of Sineguelas can yield	Three (3) papers on biology, ecology, population dynamics IPM package for SLB IPM package disseminated to 20 extension workers at least 50 sineguelas growers Partnerships with: BPI-LBNCRDPSC LGU of Batangas LGU of Occidental Mindoro LGU of Cavite Policy recommendation on IPM package for SLB to LGUs	DA-IVA, BPI-LBNCRDPSC	â€¢ Sineguelas growers â€¢ Local Government Units â€¢ Researchers â€¢ Students	1-Apr-20	31-Mar-22	NEW	5,000,000.00	2,557,896.89
	Long Staple Processing of Bandala/Lyocell Fiber for Philippine Tropical Fabrics	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The study will make use of the Institute's long staple pilot plant using the semi-worsted system of spinning and will produce blends such 70/30, 60/40 and 50/50 lyocell/BANDALA. The complete line of worsted or long staple fiber processing equipment will be utilized. The spinning facility will run using blends of lyocell/BANDALA.	6Ps Metrics Publication: One (1) scientific journal for peer review Patents: Six (6) IP filed (Product/Process) Products: Sixty (60) kilograms of BANDALA fiber blended yarns â€¢ Six (6) types of BANDALA fiber-lyocell blended yarns (60:40, 50:50, 40:60) â€¢ Six (6) types of BANDALA fiber-lyocell blended fabrics â€¢ Three hundred (300) meters of BANDALA-fiber based fabrics People Services: At least four (4) personnel trained (SRS I and SRA) Places and Partnership: None Policy: None	PTRI	1. Farmers/farming communities 2. Spinning mills 3. Weaving and knitting companies 4. Handloom weaving communities 5. Fashion design industry 6. Government employees 7. Uniform manufacturers 8. Garment producers/retailers	16-Oct-20	15-Oct-21	NEW	5,000,000.00	5,000,000.00
	Mutation Breeding in Alocasia (Araceae) and other Aroids through Gamma irradiation and Chemical Treatments (Colchicine, Oryzalin, and/or EMS)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Development of new or improved varieties of Alocasia and other aroids through gamma irradiation and chemical mutagen	1. Selection of Philippine Alocasia and other aroids with potential as ornamental plants 2. Putative Alocasia mutants with improved horticultural characteristics (variation in leaf color/variegation, size and shape, exotic form and texture, compact habit for indoor/pot plants, higher suckering ability, hardiness and adaptability). 3. Publications on genetic diversity, radiosensitivity study, tissue culture, and mutation induction of Alocasia species and other members of Araceae	PNRI, DLSU-Dasmariñas	Agriculture/ornamental industry, private nurseries and plant exporters; plant breeders/researchers	1-Jan-19	31-Dec-20	ONGOING	5,000,000.00	635,291.00

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	Optimization of the Coconut Sap Fermentation and Distillation for the Production of Coconut-Based Ethyl Alcohol for Use as Disinfectant against COVID-19 in the Philippines	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The onset of the spread of this new corona virus (COVID-19) during the first quarter of 2020 triggered the sudden surge for the demand of ethyl alcohol sanitizer products causing scarcity in the supply chain in many places in the Philippines. As the demand outstrips the supply, prices of alcohol-based sanitizers soared prompting the Department of Trade and Industry (DTI) to issue a price freeze for the said product. However, despite the very high demand, the supply of ethyl alcohol remains wanting thus creating a persistent clamor to increase the supply. Traditional sources of ethyl alcohol are sugarcane, corn, and petroleum distillates. Processors of food grade ethyl alcohol favors the sale of ethyl as wine and liquor over sanitizing products as the former set of products provide higher profits. Compared to the required 70% concentration in sanitizer products, alcoholic drinks are sold in diluted form, 35% or lower ethyl contents. On a per volume basis, the required concentration of ethyl alcohol is half the amount in alcoholic drinks thereby providing the opportunity for increased profits. This partially explains why the supply remains low despite the very high demand of such product. This condition is predicted to continue for a year or two as there is no cure or vaccine for COVID-19 yet.	1.Optimized protocol on ethanol fermentation and distillation for ethyl alcohol production; 2.Distributed thirty (30) hybrid reflux-pot ethanol stills and established ethyl alcohol processing plants in twelve regions; 3.Produced at least 374 liters (L) per month of coconut-based 70% ethyl alcohol per still (approximately 748L to 1,496L per region per month); 4.Produced approximately 5,610 liters (L) per month of flavored vinegar per monthly distillation residue processed per location; and, 5.Produced at least 7,480 pieces of coco hand sanitizers (50mL spray bottles) per still per month for possible market distribution in local sari-sari stores, school canteens and public markets.	PCA-ZRC	The immediate beneficiaries of this project will be thirty (30) coconut farmers and 360 toddy tappers and laborers in total. Likewise, 30 communities will be capacitated to produce ethyl alcohol requirements for sanitization and disinfectant against COVID-19 in the country. Furthermore, coconut sugar producers will also benefit from the optimized protocol on sugar to ethanol fermentation.	1-Dec-20	31-May-21	NEW	3,070,724.00	3,070,724.00
	Participatory Enhancement of Food Security in Laguna through S&T-based Home Garden Systems (Gulayan sa Pamayanan : A GALING – PCAARRD Initiative)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	A component of the â€œGALING (Good Agri-aqua Livelihood Initiatives towards National Goals) â€" PCAARRD Kontra CoVID-19 Programâ€	â€¢Two (2) Publications (1 ISI paper; 1 Oral paper) â€¢Products a.100 initial seed pockets and 150 seedlings and/or cuttings distributed together with compost and biological inputs (corresponding to the total number of household) per barangay b.One (1) Model for rural-based gardens and one (1) model for urban-based gardens in each barangay c.10 kgs of vegetables per home garden d.One (1) social media platform for information exchange â€¢People Services a.At least 100 cooperators trained on: Basic gardening and crop management, composting, seed saving b.Ten (10) trained individuals willing to engage in seed/seedling enterprises c.Four (4) Trainings conducted: i)Basics of home gardening with emphasis on Urban Agriculture and FAITH gardening ii)Sustainable vegetables production iii)Preparation of natural farm inputs including composting iv)Seed saving â€¢Partnerships: tripartite MOA/MOU with OPAG and LGUs: at least 2 municipality/city	UPLB	1.Five barangays in selected municipality in Districts 1 and 3 of Laguna (Total of 10 barangays) 2.Twenty cooperators (households) per barangay for a total of 200 cooperators 3.Home gardeners, both rural- and urban- based 4.LGUs of 1st and 3rddistrict of Laguna 5.NGOâ€™s 6.Researchers and horticulturists 7.Entrepreneurs and input suppliers 8.Policy makers	1-Jul-20	30-Jun-21	NEW	1,810,440.00	1,810,440.00
	Performance Evaluation of the 2-PRONGED Coconut Hybridization Scheme in CALABARZON	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	In the case of CALABARZON, at present still it has the biggest cocal hectarage but, not in the highest in terms of production	1. Identified 2 project sites in Quezon for the conduct of AHS and established 3 farms in Quezon, Laguna, and Batangas for DNHS; 2. Established 3 hybrid nurseries for AHS and distributed hybrid seedlings for ACPRP in CALABARZON; 3. Established field-planted DNHS parental trees and adopt Good Agricultural Practices for management of DNHS farms; 4. Evaluated field performance of the parent materials for DNHS and conducted hybridity testing for selected mother trees; and, 5. Produced hybrid seednuts in AHS project sites, - 76,800 hybrid nuts/year to be planted in 500 ha in Quezon; - 384,000 hybrid nuts within 5 years to be planted in CALABARZON.	PCA-IVA	The project will benefit coconut farmers, as well as stakeholders and processors.	1-May-18	30-Apr-22	ONGOING	4,981,298.00	924,240.20
	Pilot Testing and Validation of SSR Marker Kit for Philippine Mango Germplasm in Commercial Mango Nurseries	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	This project is a continuation of the completed project on molecular markers for mango in collaboration with the completed DOST-PCAARRD funded project titled, â€œGenetic Markers and Immuno based identification of Philippine 'Carabao' Mango.â€The project generated SSR markers to identify the genetic relatedness of different mango cultivars grown in the Philippines. The aim of this proposal is to pilot test the utility of such markers in distinguishing the â€˜Carabaoâ€™ mango strain over other cultivars. Likewise, the said markers will also be used in validating the authenticity of mango strains as labelled.	1. Validated and certified SSR marker for identification of mango cultivars 2. Standard protocol for mango SSR Analysis 3. 25 nurseries with accurate label for mango cultivars. 4. Training module and actual training done 5. Catalogue of mango cultivars	USM	mango growers, nursery owners, BPI NSQCS (BPI Accreditation Unit), NSIC, researchers, breeders	1-Jun-18	30-Nov-20	COMPLETED	5,000,000.00	1,022,695.10
	Pilot-scale Verification of the Textile Fiber Properties of BANDALA (Backcross Abaca With Native and Desirable Accessions to Lift Up the Abaca Industry)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The Philippine Textile Research Institute has developed an inclusive system to encourage localized/community-based textile industry. This system is called TELA Pilipinas wherein everything that is needed in the textile value chain from the source of raw materials all the way to garment production can be found within the 100- km radius. This approach demonstrates the strategy implemented by the Institute to enable the said law (RA 9242).	Publication- One (1) scientific journal for peer review Patent/Intellectual Property- One (1) IP filed (product/process) Product - Two (2) type of yarns developed - One hundred (100) kilos of blended yarns - Two hundred (200) meters of light and heavy weight woven/knitted fabrics - Five (5) types of fabrics developed (2-powerloom woven, 2-handloom woven, 1-knitted) People Services- Two (2) people trained (PTRI personnel) Partnership- One (1) linkage	PTRI	1.Farmers/farming communities 2.Spinning mills 3.Weaving and knitting companies 4.Handloom weaving communities 5.Fashion design industry 6.Government employees 7.Uniform manufacturers 8.Garment producers/retailers	1-Oct-19	30-Sep-20	COMPLETED	4,999,055.00	4,431,666.61

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	Production of Quality Planting Materials of Laguna Tall, Tacunan Dwarf and Tacunan Dwarf x Tagnanan Tall Coconut Varieties Through Coconut Somatic Embryogenesis Technology (CSet)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Coconut production in the country has declined because majority of our coconut palms are now becoming too old for optimal fruit production and are being affected by a number of new devastating pests and diseases. To meet the enormous challenge of replanting at the shortest time possible, the identification and production of superior planting materials have to be fast-tracked. The Coconut Somatic Embryogenesis technology (CSet) is based on the production and multiplication of embryogenic callus induced, for instance, from plumular tissues of zygotic embryos. From one explant, it is possible to obtain tens of thousands of somatic embryos and depending on genotype, 20-60% of them converting to plantlets. The recently concluded Coconut Program titled â€œReinvigorating the Philippine Coconut Industry through the Coconut Somatic Embryogenesis Technology (CSet)â€ which was funded by DOST-PCAARRD, was an attempt to mass produce elite types of coconut using plumule explants primarily to establish new planting in coastal zones and replant the typhoon-damaged, and coconut scale insect-infested palms. It also aims to advance the agricultural biotechnology capability in the Philippines on the rapid mass propagation of coconut planting materials. However, varying degrees of success in producing somatic plants ready for field-planting were obtained by the different participating tissue culture laboratories of the component projects. For instance, the laboratories at BIOTECH and ICropS in UP Los BaÃ±os that have produced more than 60,000 somatic embryos at the end of the 5-year program are maintaining only 1,081 shootlets and plantlets in vitro (as of September 2019), which still need some time in the laboratory for them to complete its development and become ready for ex vitro establishment, hence, this proposal.	Produce approximately 33,000 somatic embryo cultures in vitro and 500 plumule-derived ex vitro established plantlets in the screenhouse of Laguna Tall (LAGT), Tacunan Dwarf (TACD) and Tacunan Dwarf x Tagnanan Tall (TACDxTAGT) coconut varieties.	UPLB	The major beneficiaries are the coconut growers in selected areas in CALABARZON who are dependent on coconut farming as their livelihood.	1-Mar-20	28-Feb-22	NEW	5,000,000.00	2,409,194.00
	Production of Quality Planting Materials of Tagnanan Tall, Bago Oshiro Tall and Tacunan Dwarf Coconut Varieties Through Coconut Somatic Embryogenesis Technology (CSet)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The coconut is an important crop grown in 68 out of 81 provinces in the Philippines. About 26% of the countryâ€™s agricultural lands is grown to coconuts. Yet, most coconut farmers live below the poverty line. This is due to the low nut yields that could be attributed to poor cultural practices such as little or no fertilization, inferior planting materials, limited sources of tree stocks, occurrence of pests and diseases, and natural calamities such as typhoons. The proposed project aims to provide an additional source of high-quality coconut planting materials through somatic embryogenesis, a non-traditional propagation method. The recently concluded Coconut Program titled â€œReinvigorating the Philippine Coconut Industry through the Coconut Somatic Embryogenesis Technology (CSet)â€ which was funded by DOST-PCAARRD, was an attempt to mass produce elite types of coconut using plumule explants primarily to establish new planting in coastal zones and replant the typhoon-damaged, and coconut scale insect-infested palms. It also aims to advance the agricultural biotechnology capability in the Philippines on the rapid mass propagation of coconut planting materials. However, varying degrees of success in producing somatic plants ready for field-planting were obtained by the different participating tissue culture laboratories of the component projects. For instance, the laboratory at UP Mindanao that have produced more than 60,000 calloid cultures and around 3,500 somatic embryos at the end of the 5-year program (as of September 2019). These cultures still need some time in the laboratory for them to complete its development and become ready for ex vitro establishment, hence, this proposal	The project is expected to produce approximately 20,000 somatic embryo cultures in vitro and at least 1,000 plumule-derived regenerants (shootlets and plantlets) of Tagnanan Tall (TAGT), Bago Oshiro Tall (BAOT) and Tacunan Dwarf (TACD) coconut varieties.	UPMin	The major beneficiaries are the coconut growers in selected areas of Davao Oriental and Davao del Norte who are dependent on coconut farming as their livelihood.	1-Mar-20	28-Feb-22	NEW	5,000,000.00	2,412,785.00
	Propagation of Quality Planting Materials of Baybay Tall (BAYT) and Selected Dwarf and Hybrid Coconut Varieties through Coconut Somatic Embryogenesis Technology (CSet)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	In 2015, a coconut research program titled, â€œReinvigorating the Philippine Coconut Industry through the Coconut Somatic Embryogenesis Technology (CSet)â€ was implemented through the research funding of DOST-PCAARRD. This was a collaborative undertaking of several tissue culture laboratories situated in various regions of the country, namely VSU, BUCAF, PCA-ARC, PCA-ZRC, UPLB, and UPMin. The program was aimed to mass propagate plumule-derived coconut planting materials primarily to establish new planting in coastal zones and replant the typhoon-damaged, and coconut scale insect- infested palms. It also aimed to advance the agricultural biotechnology capability in the Philippines on the rapid mass propagation of coconut planting materials. The enhanced protocol for the coconut somatic embryogenesis technology (CSet) of the Philippine Coconut Authority â€" Albay Research Center (PCA-ARC) was adopted by all seven (7) participating CSet laboratories with the goal of enhancing the mass production of high yielding coconut varieties and hybrids. The adoption of the protocol was supervised and coordinated by expert from PCA-ARC. Likewise, during the first phase of the project implementation, the program enhanced the capability of laboratory personnel, specifically at the VSU Coconut Tissue Culture Laboratory (CTCL), on rapid production of quality planting materials of selected tall, dwarf and hybrid coconut varieties through CSet for the benefit of coconut farmers in selected coastal areas of Regions VI, VII, and VIII. It is very remarkable to note that the enhanced PCA-ARC CSet protocol was successfully adopted among partner laboratories and significant outputs were obtained despite unforeseen problems along the way, especially on the final step of the protocol on plantlet production. Solutions to address this major concern were explored so that optimization and enhancement of the protocol will be achieved.	â€¢ Produced approximately 23,000 somatic embryo cultures, 8,000 regenerants (shootlets and plantlets) in vitro and at least 1,000 plumule-derived ex vitro established plantlets in the screenhouse of Baybay Tall (BAYT), Laguna Tall (LAGT), San Isidro Dwarf (SNID), Tacunan Dwarf (TACD), and Malayan Red Dwarf x Tagnanan Tall (MRDxTAGT) coconut varieties. â€¢ Developed enhanced nursery management protocols for somatic plantlets â€¢ Consolidated growth performance data and identified characteristics of CSet-derived plantlets in nursery condition, and made recommendations for field planting based on observed data. â€¢ Prepared and submitted quarterly, midyear and annual project reports.	VSU	The major beneficiaries are the coconut growers in selected areas in Leyte, Eastern Samar, Bohol, Cebu, Siquijor, Iloilo and Negros Oriental who are dependent on coconut farming as their livelihood.	1-Jun-20	31-May-22	NEW	3,745,400.00	1,822,952.06

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Propagation of Quality Planting Materials of Baybay Tall (BAYT), Laguna Tall (LAGT) and Tacunan Dwarf (TACD) Coconut Varieties through Somatic Embryogenesis Technology (CSet)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The Philippine Coconut Authority-Zamboanga Research Center (PCA-ZRC) along with other participating laboratories (UPLB, UPMin, VSU, BUCAF and PCA-ARC) has been doing coconut tissue culture research under the CSet Program funded by DOST-PCAARRD, which generally aimed to mass propagate plumule-derived coconut planting materials of PCA recommended varieties using somatic embryogenesis adapting the protocol developed by PCA-Albay Research Center. The project ran its course for a period of five (5) years. As of February 29, 2020, PCA-ZRC is maintaining a total of 80,092 calloids, 7,840 somatic embryos and 156 regenerants (shootlets and plantlets) from 6 coconut varieties through primary somatic embryogenesis. Moreover, the project was able to identify Batch 16 Baybay Tall (BAYT) as the most responsive of all varieties propagated with 18,545 (cd), 2,702 (SE) and 35 regenerants. This will be maintained at PCA-ZRC together with the estimated 3,000 somatic cultures from UPLB ICropS. Continuity of the propagation of these cultures is beneficial to produce more regenerants that can eventually be established ex vitro and later on be field planted in identified sites throughout the country.	â€¢Upgraded the PCA-ZRC CSet laboratory to accommodate 3,000 somatic cultures from UPLB ICropS; â€¢Produced 8,000 (30%) regenerants from cultures of Baybay Tall (BAYT), Laguna Tall (LAGT) and Tacunan Dwarf (TACD) â€¢Developed a protocol on the movement/distribution of plumule derived plantlets from one laboratory to the nursery/screenhouse; and, â€¢Ex vitro established approximately 1,000 regenerants in the screenhouse.	PCA-ZRC	The major beneficiaries are the coconut growers in selected areas in Zamboanga del Norte, BARMM and Region XII who are dependent on coconut farming as their livelihood.	1-Jun-20	31-May-22	NEW	5,000,000.00	2,887,071.34
	Propagation of Quality Planting Materials of Selected Tall, Dwarf and Hybrid Coconut Varieties through Coconut Somatic Embryogenesis Technology (CSet)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Coconut is considered as the Philippinesâ€™ top agricultural export, wherein 3.5% of the Gross National Income and Gross Domestic Product of the agricultural sector is contributed by the coconut industry. The import commodity value of traditional and non-traditional coconut export products is $260M (PCA, 2017). However, the industry faces problems among which are low productivity due to old and senile palms, natural calamities like typhoon and coconut scale insect (CSI) infestation. To address the issue, mass propagation of coconut planting materials is being done. The Traditional method of coconut mass production is through seednut raised in nursery and seedbeds, or through embryo culture. Mass propagation of high-yielding coconut variety/hybrids using somatic embryogenesis can contribute to substantial improvement (Chan et. al., 1998) in the productivity of plantations. Coconut tissue culture has been on-going at Philippine Coconut Authority-Albay Research Center (PCA-ARC) for the past three (3) decades. Different coconut explants are being used like immature flowers, embryos and leaf, anther, ovary and plumule. Plumule was found to be the most responsive. Plumule-derived coconut palms at PCA-ARC are now at vegetative and bearing stages. As of January 31, 2020, Project 4 (PCA-ARC) of the completed CSet Program is maintaining a total of 108,316 calloids (CD), 8,281 somatic embryos (SE), 1,046 shootlets, 202 plantlets and 42 ex vitro established plantlets from 10 coconut varieties via primary somatic embryogenesis. With the aim to increase the regeneration efficiency of the CSet protocol, secondary somatic embryogenesis pathway has been considered. The group of Centre de Investigacion Cientifica de Yucatan (CICY) Mexico has been successful in micropropagation of coconut via secondary somatic embryogenesis enabling them to regenerate 13,000 embryogenic calloids and 98,000 somatic embryos per single plumule. About 35,000 and 50,000-	With the projected 40% regeneration efficiency of the PCA-ARC CSet Protocol using the secondary somatic embryogenesis, the project is expected to produce approximately 50,000 somatic embryo cultures in vitro, at least 5,000 regenerants (shootlets and plantlets) in vitro and approximately 2,500 ex vitro established plantlets in the screenhouse of selected four (4) Tall, three (3) Dwarf and three (3) Hybrid coconut varieties.	PCA-ARC	The major beneficiaries are the coconut growers in selected areas in Albay, Camarines Sur and Masbate who are dependent on coconut farming as their livelihood.	16-Dec-20	15-Dec-22	NEW	5,000,000.00	2,341,131.24
	Propagation of Quality Planting Materials of Tagnanan Tall (TAGT) and Laguna Tall (LAGT) Coconut Varieties through Coconut Somatic Embryogenesis Technology (CSet)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Coconut (Cocos nucifera L.), tagged as the Tree of Life, is a very important agricultural export crop of the Philippines. Unfortunately, the coconut industry faces many problems including the low productivity due to palm diseases and existing old and senile coconut stands, and increasing demand for coconut products. On the other hand, markets for coconut products have been rapidly growing in recent years. Thus, there is a need to replace the senile and infested coconut stands as well as expand planting in coastal areas. However, the replanting and expansion in coastal areas would require sufficient number of planting materials. At present, coconut seedlings are produced in the country through seed embryo. Propagation through seed is highly variable and quite slow since only one plant can be obtained from one seed. Mass propagation technique of quality high yielding coconut varieties through asexual propagation is an effective alternative to improve productivity and sustain viability of the Philippine coconut industry.	The project is expected to produce approximately 28,000 somatic embryo cultures and 8,000 regenerants (shootlets and plantlets) in vitro, and at least 1,800 plumule-derived ex vitro established plantlets in the screenhouse of Tagnanan Tall (TAGT) and Laguna Tall (LAGT).	BUCAF	The major beneficiaries are the coconut growers in selected areas of Camarines Norte, Catanduanes and Sorsogon who are dependent on coconut farming as their livelihood.	1-Jul-20	30-Jun-22	NEW	3,400,000.00	1,725,601.06
	Revitalizing the Abaca Industry through S&T Interventions for Higher Crop Productivity Using High-Yielding and Virus-Resistant Abaca Hybrids	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The project will cater on the production of tissue cultured abaca hybrid seedlings, further testing the performance/stability of the hybrids, and showcasing the package of production technologies through multilocation trials and demonstration farms for possible commercialization of the hybrids. With this, a more scientifc, ecologically safe and sound production will be used to maximize the benefits of abaca production and eventually, assuring the farmers of regular income stream.	1. Establishment of 11 nurseries, 2 multi-locational trials, 8 fertilization trial plots, and 4 demonstration farms/trials of the abaca hybrids; 2. Demonstration and promotion of high-yielding and virus-resistant abaca hybrids and package of production technologies including drip irrigation/fertigation; 3. Production of abaca hybrids against other major diseases; 4. Sustainability plan for the production of abaca hybrid planting materials	BU, CarSU, CatSU, PhiFIDA V, PhilFIDA VIII, PhilFIDA XI, UEP, USEP, USM, UPLB, VSU, WMSU	Farmers/Farmer Cooperatives, nursery operators, Local Government Units (LGUs), and abaca processors	1-Mar-16	29-Feb-20	COMPLETED	45,670,799.00	846,762.06

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Targeted Genome Editing using CRISPR-Cas9 Technology: Capacity Building and Proof-of-Concept in Rice, Corn, and Tomato (Old Title: Application of CRISPR-Cas9 Genome Editing Technology Towards Improvement of Economically Important Philippine Crops)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The project aims to enhance human resource capacity and rehabilitate/upgrade physical facilities that will enable the conduct of R&D at UPLB using CRISPR-Cas9 technology on economically important Philippine crops. This research would be a partnership between the International Rice Research Institute (IRRI) and the University of the Philippines Los BaÃ±os (UPLB) through the Institute of Plant Breeding and Institute of Biological Sciences in cooperation with the Office of the Vice Chancellor for Research and Extension. IRRI has already been employing the CRISPR-Cas9 technology in rice breeding particularly on drought and salinity tolerance, C4 engineering and resistance to diseases caused by various pathogens. UPLB, on the other hand, has not yet started conducting research using CRISPRCas9. The primary hindrance is the lack of infrastructure to support experiments on this cutting-edge technology. Secondly, the human resources or â€œwarm bodiesâ€ lack the training and technical capabilities to conduct the experiments. With the technical expertise from IRRI, this project will build the necessary physical and human resource requirements that will allow UPLB to apply the CRISPR-Cas9 technology in the improvement of economically important Philippine crops particularly rice, white corn, and tomato.	Expected Output 1. Seminars, trainings and workshops on CRISPR-Cas9 for capacity-building of University faculty, staff and students 2. Trained faculty, research staff, and students capable of conducting researches on CRISPR-Cas9 3. Conduct proof-of-concept experiments on gene editing using CRISPR-on rice, corn, and tomato 4. Protocols for gene editing using CRISPR-Cas9 technology 5. At least two (2) publications in a peer-reviewed journal	UPLB	Target Beneficiaries â€¢ Molecular biologists and molecular breeders â€¢ Young professionals and student researchers	1-Jul-18	30-Jun-21	ONGOING	40,550,716.80	5,824,965.70
	Varietal Development in Philippine Native Hoyas	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Hoya is a genus of tropical climbing or training plants in the Apocynaceae (Dogbane) plant family, a native to southern Asia, Australia, and Polynesia with an estimated of 200-300 species.	1. 2 poster presentations, 1 oral presentation, 1 refereed journal 2. at least 5 potential varieties 3. at least 5 propagated materials per potential variety	UPLB	Scientists, researchers, students, hobbyists, plant enthusiasts	1-Oct-20	30-Sep-23	NEW	4,999,702.80	1,938,791.62
Accelerated R&D Program for Capacity Building of Research and Development Institutions and Industrial Competetiveness: Niche Centers in the Regions for Research and Development (NICER)	DNA Barcoding for Molecular Identification of Endemic Flora for Sustainable Biodiversity Conservation in Cebu Island Key Biodiversity	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will conduct DNA barcoding of selected endemic tree species in Cebu	1. Publications - Initial draft layouts of flyer, brochure and other IEC materials (50) (Y1); Two (2) peer-reviewed journal articles: at least 3 IEC materials (Guide Books for the genetic diversity and phylogenetic relationships of the endemic flora and flyers, brochures, posters, etc) (Y2) 2. Patents - Copyrights of the IEC materials, including guidebooks, brochures, leaflets, etc. (Y2). 3. Products - At least 10 copies of maps based on the georeference of collected plant samples; and â€¢ Established database for DNA barcodes on endemic flora (approx. 20 species) in Cebu Island KBAs (Y2) 4. People and Services - 5 trained research personnel/team members; and at least 40 forestry students will be trained for PCR and molecular identification of plants (Y1) 5. Places and Partnerships - MOA with selected stakeholders (LGUs, DENR, Academe) (Y1). 6. Policy - Final information for policy recommendations and reports for LGUs for sustainable genetic biodiversity conservation (Y2).	CTU	1. Local Government Unit (LGU) = the endemic species can be showcased in their eco â€“ tourism to raise awareness of the richness of the biodiversity of the area. This can be an added attraction to the eco â€“ tourism activity of the local government unit concerned. The result on DNA barcoding shall also enhance the policy of the LGUs that will promote the protection of the endemic flora. 2. Students = forestry and agriculture students of the Cebu Technological University will now have the opportunity to learn the importance of molecular systematics through DNA barcoding. Training on PCR will provide them the right exposure to this technology. 3. Scientific Community = the study on genetic diversity and population structure of endemic flora through DNA barcoding is an important platform that will encourage scientists such as biologists and ecologists and other allied sciences to understand its	1-Jul-19	30-Jun-21	ONGOING	4,997,444.80	666,951.21
ACIAR	Enhancing Livelihoods through Forest and Landscape Restoration (ASEM/2016/103)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will provide livelihood options to smallholders involved in forest restoration.	Livelihood options to smallholders through forest restoration	VSU	Tree farmers, LGUs, academe, researchers	1-Apr-19	31-Mar-23	ONGOING	3,996,800.00	1,048,315.88
Biodiversity and Vulnerable Ecosystems Research Program (BiVER)	Project 1. Biodiversity and Systematic Study of Organisms in Vulnerable Ecosystems	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Project sites are chosen for their vulnerability for climate change and to the increasing anthropogenic activities. The results from the 4 component projects will benefit using fishing communities and the LGU for future policy-making measures. The program also hopes to create awareness among the public about the need to protect the natural resources.	Publication: a. Monograph publication b. Indexed publication c. Abstract in conferences d. Website Products: a. Knowledge base b. Module for workshop Services and People: a. Conference presentation b. Training Partnerships: a. DENR b. LGUs Policy: a. Policy advisory b. Policy recommendation	PSHS-Eastern Visayas Campus	Fishing communities in Inopacan, Palompon and Tacloban City LGUs (Inopacan, Palompon, Panaon Island, Hilongos, McArthur, Ormoc) CENRO/DENR PSHS Scholars	1-Jul-18	30-Jun-20	COMPLETED	1,642,890.00	380,844.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Biodiversity and Vulnerable Ecosystems Research Program (BiVER)	Project 2. Assessment of Quality of Water Systems in Eastern Visayas	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Project sites are chosen for their vulnerability for climate change and to the increasing anthropogenic activities. The results from the 4 component projects will benefit using fishing communities and the LGU for future policy-making measures. The program also hopes to create awareness among the public about the need to protect the natural resources.	Publication: a.Monograph publication b.Indexed publication c.Abstract in conferences d.Website Products: a.Knowledge base b.Module for workshop c.Geospatial maps Services and People: a.Conference presentation b.Training Partnerships: a.DENR b.LGUs Policy: a.Policy advisory b.Policy recommendation	PSHS-Eastern Visayas Campus	Fishing communities in Inopacan, Palompon and Tacloban City LGUs (Inopacan, Palompon, Panaon Island, Hilongos, McArthur, Ormoc) CENRO/DENR PSHS Scholars	1-Jul-18	30-Jun-20	COMPLETED	1,629,230.00	325,179.21
Biodiversity and Vulnerable Ecosystems Research Program (BiVER)	Project 3. A Computational Model of the Characteristics of the Binahaan River Ecosystem (Old Title: Computational Modelling of the Binahaan River System in Leyte for Flood Forecasting)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Project sites are chosen for their vulnerability for climate change and to the increasing anthropogenic activities. The results from the 4 component projects will benefit using fishing communities and the LGU for future policy-making measures. The program also hopes to create awareness among the public about the need to protect the natural resources.	Publication: a.Monograph publication b.Indexed publication c.Abstract in conferences d.Website Products: a.Knowledge base b.Module for workshop c.Geospatial maps d.River morphology measuring device Services and People: a.Conference presentation b.Training Partnerships: a.DENR b.LGUs Policy: a.Policy advisory b.Policy recommendation	PSHS-Eastern Visayas Campus	Communities around the Binahaan Watershed/River LGU (Dagami, Jaro, Pastrana) NDRRCC	1-Jul-18	30-Jun-20	COMPLETED	991,375.00	240,062.99
Biodiversity and Vulnerable Ecosystems Research Program (BiVER)	Project 4. Development of database and website for biodiversity & vulnerable ecosystems research in Eastern Visayas (Old Title: Development of the BiVER Database System and Website)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Project sites are chosen for their vulnerability for climate change and to the increasing anthropogenic activities. The results from the 4 component projects will benefit using fishing communities and the LGU for future policy-making measures. The program also hopes to create awareness among the public about the need to protect the natural resources.	Publication: a.Abstract in conferences b.Website Products: a.Knowledge base b.Module for workshop c.Database Services and People: a.Conference presentation b.Training Partnerships: a.DICT b.ASTI	PSHS-Eastern Visayas Campus	Researchers in biodiversity and environmental science Students Public PSHS scholars	1-Jul-18	30-Jun-20	COMPLETED	695,520.00	208,359.90
Biodiversity Assessment for Sustainable Management in Key Biodiversity Areas of Central Visayas(Old Title: Biodiversity Assessment for Long-term Ecological Research in Key Biodiversity Areas of Central Visayas)	Project 1. Flora and fauna inventory and habitat characterization and assessment of ecologically important and highly threatened species in selected key biodiversity areas of Central Visayas (Old Title: Habitat Characterization and Assessment of Ecologically Important and Highly Threatened Flora and Fauna in Selected Key Biodiversity Areas of Central Visayas)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This research program aims to assess the biodiversity and characterize ecologically important flora and fauna in selected KBAs of Central Visayas.	Year 1 Publication â€¢ Initial draft layouts of flyer, brochure and other IEC materials 2 Conference proceeding papers (50%) Products â€¢ Initial flora and fauna assessment reports of KBAs/project sites (50%) â€¢ Initial identification of selected KBAs/forests for rehabilitation (50%) â€¢ Initial identification of rehabilitation strategies (50%) â€¢ Initial list of selected and geo-tagged mother trees for seeds collection (50%) â€¢ Initial IEC materials for a more effective and enhanced biodiversity conservation education campaign (50%) People Services â€¢ 11 trained research personnel/team members â€¢ At least 40 students trained on flora and fauna ID and field survey protocols â€¢ At least 5 trainings conducted (flora and fauna inventory and field survey protocol; biodiversity and habitat characterization and assessment; photo documentation protocol and field guide preparation; data processing and analysis; and basic GIS and map layout.) Places and Partnership â€¢ MOA with selected stakeholders (LGUs, Academe, and NGOs) â€¢ MOA/MOU/Commitment agreement between and among stakeholders, LGUs â€¢ Commitment agreement of the community to maintain the demonstration sites â€¢ Three (3) selected KBAs/IBA forest areas for the project â€¢ At least three (3) municipality beneficiaries	BISU	1. Academic and Research Institutions of Central Visayas (CV); 2. Provincial and concerned Municipal LGUs in CV; 3. DENR (BMB and ERDB) and other government agencies; 4. Community Residents in KBAs; 5. Environmental Non-Government Organizations and Private Groups in CV; 6. PAMB and Watershed Management Councils in KBAs of CV; and 7. Other various stakeholders	1-Sep-18	31-Dec-20	ONGOING	10,981,369.48	2,236,583.65

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Biodiversity Assessment for Sustainable Management in Key Biodiversity Areas of Central Visayas(Old Title: Biodiversity Assessment for Long-term Ecological Research in Key Biodiversity Areas of Central Visayas)	Project 2. Cave-dependent Bats Survey and Assessment in Key Biodiversity Areas of Central Visayas	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This research program aims to assess the biodiversity and characterize ecologically important flora and fauna in selected KBAs of Central Visayas.	ear 2 Publication â€¢ Six (6) peer reviewed journal articles (ISI-indexed, SCOPUS, Thomson Reuters, etc.) â€¢ At least 6 IEC materials (3 Field Guides to Flowering Plants and Ferns of the selected study sites/KBA sites; 3 Field Guides to Faunal Diversity of KBAs) â€¢ Final copies of flyers, brochures, posters, etc. Patents â€¢ Copyrights of the IEC materials, including field guides/guidebooks, brochures, leaflets, etc. Products â€¢ Updated data and information on floral and faunal diversity, population abundance, richness and habitat profile from the various KBAs â€¢ Updated database of information for Central Visayas KBA/IBA flora and fauna featuring conservation status â€¢ Provincial and regional maps of native, threatened and ecologically important flora and fauna of all KBAs (e.g. distribution and resources); â€¢ Three (3) Flora and fauna assessment reports of KBAs/project sites â€¢ Three (3) draft Sustainable Forest Biodiversity Management Plans for selected KBAs â€¢ Selected KBAs/forests for rehabilitation â€¢ Identified rehabilitation strategies â€¢ Selected and geo-tagged mother trees for seeds collection â€¢ IEC materials for a more effective and enhanced biodiversity conservation education campaign	CTU	Beneficiaries of this Proposed Program include: 1. Academic and Research Institutions of Central Visayas (CV); 2. Provincial and concerned Municipal LGUs in CV; 3. DENR (BMB and ERDB) and other government agencies; 4. Community Residents in KBAs; 5. Environmental Non-Government Organizations and Private Groups in CV; 6. PAMB and Watershed Management Councils in KBAs of CV; and 7. Other various stakeholders	1-Sep-18	31-Dec-20	ONGOING	3,565,443.16	821,679.96
Multilocation Trial of Ten (10) Promising Varieties of Cacao in Different Agro-Climatic Zones in the Philippines	Project 1. Evaluation and Characterization of Ten (10) Promising Varieties of Cacao in Type II and III Agro-climatic Zones in Northern and Southern Mindanao	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Cacao production is one of the researchable areas under ISP of PCAARRD through identification of superior varieties in terms of yield and its tolerance to pests and diseases adapted to specific locations. Moreover, production of good bean characteristics and their availability to local cacao growers appear to be the best short term- strategy to genetically improve cacao and ensure increase local productivity	Establishment of seven cacao demo farms in different locations; Initial data on agronomic characteristics of ten cacao varieties; Gather morphological data of ten cacao varieties, Assess occurrence of pests and diseases; Data on yield, horticultural characteristics, chemical analysis nutritional and sensory evaluation of ten cacao varieties; Recommendation of new varieties in different agro climatic zones; Dissemination of new technology to farmers	USM, SKSU, ASSCAT	Cacao farmers, researchers, investors, agriculture students and other cacao stakeholders.	16-Apr-18	15-Apr-21	ONGOING	8,696,384.00	2,014,353.18
Multilocation Trial of Ten (10) Promising Varieties of Cacao in Different Agro-Climatic Zones in the Philippines	Project 2. Evaluation and Characterization of Ten (10) Promising Varieties of Cacao in Types I and II Agro-Climatic Zones in Luzon	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Cacao production is one of the researchable areas under ISP of PCAARRD through identification of superior varieties in terms of yield and its tolerance to pests and diseases adapted to specific locations. Moreover, production of good bean characteristics and their availability to local cacao growers appear to be the best short term- strategy to genetically improve cacao and ensure increase local productivity	Establishment of seven cacao demo farms in different locations; Initial data on agronomic characteristics of ten cacao varieties; Gather morphological data of ten cacao varieties, Assess occurrence of pests and diseases; Data on yield, horticultural characteristics, chemical analysis nutritional and sensory evaluation of ten cacao varieties; Recommendation of new varieties in different agro climatic zones; Dissemination of new technology to farmers	BSU, CBSUA	Cacao farmers, researchers, investors, agriculture students and other cacao stakeholders.	16-Apr-18	15-Apr-21	ONGOING	4,651,808.00	852,267.58
Multilocation Trial of Ten (10) Promising Varieties of Cacao in Different Agro-Climatic Zones in the Philippines	Project 3. Evaluation and Characterization of Ten (10) Promising Varieties of Cacao in Types of IV Agro-Climatic Zones in Visayas and Southeastern Mindanao	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Cacao production is one of the researchable areas under ISP of PCAARRD through identification of superior varieties in terms of yield and its tolerance to pests and diseases adapted to specific locations. Moreover, production of good bean characteristics and their availability to local cacao growers appear to be the best short term- strategy to genetically improve cacao and ensure increase local productivity	Establishment of seven cacao demo farms in different locations; Initial data on agronomic characteristics of ten cacao varieties; Gather morphological data of ten cacao varieties, Assess occurrence of pests and diseases; Data on yield, horticultural characteristics, chemical analysis nutritional and sensory evaluation of ten cacao varieties; Recommendation of new varieties in different agro climatic zones; Dissemination of new technology to farmers	DA-RFU XI, VSU	Cacao farmers, researchers, investors, agriculture students and other cacao stakeholders.	16-Apr-18	15-Apr-21	ONGOING	4,651,808.00	702,697.00
Philippine Forest Vines for Handicraft and Furniture Industry	Treatability and Performance of Commercial Forest Woody Vines Using Chemical and Organic Preservatives	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This study will apply alternative source of wood preservatives from natural materials like the cashew nut shell liquid. Samples of forest woody vines will be treated with formulated organic preservative from CNSL and chemical preservatives.	This project is expected to come up with data and information on the appropriate preservative treatments for commercial forest woody vines and its products which includes among others the treatment time and preservative concentration suitable to forest woody vines.	FPRDI	non-wood using industries, collectors/farmers, researchers	1-Jun-18	31-May-20	COMPLETED	4,999,456.00	790,060.86
	Anatomical, Physical, Mechanical and Veneering Properties of Young-Aged Falcata (Falcataria moluccana (Miq.) Barneby & J. W. Grimes] and Yemane (Gmelina arborea Roxb.) (Old Title: Mechanical and Veneering Products of Falcata (Paraserianthes falcata L Neilsen) and Yemane (Gmelina arborea Roxb) from Known Seed Source in Caraga Region)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Results of the study could significantly contribute to providing plantation growers/farmers and processors on the best rotation age for optimum utilization of the species and consequently in sustaining the acceptable raw material requirements of the industry particularly for construction purposes.	Year 1 ¡· Determined the anatomical, physical, mechanical and veneering properties of falcata. ¡· Determined the effect of various parameters on the recovery and quality of veneer such as rotary cutting using traditional lathe and spindles lathe, optimum combination of lathe setting, pre-treatment (soaking in hot water and steaming, veneer thickness, Knife angle and nosebar compression). ¡· Determined the benefit-cost analysis of producing veneer at different ages. ¡· Prepared report/brochures on veneer processing technologies for young-aged falcata Year 2 ¡· Determined the anatomical, physical, mechanical and veneering properties of yemane. ¡· Determined the effect of various parameters on the recovery and quality of veneer such as rotary cutting using traditional lathe and spindles lathe, optimum combination of lathe setting, pre-treatment (soaking in hot water and steaming, veneer thickness, Knife angle and nosebar compression). ¡· Determined the benefit-cost analysis of producing veneer at different ages. ¡· Prepared brochures on veneer processing technologies for young-aged yemane. ¡· Prepared terminal report for submission to PCAARRD.	FPRDI	Farmers/plantation growers, wood-based industry (furniture, construction), academe and the general public as well.	1-Apr-18	30-Sep-20	COMPLETED	4,998,999.00	331,082.20
	Assessment of Nursery and Field Growth Performance of Native and Exotic Plantation Tree Species in CARAGA Region	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The data to be collected shall be analyzed statistically to determine differences in growth performance with respect to root collar diameter, height and clear bole.	1. Best performing native species in terms of growth performance with respect root collar diameter (RCD), height and clear having the potential for commercialization as an ITP species; 2. Protocol on planting stock production and plantation development and management of native tree species identified as ITP species; 3. IEC material on native specied with potential for plantation development (ITP species) 4. Native tree species' plantations developed to serve as seed orchards for further studies.	ERDB	Tree farmers, DENR, Wood industry	1-Feb-18	31-Jan-21	ONGOING	4,997,301.00	1,589,149.33

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Assessment of the Coppicing Characteristics of Lapnis (Broussonetia papyrifera) as a Strategy for its Control and Management and Sustainable Utilization for Pulp and PAper Production (Old Title: Development of High-value Paper and other Products from Juvenile Paper Mulberry (Broussonetia papyrifera) Trees)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The uncontrolled growth of paper mulberry or "Lapnis" in the Mt. Makiling landscape has gained notoriety due to its invasive character. Vacant and open areas within this region are slowly being dominated by the species, forming dense thickets threatening even the very existence of local and endemic species. As pointed out in the study of Florece and Colladilla (2006) paper mulberry is now widely dispersed around Mt. Mailing and its vicinities. It has also broadly spread in UPLB and in towns and cities outside UPLB campus such Bay, Calauan, Calamba City and San Pablo City. A present, many of these plants have grown into trees covering large patches of land and spreading profusely to other areas outside of the Mt. Makiling region. To stop this biological infestation, method of control is usually done thru actual cutting or harvesting of the matured trees. However, this approach only temporarily halts the plant growth as shoots starts to develop rapidly after harvest. The stumps after harvesting produce coppice or root suckers, which bear fruits upon reaching maturity, thus expanding its potential for regeneration. This lack of information on the coppicing behavior of Lapnis from cutting to sprouting to flowering has baffled local land owners on how to control and manage this species. Recently, FPRDI researchers conducted a study on the harvesting and utilization of its woody portion as raw materials for non-load bearing furniture and handicraft items. This also includes the production of wood-based charcoal briquettes and handmade paper products from its stripped barks. However, much of these efforts are into the utilization of the matured trees. Information on its coppice properties, yield and utilization were not included in the study. For centuries, like in many Asian countries the inner bark of paper mulberry, especially the juvenile coppiced portion, is used to produce paper and textile fabric	Data on the coppicing characteristics of Lapnis. Monitoring data on the stages of plant growth (i.e., cutting, sprouting to flowering). Data on the physical and mechanical strength properties of the pulp and paper produced from Lapnis harvested at various stages of growth. Technology for producing good quality bast fibers fro juvenile Lapnis trunks; Technology on paper production.	FPRDI	Local stakeholders, domestic handmade paper producers and researchers.	1-Apr-19	31-Mar-21	ONGOING	2,991,222.00	1,031,065.76
	Bamboo: the green and Sustainable Construction Materials	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Bamboo is a wood like material that is naturally available in hollow cylindrical forms. Generally speaking, bamboo has higher compressive strength, tensile strength and flexural strength than any wood. As such it is popular for products produced with strips of bamboo fiber and glue to form boards. Engineered bamboo products result from processing the raw bamboo culm into a laminated composite, similar to glue-laminated timber products. These products allow the material to be used in standardized sections and have less inherent variability than the natural material. Bio-based material technology companies are developing a range of new products that improve both building sustainability and performance. In some cases, these architectural materials and systems also increase efficiencies in design and construction. Technology advancement and initiatives taken up by the government has helped in the development of bamboo in construction and structural applications. A new technology on protection and preservation of bamboo needs to be further developed and the effect on its durability and quality should be determined to open new areas for bamboo as wood substitute. Bamboo products such as bamboo fiber boards and other bamboo composite materials can be made due to their physical and mechanical performance in terms of hardness, stability and strength. Advances in structural engineering and the development of bamboo composites have opened new vistas for lightweight, durable and aesthetic construction for a variety of applications with proper treatment. Furthermore, with its lightness and flexibility the bamboo plant makes a material for the construction of wall panel and bamboo column. These are but a few examples of how bamboo's versatility is meeting the demands of consumers that are becoming increasingly aware of the impact that their choices	â€¢ An eco-friendly preservative for bamboo poles â€¢ Physical and mechanical properties of giant bamboo, black bamboo and kayali â€¢ Bio-composite as construction materials â€¢ Optimize design of engineered bamboo products â€¢ Laminated bamboo column â€¢ Bamboo wall panel	PSAU	Bamboo growers, construction industry	1-Oct-20	30-Sep-22	NEW	4,878,500.08	2,766,555.08
	Biological Studies of Economically Important Forest Vines in Camarines Sur and Albay Provinces (Old Title: Resource Survey, Inventory and Regeneration Study of Philippine Commercial and Potentially Commercial Forest Vines for the Handicraft and Furniture Industry)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project on forest vines aimed to address the increasing demand of raw materials for the handicraft industry in the Philippines. The department of Science and Technology - Forest Products Research and Development Institute (DOST-FPRDI) together with PCAARRD implemented and funded, a three-year project in the province of Cam Sur and Albay	Year 1: A list of forest vines and volume per project sites Year 2: Partial data on phenology and ecology of forest vines, as well as, increase in stem length and diameter of regenerants. Statistical analysis of factors affecting the growth and survival of forest vines. Year 3: A database of forest vines inclusive of photos, description, volume, maps, phenology, ecology, nutritional requirements, favorable environmental condition.	FPRDI	DENR, LGUâ€™s, POâ€™s, Academe/Universities, handicraft manufacturer, producers and collectors, general public	1-Apr-18	31-Mar-21	ONGOING	8,493,464.00	2,207,333.40
	Conservation and Mass Production of High-yielding Falcata Seed Sources in Mindanao (Old Title Conservation and Mass Production of High-yielding Falcata Families in Mindanao (: An Offshoot of Phase 1 Falcata Project "Advancement of Science for the Sustainable Conservation and Utilization of Forest Genetic Resources of Falcata and Yemane")	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The current proposed project (which will be referred to as Phase 2) seeks to conduct progeny selection from the Phase 1 field trials by identifying seed sources that are performing well across a wide range of sites. These â€œgeneralistâ€ seed sources will be tested in different locations with the superior seed sources and more resistant to the attack of gall rust and stem borer from each site are to be conserved and mass produced. Thus, Phase 2 is based around a series of field trials via clonal seed orchard establishment, clonal seedling propagation, and seed tree stand establishment with the participation of local farmers. Phase 2 could accelerate or increase the production rate of falcata wood in the region while ensuring the sustainability of falcata tree improvement program in the country. The output of Phase 2 project will be important in the long-term eradication of underperforming or low-quality falcata populations in the country especially those being used or sold widely by tree farmers and wood industries in Mindanao. These efforts are expected to improve the wood supply in the country and hence the income of farmers engaged tree farming. This proposed project is therefore an offshoot of Phase 1 falcata project and seeks to exploit the gains from Phase 1 through the following component activities, namely: selection of superior seed sources from Phase 1 project, F2 progeny trials via clonal seed orchard establishment, development of clonal propagation protocols for superior seed sources, seed tree stands establishment, and engaging local small-scale farmers in the region on implementation of these activities.	The proposed project is expected to accomplish the following: Year 1: â€¢ Publication â€¢ Patent/Intellectual Property â€¢ Product if¯ 105 plus trees selected from 5 seed sources if¯ 4,000 cloned seedlings produced if¯ One (1) on-site learning nursery established if¯ One (1) experimental clonal seed orchard established â€¢ People Services if¯ 15 forestry students availed services of the rooting experiment and clonal seed orchard areas for their laboratory classes, special problems/thesis â€¢ Places and Partnership if¯ Two (2) barangay LGU resolutions supporting the project in their barangay if¯ Two (2) Memorandum of Understanding (MOU) forged between the project leader and the land-owner of the two areas for clonal seed orchard/demosites â€¢ Policy Year 2: â€¢ Publication if¯ One (1) brochure on plus trees selection protocol produced if¯ One (1) training module on rooting protocol â€¢ Patent/Intellectual Property â€¢ Product if¯ 8,000 cloned seedlings produced if¯ One (1) on-site learning nursery established if¯ Two (2) experimental clonal seed orchards established	CMU	Two (2) peopleâ€™s organizations of tree farmers consisting of 60 participants, particularly, from Talisayan (Misamis Oriental) and Baliangao (Misamis Occidental) Field Trial sites; and 45 forestry students and faculty.	1-Jul-20	30-Jun-23	NEW	4,999,992.00	2,222,664.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Design, Fabrication and Field Trial of Rubber Tree Rain Guards for Improved Latex Recovery(Old Title: Design and Field Trial Assessment of Rain Guard for Rubber Trees for Improved Latex Yield)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This study will fabricate a modified rain guard using polyethylene plastic and used motorcycle interior ribber tire to design a rain guard that is suitable to the terrain and rainfall pattern of rubber plantations.	Year 1 1. fabricated and assessed the efficiency and effectiveness of the following designed rain guards: a. PRRI Skirt type b. tapping shade c. lamp shade type d. PRRI shade type 2. determined the prevalence of wetting panel infections in rubber as influenced by the use of different rain guards Year 2 1. evaluated the applicability and acceptability of the and acceptability of the different rain guards to farmers 2. determined the cost and return analysis of the different rain guards 3. showcased the workable/functional rain guards in at least 3 rubber farms 4. developed IEC materials of the technology for information dissemination	DA-PRRI	1. rubber farmers and their household member 2. rubber industry in general	1-Jan-20	31-Dec-21	NEW	3,700,000.00	1,938,995.00
	Development of Botanical Pesticides from Indigenous Plants in Selected Forest Ecosystems in Central Luzon (Old Title: Development of Botanical Pesticides from Indigenous Plants in the Forest Ecosystems and Use of Biotechnology-based Propagation and Conservation)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project generally aims to develop botanical pesticides from indigenous plants derived from selected forest ecosystems in Pantabangan Carranglan Forest Reserve (PCFR), Aurora Forest Reserve and Bataan National Park.	6 scientific paper for publication; 4 patentable methods in control; 5 products regarding potential and components of botanical pesticides, green technology, clonning, micropropagation and botanical pesticides from indigenous plants; mentored 1 BS Biology and 1 BS Agriculture and conservation of indigenous plants for people services; for places and partnership are the establishment of cloning facility, ramet garden as ex-situ conservation parks, mou/partnership with selected local barangays; local policy formulation and recommendation, 1 policy brief for policy aspect	CLSU	1.Farmers residing in the project areas and Central Luzon. 2.Indigenous people residing near the project areas 3.Students of state universities/colleges 4.Non-government organizations (NGOs) 5.Local Government Units (LGUs) 6.Peopleâ€™s Organizations (POs) 7.Faculty members/researchers	7-Jan-19	6-Jan-22	ONGOING	4,999,977.25	1,288,100.97
	Development of Tissue Culture Techniques(s) for Mass Production of Selected Bamboo Species	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The high demand for bamboo products and its ecological importance has led to the need for developing extensive bamboo farming. Despite this importance, production of most bamboo species lags behind its demand. Propagation of bamboo using seeds is low due to the long and irregular bamboo flowering cycle and scarcity of bamboo seeds. Propagation using suckers, culms and branches is similarly slow and for culm and branch cuttings, not yet well developed. To achieve this, in vitro regeneration of bamboo plantlets is needed. However, in vitro protocol is still lacking for economically important species of bamboo in the Philippines. Thus, there is need to develop a new protocol for rhizome induction which forms buds that develops into new culms or shorts easily. Shoot regeneration and rooting are key steps for in vitro micropropagation. An effective tissue culturing and nursery establishment protocols for bamboo will help stakeholders in extensive cultivation of bamboo and in cost-effective conservation of bamboo gene pool	Year 1 & Year 2 ï¿· Established an effective, reliable and measurable protocol for micropropagation (i.e. best sterilization procedure plantlet regeneration and multiplication protocol and plantlet establishment) in comparison to existing conventional propagation for economically important bamboo species in the Philippines. Year 2 ï¿· An effective protocol for establishing tissue culture plantlets in the nursery until the ready to plant stage for a year round availability. Year 3 ï¿· Planting of regenerated bamboo in the field. Cost analysis of producing tissue cultured bamboo. Publication: 1 peer reviewed article and IEC material (brochures) People and Services: 1 BS or MS student to add to the scientific workforce Product: Tissue culture protocol on selected species of bamboo Tissue cultured planting materials Pilot demonstration farm for outplanted tissue culture plantlets	VSU	Bamboo growers; Bamboo Industry	1-Jan-18	30-Jun-21	ONGOING	4,995,520.00	1,488,819.82
	Diversity of Bat Ectoparasites from the Caves of Selected Key Biodiversity Areas (KBAs) in Central Visayas (Old Title: Taxonomy, Prevalence, and Diversity of Cave-bat Ectoparasites in Selected Key Biodiversity Areas (KBAs) of Central Visayas, Philippines)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This study will be conducted in Selected Key Biodiversity Areas (KBAS) of Central Visayas. Ectoparasites associated in bats will be identified and classified. Mist netting approach is to be used adopting the protocol of SEABCRU. The modified method in collecting ectoparasites of birds (Bear 1995) will be adopted in collecting ectoparasites from captured bats. The body of each captured bat will be placed in a plastic bag with cotton soaked with ethyl acetate for 3-5 minutes to let those parasites detach from the host body. Afterwards, each bat will be examined for possible stacked ectoparasites on the body, wings and ears. Collected ectoparasites will be preserved in a specimen bottle with 70 percent alcohol. Data will be presented in terms of ectoparasite prevalence and intensity. To describe the diversity of ectoparasites in each location, indices such as the Shannon-Weiner Diversity Index and Simpsonsâ€™ Dominance Index will be computed. To determine if there is a trend in ectoparasite abundance and diversity in relation to biological (species, age group, sex) and environmental variables (location, temperature, humidity, etc), multivariate statistical analyses such as Canonical Correspondence Analysis (CCA) using the vegan package in R software (R Core Team, 2017) and non-Metric Multidimensional Scaling (nMDS) using PRIMER v. 6 (Clarke & Gorley 2006). In nMDS, distinction of clusters will be determined using One Way-Analysis of Similarity (ANOSIM). To differentiate between the clusters, pairwise comparisons will be made. To determine which of the species contributed to any observed differences between clusters, the Similarity of Percentage (SIMPER) test will be used.	The output of this study will be aligned and patterned under 6Ps; namely: A.PUBLICATION ï¼1 peer reviewed journal articles (SCOPUS, Thomson Reuters, etc. ï¼One (1) Field Guides to ectoparasites in Central Visayas KBAs ï¼Flyers, brochures, posters, and audio-visual materials B.PLACES AND PARTNERSHIPS ï¼MOA with selected stakeholders (LGUs, Academe, and NGOs) ï¼MOA/MOU/Commitment agreement between and among stakeholders, LGUs C.POLICIES. ï¼Policy input recommendation based on result in support of environmental health ordinances D.PATENTS ï¼Copyrights of the guidebooks and other IEC materials pertaining to ectoparasites in Central Visayas KBAs. E.PRODUCTS ï¼Voucher specimens of ectoparasites ï¼Updated database of information in Central Visayas KBAs featuring ectoparasites F.PEOPLE AND SERVICES ï¼At least 30 People trained in dissecting and identifying ectoparasites including 11 project team members (project leader/study leaders/research assistants) and at least 30 BSc Forestry students. ï¼Conduct 2 trainings on Ectoparasites Processing Protocol, Ecological Statistics on Species distribution modelling using R, and GIS. G.SOCIAL IMPACT ï¼The output of this study will create awareness to people in the project sites about ectoparasites of bats. H.ECONOMIC IMPACT	CTU	TARGET BENEFICIARIES The following are the recipients or target beneficiaries of the output of this study: A)ACADEME (Faculty, Researchers alike and Students) ï¼Faculty members of universities, especially those in the department forestry and environmental science, could use the research outputs and generated information in updating their lecture materials and curricular programs. ï¼The copyrighted field guides, leaflets and other instructional materials may also be shared to interested universities and colleges for information dissemination. ï¼Researchers may have the chance to utilize the methods and results of the study in their future research interest. ï¼Students could use the research outputs as their reference materials in forestry and other related subjects. B)PROVINCIAL AND MUNICIPAL LOCAL GOVERNMENT UNITS (LGUs)	1-Dec-20	31-May-22	NEW	3,500,000.00	2,481,795.20
	Ecological Mangrove Restoration of Abandoned Brackishwater Fishponds in the Philippines	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Mangrove forests decline at an alarming 1% per year (Thomas et al., 2017). About 20% decline in mangrove areas from the last 25 years is due to conversion and coastal development (ITTO, 2010). The mangrove forest cover in the Philippines: 1920-450,000 ha.; 1990- 132,500 ha.; 2007-247362 ha.; 2011-256,185 ha.; Attempts to restore degraded mangroves in the Philippines have been made but very few have reported high success rate (Primavera and Esteban, 2008).	Journal Article on "Ecological Mangrove Restoration in the Philippines". Handbook of Ecological Mangrove Restoration Techniques. IEC materials . Protocol on ecological restoration of abandoned brackishwater fishponds in the Philippines. Pioneer development sites of Ecological Mangrove Restoration in the Philippines. Model site developed. Policy recommendation on mangrove restoration. Inputs to the Land Use and Management Plans.	ERDB	Local coastal community, local government units, DENR, DA-BFAR, academic institutions and other institutions.	1-Apr-19	31-Mar-21	ONGOING	4,996,436.00	997,319.00

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	Evaluation of the Physical and Mechanical Properties of Economically Important Forest Woody Vines	KRA 3: Rapid, Inclusive and Sustained Economic Growth	the project aims determine the physical and mechanical properties of economically important forest woody vines.	Publications - Two (2) publications: 1. Leaflet on physical and mechanical properties of economically important forest woody vines 2. A booklet on forest woody vines in Quezon and Bicol Provinces for dissemination. Product â€" Basic Information on â€œPhysical and mechanical properties of Forest Woody Vinesâ€ Patent - A copyrighted booklet on forest woody vines after project completion. People Services - At least 10 personnel trained on property testing of vines Places and Partnership (MOA/MOU) signed - Collaboration between and among industries, academe, government, and communities strengthened. Policies Research results can serve as significant inputs in the formulation of policies for identifying/classifying and utilizing forest woody vines species for furniture and handicrafts.	FPRDI	(a) Handicraft industry (b) Furniture industry (c) Researchers (d) Farmers (e) Academe (d) General public	1-Jul-18	31-Dec-20	ONGOING	4,301,246.40	763,918.98
	Evaluation on the Agronomic Performance of Rubber RRIM Series in Luzon and Mindanao for NSIC Registration	KRA 3: Rapid, Inclusive and Sustained Economic Growth		At the end of the study, the following are expected outputs: 1.) geotagged and properly documented farms with RRIM 2000 and 3000 series clone in Luzon and Mindanao; 2.) determined and consolidated morpho-agronomic characteristics of the RRIM series; 3.) documented cultural management practices of the farmers; 4.) identified yield and yield parameters of rubber RRIM clones series; and 5.) facilitated NSIC registration of promising RRIM 2000 and 3000 clones.	DA-RFO 9 ZAMPIARC	Different rubber stakeholder, rubber investors, rubber farmers and research institution	1-Jan-20	31-Dec-21	NEW	5,000,000.00	3,065,835.92
	Forest Tree Seed Quality Enhancement and Development of MTSC - Seed Tracking and Information Database System (Old Title: "Seed Quality Enhancement of Selected Forest Tree Seed and Development of Mindanao Tree Seed Center - Seed Tracking and Information Database System")	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Caraga Region is known as the â€œtimber corridorâ€ of the country. In 2017, the region is the top producing wood based industry which contributes 492,525 cu.m or 67.15% of logs produced, 30,584 cu m or 72.8% of veneer produced, and 110,647 cu.m or 63.2% of plywood produced. Tree plantation development is very necessary to sustain and improve the current production of wood based industries. In tree plantation development, using quality and improved seeds is very vital component of industrial tree plantation. A â€œQuality seedâ€ is an attribute to produce a good yield, quality of wood based product and dictates high market value. In Caraga region, it was projected an area of 429,642 has. of forestland (opened), Community based Forest management Agreement(CBFMA) area and private tree farms have been identified that demand 37,124 kgs. of seeds of ITP species (Table 1). This tree plantation requires large volume of quality seeds to cater the current demand in Caraga region, less to mention the increasing tree plantation activity in Region 10, 11 and 12 in Mindanao. Mindanao Tree Seed Center (MTSC) is a distinct tree seed center of the country operated for a decade. The MTSC caters the production of quality seeds to support the industrial tree plantation of the country. Likewise, the center also serves as gene bank of high valued plant genetic materials that are risk for extinction and potential for advance scientific research. In 2008, the center was initiated and capacitated from the convergence initiative of DENR â€"ERDS 10, 11, 13 through the support of AUS-AID Public Sector Linkage program by the Commonwealth Scientific and Industrial Research Organization, Australia. In 2009, DOST-PCAARRD approved â€œITP Action Program on the Establishment of Commercial Plantation and Efficient utilization of Wood Products in Caraga.â€ Project 1.1. Seed Collection and Management of Mindanao Tree Seed	First Year - Developed seed technology on seed fortification, coating and pelletizing of forest tree seeds of nine forest tree species (i.e. falcata, mangium, yemane, kamagong, malapapaya, big leaf mahogany, nato and 2 dipterocarp species) from three (3) different seed storage classification - Determined the effect of various parameters on the tree seed quality enhancement treatments in the laboratory. - Consolidated seed information data for the development of seed tracking and information system. Second Year - Established three field trial experiments in the mined-out area, reforestation area and production forest. - Determined the effect of various growth parameters on the three field trials of the significant developed protocol of improved and enhanced tree seed. - Developed and adopted the seed tracking and information system Third Year - Identified the significant seed quality enhancement treatments in the three field trials for patent recommendation and production of improved and enhanced tree seeds. - Developed and adopted the tree seed tracking and information system - Submitted manuscript to scientific journal - Prepared terminal report for submission to PCAARRD	ERDB	â€¢ DENR and corporate tree growers (IFMA) â€¢ Mining companies for mined-out rehabilitation â€¢ Community Based Forest Management Agreement holder through the peopleâ€™s organization. â€¢ Small-scale tree farmers-small scale tree farmers/ private tree farmers engaged in tree farming â€¢ Tree seed enterprise â€¢ Academe, Researchers â€¢ Forest managers	1-Jul-20	30-Jun-23	NEW	4,999,985.00	2,023,407.80
	Germplasm Conservation and DNA Marking of Selected Priority Industrial Tree Plantation Species	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Eucalyptus deglupta Blume (Myrtaceae) commonly known as â€œBagras,â€ â€œRainbow eucalyptsâ€ or â€œMindanao Gum,â€ or â€œRainbow Gum,â€ is the only eucalyptus tree species found in the country, naturally distributed in Eastern and Southern Mindanao. Endospermum peltatum Merr. (Euphorbiaceae) and Casuarina equisetifolia Forst. (Casuarinaceae) are widely distributed throughout the Philippines. These forest tree species significantly contributed to the timber industries in early 70â€™s to 80â€™s, used as raw material for pulp and paper, poles, lumber, veneer and plywood, matchsticks and various forest products. Significant variability on various economic traits (wood quality and yield and resistance to pest) exists among populations of E. deglupta, C. equisetifolia and E. peltatum. Encouraged by this potential, in the 1970s, the Paper Industries Corporation of the Philippines (PICOP) ventured in the domestication of these species. They identified different wild populations and collected some genetic materials from its natural range in Eastern Mindanao for E. deglupta and other parts of the country for C. equisetifolia and E. peltatum to developed a industrial tree plantation. The company employed advanced research on tree improvement and produced a series of hybridization and infusion of other genetic materials from the other country. In the case of E. deglupta it was found out that the different provenances exhibit different morphological characteristics and growth performance. A provenance trial had been conducted in a limited area in PICOP in 1976, but there are no available records of seed sources. Growth and yield of E. deglupta plantations remain lower than expected, mostly due to poor genetic selection of seed sources and poor silvicultural practices. Further, the closure of PICOP in the 2000s is one of the timber industryâ€™s despondent times. All of the advance researches on tree improvement were halt and their efforts on tree breeding program were wasted.	Publications One draft manuscript of publishable article on Genetic diversity and structure of the E. deglupta, C. equisetifolia and E. peltatum used in the ex situ conservation site ; Production of 200 leaflets on E. deglupta, C. equisetifolia and E. peltatum species profile for distribution Products Maps of identified clustered wild population of E. deglupta, C. equisetifolia and E. peltatum 50 specimen for germplasm production and DNA genotype profiling collected 1.5 hectare Ex-situ conservation area established 250 Genetic material for tree breeding and other by products utilization People Service Maps of identified clustered wild population of E. deglupta, C. equisetifolia and E. peltatum 50 specimen for germplasm production and DNA genotype profiling collected 1.5 hectare Ex-situ conservation area established 250 Genetic material for tree breeding and other by products utilization People Service Mentoring of 2 undergraduate/graduate students Mentoring of 2 undergraduate/graduate students	ERDB	Researchers, Academe, Tree farmers and other stakeholders	16-Dec-20	15-Dec-23	NEW	2,424,591.68	2,424,591.68
	Gluing and Finishing Characteristics of Thermally Modified Bamboo	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Thermal modification (TM is a technology for wood modification that has been commercialized in European countries and has spread in North America and Asia such as in China, Malaysia and Thailand. The use of TM technology in the Philippines utilizing bamboo has been studied by FPRDI and has a utility model for the process. TM treatment, such as the use of hot spent cooking oil or hot air with steam can influence gluing and finishing characteristics.	Reconditioned experimental TM chamber using steam; Fabricated hot oil-bath equipment (prototype); Determined the physic-mechanical properties of bamboo thermally modified in hot air in steam environment; determine the extractives content of the bamboo thermally modified in hot air in steam environment; determine the gluing and finishing characteristics of bamboo thermally modified in hot air in steam environment; started the exposure of the modified and control bamboo for field test against decay and insect attacks, prepared one publication for submission to ISI Journal	FPRDI	Bamboo Industry	1-May-18	30-Apr-21	ONGOING	4,997,422.40	787,470.55

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Greenhouse Gas Inventory of Industrial Tree Plantation (ITP) Production Chain in Mindanao (Phase 2)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	In 2019, the UPLB-CFNR successfully completed a one-year DOST-PCAARRD-funded research project in Caraga Region. The study involved inventory of GHG emissions from ITP activities that include harvesting, minor and major log transport, and veneer and lumber production. It also included determination of carbon stored in durable wood products particularly lumber and veneer. However, due to budgetary and time constraints, the study focused only on the GHG accounting of harvesting activities, transport and primary processing of falcata into lumber and veneer. It excluded carbon stock assessment of falcata plantation and secondary wood processing including its wastes and by-products. Thus, there is a need to conduct a study covering the remaining ITP activities and processes in the production chain to be able to come up with the complete assessment of GHG fluxes in the sector and demonstrate its role in mitigating climate change and highlight its economic viability and contribution to sustainable forest resources management.	Year 1 1. List of cooperators and target small-hold tree farmers, ITP owners, and IFMA holders 2. Location map of small-hold tree farms, ITP, and IFMA study sites 3. Tree inventory and biomass samples of understorey/ herbaceous (UH), litter/necromass, and soils in selected study sites collected 4. Preliminary calculations on carbon stored in tree biomass, UH/litter/necromass, root biomass and soils in selected study sites 5. Calculated GHG emissions from land clearings used for tree plantation development 6. Signed memorandum of agreement/ understanding between DENR and tree farmers, ITP owners, IFMA holders, and collaborating wood processing plants (WPPs) Year 2 1.Calculated carbon stored in tree biomass, UH/litter/ necromass, root biomass and soils in selected study sites 2. List of secondary wood processors 3. Types of secondary wood products produced by the ITP sector 4. Gathered samples on secondary wood products and their by-products for laboratory analysis 5. Preliminary calculations on GHG emissions from secondary wood and by-products processing Year 3 1. Calculated GHG emissions from secondary wood and by-products processing 2. Carbon stored in durable wood products 3. Calculated total GHG storage and emissions from the ITP sector 4. Calculated net GHG fluxes from the ITP sector 5. Recommend protocols and policies to reduce GHG emissions from the ITP sector	UPLB	1. DENR â€“ for monitoring and evaluation and policy making 2. WPA â€“ for monitoring and evaluation and policy recommendations 3. Partner SUCs â€“ for training and research implementation 4. Small-hold tree farmers, ITP and IFMA holders/owners â€“ for implementation/compliance and guidance 5. Local communities - for implementation/compliance and passing of ordinances/resolutions 6. Wood processing industries â€“ for compliance and guidance	1-Nov-20	31-Oct-23	NEW	4,998,590.00	1,552,622.00
	Kawayan: Pagkain at Pangkabuhayan para sa Pamayanan (Enhancing Bamboo Shoot Production and Product Development through S&T Intervention: A Livelihood Project)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Due to the existing COVID-19 pandemic, more than 630,000 Filipinos are displaced from their work (DOLE, 2020), resulting to an increase in poverty and hunger of around 18M low-income families with the reported 20.8% Filipinos living below the poverty line even without the pandemic (World Bank, 2019). Filipinos who were greatly affected with the pandemic can only depend upon the governmentâ€™s support. It is a fact that in most cases, the support may not be enough to accommodate their needs. Hunger and poverty is now heightened and one of the suggested ways to alleviate this crisis is through alternative or additional food and income sources. The utilization of raw materials found in nature for food, shelter and clothing has been marginalized due to insufficient knowledge in harvesting, managing and processing of these goods. This lapse has been the main reason as to why some products have low marketability. The failure to produce high quality products points out to low and inadequate knowledge in management practices. Bamboo, a multipurpose species (about 1,500 uses), is found in most areas of the country (300,000 km2), can also serve as a source of food and income. In the Philippines, 62 bamboo species can be found and 21 of which are endemic. Among of those are Kawayang Tinik (Bambusa blumeana), Bayog (Bambusa sp.), Kawayang Kiling (Bambusa vulgaris), and Giant Bamboo (Dendrocalamus asper) which are long been utilized in basket weaving, hut, and furniture making. Aside from the exploitation of its lumber, bamboo can also be consumed as food such as pickled bamboo shoots, wine, catsup, juice, chips, and other bamboo shoot-based products (Sunstar, 2020; DOST Region II; Choudhury, Sahu, and Sharma, 2011). The utilization of juvenile shoots are not only palatable but also rich in nutritional values which displayed numerous potential health benefits such as improving appetite and	â—Identified at least three (3) groups of people or associations/organizations to be assessed on bamboo production and product development â—Capacitate at least 15 people for bamboo shoot production and product development â—Produced bamboo shoots for consumption and raw materials for processing â—Produced at least three bamboo-based food products â—Identified at least two (2) sources of market â—Generated an income/livelihood project for the community out of bamboo	PSAU	ï¯ Displaced workers ï¯ Farmer associations/organizations ï¯ Bamboo growers ï¯ Women Sector ï¯ Other Stakeholders	1-Jul-20	30-Jun-21	NEW	3,499,787.20	3,499,787.20
	Pangkabuhayan para sa Kotabateñong Pamayanan (Community-based Tablea Production for Sustainable Livelihood in Cotabato)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The worldâ€™s economic and agricultural sectors are negatively impacted by the COVID-19 pandemic as panic and quarantines restrict human and product movement. In the Philippines, quarantines and lockdowns severely limited the market activity resulting in work displacement and loss of livelihood of Filipinos. As of March 31, 2020, temporary business closures or flexible work arrangements resulted in more than 630,000 Filipino displaced workers (DOLE 2020) consequently contributing to increased poverty and hunger. While agriculture production may not be severely affected, there is hindrance in the long-distance transportation and distribution of the agriculture products. This crisis resulted in the increased dependence of Filipinos on the government as it plays the critical role of providing social protection through support to agriculture, protection of supply chains, and the preservation of jobs and businesses. The present reliance on specific markets, products and distribution channels is deemed inadequate to respond to disruptions caused by the COVID-19 pandemic. Therefore, the current situation provides opportunities to transform agriculture food systems including increased utilization of locally available food that would provide alternative sources of livelihood and reduce dependence on long distance transportation and distribution of third parties. Cacao (Theobroma cacao L.) is a highly valuable crop in the Philippine domestic and export markets. It is the only source of cocoa, a product that cannot be substituted by any other commodity and the key ingredient in chocolate production. In 2015, the Philippines only produced 6,020 MT of cacao beans (BPI and DA 2017) that led to the formulation of the The Cacao Industry Roadmap in 2017 with the explicit goal of establishing a sustainable and competitive cacao industry to be achieved by 2022. While Region 11 largely contributes to national cacao production, Region 12 through	â€¢Identified at least three associations of cacao farmers, tablea makers, and displaced workers â€¢Assessed the members of the associations on their knowledge and skills on pre- and post-harvest processing, tablea production and packaging, and product marketing â€¢Trained associations on cacao pre- and post-harvest processing, tablea production and packaging, and product marketing â€¢Developed method for improved quality of tablea products â€¢Produced IEC materials (translated in local dialects) for cacao-tablea production â€¢Produced 4,500 kgs of tablea (1,500 kgs per association) â€¢Identified market for tablea products â€¢Generated at least 30% more income for cacao farmers, tablea makers, and displaced workers in selected cacao growing municipalities of Cotabato â€¢Provided minimum equipment to associations to assure sustainable tablea production even after the project has ended â€¢Forged partnership with local investors and institutional buyers	USM	â€¢Cacao farmer association â€¢Tablea makers â€¢Displaced workers due to COVID-19 pandemic â€¢Other Stakeholders	1-Jul-20	30-Jun-21	NEW	3,000,000.00	3,000,000.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Practices of Entomophagy and Entomotherapy of Manobo Dulangan, Teduray and Tboli Ethnolinguistic Groups in Sultan Kudarat and South Cotabato, Mindanao, Philippines (Old Title: Practices of Entomophagy and Enotmotherapy by the Members of Manobo T'duray and T'boli Tribes in Sultan Kudarat and South Cotabato, Mindanao, Philippines)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project aims to expand the study on entomophagy along with entomotherapy particularly among the ethnolinguistic groups from Sultan Kudarat and South Cotabato, Philippines	Year 1 â€¢Ethno-entomological data â€¢Partnership with the three tribal groups Year 2 â€¢IEC Materials on the IKS in the use of insects for food and medicine â€¢Research paper and brochure â€¢1 patent on tribeâ€™s knowledge particularly on the preparation of insect for food and medicine â€¢Documented list of insects for food and medicine used by the Manobos, Tâ€™durays and Tâ€™bolis â€¢Information dissemination/awareness on the potential of insects as source of food and medicine through LGUs â€¢1 policy recommendation on the protection and conservation of the three IP sites	SKSU	Local communities of Senator Ninoy and Esperanza, Sultan Kudarat as well as Tâ€™boli, South Cotabato; Local Government Units; NCIP; DENR Region XII; and Academe	1-Jun-18	31-Dec-20	ONGOING	4,702,223.76	690,313.18
	Production of Bamboo Composite Boards from Bambusa blumeana J.A. Schultes and J.H. Schultes (kawayan tinik) and Dendrocalamus asper (Schultes f.) Backer ex Heyne (giant bamboo)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Bamboo-based industry offers a very promising solution to the declining wood supply in the country. When processed properly, bamboo can compete with solid wood in terms of strength, figure and finishing properties, making bamboo the best substitute for wood or even replacement for wood.The project will develop novel engineered bamboo products (i.e.Bamboo Shavings-board and Strip-board) from two thick-culmed species of bamboo as potential substitute for wood.	At least 1 paper will be published in ISI-indexed or peer reviewed journal (Y1) 1 primer on production including the cost and return analysis at the termination of the research (Y2) At least 1 or 2 products will be applied for patenting at the end of the research.(Y 2) Shavings board (1 ft x 2 ft x 8 ft) (Y1) Strip board (1 ft x 2 ft x 8 ft) (Y2) At least 1 undergraduate student will be tapped to conduct related study (Y1) 50 individuals (i.e. project laborers and bamboo furniture makers/carpenters) will be trained on actual production. (Y1 and Y2) It is expected that at the end of the research new partnership will be forged particularly DTI, cooperatives, and peopleâ€™s organization (Y2) For technology and product promotion, it is expected that a policy pertaining to the use and incorporation of the developed bamboo products to the universityâ€™s construction projects whenever is applicable.(Y2) Policy recommendation on the control of harvesting particularly on bamboos planted in public lands and PAâ€™s Policy recommendation on the permit and collection of government charges	CMU	1. Bamboo furniture makers/carpenters in the municipalities of Maramag, Manolo Fortich, and Don Carlos in Bukidnon; 2. Farmers with existing bamboo plantations/stands; and 3.Unemployed individuals willing to undergo skills development training	1-Jan-19	31-Dec-20	ONGOING	4,999,928.00	424,637.00
	Project 1. Inventory and Assessment of Flora and Fauna, and Macrofungi in Mt. Banahaw de Lucban (MT. BANAHAW DE LUCBAN BIODIVERSITY ASSESSMENT, VALUATION AND CONSERVATION PROGRAM)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This research is one of the component projects of the program of SLSU titled "Mt. Banahaw de Lucban Biodiversity Assessment, Valuation and Conservation Program". This program was initiated by the Southern Luzon State University (SLSU) as part of their responsibilities as steward of Mt. Banahaw San Cristobal Protected Landscape, one of the remaining forested areas in Luzon.	Year 1 Products â€¢Draft GIS maps of the locations of assessed flora, fauna and macrofungi in MBdL People Services â€¢One (1) graduate student and one (1) undergraduate student trained in the inventory and GIS mapping of the locations of flora, fauna and macrofungi in MBdL Places and Partnership â€¢At least one (1) MOA/MOU with selected stakeholders (LGUs, POs and DENR) Year 2 Publication â€¢At least one (1) publication either in a peer-reviewed journal article (ISI-indexed, SCOPUS, Thomson Reuters, etc.), book, or instructional material Patents â€¢Application for patent on the habitat suitability maps of species indigenous to MBdL Products â€¢GIS map locations of flora, fauna, and macrofungi in MBdL â€¢Updated information on the conservation status of flora and fauna species in MBdL	SLSU	Students, faculty researchers; nursery personnel; tree farmers, decision-makers; Government Institutions (DENR, PAMB, LGUâ€™s); Non-Government Institutions (NGO, POâ€™s); SLSU; Students; other academic institutions (SUCs); Researchers; Local communities/stakeholders of MBSCPL and vicinities.	1-Nov-20	31-Oct-22	NEW	4,999,926.00	2,834,293.12

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Suitability Assessment for Agriculture and Aquaculture Food Production of the Floodplains of the Taft River Basin Impacted by Post Operations of Bagacay Mines (Impact Assessment of the Post-Mining Operations of the Bagacay Mines on the Agriculture and Aquaculture Food Production along the Taft River Basin)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The present project proposes a comprehensive evaluation of the heavy metal pollution along the Taft river basin in order to gathere pertinent and concrete information on the extent of the off-site impact of the abandoned Bagacay mine in Hinabagan, Samar. This project recognized the necessity to address soil and water contamination from mining activities which is considered as one of the top three ecological security threats in the world. Like many other mining concessions in the Philippines, Bagacay mines affected the Taft River basin and case severe pollution on agricultural and aquatic environment. However, there is no comprehensive and updated data on the status of contamination in these area except for some quality assessment along the Taft river system. Similarly, there is no information on the levels of food contamination of the crops and aquafauna produced from these areas. Without comprehensive assessment, there remains the big risk that these environmental problems will have an irreversible impact to human and ecosystem, like those of the case of the Minamata Disease (Methylmercury Poisoning) in Japan, which lead to the death of thousands of local fishermen and people living within the polluted waters which was due to the chemical factory's effluents in the site. The Minamata case is an eye-opener for us, we do not want that to happen to ur people. Such problem can be prevented with studies that assess and evaluate these potential pollutant areas (Abandoned Mines). The result of the project would provide baseline information to be utilized as basis in planning and formulation of an effective mitigation, adaptation and rehabilitation strategies to be conducted in identified contaminated areas. After obtaining the comprehensive assessment data on the status of heavy metal contamination in the agriculture and aquaculture food production system along the Taft river basin, a plan of action will be formulated to address such problems. Mitigation strategies will be identified to rehabilitate polluted areas and prevent	At the end of the project, the following are the expected outputs: 1) characterized the extent of heavy metal contamination of the soils and sediments along the Taft rver basin; 2) determined the extent of heavy metal contamination on major agricultural crops grown in the flood plains of the Taft river basin potentially affected by sediments deposition from Bagacay mines; 3) assessed the levels of heavy metal contamination on aquafauna harvested especially consumed along the Taft river and its tributaries; 4) evaluated and determined the water quality and heavy metal loads in the water of Taft river; 5) formulated and created a geo-referened and retrievable web base program of heavy metal contamination in soil, sediments, major crops, aqua fauna and water of the study area; 6) formulated plan of actions to address the issues and concerns as a result of the study.	NWSSU	People living within the Taft river basin; LGU, DENR and academic community	1-Jul-20	30-Jun-21	NEW	4,455,835.16	4,455,835.16
	The Use of Geospatial Analysis of Gall Rust (Uromycladium falcatarium) in Falcata (Falcataria moluccana) to Determine Diseases Occurence in Compostela Valley, Philippines (Old Title: Geospatial Analysis of Gall Rust (Uromycladium tepperianum) in Falcata (paraserianthes falcataria L. Nielsen) and its attempt to Reduce Pest Occurrence at Pantukan, Compostella Valley Philippines)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This proposed project builds on the clamor of many Falcata growers, especially in the areas near the University of Southeastern Philippines, Tagum-Mabini Campus, like the municipalities of Mabini, Pantukan, Maco and Maragusan, wherein gall rust infestation has likely caused economic losses on their part. Inspite of the NGPâ€™s distribution of Falcata seedlings, an assistance in addressing this dreaded disease is what they needed most. Since there is an insufficient or lack of studies on the technical species-site compatibility especially biophysical conditions that trigger pest occurrence, this study will help the tree farmers to consider biophysical conditions and provide technical doâ€™s and donâ€™ts on planting Falcata. The works of Lacandula et.al (2017) which employed geospatial analysis in determining the influence of biophysical factors to the prevalence of gall rust in Falcata plantation in Gingoog City, CARAGA Region showed the relevance and necessity of using various statistical methods that quantitatively define the spatial pattern of disease which will provide additional information on the extent of disease damage. The Philippine government, through Executive Order 23 or the â€˜National Greening Programâ€™, allocates huge amount to reforest bare/open areas in the country. Investment in this endeavor in the form of financial resources, human resources have been poured out to	ï¿· MOU/MOA with DENR, LGUs and POs ï¿· GIS Map indicating locations of NGP areas affected/not affected of gall rust ï¿· Identify biogeophysical characteristics which favor or prohibit gall rust occurrence ï¿· GIS map indicating pest occurrence per elevation ranges (low, medium, high) ï¿· Generate potential control measures against gall rust in Falcata ï¿· Identify resistant Falcata planting materials from provenance field trial planting test	USeP-Tagum-Mabini	Forest Tree growers, National Greening Program Beneficiaries, DENR Field Men, DENR Program Implementers, Researchers, Students, and Philippine Economic Gain	1-Mar-19	28-Feb-21	ONGOING	3,500,000.00	1,260,192.05
	Validation of Molecular Markers for identification of Cacao HYVs, Criollo Types and Disease Resistant Varieties through Marker-assisted Breeding	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Cacao is an economically important crop worldwide due to its strong domestic and export market demand by various industries. Cacao production in the Philippines is constrained by several factors including low production attributed to planting of low to average yielding cultivars, pests and diseases and fewer area of cacao production. There is a great need to increase production to meet global demand. To increase cacao production in the country, efforts are exerted towards increasing the area of production for cacao and by planting high yielding varieties. The National Seed Industry Council (NSIC) recommends high yielding cacao varieties for production. In commercial nurseries, these recommended varieties appear morphologically similar. Thus, the use of the desired high yielding varieties is compromised due to difficulty in visually identifying planting materials of the genuine variety in the nurseries. There is need to utilize the SSR markers that we generated in our PCAARRD-funded project to validate NSIC cacao recommended varieties. This is to guarantee that farmers use the correct high yielding varieties for increased cacao production and income. The completed cacao project has also produced functional SSR markers that differentiate true Criollo cacao types from non-Criollo cacao accessions. Criollo is one of the most cultivated varieties worldwide and the most favored cacao variety due to its fine flavor and aroma. In the Philippines, there are numerous collections claimed as Criollo but these accessions have not been verified as true Criollo type. There is a need to validate the claimed Criollo types in different regions in the country using the SSR markers. This is to identify the true Criollo types for utilization in clonal propagation for Criollo cacao production and as parents in cacao breeding. The completed cacao project has also identified SSR markers that are associated	Publications Year 2 At least 3 scientific papers At least 2 paper presentations in conferences People and Services Year 1 2 undergraduate and 2 MS graduate students Year 2 2 undergraduate and 2 MS graduate students Training of at least 8 BPI-NSQSC staff/personnel Product Year 1-2 SSR markers for utility in plant certification agencies SSR markers to identify true Criollo cacao types Year 2 Cacao cultivars with resistance to VSD and/or phytophthora disease Patent Year 2 Utility model for cacao NSIC recommended variety identification and certification Places and Partnerships Year 1â€“2 Partnership with Bureau of Plant Industry (BPI	USM	The beneficiaries include cacao breeders, cacao farmers, cacao plantation growers, nursery owners, cacao bean processors, cacao industry, consumers and government agencies such as Bureau of Plant Industry and DOST-PCAARRD for the product and technology.	1-Nov-20	31-Oct-22	NEW	5,000,000.00	2,735,358.28

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Enhancement of Milkfish Aquaculture Productivity through Genomics [Bangus Aquaculture eNhancement through Genomics and Unified Sciences (BANGUS)]	Project 1. Milkfish Broodstock Development and Management	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	In spite the availability of well-established milkfish hatchery technologies and the implementation of local government programs to increase milkfish seed production, the milkfish aquaculture industry remains to be reliant on the wild fishery for its seedstock requirements (Garcia et al, 2019). While there are some government and private hatcheries that are able to support the Philippine milkfish industry, the supply of seedstock could not meet the demand and the farmers still resort to the use of imported hatchery-bred milkfish fry either from Indonesia or Taiwan. The shortage of milkfish fry/fingerling supply is a problem that could be addressed through the administration of improved broodstock feeds, the adoption of optimized feeding schemes, appropriate water quality management and more importantly through genetic means (in particular, increased effective population size, broodstock selection, management and genetic stock improvement). Since it takes years for milkfish broodstock to mature in captivity, a more practical approach would be to determine the genetic quality of the current, actively breeding stocks in a milkfish hatchery and assess how this is correlated with their on-farm breeding performance.	Year 1: â€¢ Milkfish broodstock management/hatchery/nursery practices documented and will serve as reference information for both science and policy-based interventions to improve milkfish seed production in the Philippines â€¢ BAD libraries will be available Year 2: â€¢ Genetic information on milkfish brood stock used in the major Philippine milkfish hatcheries will be available (genetic variability data from actively spawning broodstock will be generated, extent of inbreeding determined from biomolecular marker data and genetic markers for detecting quality seedstock developed â€¢ Loci involved in genetic sex determination in milkfish will be characterized â€¢ Validation of sex-determining loci will be performed Year 3: â€¢ Genetic structure of current local hatchery populations as inferred from microsatellite marker information correlated with reproductive performance traits, better genetic stocks identified, hatchery-specific broodstock development and management schemes formulated and recommended for use; scientific publications apart from the genetic database shall be written and made available â€¢ Sex identification based of immature individuals based on genotype will be performed â€¢ SNP profile of two generations of milkfish will be produced Product SNP and additional microsatellite markers for milkfish would be developed. Loci that could be targeted for early sex determination will be determined. Also, novel markers can be used for stock enhancement and marker assisted selection. Patent	UPD	The results of this study shall benefit the Milkfish hatchery operators, milkfish growers, students, fellow researchers	1-Dec-20	30-Nov-23	NEW	24,912,505.19	12,079,676.46
Enhancement of Milkfish Aquaculture Productivity through Genomics [Bangus Aquaculture eNhancement through Genomics and Unified Sciences (BANGUS)]	Project 2. Developing Genomic Resources for Improved Production Traits in Hatchery-bred Milkfish	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Seafood has a fundamental role in meeting current and future food needs. In view of the overexploitation and decline of capture fisheries, aquaculture production increasingly contributes to food supply and security. An important food fish in Southeast Asia, the milkfish (Chanos chanos, Family Chanidae) has a centuries-long history of farming in the region. In the Philippines, milkfish production is almost exclusively sourced from aquaculture, and is the leading aquaculture species in both production volume and economic value. However, hatchery production of seedstock is considered inadequate to supply industry needs, and continued improvements in scale, efficiency, and sustainability of aquaculture are essential. One strategy to improve aquaculture production is through genetic improvement of milkfish hatchery broodstock. Growth performance is considered one of the key production traits for selection programs in aquaculture. The development of genomic resources for milkfish, and characterization of the genetic determinants for growth performance are of scientific and commercial interest and are fundamental towards the development of marker-assisted selection protocols for broodstock management, selection, and improvement. The project will employ high-throughput sequencing of the milkfish genome and transcriptome to investigate the genomic basis of growth performance, and identify putative molecular markers such as candidate genes/gene regions and allelic variants. Identification of putative markers will be essential for the development of marker-assisted selection methods and genetic improvement of milkfish broodstock to enhance milkfish aquaculture production.	1. Profiling milkfish gene expression for growth performance through transcriptome sequencing and identification of growth-related genes/transcripts; 2. Identified genetic variants putatively associated with growth performance; 3. Discovery of putative molecular markers (genes, genetic variants) associated with growth performance for phenotype selection.	UPD	4. Stakeholders in the milkfish aquaculture industry (government, private sector) may benefit from the development of molecular markers for genetic improvement of hatchery broodstock; 5. Local researchers (research staff, graduate students) who will be provided opportunities for further training in advanced methods for genomic analysis and bioinformatic analysis; 6. The research/scientific community in general as results from these studies will provide further avenues for research related to milkfish genomics, biology, aquaculture, and resources management	1-Dec-20	30-Nov-23	NEW	22,256,906.00	6,933,628.96
Harnessing Emerging Technologies for Mangrove Crab Culture and Resource Management: 'Omics Approaches, Web-based and Mobile Computing Technologies	Project 1. A Rapid Cost-effective Method to Screen Potential Sources of Immunostimulants and Growth Promoting Feed Additives for Scylla serrata using a Functional Genomics Approach	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Feed development will require expensive iterations in the formulation of functional feeds, starting from testing potential immunostimulants to checking for doses that work. The project proposes to shorten these processes of iteration by coming up with a qRT-PCR based assay kit that will allow prioritization of potential sources to use for development into feed additives. The project will then test 3 potential sources and use that which produces the best reaction from S. serrata, and move on to develop a novel feed. In the process of immunostimulant source screening and feed development, a better understanding of the mechanism for innate immune activation and the coupled process of imparting disease resistance and improving growth rates will be better understood. This work will focus on the response to WSSV infection.	1. A rapid cost-effective means to determine immunostimulant and growth promoting properties of potential sources of feed additives 2. qRT-PCR based panel of primers for rapid screening 3. Identified and characterized 3 novel sources of immunostumulants and growth promoter 4. Information on the coupled effect of disease resistance and growth rate improvement presenting pathways where interventions may be possible 5. One novel functional feed	DLSU	1. Mangrove crab farmers, pond owners and nursery operators 2. Research community working on the discovery and development of feed development R&D 3. Feed development industry 4. Biotech industry seeking to develop gene expression screening products for use in the agriculture/aquaculture sector	1-Aug-19	31-Jul-22	ONGOING	16,326,494.80	2,742,642.24
Harnessing Emerging Technologies for Mangrove Crab Culture and Resource Management: 'Omics Approaches, Web-based and Mobile Computing Technologies	Project 2. Molecular Mechanisms Underlying Scylla serrata Response to White Spot Syndrome Virus (WSSV) Infection: Metagenomic and Transcriptomic Approaches	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Microbiome and transcriptome studies of mangrove crabs in response to WSSV challenge will provide important insight into aspects of white spot disease dynamics, molecular mechanisms underlying host and holobiont response and host-pathogen interactions. The data generated using these omics technologies will be useful towards efforts to identify biomarkers associated disease status and disease resistance to support the development of disease mitigation and control strategies.	1. Information on dynamics of WSSV infection in S. serrata; 2. Microbiome community profile of S. serrata in response to WSSV infection. 3. Transcriptome profile of S. serrata in response to WSSV infection. 4. Identification of putative immune-related genes and biomarkers of physiological status of S. serrata associated with WSSV infection.	UPD	1. Local researchers, particularly graduate students and research staff, provided opportunities to develop capabilities in interdisciplinary studies and use of advanced molecular methods. 2. Research/Scientific community as results from these studies will provide further avenues for research related to the study of viral disease in mangrove	1-May-19	30-Apr-22	ONGOING	15,101,598.00	1,710,272.20

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Harnessing Emerging Technologies for Mangrove Crab Culture and Resource Management: 'Omics Approaches, Web-based and Mobile Computing Technologies	Project 3. Validation of local practices with genetic marker base and GIS technologies to maximize use wild caught and traded mangrove crab juveniles (Old Title: CrabTECH: Enhancing Mangrove Farm Productivity thru Genetics and Information Technology)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This study involves the deployment of genetic marker-based and GIS technologies to fisher communities and traders in Luzon, Visayas and Mindanao through workshops, and further needs assessment at the ground level. This would allow the validation of the effectiveness of new technologies side-by-side with local practices on juvenile species identification and mangrove crab site selection, develop a network of stakeholders that are willing to adopt new technologies, and assess the impact of these interventions to farm productivity and efficiency.	(1)An impact assessment report on genetic marker-based and GIS technologies and a compendium of local practices in juvenile species identification and mangrove crab site identification; (2)Database and network of mangrove crab stakeholders in the country that adopt new technologies and with updated knowledge in molecular biology and information technology; (3)A mangrove crab stakeholder website and database featuring an online CrabMAP updated regularly through data-mining algorithms and a nationwide network of contributors, and a feedback system on new technologies.	DLSU	Regulatory Bodies, LGUs, Research and Academic Institutions, and the General Public.	1-Aug-19	31-Jul-22	ONGOING	4,606,476.00	731,723.84
Mussel Biotechnology Program (Old Title: Biotechnological Utilization of Philippine Green Mussel Perna viridis (Mussel Biotech Program))	Project 1. Development and Characterization of Bioactive Protein and Lipid Products from Mussels (Proj. 1 Extraction and Characterizatio of Bioactive Protein and Lipid from Mussel)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The study will look into the potential of mussel as a source of lipids with anti-inflammatory activities and nutritional supplement. The final product will be encapsulated lipid fraction or lipid mix that has anti-inflammatory activities and nutritional benefits and is fit for human consumption and incorporation into food systems.	1. Efficient method for isolating bioactive peptides and lipid 2. Isolated peptides with antioxidant and antimicrobial properties 3. Extracted lipid or fraction with anti-inflammatory properties 4. Shelf-stable bioactive peptide and encapsulated lipids.	UPV	The results of the project will be beneficial to the general consumers; mussel farmers, researchers, and food supplement industry partners	1-Jan-19	31-Dec-21	ONGOING	17,486,760.00	2,586,332.18
Mussel Biotechnology Program (Old Title: Biotechnological Utilization of Philippine Green Mussel Perna viridis (Mussel Biotech Program))	Project 2. Extraction and Utilization of Mussel Glycogen (Proj. 2 Utilization of HAB Affected Mussels for Biotechnology Applications)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project aims to extract and utilize glycogen from mussels for food and non-food applications	1. Efficient method for extracting and purifying glycogen from green, brown and charru/black mussels 2. Purified glycogen for molecular biology applications 3. Food grade glycogen	UPV	The results of the project will be beneficial to the general consumers; mussel farmers, researchers, and food supplement industry partners	1-Jan-19	30-Jun-21	ONGOING	10,999,779.00	2,199,747.36
	Amaranthus spinosus Leaf Meal as Potential Protein Source for Nile Tilapia (Old Title: Utilization of Amaranthus spp. Weed as an Alternative Feed Ingredient for Tilapia Aquaculture)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The proposed research is expected to produce quantitative result on the nutritional quality of Amaranthus spinosus Leaf Meal (ASLM) for growth performance, nutrient utilization, carcass quality, proximate composition and digestibility of Nile tilapia (Oreochromis niloticus).	1. Publication 4 Scientific papers for ISI/Scopus and other International refereed journals 1 Paper Presentation to scientific conference 2. Products 1 Amaranthus spinosus Leaf Meal 1 Amaranthus spinosus Protein Concentrates 3. People and Services 30 Fishfarmers trained on the utilization of Amaranthus spinosus leaf meal in feed for Nile tilapia 2 MS students 2 Ph.D. students 4. Places and Partnership 1 MOU 2 Experimental sites established	ISU, USC	Research and Academic Fisheries Institutions, Extensionist, Tilapia hatchery operators/growers and policy makers	1-Oct-18	31-Mar-21	ONGOING	4,950,318.00	988,023.96
	Application of exogenous metabolites in improving soft-shell mangrove crab production (Old Title: Biotechnological Strategies in Improving Soft-shell Mangrove Crab Production)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The molting process of crustaceans involves complex metabolic pathways that rely on the balance of metabolites (biogenic amines, neuropeptides, and other signal molecules) to effectively regulate the molting process. By introducing exogenous metabolites (i.e. biogenic amines or terpenoids), this balance could be shifted towards the occurrence of precocious molting and thus translate into more efficient and synchronized molting events for the production of soft-shell crabs.	1. Protocols and technologies for the mode of delivery, and frequency of application of exogenous biological metabolites for optimum molting rates. 2. Formulated feed with identified compound with the most active effect on precocious molting of soft shelled crabs. 3. Increased precocious molting rate of marketable size soft-shell mangrove crabs (50-80 grams) by 50% 4. Acceptable levels of residual exogenous compound application for human consumption 5. Rapid method for determining product quality (UV-VIS) 6. Trained fisherfolk (KASAMA members) involved in soft-shell crab production to use developed strategies 7. Improved production rate of soft-shell crabs (~40-50%)	UPV	1. Small scale farmers/fisherfolk as future adaptors of soft-shell crab technologies. 2. Current adaptors of soft-shell crab technologies.	1-Dec-18	30-Nov-21	ONGOING	4,997,018.00	826,945.43
	Backyard Tilapia Farming Project (Tilapia Para sa Pamayanan)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The project will be implemented by the Laguna State Polytechnic University in cooperation with the Batangas State University and LGUs. It is intended to meet the immediate needs of the communities in terms of protein source from fish and increase their disposable income. Financial and technical know-how will be provided to the fishfarmer cooperators and the respective LGUs.	Trained 20 tilapia fishfarmer cooperators in Laguna and Batangas on tilapia farming and tilanggit production	LSPU-LB	20 Tilapia pond operators in Laguna and Batangas, Local Government Units, Households in Laguna and Batangas	1-Jul-20	30-Jun-21	NEW	1,384,888.80	1,384,888.80
	Conservation and Aquaculture Research and Development Project for Glossogobius giuris (Biyang Puti) in Naujan Lake (GoBy Project)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Glossogobius giuris (Bar-eyed Goby, White Goby) is an anadromous species of goby that are widely exploited for food in many countries. It is also used as an aquarium species and can attain a maximum size of 30-45 cm. In the Philippines, it is known to occur in rivers and inland lakes such as Laguna Lake, Taal Lake, Lake Mainit, and Lake Lanao, and Naujan Lake. From Naujan Lake, the fish is processed into dried fish. Relative to the fresh fish as food, dried biya is considered a delicacy fetching higher prices and adding value to fishermenâ€™s economic gains. There is, however, an equivocal taxonomic identity of the species. Recent studies on genetic diversity of G. giuris using isozyme, indicated high diversity among populations indicating limited gene flow between populations pointing to the need for area-based conservation measures for the species (Ardestani et al., 2014). Given the amphidromous nature of the taxa (Larson et al., 2016), and its wide distribution (Dihn et al., 2017), population dynamics may be assumed stable. Fish catch survey within the lake done by Urate et al.(2016) however, showed seasonality of catch possibly indicate dwindling population. This project will contribute to the growing body of knowledge on the biology and ecology of the species towards its conservation. Aspects of aquaculture towards the development of cultivation protocols will be dealt with in relation to its biology. Overall, this project is anticipated to contribute to the biodiversity conservation measures for Naujan Lake National Park with a balanced view of the species ecology and its commercial potentials.	The project is expected to provide baseline for the conservation and management of Naujan Goby population as well as develop the basic protocol for pond culture of the species. 6Ps Publications 3 Scientific Papers; 5 Presentations; 1 book; 2 Information Bulletins People Services 1 graduate and 5 undergraduate thesis students; at least 10 aquaculture farmers Places and Partnerships Mindanao State University Marawi (MSU Marawi), University of the Philippines Diliman Philippine Genomics Center (UPD-PGC), UP-MSI, Naujan Lake Protected Ares Management Board (NLPAMB), Provincial Government of Oriental Mindoro (PGORM), Bureau of Fisheries and Aquatic Resources MiMaRoPa (BFAR MiMaRoPa), and University of the Philippines Los Banos (UPLB) Policy link with communities and the Naujan Lake Protected Area Management Board (PAMB) for presentation of the possible rarity of the goby species in Naujan Lake 2Is Economic Impact technology development in aquaculture of the species will increase options for livelihood for 10 cooperating farmers Social Impact Fisherfolk community will develop the attitude to conserve and achieve the harvesting of goby as a sustainable bioresource.	MinSCAT	The project will benefit the academe for producing basis for population study. This project will benefit fish farmers of the 30 BFAR-registered aquaculture farms in Oriental Mindoro who are target adopters of the technology. The students of the Institute of Fisheries of MinSCAT will also be benefited through enhancement of technical skills on fish breeding and aquaculture production of white goby.	1-Jan-21	31-Jan-23	ONGOING	10,946,617.60	5,986,684.13

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Development and Validation of Mussels Automated Depuration System (MADS) (Old Title: Validation and Pilot Testing of Mussels and Oysters Automated Depuration System (MOADS) in Vulnerable Areas of Region III)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	This project aims to develop Mussel Automated Depuration System (MADS) for large volume production. It is a mechanism to control and manage the whole operation of depuration process. The process will be automatically monitored and appropriate action will be applied by the system. It will aid the operators to determine the optimum depuration time. The project has two components: (1) automation of the UPV recirculating depuration system based on the MADS technology developed by BPSU, with emphasis on its cost-effectiveness and applicability; and (2) experimental confirmatory trials of MADS to verify the effectiveness of the technology in reducing or eliminating bacterial count at allowable limits.	Automated UPV depurator system Design with MADS technology of BPSU Effcient & Effective MADS Low Mortality Rate of Mussels SMS	BPSU	Beneficiaries include mussel farmers, entrepreneurs, processors, researchers, technicians/extensionists, policymakers, and consumers.	1-Oct-19	31-Mar-21	ONGOING	4,064,121.64	3,089,339.16
	Development of Colloidal Gold Nanoparticles (AuNPs) Immune Assay for Rapid Detection of Bacterial Pathogens in Freshwater Tilapia Aquaculture (Old Title: Development of Colloidal Gold Nanoparticles (AuNPs) immune Assay for Rapid Detection of Different Bacterial Pathogens Causing Disease Problems in Nile Tilapia Industry)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The project will be implemented with two phases: For Phase 1, this stage will focus on thedevelopment and optimization of colloidal gold nanoparticles (AuNPs) immune assay detection kit for rapid detection of different bacterial pathogens causing disease problems in Nile Tilapia industrywith 4 major activities that will be done as follows: 1) isolation of different bacterial pathogens infecting Philippine tilapia industry; 2) standardization and optimization of polyclonal antibody production of each isolated pathogenic bacteria; 3) development and optimization of colloidal gold nanoparticle to be used as immune assay in the detection of different isolated pathogenic bacteria; 4) development and optimization of the protocol on the use of colloidal gold nanoparticles as rapid detection kit for the different bacterial pathogens in tilapia. For Phase 2, the project will focus on the prototyping, laboratory and field testing of the developed detection kit (RDK). Two major activities will be done including evaluation on the efficiency and accuracy of the detection kit and determination/optimization of the shelf-life of detection kit developed. The economics of production on the use of the developed products will also be determined after the laboratory and on farm testing trials.	1. Publication: 1 Paper for presentation in the Scientific Forum, 1 Paper for publication in the Scholarly Journal 2. Patent: 1 Patent on Colloidal Gold Nanoparticle Immune Assay Detection Kit 3. Products: 1 Rapid Detection Kit against specific bacterial pathogens in tilapia 4. Places/Partnership: 3 Partnerships (DMMMSU, ISU, and BFAR) 5. People/Services: 2 Undergraduate Students, 1 Graduate Student	CLSU	Tilapia farmers, researchers, educators, extension workers, students, consuming public	1-Jun-18	31-Aug-20	COMPLETED	4,996,472.00	748,670.92
	Development of Cost-effective nano(zeolite-silica) Composites for the Removal of Pollutants from Water and Soil for Freshwater Tilapia Aquaculture (Old Title: Development of Cost Effective Nano Materials for the Removal of Pollutants from Water and Soil Tilapia Aquaculture Production)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The project will focused in the development of nanochar for aquaculture purposes. The selection of various indigenous materials suitable for the production of nanochar that can be used for the aquaculture industry will be the first phase of the project.	1. Publication: 1 Publication in a scholarly journal (ISI, Scopus Journal), 1 Paper presentation to scientific Conferences 1 IEC on Production of nanoremediation of soil and water for better tilapia production 2. Product 1: Pelletized nano (zeolite-silica) composite Char 3. Patent: 1 Nanochar product 4. People and Services: 2 MS and 1 PhD 5. Places and Partnership: ISU Experimental Station, CLSU-CF, BFAR	CLSU	Tilapia farmers, researchers, educators, extension workers and students	1-May-18	31-Jul-20	COMPLETED	4,998,937.00	523,902.00
	Development of Propagation Protocol for Clarias macrocephalus Towards its Conservation (Old title: Evaluation of Reintroduction of Clarias macrocephalus through Conservation Genomics)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project will apply translocation experiments in controlled systems to test whether functional genetic variation is a good predictor for long-term introduction success or whether transcriptional profiling can predict short-term acclimation and survival. It will conduct experimental re-introduction of Clarias microcephalus in Pangasinan and Panay Island and develop a propagation protocol towards its conservation.	Phase I â€¢ Assembled transcriptome for the C. macrocephalus from Cagayan and Agusan population. â€¢ Identification of differentially expressed genes (DEGs) of the Cagayan and Agusan catfish population and their functions Microsattelite markers and single nucleotide polymorphism (SNP) markers Phase 2 â€¢ Identify functional differences that are related to important physiological processes and responses to environmental stressors; this can be used in the prediction of specific trait response upon reintroduction and will enable one to choose appropriate source of population for reintroduction. Phase 3 â€¢ Performance of the identified catfish population from Phase 2 without competition and under competition; comparison of the transcriptome response with or without competition	UPV	Aquatic ecological scientists and managers as well as fish farmers.	1-Jan-20	31-Dec-22	NEW	7,715,835.80	3,070,714.40
	Enhanced Aquaculture System for Genetically-Improved farmed tilapia (GIFT) Towards Improved reproductive Performance of Broodstock and Sustainable Supply of Quality Fry and Fingerlings	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Despite the fast-growing trait exemplified among GIFT strains, several constraints are associated with the reproductive performance of the GIFT. The seemingly poor reproductive performance of the GIFT was also reported by Yoshida et al. (2015), Ansah et al. (2014), Biswas et al. (2014) and Campos-Mendoza et al. (2004). Large number of broodstock are thus required to offset the problem on low reproductive performance to produce quality fry and fingerlings and poor survival to reach to marketable size which poses positive impact on the efficiency and profitability of tilapia industry in the country. Therefore, aquaculture scientists and researchers are encouraged to optimize and improve the current culture strategies that could best enhance the health and nutritional status of the GIFT for improved reproductive performance.	Publications: 1 Peer-reviewed journal articles 1 Manual on Broodstock Management (1) 1 Manual on Culture System for Fry/Fingerling Product: 1 Enriched aquafeed formula for broodstock 1 Alternative aquafeed formula for fry/fingerling Patent Utility Models: 1 Enriched broodstock aquafeed 1 Alternative fry/fingerling aquafeed People and Services Student Mentorship Training of broodstock operators Places and Partnerships: UP Visayas/UPLB-Biotech Central Luzon State University GIFT-Feed Mix Broodstock Hatcheries	LSPU	Hatchery & Grow-out Operators/ Fishfarmers, Students, Researchers, and Extentionists	1-May-18	30-Apr-21	ONGOING	4,994,854.00	615,767.33

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Evaluating IMTA as an Approach to Disease and Environmental Management for Sustainable Culture of Penaeus monodon in Northern Mindanao (Organic Farming Systems for Disease and Environmental Management towards Sustainable Penaeus monodon Pond Aquaculture)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will contribute in providing scientific-based technical strategies of improving the culture condition in P. monodon ponds using eco-based methods of production. This study will contribute in mitigating deteriorating environmental conditions and disease occurrence through biological population manipulation centering on IMTA and algal remediation. It is the ultimate goal of the project to evaluate and develop a straight forward protocol for best IMTA management practices that will assist in preventing disease occurrence and in rehabilitating the environment towards ecological balance in P. monodon aquaculture. Moreover, the aim is to evaluate the profitability IMTA that are yet to be clearly demonstrated. The long-term contribution of this study will be its beneficial impact on the revival of the P. monodon industry as well as generation of jobs and revenues from improved shrimp production in Mindanao. Likewise, the purpose is to develop IMTA techniques for sustainable P. monodon production.	â€¢Increased production by 10-15% from baseline production of 0.5-1.0 ton/hectare/year â€¢Soil and water quality profile in IMTA pond-based aquaculture systems in P. monodon â€¢Bio-economics of an IMTA pond-based shrimp farming/technology â€¢Biological pond profile (pathogenic and non-pathogenic microbial species, microalgal species) â€¢Pond-based IMTA protocol for P. monodon culture â€¢Reduced commercial feed cost of up to 30% from the baseline production of 60% of the total production cost, hence increase profitability â€¢Policy recommendation on the use of IMTA pond-based technology as management option in sustainable P. monodon production	MSU-Naawan	Shrimp farmers, LGU, BFAR, researchers, academe, other aquaculture stakeholders and practitioners	1-Oct-19	30-Sep-21	ONGOING	12,028,364.38	6,173,358.52
	Evaluation of provitamin B1 as agent to reduce feed cost of practical diet of the Nile Tilapia and Milkfish (Old Title: Evaluation of Benfotiamine as Agent to Increase Carbohydrate Utilization in the Nile Tilapia and Milkfish)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The project will be done in two years. During the first year, initial evaluation will be conducted on the Nile tilapia and milkfish. Fish fry will be fed the control diet with a normal carbohydrate amount of 30%, a diet with high carbohydrates (HC, 45%) and a diet with HC (45%) supplemented with provitamin B1. The control diet will contain about 30% protein, 30% carbohydrates and 4000 kcal kg-1 energy while diets HC and HCB with 45% carbohydrates. All the rest of the ingredient will be similar except carbohydrate content and the provitamin B1 added at 3.0 %. Parameters to be estimated will be growth (final body weight, weight gain and specific growth rate), feed utilization efficiency (food conversion efficiency, protein efficiency ratio, lipid and protein deposition), glucose tolerance test (GTT) and stress test (ammonia, extreme salinities, temperature) to know whether provitamin B1 also results in enhanced immune response in the Nile tilapia and milkfish. Changes between the transcriptome of each treatment will also be monitored by RNA-seq.	1. Publication 2 Publications in an ISI or peer-reviewed journals 2 Paper presentations to scientific Conferences 2. Product Formulated feeds with provitamin B1 3. Patent (none yet) 4. People and Services 1 MS Student 5. Places and Partnership (none yet) 6. Policy (none yet)	UPV	Tilapia and milkfish fish farmers, researchers, extension workers, and students	1-Jul-18	30-Jun-21	ONGOING	4,819,091.20	1,044,433.61
	Field Testing of LAMP Detection Kit for AHNPD	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The LAMP assay has been used in the point-of-care diagnosis of some pathogenic diseases in humans. In fact, this type of assay is highly applicable to all types of detection assays that use DNA as biological samples as long as specific primers have been designed, tested and well established. This technology is extended to the detection of Philippine isolates of the V. parahaemolyticus, a bacterium which have been found out to have a plasmid that encodes certain toxin that cause AHPND, and ultimately caused severe mortality and injured the Philippine shrimp aquaculture industry. As efforts coming from the government and from researchers to improve the countryâ€™s shrimp industry increase, the field of diagnostics is expected to grow as well. This simple, low cost and rapid diagnostic kit may readily be used by research facilities, universities, government agencies and large/small scale shrimp farms with interest in disease detection in the laboratory or field.	1. Production of the kit and fabricated heatblock machine 2. Nine (9) adoptors of the JAMP Alert AHPND Detection kit and heatblock machine 3. Field testing and a technology manual with costs and returns analysis	UST	1. Shrimp hatchery operators â€“ the optimized PCR and LAMP protocols can be used for screening of wild broodstock for the presence of the pathogens prior to their use for spawning; thus, asymptomatic carriers can be easily identified and discarded. 2. Shrimp farmers â€“ these molecular diagnostics protocols can be used for routine screening of the culture stock to detect early signs of disease; thus, immediate management procedures can be undertaken to mitigate heavy losses due to heavy infection. 3. Diagnostic laboratories â€“ these protocols particularly the publication of how-to-manuals will be of significant use to these laboratories since these have been tested under Philippine conditions. In addition, these how-to-do manuals on disease detection in shrimp will facilitate the establishment of mobile disease diagnostic laboratories, which the	1-May-19	30-Apr-21	ONGOING	4,999,996.00	1,990,881.00
	FISH ARK Project for Taal Lake: Direction for Conservation of Endemic Freshwater Fish Sardinella tawilis	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Sardinella tawilis is one of the most economically important freshwater resource in Taal Lake sought after by locals and tourists. The fish is traditionally caught with gillnet, although illegal fishing gears such as trawl net, motorized push-net and the use of â€œsuperlightâ€ have also been used (Mutia et al., 2018; Mutia et al., 2004). Due to its endemicity and popularity to tourists as a local cusine, â€œtawilisâ€ commands a higher price and demand compared to marine sardines. This led to overfishing and exploitation of fish in Taal Lake. Since the publication of its inclusion to the IUCN red list, fishing bans and stronger enforcement of laws/ policies on the use of illegal fishing gears are currently being implemented to prevent further decline of this species.	By the end of the project, the project is expected to produce a protocol in proper rearing of Sardinela tawilis in form of a technical bulletin	UPLB	The project can help in conservation of tawilis especially during disasters such as explosion of Taal Volcano by isolating a healthy population in captivity. This project can also open a new path in fisheries research that would benefit the â€œtawilisâ€ economy and fisheries research. For example, inland aquaculture for â€œtawilisâ€tan be developed once this is successfully transported and kept in captivity which is a new potential business venture for local aquaculturists. Robust and comprehensive research can also be done in laboratories once â€œtawilisâ€s acclimatized in controlled condition which can help us understand biology, physiology and life cycle of â€œtawilisâ€	1-Mar-20	28-Feb-21	NEW	3,000,000.00	3,000,000.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	GeM-Phil: Genetic Characterization of Macrobrachium populations in the Philippines for Broodstock Development and Seed Production	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will map the genetic resources of M. rosenbergii in the Philippines through comparison of the mtDNA sequences from shrimp collected from various places in the country and discovery of biomarkers related to growth and sexual differentiation. Through this project, it is envisioned that by identifying suitable populations of M. rosenbergii for subsequent broodstock development, a carefully laid out blueprint is implemented to ensure continuous production of good quality fry for the development of a sustainable aquaculture of M. rosenbergii in the Philippines.	â€¢Appropriate/Fit Macrobrachium rosenbergii strain will be identified, developed, produced, and maintained as quality broodstock by the project for potential freshwater prawn hatchery operators in Palawan â€¢High quality Macrobrachium fry will be produced and maintained by the project for selective breeding in Palawan â€¢Sufficient data to prove that Macrobrachium rosenbergii is an indicator species of good water quality	WPU	Freshwater prawn hatchery operators, Population geneticists, Freshwater prawn farmers, Researchers, and Policy makers	1-Oct-20	30-Sep-22	NEW	10,858,430.40	7,327,715.20
	Improvement of Philippine Penaeus vannamei for Enhanced Growth and White Spot Syndrome Virus Resistance through Selective Breeding	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Philippines has been proud of its contribution to aquaculture improvement through the creation of GIFT tilapia by genetic selection. Similar system of approach will be employed in the current project to develop a superior P. vannamei strain that are selected for better growth and enhanced disease resistance against WSSV. Output of this work is intended for the use of the Philippine shrimp growers and for the Philippines to be engaged in the global trade of superior strains of P. vannamei broodstocks. The geographical location of the Philippines put this country to an advantage edge among the countries of the ASEAN region since this country serves as a transit hub of distribution of traded goods that could include shrimp broodstocks. The location of the Philippines permits easy access to Hawaii, mainland US and Guam to obtain founder stocks of P. vannamei broodstocks that could be subjected to further breeding selection for further strain improvements. As soon as the superior lines of P. vannamei broodstock be developed, the country could now engaged in marketing and distribution of this commodity to the ASEAN region including China which is considered as the major shrimp producing regions in the global context.	â€¢Culture of foundation families of P. vannamei from North America (USA) established in the Philippines â€¢Optimized broodstock rearing, breeding and hatchery protocols for P. vannamei in the Philippines â€¢P. vannamei broodstocks exhibiting traits of better growth performance and enhanced resistance against WSSV	UPV	The target beneficiaries of the project are the various sectors of the shrimp industry such as shrimp growers and hatchery operators.	1-Dec-18	30-Nov-21	ONGOING	29,881,443.00	1,968,843.20
	Maximizing Pond Use through Mangrove Crab Fattening Cum Fish Culture to Improve the Livelihood of Farmers (Old Title: Mangrove Crab Fattening in Northern Iloilo to Improve the Livelihood of Farmers)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Polyculture of crabs and milkfish / siganid is ideal because there is no competition for food and space among the animals. Because the fish feed on plant matter, they are inexpensive to culture. Although selling the fish after several months of culture period will give the farmers additional income, the fish can also be their source of food. The culture system to be introduced in this project is applicable for both small and medium â€“ scale business enterprise. This is a much improved system maximizing the use of the pond through polyculture of crab and an herbivore and/or omnivore fish, and crab fattening in perforated plastic boxes in the same pond compartment.	â€¢Polyculture of crabs and fish, and crab fattening set up at NIPSC established for demonstration â€¢Appropriate technologies disseminated through training and demonstration on site to farmers, academe and other stakeholders; â€¢ Number of participatory on farm trials by farmers â€¢Number of farmers who adopted the appropriate or improved fattening technologies before the project ends not lower than 5 â€¢Income of farmers that adopted the technology in their own site increased by at least 20%	NIPSC	Target beneficiaries are the pond operators and traders. Researchers and those from academe (fisheries faculty and students) can also benefit from the results as basis for further studies; they can also be instrumental in disseminating the technology.	1-Jul-20	30-Jun-21	NEW	1,935,525.00	1,935,525.00
	Medium Chain Fatty Acids and Mannose Polysaccharide from Coconut as Dietary Supplement to Promote Growth and Improve Health of Cultured Saline Tolerant Strain of Tilapia nilotica	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The proposed research work will involve the utilization of medium-chain rich coconut oil and Mannan polysaccharide as bioactive feed additive to improve health and promote growth of seawater Nile Tilapia. Optimization of dose and blend of Coconut oil with soyabean oil as dietary supplement to tilapia as to promote growth and improve health condition of this fish will be done. The work would also evaluate the production and use of Mannan polysaccharide from coconut and dos-response will be optimized as to maximize the effects of this bioactive additive in improving the growth performance of tilapia.	1.Optimum dose of coconut oil to promote better growth and efficient feed conversion in saline-tolerant strain of Oreochromis niloticus 2.Mannose polysaccharide with bioactivity to promote better growth of saline-tolerant strain of Oreochromis niloticus 3.Probiotic isolated from tilapia gut that act in tandem with medium chain fatty acids	UPV	Tilapia growers, fish cage culture operators, feed companies, consumers, LGUs, and entire aquaculture industry	1-Sep-20	31-Aug-22	NEW	4,797,497.60	2,425,308.80
	Padina sp. (Lap-lapayag) as an Alternative Immunobooster for Tilapia Health Management	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Use of immunobooster is a unique approach for fish culturists as they undertake methods of controlling disease losses in their facilities. The interest in using this approach is heightened by the problems of viral, bacterial, parasitic and fungal diseases that are limiting factors in culture at many fish farms, hatcheries, and aquaculture stations. Moreover, a serious problem is that few approved chemotherapeutics agents are available for use in food fish because of growing concerns for consumer liability and for accumulation of substances in the environment. Use of antibiotics in fisheries is extensive, and there is concern about increases in antibiotic-resistant strains of bacteria in the aquatic environment surrounding locations where the drugs are used. Indeed, while these antibiotics effective in the treatment or control of some diseases agents, additional methods are needed to control these and other fish diseases. Problems with present antibiotic, drug, and chemical treatments to prevent diseases in fish, set the stage for this newly concept in disease prevention. The proposed research is expected to produce quantitative result on the utilization of Padina sp. as an alternative immunosbooster for tilapia health management. It is assumed that the introduction of Padina sp. extract via immersion, injection or oral administration will enhance the survival, immune response, and haematological parameters, increase resistance against bacterial infection, and enhance stress response of tilapia.	1. Product: Hot-water Extracts of Padina 2. Publication: a. Produce 4 research article for publication for ISI/Scopus and other International refereed journals b. At least two paper presentation to scientific conference 3. People and Services a. Trained at least 30 fisherfolk on the utilization of Padina sp. as an Alternative Immunobooster for Tilapia Health Management 4. Partnership: Forged at least one linkage/partnership 5. Places: Established 1 concrete experimental set-up	ISU	Fish farmers, researchers, consuming public	1-Apr-18	31-Mar-21	ONGOING	4,939,332.00	437,904.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Pilot Scale Production of Primary Processed Philippines Green Mussel, Perna viridis	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	This project is the next phase of the primary processing project (Project 2) of the Post Harvest Program for Sustainable High Quality Mussel Products Program. The developed protocol for cleaning and live handling/transport of mussel as well as the process of blanching and use of additive for the development of primary processed mussel products (i.e., chilled-and-frozen-blanched whole, half-shell, and shucked mussels) will be tested at pilot scale level. Pilot scale production is an intermediate step between bench-scale production and full-scale commercialization. It is scaled-down version of the commercial operation, which aims to evaluate the efficiency of the developed technology when run in bigger volume. Subjecting the developed technologies at pilot scale level before going full scale at commercial level will identify and address many possible problems that can be encountered during technology commercialization.	Year 1 1. Verified and optimized protocols at pilot scale production (100-200kg mussel input per production cycle) of chilled (blanched, in shell) and frozen (blanched, in shell; and blanched, half-shell); Year 2 2. Information on mussel product quality at pilot scale production; 3. Time and motion data for 100 kg and 200 kg mussel inputs per cycle per product; 4. Product quality and nutritional profile of chilled and frozen blanched mussels; 5. Product shelf life/'Best before date' of each product optimized; 6. Financial and economic viability of the products (Cost and return sensitivity analyses); and 7. Verified business plan for the establishment of small-scale mussel processing plant engaged on primary processed chilled and frozen mussel products	UPV	The results of the project will be beneficial to improve the Export Market, Food Processing Industry (Medium/Large-scale), Small-scale Enterprise or Village Processors, Hotels, Restaurants, and Fish & Fishery Product Retailers	1-Apr-18	30-Jun-20	COMPLETED	4,999,828.00	872,759.40
	Pilot-testing an LGU-based Common Service Mussel Depuration Facility (Old Title: Pilot Testing the Mussel Depuration Facility and its Operation Management Plan in Bacoor City (Establishment of an LGU-led Mussel Depuration Facility))	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project proposal is a continuation of the newly completed project â€œProgram B, Project 5: Production of Safe Mussels Using EnvironmentFriendly Culture Methods in Sites Near Urban Areasâ€ (Pugay, 2018) implemented in Bacoor Bay. The completed project had established the advantage of longline culture method versus the traditional stake method, profiled the seasonal variations of the environmental parameters of Bacoor Bay, and had established a depuration facility in Bacoor City. This project will focus on the pilot testing of the mussel depuration facility in Bacoor Cavite by using the grown mussel in longline and stake method. It aims to assess the robustness of the depuration process and protocol, determine the financial viability using various marketing strategies for sustainability of the project. The will also pilot test the operation management manual output of the initial project to have a proper turn over of the facility. This project is in cooperation with DOST-4A who would like to make the depuration process a mandatory pre-processing activity of their Mussel Processing Project. Further, the LGU of Bacoor is planning to integrate the Mussel industry into their tourism plan. They are establishing a â€œMussel Tourâ€ involving a stopover in the Mussel Depuration Facility to highlight their effort on producing quality mussels. The cooperation of these institution ensures the sustainability of the facility thus the need to institutionalize the depuration operations in Cavite.	¡ Food Safety Certificate from BFAR-NFRDI ¡ Financial Plan for depuration (Cash flow plan, profit plan, production and cost plan, and loan access plan) ¡ Marketing Plan for depurated mussel from Bacoor Bay ¡ Refined Operational Management Manual for Bacoor City Depuration Facility ¡ IEC materials	CvSU	Beneficiaries include mussel farmers, entrepreneurs, vendors, middleman, processors, researchers, technicians/extensionists, policy makers, and consumers.	1-Jan-19	31-Dec-20	ONGOING	3,981,200.00	963,158.49
	Product Quality Enhancements of Novel Dietary Synbiotic Materials and Pilot Field Application in Milkfish Hatchery-Nursery Seedstock Production	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	Pilot testing of the project ...	1. Probiotic Fermentation Medium 2. Low-cost Endogenous Probiotic Powder 3. SB-E Aquafeeds for Hatchery-Reared Milkfish Fry	LSPU	The results of this proposed project will provide science-based information on the potential use of the novel aqua-synbiotic materials	1-Jan-20	31-Dec-21	NEW	4,995,000.00	2,997,962.50
	Refinement of Milkfish Nursery Culture and Development of Efficient Juvenile Transport Techniques (Old Title: Lowering Mid-Cycle Losses in Milkfish Aquaculture through Refinement of Nursery Management and Transport Techniques)	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	To support the industry, the DOST in 2013 funded research program entitled â€œEnhancement of Milkfish Broodstock Management for Production of Good Quality Fryâ€ that include projects on refinement of broodstock management to improve fry production as well as food enrichment of milkfish larvae and the adoption of the core-satellite hatchery schemes. Another DOST-funded program entitled Improved Grow out Technology for Sustainable Milkfish Industryâ€ focused studies on milkfish grow-out in both ponds and cages, feeds and feeding management including mechanization in milkfish grow out culture. Many of the factors contributing to low hatchery production (egg and fry) were identified and given solutions. However, the problems in the nursery phase of milkfish production was overlooked and was not given enough priority. Base on personal observations and farmer enquiry, about 50% of the milkfish produced in the hatchery are lost in the nursery stage on reasons like poor pond preparation, mortality as a result of stress due to transport, predation, etc. Normally, survival rate in the nursery averaged to a low of 20-40%. The loss incurred during transport from the nursery to grow-out ponds and especially to cages are not yet included. Thus, studies to improve survival in the nursery as well optimum conditions of transport from the nursery to	1. Increased fingerlings survival in the nursery (from 35% to 70%); transport survival (at least 30% increase) 2. Identified and established the optimum size of milkfish for transport and stocking in ponds and cages 3. Protocol for standard transport techniques of various sized milkfish 4. Provide support in the establishment of the milkfish tuna bait industry	UPV	Milkfish fish farmers, researchers, extension workers, and farm hands	1-Apr-19	31-Mar-21	ONGOING	4,921,051.20	1,379,232.00
	Species composition and seasonality of eels in the river systems of Northeastern, Luzon (Old Title: Species Biodiversity of Philippine Eel (Anguilla sp.): A Precursor for Management and Prospect for Sustainable Aquaculture)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project will be undertaken to provide benchmark data for the status of eel biodiversity in the country. Data that will be gathered in this project will be a strong instrument in the formulation or recommendation of policies for management and conservation for sustainable utilization of this fishery resource.	Maps on species abundance, plankton abundance, hydrological and physicochemical water quality of the different sites for eel gathering. Catch data and CPUE of different gear for eel gathering Protocol on eel conditioning and transport Policy recommendation on eel gathering and conservation	CagSU	coastal and estuarine communities, eel gatherers, policymakers	1-Apr-18	15-Nov-20	COMPLETED	4,996,676.00	136,857.71

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Utilization of Marine Diatoms as Dietary Additives to enhance the Omega-3 Fatty Acid Profile of Seawater Strain Tilapia nilotica	KRA 2: Poverty Reduction and Empowerment of the Poor and Vulnerable	The proposed research work will involve the optimization of marine diatoms supplementation to tilapia diets as to increase the levels of EPA and DHA incorporation to tilapia flesh. This research will assess at what period of grow-out the algae supplemented feed will be applied as to maximize the incorporation of EPA and DHA in tilapia tissue. Optimization of dose and frequency will also be done as to optimize the efficacy of the strategy in manipulating the fatty acid profile of Tilapia. Biological growth performance and the biochemical changes in flesh of these aquatic animals fed with the marine diatoms supplemented diets will also be evaluated.	1.Optimized dietary inclusion levels, frequency and period of application of Marine diatoms supplement to attain maximum bioaccumulation of EPA and DHA in saline tilapia flesh. 2.Diets containing Marine diatoms and its influence on carcass composition, sensory quality and health of tilapia.	UPV	Fisher folks/traders/feed industry; researchers/scientists, the general public and science in general.	1-Sep-20	31-Aug-22	NEW	4,911,489.68	2,358,912.60
Assisted Reproduction, Nutrition and Health Interventions for Enhancing Dairy Cattle Productivity and Milk Safety (Old Title: Science and Technology-based Interventions to Improve Dairy Cattle Productivity and Profitability in the Philippines)	Project 1. Application and Improvement of Embryo Transfer (ET) and Artificial Insemination Technologies as Tools Toward Achieving the Desired Number of Genetically Superior Breeder Dairy Cattle(Old Title: Value Chain Improvement and Sustainability for Dairy Cattle Value Chain Players)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Philippine dairy industry has been trying to increase its volume of milk produced for the past few years to cater the increasing demand of the Filipino people. However, increase in volume of milk produced has been slow with the low number of good quality dairy stocks as one of the main reasons. Introduction of Embryo Transfer and artificial insemination technologies to Philippine dairy farms are possible solutions to improve the quality of our breeding stocks to increase the production of good milk producers at a faster and more efficient rate given the long generation interval of dairy cattle. Embryo transfer (ET) is a technique wherein embryos are collected from superior donor cowsâ€™ reproductive tract and transferred to other females which will serve as surrogates until end of gestation. With this, we will be able to get multiple calves out of one donor cow in a year compared to only one or two calves.	¡ 3,555 Pregnant dairy heifers/ cows through ET and AI ¡ 3,200 hd genetically improved calves ¡ Technical Manual on improved ET and AI technologies ¡ Trained personnel to perform ET and AI	UPLB, CagSU, BISU, CMU, USeP, CLSU,	Dairy farmers ¡ Researchers ¡ Students	1-Dec-18	30-Nov-23	ONGOING	91,154,626.78	10,031,380.83
Assisted Reproduction, Nutrition and Health Interventions for Enhancing Dairy Cattle Productivity and Milk Safety (Old Title: Science and Technology-based Interventions to Improve Dairy Cattle Productivity and Profitability in the Philippines)	Project 2. Genetic Quality Assessment and Production Performance Evaluation of Dairy Cattle in the Philippines(Old Title: Developing a Sustainable Dairy Cattle Genetic Stock in the Philippines)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The primary dairy cattle breed is a cross of the Sahiwal and Holstein-Friesian breeds, which are not suitable under Philippine conditions. The Sahiwal-Holstein cattle produces only 10 L of milk per day in the Philippines. Considering it is a large-framed cattle it requires higher maintenance and also expensive to impregnate to proceed to lactation. In addition, these imported cows are very expensive costing about PhP 140,000.00 each. In other dairy countries purebred dairy heifers can cost as low as PhP 22,000.00 ($600) each. In addition, the Philippines lack a clear breeding strategy for the development and supply of productive local dairy animals, thereby resulting to the cyclical importation of Sahiwal-Holstein cattle. Knowledge of current production performance level, institutionalized recording system would enable the country to develop a breeding and selection program. Genotyping of animals and the use of marker assisted selection would enable us to efficiently select superior animals, thereby decreasing the generation interval, hence this project.	¡ Baseline performance data on existing dairy animals in the target regions ¡ Information on the genetic quality of existing dairy animals in the target regions ¡ Breeding strategy for genetic improvement formulated Database/ Institutionalized recording system for dairy farm performance	UPLB	¡ Dairy farmers ¡ Dairy cooperatives ¡ NDA ¡ Researchers	1-Dec-18	31-May-21	ONGOING	6,204,834.88	1,653,851.44
Assisted Reproduction, Nutrition and Health Interventions for Enhancing Dairy Cattle Productivity and Milk Safety (Old Title: Science and Technology-based Interventions to Improve Dairy Cattle Productivity and Profitability in the Philippines)	Project 3. Development of Farm-Specific Precision Feeding System and Forage Production Protocols for Increased Productivity and Profitability of Dairy Farms(Old Title: Utilization of Indigenous Forages as a Component of the Feed Ration in the Dairy Cattle)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Sustained production of corn silage and legume hay will ensure continued basal feed to be supplemented by some indigenous feedstuffs. In addition, crop residues and agri-industrial by-products can used as ingredients in cost-effective rations for different groups of dairy animals. Mapping the feed resource base in the different regions of the country and promoting their use in the formulation of formulated rations will ensure the sustained adoption of this feeding system. Considering operational sustainability, waste management system for TMR-based dairy enterprise also needs to be established. TMR production technology adapted to the Philippines setting is not yet available to the small-hold and semi-commercial dairy farms. Hence, establishment of standardized TMR production, quality control procedures and feeding management is timely and direly needed to contribute to the government's call to increased local milk production.	It is expected that after the completion of the project, cost-effective and precise rations (total mixed rations, TMRs) for specific dairy herds in different regions. Manufacturing protocols, quality assurance procedures, feeding systems and waste disposal systems will be made available to dairy farmers to increase their farm productivity and standard of living. After 1.5 years, the technology will be shared to pilot farms such as Samahang Maggagatas ng Batangas Cooperative (eg. SAMABACO) and other NDA assisted dairy farmers for onfarm trials. With SAMABACOs members, the TMRs developed at DTRI will be applied in different farms considering the available feed resources and different husbandry conditions. A policy that will promote feed supply reliability and reduced cost will be drafted and proposed.	UPLB	¡ Ruminant farmers ¡ dairy processors ¡ researchers ¡ students	1-Dec-18	30-Nov-21	ONGOING	17,394,745.74	2,757,999.41
Assisted Reproduction, Nutrition and Health Interventions for Enhancing Dairy Cattle Productivity and Milk Safety (Old Title: Science and Technology-based Interventions to Improve Dairy Cattle Productivity and Profitability in the Philippines)	Project 4. Development of Farm-specific Protocols for the Reduction of Subclinical Mastitis in a Dairy Enterprise(Old Title: Influence of Milking Preparation Procedures in the Degree of Subclinical Mastitis Levels in Selected Dairy Farms in South Luzon and Batangas - Development of Farm-specific Protocols for the Reduction of Subclinical Mastitis in the Small-Scale Dairy Enterprise)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Subclinical mastitis ranks higher in importance than clinical mastitis as the cause of low production in a typical dairy operation. There is an estimated loss of 1,500 pounds of milk per cow testing positive for the first time for subclinical mastitis (Kirkpatric, 2015). In the Philippines where dairying remain a fledgling industry, the main source of non-UHT milk are the small-holder farms, which keep from 1-100 head of dairy cows (BOI Report, 2011). The production of high quantities of good quality milk is hindered by constraints amongst which is subclinical mastitis. Contributory to this is the disparity of milking management practices amongst dairy producers. Poor udder health as related to high somatic cell counts ranks third as a major cause of involuntary culling in a dairy herd. Subclinical mastitis infections have no overt signs thus making it difficult to identify and detect. The milk remains visually normal and unaccompanied by udder changes such as pain and inflammation. Of the three major dairy herd problems, i.e. mastitis, fertility and lameness, mastitis is the disease that a well-planned health program can have the most economic impact on (Laven, 2013). However, to maximize effectivity of such a program, there is a need for a thorough recording of both subclinical and clinical cases, introduction of a higher level SCM control plan and its continuous monitoring and assessment. Variations in the methods of milking preparations at farm level, attributable to situational differences, are well-documented as a constraint in the production of high-quality milk.	¡ Reduced incidence of mastitis in dairy cattle ¡ Increased milk production through practice of the recommended management programs for farmers ¡ Increased income of farmers from buffalo milk production ¡ Developed protocols for the detection of mastitis ¡ Enhanced capability of local researchers, scientists and dairy technicians in the diagnosis and control of mastitis	UPLB	¡ Animal Breeders of private and government farms ¡ Researchers, professors and students in animal science and veterinary medicine ¡ Field Veterinarians/Animal Extension Workers ¡ Dairy Farmers	1-Dec-18	30-Nov-21	ONGOING	5,976,584.12	1,587,602.14

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Assisted Reproduction, Nutrition and Health Interventions for Enhancing Dairy Cattle Productivity and Milk Safety (Old Title: Science and Technology-based Interventions to Improve Dairy Cattle Productivity and Profitability in the Philippines)	Project 5. Establishment of a Farm to Consumer Milk Quality and Safety Assurance Systems(Old Title: Establishment of Milk Quality and Safety System from Farm to Consumers)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	At present, there are no available data on the quality of raw milk and dairy products that are produced locally. Neither there are locally established management and handling systems in the milking parlor to the processing plant and outlet stores that could ensure food safety. The proposed study will assess existing milking, handling, processing, transport and retailing practices of milk and milk products in the Philippines. Critical control points will be identified and proper intervention technologies will be developed to address issues on food safety.	ï¿· Profile on the quality of the locally produced raw and processed dairy products. ï¿· Manual for the production of safe and quality milk. ï¿· Interventions to address issues on milk safety.	UPLB	ï¿· Dairy cattle farmers in the target regions ï¿· Dairy processors ï¿· Distributors of raw milk and processed dairy products	1-Dec-18	30-Nov-21	ONGOING	9,256,458.84	1,473,634.05
Conservation, Improvement and Production of Central Luzon Native Pig	Project 1: Value Chain Analysis of Native Pigs in Central Luzon	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The study would develop a more comprehensive mapping that describes interacting and competing channels and a variety of final markets that is essential in capturing the complete picture of the native pig value chain.	â€¢Information on value chain of native pig in Region 3 (including the market map) â€¢Data on the inventory and distribution of Native pigs in Region 3 â€¢Technical inputs to policy on 1) support to native pig as a rural-based enterprise; 2) pricing scheme for slaughter and breeder native pig; 3) recommendations to improve value chain â€¢1 paper submitted for publication in scientific journal	CLSU	a. Native pig raisers b. researchers and development workers c. students d. consumers	1-Jan-20	31-Dec-20	NEW	1,231,541.92	1,150,845.00
Conservation, Improvement and Production of Central Luzon Native Pig	Project 2 Establishment of Foundation Breeder Stocks of Central Luzon Native Pig: Project 2.1 Phenotypic Characterization of Native Pigs in Highland Areas in Central Luzon	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Survey, collection and characterization of native pigs and recording of phenotypic and genotypic data. Parameters for qualitative traits or physical appearance and quantitative traits or physical measurements will be documented and recorded following the FAO Guidelines.	â€¢ Genetic and phenotypic characteristics of native pigs in Region 3 â€¢ Developed GIS map and database on CL native pig	TAU	a. Native pig raisers b. Researchers and development workers c. Students d. Consumers e. Market agents f. Local government	1-Jan-20	31-Dec-20	NEW	1,706,422.00	1,587,737.00
Conservation, Improvement and Production of Central Luzon Native Pig	Project 2 Establishment of Foundation Breeder Stocks of Central Luzon Native Pig: Project 2.2 Breeding and Selection to Establish Foundation Breeder Stocks	KRA 3: Rapid, Inclusive and Sustained Economic Growth	A nucleus farm of native pig will be established. Breeding objectives will be formulated based on the parameters important to the native pig farmers and also based on the requirement of the lechon processors. The results of phenotypic and molecular characterization of native pigs in Project 1 will be the basis of selection of foundation native breeders. Further evaluation of male and female breeder stocks will be conducted and the sperm of male animals will be evaluated based on visual and olfactory assessment of ejaculate, such as semen volume and sperm concentration, motility, and morphology. Preferably, males with acceptable physical characteristics, and sperm quality will be used as breeders based on the description of Rosenbloom (2000).	â€¢ Established foundation herd at PSAU â€¢ Established breeding and selection protocols â€¢ Produced foundation stocks populations of CL native pig	PSAU	a. Native pig raisers b. Researchers and development workers c. Students d. Consumers e. Market agents f. Local government	1-Jan-20	31-Dec-22	NEW	6,354,300.00	2,147,986.00
Conservation, Improvement and Production of Central Luzon Native Pig	Project 3: Performance Evaluation of Selected Native Pigs following the Most Common Feeding and Management Practices in the Area	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Breeder animals from the nucleus farm will be tested and evaluated at the multiplier farms based on their reproductive and growth performance.	â€¢ Reproductive and growth performance data of improved CL native pigs â€¢ Trade name/mark applied for registration at IPO â€¢ Established multiplier farm at PSAU â€¢ Established feeding and healthcare management protocols â€¢ Conducted techno-promotional activities â€¢ Trained 40 farmer co-operators on production and management of CL native pig â€¢ Established 4 private techno-demo farms â€¢ Developed techno-guide on â€œProduction of CL native pigâ€	CLSU	a. Native pig raisers b. Researchers and development workers c. Students d. Consumers e. Market agents f. Local government	1-Jan-20	31-Dec-23	NEW	4,177,066.00	289,793.00
Innovative Systems in Advancing Technology-Based Goat Production	Project 4. Roll-out of Technology-based Options in Region I, II, III, V, VII, VIII, XI, XII and CAR	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The different outputs including technologies, best practices, processes and enterprises developed from the other studies will be promoted among the stakeholders using the industry-accepted tech-transfer modality for goat, the Farmer Livestock School on Goat Enterprise Management (FLS-GEM). This will address the need for continuous promotion of technology-based options and is the function of Project 4.	1 copyright for FLS-GEM manuals Revised FLS-GEM manuals Vol 1&2 10 MOUs signed with various stakeholders for FLS implementation 6000 farmers trained on GEM 300 facilitators trained on FLS-GEM implementation	ISU	Goat raisers FGASPAPI LGUs and AEWs	1-Apr-17	30-Sep-20	COMPLETED	16,377,296.00	1,554,040.40
Strategic Interventions for Sustainable Production of Marinduque Native Pigs (Old Title: S&T Based Intensification and Pilot Demonstration of Integrated Services and Systems to Native Pig Production in Marinduque)	Project 1. Improvement of productive and reproductive performance of nucleus Marinduke breeders(Old Title: Enhancement of Nucleus Breeding Operation for Ensured Supply of Grandparental Stock of Marinduke Pig)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This proposed R&D program is an offshoot of the on-going R&D program on Conservation, Improvement and Profitable Utilization of Philippine Native Pig that improved the reproduction and production performances of Marinduke pig, an endemic native pig in Marinduque province. Moreover, this program is one of the priorities R&D to expand the benefits derived from previous native pig R&D and to further enhance the livelihood of native pig farmers in the rural farming communities.	â€¢ Breeding and selection protocols/strategies for improved litter size, growth, carcass quality, and adaptation ability â€¢ Economic and breeding values of litter size, growth, carcass quality, and adaptation ability â€¢ Predictive production and reproduction parameters and models â€¢ 250 Breeder Marinduke pigs â€¢ Performance data of breeder Marinduke pigs in the nucleus farm	MSC	ïƒ¼ Native pig farmers and Entrepreneurs ïƒ¼ Native pig consumers ïƒ¼ Institutional markets ïƒ¼ Academic professionals (Researchers and Faculty) and students ïƒ¼ Development planners and policy makers	1-Jul-18	30-Jun-21	ONGOING	15,939,040.00	2,455,454.00
Strategic Interventions for Sustainable Production of Marinduque Native Pigs (Old Title: S&T Based Intensification and Pilot Demonstration of Integrated Services and Systems to Native Pig Production in Marinduque)	Project 2. Performance and profitability testing of Marinduke pig at farmers field(Old Title: Proj. 2 Establishment of Multiplier Farms for Mass Production of Parental Stock and Commercial Stock of Marinduke Pig)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This proposed R&D program is an offshoot of the on-going R&D program on Conservation, Improvement and Profitable Utilization of Philippine Native Pig that improved the reproduction and production performances of Marinduke pig, an endemic native pig in Marinduque province. Moreover, this program is one of the priorities R&D to expand the benefits derived from previous native pig R&D and to further enhance the livelihood of native pig farmers in the rural farming communities.	â€¢ Institutional and private multiplier farms established for mass production of parental stocks â€¢ Production and reproduction performance data of Marinduke pig under multiplier farms â€¢ Breeding and selection strategies (selection criteria and mating system) applicable in multiplier farms â€¢ Data on economic and breeding values of litter size, growth, carcass quality, and adaptation ability under multiplier farms â€¢ Information on genetic combining ability and degree of heterosis in commercial stocks (terminal stocks) of Marinduke pig â€¢ Performance data of breeder Marinduke pigs in the nucleus farm â€¢ Parental/commercial stocks of Marinduke pig â€¢ Slaughter native pig for Lechon â€¢ Data on socio-economic contribution of native pig production in Marinduque â€¢ Linkages and networks established among academic and industry partners â€¢ Mobile application for online marketing of native pigs â€¢ Conducted technology and livelihood seminars and trainings â€¢ Trained MSC R&D workers, farmers, private entrepreneurs and LGU agri workers â€¢ IEC materials on native pig production, forage crop production, and feed quality enhancement technology	MSC	ïƒ¼ Native pig farmers and Entrepreneurs ïƒ¼ Native pig consumers ïƒ¼ Institutional markets ïƒ¼ Academic professionals (Researchers and Faculty) and students ïƒ¼ Development planners and policy makers	1-Jul-18	30-Jun-21	ONGOING	5,905,329.00	957,305.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Strategic Interventions for Sustainable Production of Marinduque Native Pigs (Old Title: S&T Based Intensification and Pilot Demonstration of Integrated Services and Systems to Native Pig Production in Marinduque)	Project 3. Sustainable production of feeds in support to Marinduke pig production (Old Title: Proj. 3 Large-scale and Consolidated Feed Resources Production and Range Management System for Marinduke Pig)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This proposed R&D program is an offshoot of the on-going R&D program on Conservation, Improvement and Profitable Utilization of Philippine Native Pig that improved the reproduction and production performances of Marinduke pig, an endemic native pig in Marinduque province. Moreover, this program is one of the priorities R&D to expand the benefits derived from previous native pig R&D and to further enhance the livelihood of native pig farmers in the rural farming communities.	â€¢ Nutrient requirement and feed formulations for Marinduke pig â€¢ Established fiveâ€"hectare forage plantation in the nucleus farm, and at least one-hectare forage plantation in multiplier farms â€¢ Data on land carrying capacity and biomass production of forage crops in multiplier farms â€¢ Silage processing and other nutrient-enhanced feed resources technologies for Marinduke pig	MSC	ï¾ Native pig farmers and Entrepreneurs ï¾ Native pig consumers ï¾ Institutional markets ï¾ Academic professionals (Researchers and Faculty) and students ï¾ Development planners and policy makers	1-Jul-18	30-Jun-21	ONGOING	13,895,079.00	1,707,515.00
Sustainable Production, Marketing and Utilization of Established and Improved Bolinao Chicken in Ilocos Region	Project 1. Genetic Improvement Porgram for Bolinao Chicken through Conventional and Molecular Approaches	KRA 3: Rapid, Inclusive and Sustained Economic Growth	To motivate and encourage small-scale farmers to venture in the production of native chicken and increase their income, there is a need to identify them phenotypically and molecularly and there should be a supporting production management strategy to attain productivity.	a. A compendium of the phenotypic characters of Bolinao chicken in Ilocos. b. Description of the population structure of Bolinao chicken in Ilocos. c. Baseline information of the existing indigenous practices.	MMSU	a.Policy makers b. Breeders c. Geneticist d. Researchers e. Livestock Farmers f. Students	1-Feb-18	31-Jan-21	ONGOING	5,571,619.00	1,800,802.21
Sustainable Production, Marketing and Utilization of Established and Improved Bolinao Chicken in Ilocos Region	Project 2. Sustainable Feeding and Management Systems for Bolinao Chicken	KRA 3: Rapid, Inclusive and Sustained Economic Growth	There is a need to improve the feeding and other production management systems to meet this growing demand and likewise the possibility of creating stable niche market of native chicken.	A. 1 Utility model for feed formulation and patent for feed ingredients B. Improved cultural management practices for Bolinao native chicken C. 2 Publications related to feeding and brooding and hatchery management for Bolinao native chicken	DMMMSU	a.Policy makers b. Breeders c. Geneticist d. Researchers e. Livestock Farmers f. Students	1-Feb-18	31-Jan-21	ONGOING	5,514,810.00	1,925,219.16
Sustainable Production, Marketing and Utilization of Established and Improved Bolinao Chicken in Ilocos Region	Project 3. Market Analysis and Product Development of Bolinao Native Chicken	KRA 3: Rapid, Inclusive and Sustained Economic Growth	To make the most of its potential, it is necessary to upscale the production and develop various marketing strategies through market analysis and product development. this study will provide a benchmark information of the key players in the marketing flow as well as existing policies in native chicken production. This relevant data will therefore be the basis in formulating strategies to better showcase the product.	A. Evaluated the supply chain of native chicken in Region I B. Gathered primary and secondary data of key players. C. Developed interventions marketing strategies and value-adding techniques D. Developed various marketing strategies and value-adding techniques. E. Established marketing channels of native chickens.	MMSU	a.Policy makers b. Breeders c. Geneticist d. Researchers e. Livestock Farmers f. Students	1-Feb-18	31-Jan-21	ONGOING	4,494,420.00	1,500,964.07
Sustainable Production, Marketing and Utilization of Established and Improved Bolinao Chicken in Ilocos Region	Project 4. Technology Transfer and Partnership with the Private Sector towards Sustainable Production of Bolinao Chicken (Old Title: Establishment of Model Farms Implementing the Package of Technology for the Production of Bolinao Chicken	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The establishment of techno-demo farm for Bolinao chicken showcases the economic viability and further creation of profitable entrpriseis necessary to assess the potential radiance of the generated research outputs.	A. Characterized prospect private partners in terms of their resources and trainings needed. B. Conducted training to capacitate farmers on how to mangae Bolinao chicken. C.Establish demo farm from Package of technology. D.Prepared training modules and conducted hands-on demostration to farmers. E. Implented the Package of technology and Monitored the dispersal of the Bolinao Native Chicken.	MMSU	a.Policy makers b. Breeders c. Geneticist d. Researchers e. Livestock Farmers f. Students	1-Feb-18	31-Jan-21	ONGOING	3,784,317.00	1,273,433.67
	Assessment of Feed Resources for "Sinirangan" Native Pig in Eastern Samar	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The potentials of the Sinirangan native pig as a resource to build rural farm enterprise is high, however, the unpredictability in production performance and variability of the quality of native pig products are major constraints to full utilization of its potentials. In addition to these is the unstable year round supply of feeds for the native pigs to sustain its potential and viability. It is therefore necessary that a stable feed supply and alternative feed resources available in the area be established for a year round production of Sinirangan native pigs.	The following baseline data will be generated: â€¢ Inventory of locally produced feed resources for native pigs â€¢ Location and land area devoted to the production of feed materials; â€¢ Estimated volume of feed resources for native pigs â€¢ Available land area for expansion of feed production â€¢ Critical inputs to native pig based rural enterprise building	ESSU	ï¾ Researchers, professors, students and swine breeding practitioners ï¾ Native pig farmers ï¾ Institutional markets	1-Aug-20	30-Apr-21	NEW	500,000.00	500,000.00
	Deployment and operationalization of Swine Cart: An E-Commerce System for Breeder Swine and Boar Semen (Old Title: Operationalization and Popularization of an E-commerce System for Breeder Swine and Boar Semen)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This proposed project is a continuation of the project entitled â€œDevelopment of an E-Commerce system for Breeder Swine and Boar Semen. The goal of the project is to deploy and operationalize the swine cart as an E-commerce platform for selling breeder pigs and boar semen.	Deployment of the web-based information system â— Web-accessible e-commerce system for breeder swine and boar semen that is highly available for use of the breeder swine producers and consumers (Year 2) â— Initial breeder swine data from breeder farms (Year 1) â— List of breeder farms that can access the breeder portal and can upload breeder swine data (Year 1) Assessment of knowledge, skills, and practices of stakeholders â— Training needs analysis tools such as questionnaire, focus group discussion guides, and interview schedule (Year 1) â— Comprehensive training needs analysis report and learning modules (Year 1) Capacity building and extension â— Letter of understanding with the target agencies and institutions (Year 1) â— Training program design and actual conduct of training and capacity building activities (Year 1) â— Information, education, and communication materials such as but not limited to brochures, leaflets, and videos (Year 2) â— Policy brief and journal articles (Year 2) Monitoring and evaluation of the e-commerce system â— System usability test results (Year 1) â— A dashboard that shows a summary of the user activity in the e-commerce system (Year 2) â— A dashboard that shows a summary of the performance of the e-commerce system (Year 1) Web and mobile application development â— Design of the additional e-commerce system modules	UPLB	âœ“ Swine industry (in general) âœ“ Breeder farms âœ“ Academe and researchers	1-Jun-18	29-Feb-20	COMPLETED	3,910,490.00	743,964.81
	Detection of Estrus (DOE) Project: Development of a Wearable Goat Peak Estrus Sensor	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The estrous monitoring device for goats is a wearable wireless sensor prototype that will detect changes in temperature, conductivity and acidity of the fluid discharge in the doe's vagina that will signal the best time to inseminate. Data will be transmitted wirelessly through an android software application to computer software operated by the farm manager.	Patents: 1. Wearable device 2. Integration and use of sensors Products: 1. One (1) working prototype of the wearable sensing device with integrated electronic connection platform 2. One (1) android mobile phone application design that can receive and display the data transmitted from the wearable sensor Publications: 2 conference papers and high impact journal publications Places and partnerships: 1 MOU with CVSRRC-ISU	DLSU	Commercial Goat Breeders and Farms- direct and economic benefit Academic community- new research opportunities in medical devices development	1-Jan-19	31-Dec-20	ONGOING	7,957,974.80	4,524,621.49

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Development of Caraga Black Native Chicken through Selection and Breeding as Potential Niche Product of Caraga Region	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Philippine native chicken industry has an economic potential contribution for farmers and entrepreneurs who engaged in native chicken raising which is a potential niche in the region. With its high demand in poultry meat due to its taste, texture, health benefits, and aroma, its supply are very limited within the region. Productivity, feed efficiency, availability of breeding stocks, and cost effectiveness are factors that will affect the production and management system. In addition, its major challenges are climate change where environmental conditions are extreme affecting performance in the production system, thus reducing its productivity. With the development of Caraga black native chicken, it can strengthen its capacity and capability in terms of productivity and efficiency through proper breeding and selection. Moreover, Caraga black chicken can provide a healthier option to consumers. The project is expected to produce breeding true-to-type population of black native chicken which is resilient to climate change condition in Caraga and can perform good traits in growth, hatchability, taste preference, and disease tolerance. These can also serve as genetic pool where target beneficiaries can avail on it through dispersal program. Target users of the generated	Publication ï¿· Two (2) scientific journal publications (ISI/CHED refereed) (Y2) ï¿· IEC materials on technology options of Caraga black native chicken breeding and production (Y2) ï¿· Presentation of results to scientific for a (Y2) ï¿· Caraga black native chicken breeding and production training module (Y2) Patents ï¿· Copyright of IEC materials developed (Y2) ï¿· Trademark registration of Caraga black native chicken (Y2) Product ï¿· 500 breeder Caraga black native chickens (Y2) in each station ï¿· Caraga black native chicken breeder flock with at least 80% uniformity established in 2 units (Y2) ï¿· 2,000 hd quality Breeder stocks of Caraga black chicken (Y2) People Services ï¿· 50 farmer entrepreneurs trained in science â€“ based native chicken breeding and selection (Y2) Places and Partnerships ï¿· At least 20 Materials transfer agreements (MTA) with adopters of Caraga black native	CarSU, DA-CARAGA	ï¿· Native chicken raisers in Caraga Region and nearby provinces. ï¿· Native chicken domestic and institutional consumers ï¿· Faculty, researchers, students, NGOâ€™s, Cooperatives and other organizations who wish to engage in native chicken production ï¿· Native chicken enthusiast in the Province and in the Region.	1-Jul-19	30-Jun-21	ONGOING	5,317,456.60	1,927,842.52
	Development of Real-time Ultrasound Scanning and DNA Marker Selection Protocols for Meat, Carcass and Fertility Traits of Philippine Native Pig	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will develop a selection protocol utilizing real-time ultra sound and DNA marker technology as tools for selection of breeding animals to improve the production and reproduction performance of the native pig to benefit the native pig farmers and the swine industry.	â—Œstablished genetic testing protocol using DNA marker technology for selected traits for use in breeding program. â—Œstablished protocol for live animal scanning for loin eye area and intramuscular fat composition for use as selection tool in animal breeding program and in meat quality evaluation prior to sale of live animal. â—Œstablished a genetic evaluation model that combines estimated breeding values and genomic information for selection/ranking of individual breeding animals. â—Œontribute to increase in reproduction performance based on litter size at birth from 8.0 to 10.0 and improved the farrowing index from 1.7 to 2.0	PCC	ïƒ¼ Swine industry (in general) ïƒ¼ Native pig breeder farms ïƒ¼ Academe and researchers	1-Apr-19	30-Jun-22	ONGOING	12,734,782.00	3,711,726.00
	Development of Screening Protocol for Genetic Defects and other Economically Important Traits in Cattle and Buffaloes in the Philippines	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Philippines is an agricultural country, owing the major contributions from plants and animal resources. Over the years, the interest and efforts of the government livestock sector and private breeders in the development of cattle and buffalo industry in the Philippines have grown rapidly. However, despite of its contribution to the meat and milk supply of the country, the industry still needs to keep up with the demand of the consumers. One of the challenges that affect the growth of the cattle and buffalo industry is the poor production performance and low reproductive efficiency. To address these challenges, most of the private cattle and buffalo breeder farms, including the government itself outsource their stocks and genetic resource from other countries which facilitated the entry of new genetics for improved production efficiency in terms of meat and milk but also entry of genetic defects. In addition to importation, the use of assisted reproductive technologies like artificial insemination, as it is widely used in the industry has resulted to a selection from relatively limited number of elite bulls, which might have facilitated the spread of these genetic defects in the local herds. Several economically important genetic defects have been reported in cattle, but there are still limited studies on buffalo. Although genetic disorders are of minor concern in livestock industry, the increase in number of carrier animals may lead significant losses in the production. Several cases are still not reported, causing an underestimation of the real burden of genetic diseases in these animals. Understanding these genetic defects and economically significant traits at the molecular level will aid in the identification of carrier animals even at earlier stage in animalâ€™s life. Screening of semen donor bulls should be aimed to identify carriers of genetic defects and eradicate them from the breeding program. Furthermore, directly screening for genes that have huge effect on the production traits will greatly aid in the selection of replacement animals and hasten genetic improvement.	â€Œdentified significant markers for genetic defects and other economically important traits present in cattle and buffalo that are possibly be incorporated in the culling and selection program of breeder farms. â€Œstablished genetic testing protocol using DNA marker technology for economically important traits and genetic defects in cattle and buffalo. At least 10 gene markers optimized â€Œolicy recommendation on the use of the technology for the local livestock industry.	PCC	â€Œattle and buffalo breeder farms and research agencies both government and private-owned. â€Œreed associations whose work focuses on the genetic improvement as well as conservation of livestock species. â€Œocal large ruminant industry in general	1-Jan-21	31-Dec-23	ONGOING	14,109,528.00	6,136,509.40
	Development of Sustainable breeding and production systems for Paraoakan native chicken in Palawan	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Paraoakan, the known genetic group of native chicken in Palawan has varying phenotypic characteristics and production performance within its group as perceived by paraoakan raisers. A sustainable breeding and selection R&D program for paraoakan native chicken can intensify the improvement of the native chicken industry.	> Information on the productive and reproductive performance of breeding true-to-type Paraoakan native chicken; > Information on appropriate production and management practices for Paraoakan native chicken; > Paraoakan breeding and selection, and hatchery technology; > 5,000 head breeder Paraoakan native chicken; > 20,000 head quality Paraoakan hardened chicks > Two (2) private entrepreneurs identified as multiplier farms; > Two (2) scientific articles published in refereed journal; > Improvement of Paraoakan NC breeding and production facilities.	WPU	Native chicken raisers in the province and in the region, faculty, students, NGOs, cooperatives, and other institutions who wish to engage in native chicken production, native chicken domestic and institutional consumers	1-Oct-20	30-Sep-23	NEW	8,478,601.00	3,541,626.15

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Diagnostic Validation of the ASFV Nanogold Biosensor Test	KRA 3: Rapid, Inclusive and Sustained Economic Growth	African Swine Fever (ASF) is a highly contagious hemorrhagic viral disease of domestic pigs with case-fatality approaching 100%, and has caused serious economic and production losses estimated to have affected more than 20 million pigs in Asia since 2018. One of the internationally recognized strategies recommended by the OIE or the World Organization for Animal Health to prevent the spread of any animal disease is by zoning. However, to accomplish this, there should be active surveillance to update the classification of areas according to zones. From time to time however, reports of depleted test kits for real-time PCR for surveillance cause massive delay of results that affect the establishment of the zoning areas. Hence, there is a need to supply a more affordable and portable, rapid but sensitive test assay as an alternative to what is currently being used.	â€¢Validated ASFV nanogold biosensor test kit and ready for use by the industry â€¢Established the prevalence rate of ASFV samples of blood, fresh pork and frozen pork â€¢Established the analytical sensitivity and specificity of the ASFV test kit â€¢Produce at least 600 ASFV Nanogold Test Kits	CLSU	ï¿½Pork producers ï¿½Private company that will engage in the production and marketing of the ASF test kits ï¿½DA-BAIâ€™s ASF Crisis Management Team ï¿½BADDLs and its personnel ï¿½Regional and LGU vets	1-Jul-20	30-Jun-21	NEW	4,792,599.20	4,792,599.20
	Dietary Interventions for Improved Recovery of Oocyts and Embryos from Dairy Cattle in the Philippines	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The level of milk production in dairy cows is highly associated with dry matter and energy intake. However, as the level of milk production increases due to controlled breeding programs and intensive nutritional management, there is an observed decline in the reproductive efficiency of dairy cows. Cows return longer to estrus, display poorer signs of estrus, have lower conception rates, and have greater early embryo loss (Roche et al., 2011). From a practical standpoint, these problems could lead to a lengthening of the calving-to-first-ovulation interval which subsequently lengthens the calving-to-conception interval (Boland and Lonergan, 2003). In addition, since there is a continuous effort to improve the existing breeding stocks through reproductive biotechnology tools such as In Vitro Fertilization, Artificial Insemination and Embryo Transfer in the Philippines, it is imperative and timely to address the problem of reduced fertility in our dairy cows without compromising milk production.	â€¢Recommendation on the optimum energy and protein levels which have the best effect on fertility and reproductive traits using feed materials in the Philippines â€¢At least 1 scientific paper for publication â€¢At least 50 grade 1 oocytes ready for in vitro fertilization	UPLB	ï¿½Dairy cattle farmers ï¿½Dairy cattle cooperatives ï¿½Researchers	1-Dec-20	30-Nov-21	NEW	4,999,999.60	4,999,999.60
	Establishment of Zampen Native Chicken Breeding Population with Improved Egg Production and Growth Performance	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project envisions to establish a ZamPen native chicken breeding population with improved egg production and growth performance	25,000 quality Zampen hardened chicks; 5,000 breeder ZamPen native chicken; improved reproductive and growth performance of ZamPen native chicken; ZamPen native chicken breeding and hatchery management technology; Native chicken breeding and production module and IEC materials; Technical personnel and farmer entreprenuers capacitated on organized breeding and selection and production; established Zampen breeding units	JHCSC, WMSU	Native chicken raisers; native chicken domestic and institutional consumers; researchers/students	16-May-18	15-May-20	COMPLETED	4,972,440.00	958,053.85
	Genome-wide Association Study (GWAS) for Growth and Egg Production Traits of Darag Native Chicken (Genome-wide Association Study for Egg Production Traits of Darag Native Chicken)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Research and development efforts have been done considerably for Darag native chicken for several decades now. The breed has already been purified while the management system is continuously being optimized by the West Visayas State University.	The project aims to deliver the following output: 1.Information on the degree of variations in growth and egg production traits of Darag native chicken; 2.Information on the heritability, genetic and phenotypic correlations of growth and egg production traits of Darag native chicken; 3.Information on possible genetic marker(s) associated with growth rate, egg production and other economically important traits of Darag native chicken; 4.Whole-genome sequence of Darag native chicken; 5.Optimized protocol on genome-wide association study for growth rate and egg production traits of Philippine native chicken; 6.At least five (5) trained WVSU staff and PADABA members on the use of molecular-assisted selection; 7.At least two (2) scientific article published in refereed journal.	UPLB	Darag breeders and producers, Academe, Research and Extension workers, Funding agencies, Native chicken producers, consumers, and traders	1-Jan-21	31-Dec-23	ONGOING	21,051,418.00	9,833,955.20
	Improving the Microbial Quality and Shelf-Life of BEPCO Pasteurized Liquid Egg Products thru On-line Processing Equipment Intervention	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will address the seasonal supply of table eggs and fluctuations in egg price by processing the excess egg during summer months brought by high egg production of layer chickens and low consumption of eggs. Moreover extending the shelf life will further widen the distribution and market of processed liquid egg products.	Comprehensive scientific assessment with recommendations regarding the evaluation of the implementation and integration of four On-Line Processing Equipment Interventions proposed by BEPCO. Specific outputs are detailed further below using the 6Ps metric. Publication: Two (2) undergraduate theses and/or One (1) graduate thesis / at least one (1) paper submitted for publication in a scientific journal Product/Technology: Improvement of product specifications based on FDA Philippine microbial standards ï¿½ New shelf-life declaration resulting from implemented equipment interventions originally set at 14 days ï¿½ Expected extension of shelf-life with possible sales growth from original Shelf-life declaration from 14 days People and Place: Knowledge-transfer to 15 BEPCO technical staff Partnership: Partnership with BEPCO processing plant and egg-producers. Policies: New processing parameters for BEPCO (in-house policy) taking into consideration the equipment-enhanced processing line.	UPD	ï¿½Egg Producers and Processors ï¿½Batangas Egg Producers Cooperative (BEPCO) ï¿½Egg Product Consumers	1-Jan-20	31-May-22	NEW	4,765,299.00	4,007,839.00
	In Vitro Fertilization Application in Dairy Cattle in the Tropics	KRA 3: Rapid, Inclusive and Sustained Economic Growth	One of the main concerns of the Philippine dairy industry is the low average milk production of the existing dairy cattle breeds. Currently, the majority of the local dairy farmers, through the assistance of the National Dairy Authority (NDA), are importing exotic purebreds and/or crossbreeds to introduce to their farms to improve milk yield and quality. Reproductive biotechnologies, such as artificial insemination (AI), multiple ovulation and embryo transfer (MOET) and in vitro fertilization (IVF), to name a few, are adapted and already in place in several developed countries and have proven their advantage over the conventional method of reproduction. According to Bousquet et al. (2003), North America was able to transfer 1,741 IVF-produced embryos in 2000 which is equivalent to 1% of the total globally. Likewise, oocytes obtained from abattoirs are popular in Europe, Asia and South America. In the Philippines, however, the majority of dairy farmers are dependent on live animal importation while a few are trying to dabble with embryo transfer. This project will look into different IVF techniques performed under a tropical setting, especially since minimal data is available from the Philippines and the economics in performing IVF as compared to ET and live animal importation. This project will enable the dairy industry to introduce IVF in dairy cattle in the Philippines and give the dairy farmers other options/ ways to improve their milk quality and production.	â€¢At least 100 dairy cattle embryos produced from IVF â€¢At least 1 paper ready for submission to a scientific journal â€¢At least 2 trained personnel in ovum pick-up and IVF â€¢Recommendations on: â€¢Suitable procedure on oocyte collection â€¢Suitable technique for oocyte maturation and fertilization	UPLB	ï¿½Dairy cattle farmers ï¿½Dairy cattle cooperatives ï¿½The National Dairy Authority ï¿½Researchers	1-Dec-20	30-Nov-21	NEW	4,999,967.40	4,999,967.40

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Semen Quality Evaluation of the Philippine Native Boar	KRA 3: Rapid, Inclusive and Sustained Economic Growth	With pigs providing as much as 40% of the global meat consumption [1] boasting from steady economic growth and a robust meat demand in many countries [2], pig farming is a major contributor to a sustainable food production. Sustained efforts for continued improvement of the reproductive performance of breeder boars are required to increase reproductive efficiency and production potential in swine operations.	Year 1 â€¢ Collection & optimization of semen evaluation protocol â€¢ Capacity building of staff at 6 native pig R&D stations â€¢ Semen evaluation expertise developed â€¢ Well-equipped swine semen laboratory Year 2 â— Semen and sperm characteristics, environmental factors affecting semen quality, and Philippine native boar fertility information â— Selection criteria for Philippine native boars â— Philippine native boar selection model â— Publishable manuscripts â— Empirical standards and semen quality profile of the seven Philippine Native Pig (Boar) Groups â— Epidemiological investigations on the breeding soundness of the seven Philippine Native Pig (Boar) Groups â— Prevalence of and risk factors associated with potential bacteriospermia in Philippines Native boar semen â— Correlation between seminal plasma components and semen quality characteristics of the Philippine Native Boars	VSU	ïƒ¼ Swine industry (in general) ïƒ¼ Native pig breeder farms ïƒ¼ Academe, pig research networks and LGUâ€™s	1-Jul-20	30-Jun-22	NEW	4,921,566.00	4,188,428.00
Assessing the Status of Giant Clams and Advancing Culture Techniques	Project 1. Evaluating the status of giant clams in Luzon and Visayas	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Over 30 years ago, populations of giant clams (Tridacna gigas) in the Philippines were overexploited and virtually locally extinct. Since 1987, hatchery-produced giant clams have been restocked by the University of the Philippines Marine Science Institute (UPD MSI) with local collaborators in over 40 sites around the country. This program is the longest-running giant clam restocking initiative in the world. After almost three decades, anecdotal reports indicate that some of the giant clams that were restocked in early 2000 are already providing recruits to adjacent reefs. However, the full impact of the program, particularly on the potential of restocked clams to replenish wild populations around Philippines, remains to be determined.	Publications ISI Publication â€¢ Biodiversity of giant clams in selected sites representing Philippine biogeographic regions differentially impacted by climate change induced thermal stress â€¢ Impact of past giant clam restocking efforts especially on giant clam recruitment â€¢ Zooxanthellae clades in Tridacna gigas and T. crocea identified and mapped against thermal regimes of selected biogeographic regions Non-ISI Publications Primer â€¢ Giant clam restocking and impact of thermal stress on giant clams Manual â€¢ Manual on monitoring of giant clam populations and identification of zooxanthellae clades Video Production â€¢ Video production summarizing the output of the Program â€¢ Press releases about project activities and outputs Products (Knowledge) â€¢ Giant clam populations ï‚§ Biodiversity of giant clams as differentially impacted by climate change induced thermal stress ï‚§ Giant clam populations and zooxanthellae clades	UPD	â€¢ Local communities including the local government units (LGUs) that will be involved in the monitoring and conservation efforts. The results of the proposed project will be disseminated through information, education and communication (IEC) materials to help promote giant clam restocking, monitoring and conservation efforts to relevant coastal communities and government agencies. â€¢ Fishers and other direct users of goods from coral reef ecosystems: giant clams contribute to reef restoration and will in the long-term contribute to the delivery of valuable goods and ecosystem services. â€¢ Research/scientific community: data obtained from these studies will provide further avenues for research related to understanding the biodiversity and growth of giant clams â€¢ Students: the project will support graduate student research and serve as a platform for the training of	1-Feb-18	31-Jan-21	ONGOING	19,161,341.00	4,802,930.91
Assessing the Status of Giant Clams and Advancing Culture Techniques	Project 2. Evaluating the status of giant clams in Palawan	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Over 30 years ago, populations of giant clams (Tridacna gigas) in the Philippines were overexploited and virtually locally extinct. Since 1987, hatchery-produced giant clams have been restocked by the University of the Philippines Marine Science Institute (UPD MSI) with local collaborators in over 40 sites around the country. This program is the longest-running giant clam restocking initiative in the world. After almost three decades, anecdotal reports indicate that some of the giant clams that were restocked in early 2000 are already providing recruits to adjacent reefs. However, the full impact of the program, particularly on the potential of restocked clams to replenish wild populations around Philippines, remains to be determined.	Publications ISI Publication â€¢ Biodiversity of giant clams in selected sites representing Philippine biogeographic regions differentially impacted by climate change induced thermal stress (in connection with Proj 1) Non-ISI Publications Primer â€¢ Giant clam restocking and impact of thermal stress on giant clams Manual â€¢ Manual on monitoring of giant clam populations and identification of zooxanthellae clades (in connection with Proj 1) Video Production â€¢ Video production summarizing the output of the Program â€¢ Press releases about project activities and outputs Products (Knowledge) â€¢ Giant clam populations ï‚§ Biodiversity of giant clams as differentially impacted by climate change induced thermal stress (in connection with Proj 1) People and Services â€¢ Graduate student research supported ï‚§ Biodiversity and thermal stress	WPU	â€¢ Local communities including the local government units (LGUs) that will be involved in the monitoring and conservation efforts. The results of the proposed project will be disseminated through information, education and communication (IEC) materials to help promote giant clam restocking, monitoring and conservation efforts to relevant coastal communities and government agencies. â€¢ Fishers and other direct users of goods from coral reef ecosystems: giant clams contribute to reef restoration and will in the long-term contribute to the delivery of valuable goods and ecosystem services. â€¢ Research/scientific community: data obtained from these studies will provide further avenues for research related to understanding the biodiversity and growth of giant clams â€¢ Students: the project will support graduate student research and serve as a platform for the training of students in giant clam culture techniques and transcriptome data	1-Feb-18	31-Jan-21	ONGOING	3,803,277.00	1,074,710.89

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Assessing the Status of Giant Clams and Advancing Culture Techniques	Project 3. Evaluating the status of giant clams in Mindanao	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Over 30 years ago, populations of giant clams (Tridacna gigas) in the Philippines were overexploited and virtually locally extinct. Since 1987, hatchery-produced giant clams have been restocked by the University of the Philippines Marine Science Institute (UPD MSI) with local collaborators in over 40 sites around the country. This program is the longest-running giant clam restocking initiative in the world. After almost three decades, anecdotal reports indicate that some of the giant clams that were restocked in early 2000 are already providing recruits to adjacent reefs. However, the full impact of the program, particularly on the potential of restocked clams to replenish wild populations around Philippines, remains to be determined.	Publications ISI Publication â€¢ Biodiversity of giant clams in selected sites representing Philippine biogeographic regions differentially impacted by climate change induced thermal stress (in connection with Proj 1) Non-ISI Publications Primer â€¢ Giant clam restocking and impact of thermal stress on giant clams Manual â€¢ Manual on monitoring of giant clam populations and identification of zooxanthellae clades (in connection with Proj 1) Video Production â€¢ Video production summarizing the output of the Program â€¢ Press releases about project activities and outputs Products (Knowledge) â€¢ Giant clam populations ï¿§ Biodiversity of giant clams as differentially impacted by climate change induced thermal stress (in connection with Proj 1) People and Services â€¢ Graduate student research supported ï¿§ Biodiversity and thermal stress	DNSC	â€¢ Local communities including the local government units (LGUs) that will be involved in the monitoring and conservation efforts. The results of the proposed project will be disseminated through information, education and communication (IEC) materials to help promote giant clam restocking, monitoring and conservation efforts to relevant coastal communities and government agencies. â€¢ Fishers and other direct users of goods from coral reef ecosystems: giant clams contribute to reef restoration and will in the long-term contribute to the delivery of valuable goods and ecosystem services. â€¢ Research/scientific community: data obtained from these studies will provide further avenues for research related to understanding the biodiversity and growth of giant clams. â€¢ Students: the project will support graduate student research and serve as a platform for the training of students in giant clam culture	1-Feb-18	31-Jan-21	ONGOING	6,653,102.00	1,436,841.23
Assessing the Status of Giant Clams and Advancing Culture Techniques	Project 4. Development of molecular resources for enhancement of culture and rearing techniques	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Giant clams are one of the most popular and iconic bivalve molluscs. They help draw attention to the state of coral reefs and the efforts to conserve them (Neo et al. 2015). Giant clams provide food and habitat to various marine organisms (Cabaitan et al. 2008), thus adding to reef biodiversity and aesthetics (Gomez & Mingoa-Lincuanan 2006). However, due to their reliance on symbiotic association with photosynthetic microalgae (zooxanthellae), filter-feeding ability, large size, and sessile nature, giant clams are especially vulnerable to drastic changes in water quality (e.g. increases in turbidity, nutrient quality, temperature and acidity). Giant clams are also intensively harvested for both food and marine aquarium trade market and are thus vulnerable to overfishing and poaching (Mies et al 2017). Some species of giant clams are considered endangered (Gomez & Mingoa-Lincuanan 2006). Through the efforts of the Marine Science Institute, giant clams have been restocked and propagated in Bolinao, as well as in other parts of the Philippines. The giant clam ocean nursery maintained by the Bolinao Laboratory represents the largest and most diverse collection of this species.	Publications ISI Publication â€¢ Comparison of the first reference transcriptomes of 2 giant clam species â€¢ Developmental transcriptome for identification of genes relevant to giant clam growth, development, biomineralization, symbiosis and stress response Video Production â€¢ Video production summarizing the output of the Program Products (Knowledge) â€¢ Optimized protocols for total RNA extraction â€¢ Giant clam genetics â€¢ Genetic responses to stress Database â€¢ Sequence database for 2 giant clam species People and Services â€¢ Graduate student research supported ï¿§ De novo reference transcriptome assembly and comparative analysis ï¿§ Developmental transcriptome analysis ï¿§ 2 graduate students trained in giant clam culture and transcriptome analysis â€¢ Training ï¿§ Training and information dissemination on biodiversity survey and molecular mechanism of response to thermal stress	UPD	â€¢ Fishers and other direct users of goods from coral reef ecosystems: giant clams contribute to reef restoration and will in the long-term contribute to the delivery of valuable goods and ecosystem services. â€¢ Research/scientific community: data obtained from these studies will provide further avenues for research related to understanding the biodiversity and growth of giant clams â€¢ Students: the project will support graduate student research and serve as a platform for the training of students in giant clam culture techniques and transcriptome data generation and analysis	1-Feb-18	31-Jan-21	ONGOING	16,971,166.00	3,107,722.79
Coastal Acidification: How it Affects the Marine Environment and Reosurces in the Philippines	Project 1: Spatio-temporal trends in pH, CO2, and related parameters	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Ocean warming and ocean acidification will have profound effects on coral reef ecosystems and pose grave threats to corals and reef-associated fauna and flora. These disturbances affect key reef processes and impact different levels of reef organization (individual, population, ecosystem) while also interrogating the effects of environmental perturbations on the organismal processes of settlement, metamorphosis, growth, and survival. These are the critical events that maintain the ability of a reef to perform its provisioning and regulating services to mankind. The skeleton of massive corals and sediment deposits can record environmental changes and the coral's response to these changes. Given the absence of monitoring data, retrospective analysis using coral skeletons can provide longterm information that can give insights on the response of corals to acidification and other environmental stressors. It will yield important baselines for assessing future changes in ocean chemistry and would fill a major data gap for the region. The Philippine marine resources are already under a barrage of attacks from localized anthropogenic activities (e.g., pollution, sedimentation, direct destruction, overfishing). These cannot be ignored along with global stressors of increased sea surface temperatures and acidification. Now more than ever it is necessary to holistically monitor and study our marine ecosystems to understand how they are being impacted by these changes, and hopefully maintain their resilience, and prepare our people who are dependent on these systems for future changes. Results of the study will serve as relevant input towards strategies for climate change adaptation measures related to biodiversity conservation, food security, and livelihood of the poorest and most vulnerable sectors of the Philippines â€" the millions of fisher families and coastal communities that rely on the continued availability of reef resources.	Publications â€¢ 1 ISI publications â€¢ Primer on coastal/ocean acidification for the general public Products â€¢ Map of pH for Philippine waters â€¢ Map of aragonite saturation for Philippine waters People & Services â€¢ 3 Graduate student research supported Year 1 People and Services â€¢ Three student research supported Publication â€¢ Primer on coastal/ocean acidification for the general public Places and Partnerships â€¢ Establishment of sites in Bolinao and Mabini for spatio-temporal sampling People & Services â€¢ 3 Graduate student research supported (started in February 2018) Year 2	UPD	â€¢ Local and national government offices concerned with coral reefs and the communities that depend on them. â€¢ Resource planners, local state colleges and universities who can be trained to monitor changes in pH, carbonate and other relevant parameters.	1-Feb-18	31-Jul-21	ONGOING	18,251,855.00	3,456,498.69

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Coastal Acidification: How it Affects the Marine Environment and Reosurces in the Philippines	Project 2: Impacts of acidification on the base of the matine food web and their effects on marine production	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Ocean warming and ocean acidification will have profound effects on coral reef ecosystems and pose grave threats to corals and reef-associated fauna and flora. These disturbances affect key reef processes and impact different levels of reef organization (individual, population, ecosystem) while also interrogating the effects of environmental perturbations on the organismal processes of settlement, metamorphosis, growth, and survival. These are the critical events that maintain the ability of a reef to perform its provisioning and regulating services to mankind. The skeleton of massive corals and sediment deposits can record environmental changes and the coral's response to these changes. Given the absence of monitoring data, retrospective analysis using coral skeletons can provide longterm information that can give insights on the response of corals to acidification and other environmental stressors. It will yield important baselines for assessing future changes in ocean chemistry and would fill a major data gap for the region. The Philippine marine resources are already under a barrage of attacks from localized anthropogenic activities (e.g., pollution, sedimentation, direct destruction, overfishing). These cannot be ignored along with global stressors of increased sea surface temperatures and acidification. Now more than ever it is necessary to holistically monitor and study our marine ecosystems to understand how they are being impacted by these changes, and hopefully maintain their resilience, and prepare our people who are dependent on these systems for future changes. Results of the study will serve as relevant input towards strategies for climate change adaptation measures related to biodiversity conservation, food security, and livelihood of the poorest and most vulnerable sectors of the Philippines â€" the millions of fisher families and coastal communities that rely on the continued availability of reef resources.	Publications â€¢ 1 ISI publications People & Services â€¢ Formal Training ï‚§ 3 Graduate student research supported â€¢ Informal Training ï‚§ 1 Students trained in molecular tools for looking at plankton ï‚§ 3 Students trained in the fields of ocean acidification and plankton research, and mesocosm experiments Year 1 People & Services â€¢ Three graduate students trained Places and Partnerships â€¢ 3 Prior Informed Consents Year 2 Products â€¢ Database on plankton assemblages (densities, assemblage and genomics) along environmental gradients and through the mesocosm People and Services â€¢ Train at least 2 students on genomics and ocean acidification field and laboratory work	UPD	Fisheries managers, resource planners, local and global scientists	1-Feb-18	31-Jul-21	ONGOING	23,559,779.00	4,795,098.83
Coastal Acidification: How it Affects the Marine Environment and Reosurces in the Philippines	Project 3: Possible influence of acidification on specific reef resources	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Ocean warming and ocean acidification will have profound effects on coral reef ecosystems and pose grave threats to corals and reef-associated fauna and flora. These disturbances affect key reef processes and impact different levels of reef organization (individual, population, ecosystem) while also interrogating the effects of environmental perturbations on the organismal processes of settlement, metamorphosis, growth, and survival. These are the critical events that maintain the ability of a reef to perform its provisioning and regulating services to mankind. The skeleton of massive corals and sediment deposits can record environmental changes and the coral's response to these changes. Given the absence of monitoring data, retrospective analysis using coral skeletons can provide longterm information that can give insights on the response of corals to acidification and other environmental stressors. It will yield important baselines for assessing future changes in ocean chemistry and would fill a major data gap for the region. The Philippine marine resources are already under a barrage of attacks from localized anthropogenic activities (e.g., pollution, sedimentation, direct destruction, overfishing). These cannot be ignored along with global stressors of increased sea surface temperatures and acidification. Now more than ever it is necessary to holistically monitor and study our marine ecosystems to understand how they are being impacted by these changes, and hopefully maintain their resilience, and prepare our people who are dependent on these systems for future changes. Results of the study will serve as relevant input towards strategies for climate change adaptation measures related to biodiversity conservation, food security, and livelihood of the poorest and most vulnerable sectors of the Philippines â€" the millions of fisher families and coastal communities that rely on the continued availability of reef resources.	Publications â€¢ 1 ISI publications Products(knowledge) â€¢ Knowledge/information on reef community shifts under changing environmental conditions â€¢ Knowledge/information on link between eutrophication (e.g. from mariculture) and acidification â€¢ Knowledge/information on reef community shifts under changing environmental conditions. â€¢ Knowledge/information on primary producers and plankton biomass and community shifts under changing environmental conditions. â€¢ Knowledge/information on gene markers that are linked to stress response of sponges â€¢ Faster methods for quantification of plankton through pigment analysis and genomics People & Services â€¢ Formal Training ï‚§ 4 Graduate student research supported â€¢ Informal Training ï‚§ DENR, BFAR, LGU personnel in the study sites trained in monitoring coral cover and diversity, algal and sponge community composition, giant clam handling, pH and other parameters Year 1 Publications â€¢ 1 Poster	UPD	Conservation biologists, Fisheries resource managers, Environmentalists, Ecologists, Ecotoxicologists	1-Feb-18	30-Jun-21	ONGOING	24,816,356.00	5,332,261.12
Coastal Acidification: How it Affects the Marine Environment and Reosurces in the Philippines	Project 4: Acidification impacts on the demography of corals (ACID Corals)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Ocean warming and ocean acidification will have profound effects on coral reef ecosystems and pose grave threats to corals and reef-associated fauna and flora. These disturbances affect key reef processes and impact different levels of reef organization (individual, population, ecosystem) while also interrogating the effects of environmental perturbations on the organismal processes of settlement, metamorphosis, growth, and survival. These are the critical events that maintain the ability of a reef to perform its provisioning and regulating services to mankind. The skeleton of massive corals and sediment deposits can record environmental changes and the coral's response to these changes. Given the absence of monitoring data, retrospective analysis using coral skeletons can provide longterm information that can give insights on the response of corals to acidification and other environmental stressors. It will yield important baselines for assessing future changes in ocean chemistry and would fill a major data gap for the region. The Philippine marine resources are already under a barrage of attacks from localized anthropogenic activities (e.g., pollution, sedimentation, direct destruction, overfishing). These cannot be ignored along with global stressors of increased sea surface temperatures and acidification. Now more than ever it is necessary to holistically monitor and study our marine ecosystems to understand how they are being impacted by these changes, and hopefully maintain their resilience, and prepare our people who are dependent on these systems for future changes. Results of the study will serve as relevant input towards strategies for climate change adaptation measures related to biodiversity conservation, food security, and livelihood of the poorest and most vulnerable sectors of the Philippines â€" the millions of fisher families and coastal communities that rely on the continued availability of reef resources.	Publications â€¢ 1 ISI publication Products â€¢ 1 simulation model with several scenarios People & Services â€¢ Formal Training ï‚§ 3 graduate research supported ï‚§ 2 BS, possibly two MS, one PhD degree graduates in the sciences Places & Partnerships â€¢ Partnership agreement with LGUs, DENR, BFAR, other stakeholders in the study sites ï‚§ DENR, BFAR, LGU personnel in project sites trained in monitoring coral cover and diversity, algal and sponge community composition, giant clam handling, pH and other parameters Year 1 Products â€¢ Maps of selected Batangas sites â€¢ Validation of the statistical power of the proposed layout and analysis of the changes in abundance, size-structure â€¢ Implementation and testing of the projection matrix model People and Services â€¢ 3 student research supported	DLSU	Local and national government offices concerned with coral reefs and the communities that depend on them.	1-Feb-18	31-May-21	ONGOING	10,900,215.00	3,560,674.59

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Discovery of High Value Biomolecules from the Sea Cucumber Stichopus spp.	Project 1. Characterization of High Value Biomolecules from the Sea Cucumber Stichopus spp. (Old Title: Discovery of high value biomolecules from Stichopus spp.)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Two cryptic species of S. cf. horrens have been recently characterized as occurring in the Philippines (Lizano et al. in prep). Such inherent genetic diversity in Stichopus sp. represents added value in terms of the potential chemical diversity of bioactive molecules with potential pharmaceutical or therapeutic value. In addition to being a potential source of novel bioactive molecules, Stichopus spp. are capable of rapid change in the elasticity of their tissues, with some species even capable of drastic responses such as tissue liquefaction or dermal shedding, and are always able to regenerate lost body parts. Understanding the molecular mechanisms by which these remarkable organisms orchestrate their abilities may have significant implications in cellular regeneration, aging, medicine, and biomaterials engineering. We can capitalize on the inherent genetic diversity and unique properties of Stichopus through further characterization of the genetic and associated chemical diversity of the species from different marine biogeographic regions and habitats, coupled with multi-comics studies to characterize molecular mechanisms underlying tissue modulation and regeneration. Characterization of key ecological and reproductive traits will generate information necessary for the development and refinement of culture technologies for hatchery production of the species, and to augment capture-based production. Also, the Philippine sea cucumber industry has the potential to provide valuable raw materials for high-priced cosmeceutical and pharmaceutical products. We can capitalize on the inherent sea cucumber species diversity found in the different biogeographic regions in the Philippines to provide a more abundant source of biomolecules for discovery. The discovery and characterization of sea cucumber compounds and the fundamental understanding of the mutable collagenous tissue phenomenon is a necessary first step and investment in sea cucumber R&D in order to lay the foundations for future product development.	Publication â€¢ Three (3) publications in Scopus/SCI-E indexed journals Products â€¢ Optimized protocols for LC-MS and MS/MS for metabolites and saponin analysis, tissue sampling and sample preparation for advanced imaging and spectroscopic methods, protocols for saponin extraction and fractionation â€¢ Transcriptome sequences; putative gene identification; secondary metabolite list for S. horrens; SHG instrument People and Services â€¢ Three graduate students supported â€¢ Open laboratory for services for common physicochemical analysis for materials, mass spectrometry â€¢ Three training workshops for MS students Partnerships â€¢ Potential partnerships with foreign collaborators (materials research groups in US and Taiwan) if active saponins will be discovered through this project	UPD	Public and private hatcheries with capabilities to culture and can be trained, research/scientific community, local fisher partners in pilot grow-out trials, LGU, local resource managers, NAARRDN agencies and DOST-PCAARRD consortia.	1-May-20	30-Apr-23	NEW	18,617,310.00	6,527,477.00
Hazard Detection and Mitigation Tools for Algal Blooms in a Changing Marine Environment	Project 1. Development of detection tools for algal blooms to enable rapid responses from organism to environment(Old Title: Enhanced Detection and Mitigation of HABs: from Organism to Environment)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The program will be using molecular, material science, chemical and optical approaches in tandem with instrumentation development in order to come up with viable tools to monitor HAB at a variety of spatial and temporal scales that is needed to come up with consistent long term information of what happens before, during and after harmful algal blooms	Products â€¢ Low-cost water quality sensor package and messaging/app â€¢ Maps on water quality and HAB organisms â€¢ Prototype sensor for HAB organism detection using spectral signature â€¢ Optimized toxin detection capability through SPATT â€¢ Revised remotely-sensed early-warning system â€¢ Enhanced dynamic models for HABs for previous and new HAB-affected sites â€¢ Comprehensive database on HABs; Statistical models on HABs for forecasting â€¢ Database of plankton in relation to HAB occurrences â€¢ Decision-support system for HAB management centralizing observations and models â€¢ Scale-up production method for authentic standards of HAB toxins â€¢ at least 2 authentic standards of HAB toxins Publication â€¢ 7 ISI manuscripts for Scopus / ISI-indexed publication â€¢ Primer on the HAB informatics/decision-support system â€¢ Manual on low-cost sensors People and Services â€¢ 13 researchers trained in marine sensor development, HAB cyst dynamics, hydrodynamic surveys, phytoplankton analysis, biological modeling, hydrodynamic modeling, HAB statistical analysis, remote sensing modeling, decision support-system development, consortium-building â€¢ At least 7 MSc/PhD students â€¢ 40 trained in the use of water quality sensors developed â€¢ 5-10 on the job trainees/interns trained â€¢ Trainings/Workshops on HAB monitoring using low-cost sensors Partnerships â€¢ Partnerships for water quality/HAB monitoring with academe, government agencies (BFAR/LGUs) and stakeholders (mariculture) â€¢ Potential partners within DOST regional consortium: Region V (BCAARRD), Region VI (WESVAARRDEC), Region VIII (VICAARP), Region XI (SMAARRDEC) on water quality/HAB monitoring that can be used not just for research but also for interactive teaching modules Policy â€¢ Input into the guidelines for monitoring and management of harmful algal blooms and mariculture practices	UPD	National agency, LGUs, Coastal communities, coastal managers, researchers	1-Apr-18	31-Mar-21	ONGOING	8,676,484.00	1,528,508.00
Hazard Detection and Mitigation Tools for Algal Blooms in a Changing Marine Environment	Project 2. Fine Scale Characterization of Plankton Community Composition Dynamics for Enhanced Modelling of Harmful Algal Blooms	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The program will be using molecular, material science, chemical and optical approaches in tandem with instrumentation development in order to come up with viable tools to monitor HAB at a variety of spatial and temporal scales that is needed to come up with consistent long term information of what happens before, during and after harmful algal blooms	Products â€¢ Low-cost water quality sensor package and messaging/app â€¢ Maps on water quality, HAB organisms and cysts, and physical conditions at HAB-affected sites â€¢ Optimized toxin detection capability through SPATT â€¢ Revised remotely-sensed early-warning system â€¢ Enhanced dynamic models for HABs for previous and new HAB-affected sites â€¢ Comprehensive database on HABs; Statistical models on HABs â€¢ Decision-support system for HAB management centralizing observations and models â€¢ Scale-up production method for authentic standards of HAB toxins at least 2 authentic standards of HAB toxins â€¢ 1-3 authentic standards of HAB toxins Publication â€¢ 8 ISI manuscripts for Scopus / ISI-indexed publication â€¢ Primer on the HAB informatics/decision-support system â€¢ Manual on low-cost sensors People and Services â€¢ 3 researchers trained in marine sensor development and SPATT deployment â€¢ 8 researchers trained ib HAB cyst dynamics, hydrodynamic surveys, phytoplankton analysis, biological modeling, hydrodynamic modeling, HAB statistical analysis, remote sensing modeling, decision support-system development, consortium-building â€¢ At least 7 MSc/PhD students â€¢ 40 trained in the use of water quality sensors developed	UPD	National agency, Local Government Units, Coastal communities, coastal managers, research	1-Apr-18	31-Mar-21	ONGOING	13,905,188.80	1,957,650.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Hazard Detection and Mitigation Tools for Algal Blooms in a Changing Marine Environment	Project 3. Dynamics of Protein and Small Molecule Chemistry in HAB Causative Organisms	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The program will be using molecular, material science, chemical and optical approaches in tandem with instrumentation development in order to come up with viable tools to monitor HAB at a variety of spatial and temporal scales that is needed to come up with consistent long term information of what happens before, during and after harmful algal blooms	Products â€¢ Low-cost water quality sensor package and messaging/app â€¢ Maps on water quality, HAB organisms and cysts, and physical conditions at HAB-affected sites â€¢ Optimized toxin detection capability through SPATT â€¢ Revised remotely-sensed early-warning system â€¢ Enhanced dynamic models for HABs for previous and new HAB-affected sites â€¢ Comprehensive database on HABs; Statistical models on HABs â€¢ Decision-support system for HAB management centralizing observations and models â€¢ Scale-up production method for authentic standards of HAB toxins at least 2 authentic standards of HAB toxins â€¢ 1-3 authentic standards of HAB toxins Publication â€¢ 8 ISI manuscripts for Scopus / ISI-indexed publication â€¢ Primer on the HAB informatics/decision-support system â€¢ Manual on low-cost sensors People and Services â€¢ 3 researchers trained in marine sensor development and SPATT deployment â€¢ 8 researchers trained ib HAB cyst dynamics, hydrodynamic surveys, phytoplankton analysis, biological modeling, hydrodynamic modeling, HAB statistical analysis, remote sensing modeling, decision support-system development, consortium-building â€¢ At least 7 MSc/PhD students â€¢ 40 trained in the use of water quality sensors developed	UPD	LGUs, BFAR, general public, Network partners (Consortia) SUCs, mariculture industry	1-Apr-18	31-Mar-21	ONGOING	12,696,856.00	1,560,472.00
Hazard Detection and Mitigation Tools for Algal Blooms in a Changing Marine Environment	Project 4. Integrated harmful algal bloom detection and information system for adaptive responses	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This program builds on previous efforts and aims to help address these issues through 1) the development of a suite of tools that can provide ample spatial and temporal coverage of algal blooms using two approaches: low-cost crowd-sourcing tools and high resolution sensors; 2) providing expanded and more robust models of HABs for previous and new target sites that would enable increased understanding of bloom triggers; 3) providing an information system for the storage, retrieval, and analysis of bloom monitoring data; and 4) integrating with relevant monitoring and management agencies (e.g., BFAR/LGUs) for using the suite of tools for forecasts and mitigation.	- Fine-scale characterization and maps of bloom conditions and transport at the target sites - Fine-scale characterization and maps of phytoplankton/HAB organisms, cyst beds, rates of encystment and excystment in relation to bloom initiation and decline	UPD	National agency, Local Government Units, SUCs, Coastal communities, coastal managers, researchers	1-Apr-18	31-Mar-21	ONGOING	24,702,489.20	4,250,822.00
Reproductive Biology Studies, Dietary Analysis, and Life-History of Philippine Tuna Species towards Sustainable Fishing Industry in Mindanao	Project 1. Reproductive Biology Studies of 3 Neritic Tuna Species in Mindanao	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will evaluate neritic tuna species with its reproductive biology to establish a proper data that will be used primarily in fish management efforts and will further provide more inputs to stock population density implications in the future. Inter and intra-species reproductive variations will, therefore, be generated that will be instrumental in crafting policies that will ensure a sustainable tuna fishing in Mindanao and the country. If the following objectives are realized, the results of this research will be able to provide an updated information on the reproductive biology of neritic tuna species. It would provide relevant knowledge to help understand the reproductive condition of male and female individuals of each species. Having a better picture of the speciesâ€™ reproductive biology on a tissue level would help understand its population dynamics as much as reproduction is concerned. Wholly, this undertaking will be able to provide essential and required biological knowledge that would facilitate stock assessments and efficient management of tuna and tuna-like species in the future, in consideration of sustainability of the tuna resources. Among these policies that might be supported by the data that will be generated from this project are: 1) control of fishing seasons, 2) control of the fishery areas (spawning areas), and 3) control of juvenile fish through the regulation of minimum net mesh size and the prohibition of the sale of juvenile fishes. Thus, this project is important for the assessment of the reproductive potential of the populations as well as to well understand the productivity of fish populations and their resilience to fisheries and environmental changes.	Publications â€¢ At least 3 publications on the reproductive biology of Eastern Little Tuna (Euthynnus affinis), Tuna (Auxis thazard) and Bullet Tuna (Auxis rochei) in the seas of Mindanao, Philippines Products â€¢ Atlas of the neritic tuna species with updated information on its reproductive biology based on the results of this project People Services â€¢ Awareness campaign for local Fisherfok, canning industries or tuna consumers on the target preys and food preferences of these 6 commercially important tuna species â€¢ Two research assistants and two MS Bio students will be trained in reproductive characterization of neritic tuna species Places and Partnerships â€¢ MOU with Bureau of Fisheries & Aquatic Resources, private tuna industries, and local government units Patents/Intellectual Properties â€¢ Copyright for an atlas of the neritic tuna species with an updated information on its reproductive biology based on the results of this project Policy â€¢ Science based information that will input to policy on the 1) control of fishing seasons, 2) control of the fishery areas (spawning areas), and 3) control of juvenile fish through the	MSU-GSC	Stakeholders (Tuna Industry). This project can provide the stakeholders recommendations in tuna fishery management, especially for the small-scale fishers that could potentially result to an increased and efficient catch. The results may be used to provide guidance to the fishing industries to improve their management practices in order to save valuable time and resources. Government Sectors (LGUs and DA). Results from this project can serve as a basis for the development of species atlas that the LGUs and the DA can extend to their clienteles. Furthermore, the results can serve as benchmark information in crafting new technologies in management especially for research purposes, and in developing policies and regulations related to the management and sustainability of the tuna industry and the marine ecosystem in the country. This will also pave the way for LGUs, DA and SUCs to craft complementary technologies for research,	1-Jan-20	31-Dec-22	NEW	6,478,990.00	2,246,759.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Reproductive Biology Studies, Dietary Analysis, and Life-History of Philippine Tuna Species towards Sustainable Fishing Industry in Mindanao	Project 2. Dietary Analysis and Feeding Habits of 6 Philippine Tuna Species Using Metagenomics	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Application of NGS in metagenomics is currently explored in a plethora of fields such as microbial ecology, molecular taxonomy, and more recently in dietary composition analysis of organisms with high ecological value. In the Philippines, this will be the first time to investigate the dietary composition and feeding habits of tuna or any fish in general caught in its natural environment. Results of this research will provide crucial information on the identification of their target preys directly influencing their spatial distribution and population dynamics, which is important for tuna resource management. An accurate and confident model of the factors affecting species distribution and population structure is essential to managing species viability and sustainability. Thus, this research undertaking aims to ensure the conservation and sustainability of tuna as a major and valuable economic product of the region.	Publications (2) â€¢ At least 2 papers on the Dietary Analysis of Intestinal Contents of Oceanic Tunas Thunnus albacares (yellowfin), Katsuwonus pelamis (skipjack), and Thunnus obesus (bigeye) via Metabarcoding; and Metagenomic Analysis of Intestinal Contents of Euthynnus affinis (eastern little tuna), Auxis thazard (frigate tuna), and Auxis rochei (bullet tuna) for Dietary Composition Patents/Intellectual Property â€¢ Original scientific data on the diet composition of neritic and oceanic tunas catched from the wild using metabarcoding. More specifically on: 1. DNA profiles and taxonomic identification of plants and animals eaten by each of the 6 tuna species 2. Dietary breadth and food overlap between the 6 tuna species 3. Dietary preferences and feeding habits of each tuna species at varying life stages 4. Species diversity and richness in the dietary composition of the 6 tuna species Products â€¢ Handbook on Target Preys of 6 Philippine Tuna Species People Services â€¢ Awareness campaign for local fisherfolk, canning industries or tuna consumers on the target preys and food preferences of these 6 commercially important tuna species â€¢ Two research assistants and two MS students will be trained for DNA extraction, NGS analysis, metabarcoding, and bioinformatics. Places & Partnerships â€¢ MOU with Bureau of Fisheries & Aquatic Resources and private tuna industries Policy	MSU-GSC	Results of this research will provide crucial information on the identification of tunaâ€™s target preys directly influencing their spatial distribution and population dynamics, which is important for tuna resource management. An accurate and confident model of the factors affecting species distribution and population structure is essential to managing species viability and sustainability. Thus, this research undertaking aims to ensure the conservation and sustainability of tuna as a major and valuable economic product of the region. Therefore, the findings of this research will significantly contribute to the scientific community, academe, local fisher folks, tuna industry, local and national economy, marine ecosystem, and the Philippines as a whole.	1-Jan-20	31-Dec-22	NEW	21,188,459.00	8,045,623.00
Reproductive Biology Studies, Dietary Analysis, and Life-History of Philippine Tuna Species towards Sustainable Fishing Industry in Mindanao	Project 3. Otolith Elemental Fingerprinting, Shape Analysis, and Microstructural Analysis of the 3 Philippine Neritic Tuna Species	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The analysis of otoliths for elemental fingerprinting, shape analysis, and microstructural description will pave the baseline data for the establishment of its age at varying life stages in correlation to its total fish length, growth patterns, life history traits, migratory patterns, and species discrimination between the 6 tuna species that abound within Mindanao waters. Data generated from this research will significantly contribute to an accurate and confident model of the factors affecting species distribution, migration patterns, and population structure of tuna in the Philippines which are crucial for managing species viability and sustainability. Thus, this research undertaking aims to ensure the conservation and sustainability of tuna as a major and valuable economic product of the region.	Publications â€¢ At least 3 papers on Otolith Shape & Macrostructural Analysis of 3 Philippine Tuna Species; Otolith Microstructural Analysis for Age Determination, Growth, and Life History Patterns of 3 Tuna Species; and Natal Origin and Migratory Patterns of Tuna Species using Otolith Elemental Fingerprinting Patents/Intellectual Property â€¢ Original scientific data on the otolith macrostructural, microstructural, and chemical characterization of the 3 Philippine neritic tuna species will be generated. More specifically, 1. Otolith shapes of the 3 tuna species 2. Establishment of landmarks for the changes in otolith shape for discrimination between species 3. Age range approximation correlating fish length with otolithâ€™s structural attributes 4. Otolith elemental fingerprints of the 6 tuna species at varying life stages 5. Elemental signatures between otoliths collected at varying sites Products â€¢ Handbook on Otolith Morphometrics and Life History Patterns of 3 Philippine Neritic Tuna Species Euthynnus affinis, Auxis thazard, and Auxis rochei People & Services â€¢ Awareness campaign for local fisherfok, canning industries or tuna consumers on the approximate age of these 3 neritic tuna species relative to its size and weight, migration patterns, and breeding areas for protection â€¢ Three research assistants and two MS students will be trained specifically for otolith processing for macro and microstructural analysis as well as elemental fingerprinting using ICP-MS.	MSU-GSC	Results of this research will provide crucial, scientifically sound information on the size-age approximation, migratory patterns, and life history patterns of the 6 tuna species within the waters of Mindanao which is essential for tuna resource management. An accurate and confident model of the factors affecting species distribution and population structure is important for managing species viability and sustainability. Thus, this research undertaking aims to ensure the conservation and sustainability of tuna as a major and valuable economic product of the region. Therefore, the findings of this research will significantly contribute to the scientific community, academe, local fisher folks, tuna industry, local and national economy, marine ecosystem, and the Philippines as a whole as the data generated will be essential used for the crafting of policies for the management and sustainability of the tuna industry in the country.	1-Jan-20	31-Dec-22	NEW	14,097,959.00	4,813,743.00
Reproductive Biology Studies, Dietary Analysis, and Life-History of Philippine Tuna Species towards Sustainable Fishing Industry in Mindanao	Project 4. Ichthyoplankton Resource Identification towards Replenishment of Tuna Species in Sarangani Bay Protected Seascape (SBPS) and Adjacent Waters	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Studies on fish larvae and ichthyoplankton data in SBPS and their adjacent waters were scarce and insufficient thus the conduct of this study. Results of this study will provide (1) a list/profile of identified fish larvae (ichthyoplankton) of tuna in Sarangani Bay and adjacent waters; (2) relevant inputs and scientific basis for fisheries managers and decision makers in formulating policies on the appropriate seasonal harvest of these species so as to improve the health and population of the tuna and tuna-like fish stocks in the area; (3) better management options that will Improve the sustainability of the tuna stocks of the fishing grounds by providing fishes the opportunity to spawn and grow to maturity before they are harvested and; (4) evidence of spawning ground of tuna and tuna-like species in the area and; (5) Increase tuna production thus contribute significantly to the economy of locality and the country in general.	Publications â€¢ At least three (4) papers submitted for publication to reputed journals: - Profile and inventory of ichthyoplankton resources in SBPS; - Physico-chemical analysis of SBPS; - Species diversity and richness of ichthyoplankton in SBPS; - Seasonal variation in the abundance of ichthyoplankton species in SBPS. Patents/Intellectual Properties â€¢ Copyright for a guidebook of profile and inventory of ichthyoplankton resources in SBPS Products â€¢ Guidebook of profile and inventory of ichthyoplankton resources in SBPS People Services â€¢ Awareness campaign for local Fisherfolk and the rest of the community on the ichthyoplankton diversity of Saranggani Bay â€¢ Two research assistants and two MS students will be trained on the sampling techniques and ichthyoplankton biodiversity Places and Partnerships â€¢ MOU with Bureau of Fisheries & Aquatic Resources Region XII Policy â€¢ Science based information that will input to policies for the protection, preservation, water quality to in Sarangani bay to conserve plankton resources that act as food to tuna resources. Social Impact â€¢ Increased awareness of fisherfolk and local community on the present status of the tuna	MSU-GSC	Scientific community, academe, local fisher folks, tuna industry, local and national economy, marine ecosystem, and the Philippines as a whole.	1-Jan-20	31-Dec-21	NEW	6,119,112.00	3,877,781.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Assessment of the Reproductive Biology, Ecology and Biomass Production of Porphyra in Northwestern Luzon	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This study will focus on the assessment of the Porphyra biomass in the natural ground, look for possible establishment of mariculture technology and development of harvesting technology	Products Brochures of Porphyra species in the Philippines (Y2) Publications -Reproductive Biology and Ecology of Porphyra in Northwestern Luzon (Y1) -Conchocelis Culture Technology of Porphyra in the Philippines (Y2) -Field Culture of Porphyra (Y2) Patents -Conchocelis Culture Technology (Y2) -Maricutlure technology (Y2) Places and Partnerships -Local Government Units of Burgos, Pagudpud in Ilocos Norte and Sta. Praxedes and Claveria (MOA) -DA-Bureau of Fisheries and Aquatic Resources -Department of Environment and Natural Resources People and Services -2 MS student trained (Y2) -60 of stakeholders attended in Public Consultation (Y1-Y2) Policy Scientific data as inputs osn the formulation of Regulation of Harvesting Porphyra Thallus in the Natural Grounds (Y2)	MMSU	Researchers, Local Government Units, Students, Residents, Academe	1-Jul-20	30-Jun-22	NEW	4,912,394.00	2,933,950.00
	Culture Conditions and Environmental Effects on Metabolite Production, Dermal Morphing and Regeneration in Stichopus cf. horrens	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Experimental scale culture will be conducted to produce juveniles and adults with known rearing history and ages. The cultured animals will be used in systematic manipulative experiments in the laboratory and field to determine the factors affecting secondary metabolite production and dermal sloughing and regeneration. Growth, survival and behavioral responses under different rearing conditions. Comparison between juveniles and adults will also provide valuable insights on the effects of ontogenetic development. The secondary metabolites and the physico and chemo mechanical properties of the body wall of replicate animals subjected to the different experimental treatments (i.e. light, density, simulated predatory threats, age) will be analyzed as part of the PCAARRD DOST project on high-value biomolecules to be implemented by the UPS Institute of Chemistry. Pilot demo site for ocean nursery and grow-out culture will also be established with community partners in Bolinao in conjunction with the field experiments.	Products â€¢ Pilot demo culture system for S. horrens in Bolinao, Pangasinan Publication â€¢ At least 1 paper submitted for publication; â€¢ Paper/ poster presentations in regional/local conference People and Services â€¢ In this 2-year project, researchers and graduate students will be mentored and trained on hatchery production and ocean rearing of Stichopus horrens. â€¢ At least 2 graduate students and 2 research assistants/aides will be trained Partnerships â€¢ Interdisciplinary research collaboration with UPD Institute of Chemistry will be undertaken Policy â€¢ S&T based information that will input into policies or guidelines for LGUs and DA-BFAR with focus on S. horrens Social Impact â€¢ Improved interdisciplinary collaboration among biologists and chemists; exchange of information with local policy makers/resource managers, fishers and other stakeholders and other interest groups Economic Impact â€¢ Progress towards development of culture and biomolecules that will provide potential additional economic streams aside from premium grade trepang	UPD	â€¢ The research/scientific community, as results generated from the abovementioned studies and observations will open doors for further researchable areas on sea cucumber ecology (organismal, molecular, and biochemical) and fishery stock management (e.g., culture-based restocking and stock enhancement) â€¢ Local fisher partners in pilot demo site â€¢ LGU and local resource managers will have science-based information to improve sea cucumber fisheries management	1-Mar-20	28-Feb-21	NEW	4,959,980.00	2,476,459.00
	Current Status and Resilience of Coral Reefs in Lagonoy Gulf, Eastern Bicol	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Coral reefs are strongly connected by currents and many coral reef organismsâ€™ recruits in one area may depend on the coral reefs of other areas. Therefore, when considering management and conservation of coral reefs, it is vital to understand the current status of coral reefs in both small and large scales. This information is critical for management and conservation planning for local coral reefs. This project determines the current status of the coral reefs and its resilience considering the key functional groups (herbivores, algae, and corals) as well as the socioeconomic influence that would regulate coral reef ecosystems which are critical inputs in the management and conservation of coral reefs in Lagonoy Gulf.	Products â€c IEC on coral reef resiliency â€c Maps and databases Publication â€c 2-3 research paper in ISI or peer reviewed journal â€c Submission of Abstract and presentation in two (2) prestigious International Coral Symposium o Asia Pacific Coral Reef Symposium on June 2018 at Cebu City, Philippines. o International Coral Reef Symposium on June 2020 at Bremen Germany â€c At least 2-3 National conference presentation o PAMS o NRS o FIMFS Patents â€c At least 5 copyrights on Maps and IEC materials produced People Services â€c 4 University personnel trained on reef assessment methodologies, data processing and analyses especially in relation to reef resiliency. â€c 1 seminar-workshop organized (at least 50 participants) for LGUs and CRM practitioners on reef resilience and establishment of MPA. Places and Partnerships â€c 10 â€“ MOA (between Bicol University and the 10 Municipalities covered in this study). â€c Partnership and collaboration with Partido State University (PArSU) in Camarines Sur, Catanduanes State University (CatSU) and Bicol University	BU	Regulatory Bodies such as BFAR and DENR, LGUâ€™s of 9 municipalities and 1 city and Researchers and Academicians of Partido State University (PArSU) in Camarines Sur; Catanduanes State University (CatSU) and Bicol University	1-Nov-17	31-Oct-20	COMPLETED	4,989,572.00	699,443.79

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Deep Fish 360: Development of a Mesophotic Reef Fish Imaging System	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will contribute in addressing limitations in the conduct of research activities in the mesophotic areas by developing a reef fish imaging technology that would allow researchers to gather fisheries data using phototransects. A stereo camera system will be mounted on an ROV for conducting video transect measurements of fish assemblages and the associated video analysis software that can estimate fish count, population density, size,species distribution and biomass. This system is intended for baseline measurements to provide permanent visual records that can be analyzed by experts for long term studies of mesophotic ecosystem changes across spatial and temporal scales. Further it will allow the conduct of longer and more frequent transect surveys in both horizontal and vertical directions at lower costs and without the diver risks inherent in deep dives (e.g. risk of deep decompression diving).	Publications â€¢ 2 peer reviewed papers Patents â€¢ 1 copyright or patent on the ROV and software Products â€¢ ROV with software for counting, identification and biomass estimation of fishes found at mesophotic depths â€¢ Database (mesophotic fishes) People and Services â€¢ Training of 5 scientists/researchers in the use of the ROV â€¢ 6 undergraduate and graduate students on hard- and soft-ware development Year 1 Outputs Patents â€¢ 1 copyright or patent on the ROV rig. A mesophotic reef fish imaging system for efficient image capture of underwater video sequences of mesophotic fish species through a custom-build ROV-mounted camera rig system Products â€¢ ROV rig â€¢ Database (mesophotic fishes in 1 site) Year 2 Outputs	UPD	Researchers/scientists LGUs and NGOs tasked with monitoring the marine ecosystem	1-Nov-18	31-May-21	ONGOING	5,036,014.00	1,271,260.42
	DNA Barcoding of Selected Marine Fishes in Davao and Sulu Archipelago (Old Title: DNA Barcoding of Selected Marine Fishes in Basilan, Sulu and Davao Provinces)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This study will initiate the DNA barcoding of fishes that are located in highly diverse reef areas of Davao and Sulu Archipelago (Sulu, Basilan and Tawi-Tawi).	Publicatins â€¢ 2 indexed publications Products â€¢ DNA barcode information for more than 300 species of marine fish from Basilan, Sulu, Tawi-Tawi and Davao region â€¢ Database library on DNA barcodes of marine fishes from Basilan, Sulu, Tawi-Tawi and Davao â€¢ Functional web design on DNA barcoding information based from the collection sites â€¢ All the analyzed COI sequences submitted to GenBank, BOLD, and Cryobank People Services â€¢ 10 faculty/staff from UP Mindanao, DNSC, DOSCST, USEP, Davao Doctorâ€™s College trained on DNA barcoding extraction protocol â€¢ 6 BS Biology students of UP Mindanao obtained undergraduate thesis assistance Places and Partnerships â€¢ Prior Informed Consents (PICs) from 8 LGUs (Davao City, Gov. Generoso, Lamitan City, Isabela City, Jolo, Tongkil, Sibutu and Sitangkai), commodity clearance and gratuitous permit from DA-BFAR â€¢ 3 MOA signed with MSU-TCTO, DNSC and DOSCST for research collaborations and technical support	UPMin	Academe, government sectors, fisherfolks and resource managers for the protection/conservation of marine fishes in the Basilan, Sulu, Tawi-Tawi and Davao. Faculty/Staff of HEIs in Davao Region (DNSC, DOSCST, USEP, Davao Doctorâ€™s College) and in MSU-TCTO for the hands on training on DNA barcoding BS Biology students and faculty member of UP Mindanao	1-Jan-18	30-Apr-21	ONGOING	4,999,105.00	685,793.20
	Fisheries Catch Assessment Using GPS Trackers and Effort Survey of Municipal and Commercial Fishers in Mindanao (Fisheries Catch Assessment using IoT (Internet of Things) based GPS Trackers and Effort Survey of Municipal Hook and Line and Ringnet Fishers and Purse Seine Fishers in Mindanao)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will focus on utilizing internet-based gps trackers that will be used to track the movement and distance fished by municipal and commercial fishers. The gps tracker will send signals that will utilize both satellite, existing cellular and radio antennas.	1. Five ISI/SCOPUS publications 2. 2 Patentable tracker prototypes 3. 6 presnetations 4. Development of IEC materials 5. Policy guide on fishing effort distribution and mapping	DOSCST	Tuna industry, municipal and commercial fishers of tuna and pelagic resources, LGUs, academe, fishing companies	1-Aug-19	31-Jul-21	ONGOING	8,033,440.00	4,242,106.04
	Jellyfish Ecology and Envenomations	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project seeks to generate basic information on the taxonomy and ecology of box jellyfish in the Philippines through a collaboration of experts at DLSU, MSU-IIT and Ateneo de Naga. The information will be used to inform the public and guide local officials and tourism operators.	Products - Profile of box jellyfish (Caramoan, Cam Sur and Lian, Batangas) Publication - One scientific paper in a peer reviewed, abstracted publication - Posters, Brochures, Infographics People and Services - Public seminars or consultations Places and Partnerships - MOU between DLSU and Lian, Batangas (existing), MOA between DLSU and MSU-IIT (existing) Policy - Policy brief targeting local officials Social Impact -Help dispel fears and misconceptions about jellyfish envenomation Economic Impact - Help reduce impact on tourism and fishing	DLSU	Policy makers, Coastal residents, researchers, tourism operators, and fishers	16-Oct-20	15-Oct-22	NEW	4,874,706.00	2,668,706.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Kuroshio Current Observing System in the Philippines: Remote observations of the interactions of the Kuroshio with Internal Tides and Mesoscale Currents in Luzon Strait by High Frequency Doppler Radio Scatterometer	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Our current understanding of the forcing mechanisms that determine the Kuroshio intrusion into the LS remains limited, whether from observational evidence, laboratory experiments, theoretical analyses, or numerical model simulations. The role of the Kuroshio in the momentum, heat and salt budgets of the WPS and of the Indonesian Through-Flow (ITF) is receiving increased attention; time series of maps of currents at high temporal and spatial resolution are needed to resolve the dynamics of the governing processes. This Kuroshio Current Observing System will yield an improved understanding of the oceanography of southern Luzon Strait (LS), and provide ocean currents measurements of Balintang and Babuyan channels. Processes that will be studied include the intrusion of Kuroshio Current, mainly through the Balintang Channel (e.g., Chern and Wang, 1998; Liang et al., 2003, 2008; Yuan et al., 2008a), mesoscale currents and in particular island wakes, topographically-generated internal tides and internal waves, their mutual interactions, and their modulation by low frequency fluctuations such as the El NiÃ±o/Southern Oscillation (ENSO) and the Pacific Decadal Oscillation (PDO). The surface currents data will also benefit biochemical oceanography studies, as well as ecology and fisheries. It will also provide environmental data for developing and conserving marine resources in southern Luzon Strait, in particular around the Batanes and Babuyan Group of Islands.	Products â€¢ Database of surface currents and in-situ data â€¢ Time-series oceanographic data Publication â€¢ 3 Scientific Journals People Services â€¢ 10 Trained Personnel â€¢ 5 Graduate Students - 4 MS Marine Science students - 1 PhD student Partnerships â€¢ MOA with University of Hawaii and Woods Hole Oceanographic Institution Policy â€¢ S&T based information that will input into policy or guidelines for conservation and management of marine resources for Southern Luzon Strait	UPD	Philippine government agencies/ academe/ researchers who use surface current maps for maritime safety, search and rescue operations, weather forecasting, maritime enforcement, marine science, oceanographic research and fisheries.	16-Dec-17	15-Jun-21	ONGOING	35,609,106.00	7,570,569.53
	Macronutrient, Carbon Cycling, and Aerosol Deposition: Impacts on Phytoplankton Community Structure and Toxin Production of Harmful Algal Blooms (Trace-HABs)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The proposed project will look into the interactive effects of various growth factors (e.g., light intensity, temperature, macro- and micronutrient availability) on the occurrence and toxicity of Alexandrium and Pyrodinium blooms in two major sites in the Philippines: Bolinao in Pangasinan and Cancabato Bay in Tacloban City. These areas are identified as study areas because harmful Alexandrium and Pyrodinium blooms have been reported in these sites where coastal communities also rely on fisheries as a major source of food and income. The project results are expected to benefit coastal communities in the study areas as well as the Philippine population, in general.	Product: - Knowledge/knowhow/information regarding interactive effects of trace metals with other growth factors of HABs - Database of macronutrient concentrations - Module/training program for trace metal-defined algal cell culturing conditions People services: - Trained personnel in metallomics and trace metal biogeochemistry (including all 3 research staff that will be hired during the project duration) - On the job trainees/interns (about 5 per year) - Addition to scientific workforce by graduating science majors (estimated 3 graduate students for the duration of the project) Publications: - ISI-indexed publication (estimated 2-4 peer-reviewed articles for the duration of implementation) - Papers in national and international conferences (estimated 1 per year) - IEC materials: posters, proceedings Places and Partnerships: - Established laboratories including ¡ A laboratory equipped with facilities for trace metal-defined algal cultures ¡ A core measurement facility for major nutrients - Partnership with Academia Sinica Policy: - Policy briefs on discharge of riverine and anthropogenic wastes especially those that are	UPD	General Public Coastal Communities Academic/Scientific Community	1-Jun-20	31-May-23	NEW	12,508,077.00	5,167,388.00
	Pangtawid Program for Coastal Communities in Palawan Affected by the Luzon Lockdown through Seaweed Farming	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Amidst this health and economic crises, the seaweed industry is among the most vulnerable sectors of the society. Seaweeds and its derivatives (e.g. carrageenan) are export commodities and are therefore largely affected by disruption in global market and supply chain due to COVID 19 pandemic. Considering further that the bulk of Philippine seaweed production goes to China, which is heavily affected by the disease, a decrease in total export of seaweed is expected to drop. As early as February, decrease in seaweed export to China was recorded at 55% (http://www.neda.gov.ph). During the entire ECQ, seaweed farmers had suffered the above-economic consequence as demand for raw material decreased and the prices have fallen (https://moderndiplomacy.eu). The lifting of ECQ in Palawan starting May 1, 2020 calls for an intervention to support seaweed farmers in coping this economic crisis. Providing assistance to farmers will result not only to meeting their basic daily needs but also to attain food security in the country despite of pandemic (https://www.officialgazette.gov.ph/). The Palawan State University-Marine Science Laboratory (PSU-MSL), aims to intervene through the proposed project, â€œPangtawid Program brought about by Luzon Lockdown for Palawan through Seaweed Farmingâ€ This project will utilize the laboratory-reared cultivars from its completed DOST-funded project, Use of Branch and Spore Culture Technologies to Enhance Seaweed Production in Farmsâ€ in 2012-2014, which are being propagated in established seaweed nurseries of PSU in San Vicente, Quezon, and Bataraza, Palawan. The selected fast-growing cultivars from these nurseries shall be dispersed to the target beneficiaries of the project in order to augment their livelihood and subsequently increase their income.	Products â€¢ At least three (3) hectares of seaweed sea-based nurseries with pre-selected fast- growing cultivars awarded to seaweed farmers associations Publication â€¢ One (1) technical paper presented in scientific conference People and Services â€¢ At least 100 farmers trained on initiation of community-based seaweed enterprise Places and Partnerships â€¢ At least three (3) partnership agreements with LGUs and seaweed farmer associations	PalSU	â€¢ Seaweed Farmers/Association	1-Jul-20	31-Dec-20	NEW	983,211.00	983,211.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Product Development of Vacuum Fried Tuna Skin	KRA 3: Rapid, Inclusive and Sustained Economic Growth	As the human population is growing and their consumption behavior changing, the worldwide demand for fishery products is increasing. Fish is considered safer and healthier to be consumed when compared with animals as source of protein. Fish is also one of the main source of protein in the developing countries. Fishing is one of the major industries in the Philippinesâ€™ agriculture, fisheries and forestry sector. It is still one of the top fish producing countries in the world. Over 1.6 million Filipinos depend on the fishing industry for their livelihood. The Philippines is also considered a major tuna producer in the Western and Central Pacific Ocean (WCPO). The fishing industryâ€™s contribution to the countryâ€™s Gross Domestic Products (GDP) in 2015 was 1.5% and 1.7% at current and constant prices, respectively (Philippine Fisheries Profile, 2015). Tuna remain as the top export commodity with a collective volume of 104,984 MT for fresh/chilled/frozen, smoked/dried and canned tuna products valued at US $296 million. Canned tuna constitutes the major bulk of tuna products being exported (Philippine Fisheries Profile, 2015). It is identified as one the priority commodity from the DOST harmonized national research and development agenda for 2017-2022 focusing on processing and new product development of the aquatic priority commodity aside from seaweeds. Most of the municipal and commercial catch of tuna is increasingly directed towards processing canneries which utilized only the meat portion. These kinds of processed products generate a large amount of by-products like head (13%), skin (10%), visceral organs (8%), bones (6%), fins (1%). These are sold to village people for human consumption (main ingredient for soups, while others are prepared as fried products). Tuna skin is also processed further. It is prepared as â€œdried tuna skinâ€	Products â€¢ Vacuum fried tuna skin. â€¢ Information on the acceptability and nutritive value of the newly developed product from tuna wastes. Publications â€¢ At least 1 paper for publication (acceptability of vacuum fried tuna products through consumer test/processing optimization of vacuum fried tuna products). People Services â€¢ 15 trained panelists on descriptive testing and product sensory evaluation. Places and Partnerships â€¢ Partnership with Southern Philippines Agri-Business and Marine and Aquatic School of Technology (SPAMAST) and Philippine Women College. â€¢ Partnership with the Department of Science and Technology-Region 11 Patents â€¢ 1 utility model (Process of producing vacuum fried tuna skin)	DNSC	Tuna industry LOcal Fisherfolk Small, Medium and Micro Enterprises	1-Oct-19	30-Sep-22	ONGOING	5,000,000.00	2,545,642.00
	Reproductive Biology and Catch Documentation and Traceability of Small-scale Commercial Sardine Fishery in the Sulu Archipelago	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project will assess the sardine fisheries stock in selected sites in the Sulu Archipelago including the reproductive biology of dominant species. Comprehensive surveys shall be conducted for the small-scale commercial fishery sectors, specifically for the â€œkulibuâ€ or ringnet which operate mostly in Tawi-Tawi and other coastal fishing grounds in the Sulu Archipelago.	Products â€¢ Map of fishing effort â€¢ Information on the reproductive biology of dominant sardine species â€¢ Harvest control reference points â€¢ Sardine fisheries profiles for LGUs Publication â€¢ At least 2 manuscripts submitted for publication in ISI indexed journal â€¢ At least 2 IEC materials (posters) on species and reproductive patterns of sardines in the Sulu Archipelago People and Services â€¢ Supported at least 1 undergraduate thesis student â€¢ Capacitated staff of MSU Sulu, MSU TCTO, MAFAR on sardine stock assessment Places and Partnerships â€¢ MOA with Mindanao State University (MSU) Sulu â€¢ Local partnership with LGUs of Bongao, Tawi-Tawi, Jolo, Sulu and MAFAR Policy â€¢ S&T based information that will input into policies or guidelines for the harvest control rules/measures and other fisheries management plans in the study areas Social and Economic Impact â€¢ The fisheries management plans that will be developed through the project can optimize fishing effort and maintain the viability of local sardine stocks in Sulu Archipelago. This is important in sustaining the livelihood and food fish of the local community. The results will	MSU-TCTO	â€¢ Local small-scale commercial and municipal fisheries sector â€¢ Fisheries stakeholders & consumers â€¢ LGUs â€¢ MAFAR â€¢ Academe/researchers	1-Jul-20	30-Jun-22	NEW	4,846,300.00	2,834,777.00
	Ridge to Reefs Modelling and Monitoring for Decision Support System	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will help elucidate the type and volume of agrochemicals used in the surrounding areas as well as other pollutants that have leached into the bays to possibly cause marine pollution.	Product: â€¢ 1 potential technology on Comprehensive Coastal Ecosystem-based System (CCES) with scientific basis and will be packaged for environmental monitoring â€¢ Ecological Map People services: â€¢ 2 Public symposia Publications: â€¢ 1 Operatorâ€™s Manual â€¢ 1 Technical Brochure â€¢ 2 Published Technical Paper â€¢ 2 Paper presentations (local and international conferences) â€¢ 1 Report (written in layman's language for DOST and LGU) Partnerships: â€¢ 2 Partnership (MOU/MOA) with PO & LGU â€¢ 1 Research service agreement with University of Tokyo Policy: â€¢ Policy recommendation as inputs in the crafting of city or Barangay ordinance	DOSCST	Coastal Communities in Pujada and Mayo Bays, City of Mati; Local Government Unit (City and Barangay levels); Protected Area Management Board of Pujada Bay Landscape and Seascape; Davao Oriental State College of Science and Technology (DOSCST); and Regional Integrated Coastal Resource Management Center (RIC-XI) Region XI	16-Jun-19	15-Jun-21	ONGOING	2,943,844.00	1,310,121.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Screening for Radionuclide Contamination from the Fukushima Accident by Iodine-129 Measurement in Corals from the Philippines	KRA 3: Rapid, Inclusive and Sustained Economic Growth	It is timely for the Philippines to conduct research studies to investigate the effect of the Fukushima accident to the country, especially to assess if it poses any threats to its people. The KRG, which presumably brings radioactive material from the Fukushima accident, hits the northeastern part of the Philippines from Cagayan Province and possibly down to the Bicol Region, with the current periodically migrating northwards and southwards with seasonal and decadal variations. One possible way of assessing if the Fukushima accident has already affected these regions is by analyzing Iodine-129, a nuclear fission product, in corals growing in these locations.	End of the Project Outputs Place a. A laboratory for 129I/127I analysis (Place) Publication a. At least 2 local and 2 international conference presentations. b. At least 2 ISI publications detailing: i. Three (3) coral cores from Cagayan, Aurora, and Camarines Norte regions and their age models. ii. 129I/127I time series profiles of the three (3) coral cores. iii. Baseline values of 129I before 1950s (nuclear age) and before the Fukushima accident. iv. Radionuclide contamination assessment and comparison in the three (3) coral locations from pre-nuclear age (1950s) to present. v. Description of ocean transport mechanism of radionuclide contamination to the three (3) coral locations. Policy a. Policies or guidelines for radionuclide contamination from the Fukushima accident to northeastern Philippines and for similar future incidents. Year 1 Outputs Place a. Establishment of a laboratory (i.e., both equipment and personnel) capable of processing and measuring I-129 and I-127 in coral samples. Publication (sample and data acquisition): a. Acquire 1st coral sample	PNRI	Regulatory Bodies, LGUs, Research Institutions, Academe, and the General Public	1-Feb-18	31-Jan-21	ONGOING	7,623,639.00	1,899,824.48
	Transcriptome and Metabolome Profiling of Seaweeds to Elucidate "Ice-ice" Diseases and Epiphyte Infestation Mechanisms	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project proposes the utilization molecular biology and biochemical techniques, namely comparative transcriptomic and non-targeted metabolomics analysis, in order to understand the molecular mechanisms underlying the occurrence of ice-ice disease and epiphyte infestations in commercially important seaweed species (Kappaphycus sp. and Eucheuma sp.). To date, studies on the development of ice-ice disease have been limited to correlating environmental factors that may cause the disease or isolating potential bacterial pathogens that may cause or aggravate the disease. Despite these studies, a clear consensus as to what actually causes the disease has still not been reached. In fact, from our consultations with several seaweed producers, varying descriptions of the manifestation of ice-ice disease have been noted, indicating that there could be more than one single causative factor for this disease. In relation to epiphyte infestations, although improved resistance of fertilized seaweeds has been observed, actual host-parasite interactions and the underlying mechanisms for this phenomenon have received little or no attention at all. Understanding the actual physiological status of disease-affected seaweeds at the molecular level (using RNA and metabolites) will therefore allow us to pinpoint more specific causes and will eventually lead to formulating better strategies in preventing or mitigating the disease through better culture practices.	Publications â€¢ 1 Publication possibly related gene expression profile changes in response to diseases â€¢ 1 Publication possibly related to genes that can be associated with disease resistance Policy â€¢ 1 Policy recommendation on possible biosecurity measures or zoning areas for farms People and Services â€¢ Support for at least 2 undergraduate students and 2 MS students â€¢ Dissemination of improved knowledge on ice-ice and epiphyte infestation to seaweed farmers (This is in relation to updating current practices in managing ice-ice and epiphyte infestation) â€¢ Provide science-based farming strategies based on molecular data to mitigate or manage disease occurrence in seaweed farms Places and Partnerships â€¢ 5 collaborations (SEAFDEC, PSU, UA, CTU, NIPSC, MSU-Tawi tawi)	UPV	Seaweed Farmers and Researchers in Seaweeed Biotechnology	1-Feb-20	31-Jan-22	NEW	12,483,797.00	6,845,336.00
Accelerating the Growth and Assessing the Impacts of Gender-sensitive and Technology Enhanced Organic Vegetable Production in the Province of Laguna	Proj. 1 Expanding organic vegetable production through farmer capacity building in organic vegetable production and marketing in Laguna	KRA 1: Transparent, Accountable and Participatory Governance	The project is an expansion of the the pilot study of Gonzalez (2016) by expanding training on organic vegetable production from the past study in order to increase organic vegetable production and marketing in the province of Laguna.	The expected outputs of the projects are the following: Publications â€¢ Poster/oral presentation â€¢ Article focused on training/capacity development Products â€¢ Compilation of organic vegetable production training materials with draft training curriculum for organic vegetable production Places and partnerships â€¢ Linkages with LGUs and NGAs People and services â€¢ Capacities of farmer households on organic vegetable production and marketing enhanced.	UPLB	â€¢ Farmers interested in organic vegetable production â€¢ Local consumers of organic vegetables	1-Mar-20	28-Feb-21	NEW	2,453,608.00	2,453,608.00
Accelerating the Growth and Assessing the Impacts of Gender-sensitive and Technology Enhanced Organic Vegetable Production in the Province of Laguna	Proj. 2 Assessing the economic impacts of technological intervention on organic vegetable farm profitability and gender roles in organic farming	KRA 1: Transparent, Accountable and Participatory Governance	This initiative would evaluate the economic impacts of technological interventions in organic vegetable production on both farmer profits and household wellbeing using a randomized controlled trial (RCT). RCTs offer more rigorous documentation of impacts than commonly used methods such as before-and-after designs or enrolled-versus-unenrolled designs.	The expected outputs of the projects are the following: Publications â€¢ 2 journal publications in peer-reviewed journals; â€¢ Impact Assessment bulletin â€¢ Policy report that documents the programâ€™s outcomes and social, economic and environmental impacts to society in the Philippines. â€¢ Enterprise budget for organic vegetable farmers and factsheet; Places and partnerships â€¢ Linkages with LGUs and NGAs People and services â€¢ Capacities built on the use of RCT enhanced Policy â€¢ Discuss policy implications in relation to development and deployment of the technological interventions	UPLB	1. Farmers who have not tried organic vegetable production; 2. Policy and decision makers, national R&D/S&T system and the funding agencies supporting R&D activities; 3. Researchers who are directly involved in technology generation as well as those whose field of study included technology assessment and impact assessment; and 4. Evaluators of R&D programs, including PCAARRDâ€™s Socio-Economics Research Division.	1-Mar-20	28-Feb-22	NEW	2,546,392.00	1,168,930.50

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Development of Appropriate Innovation Approaches in the Context of Selected Small Island Municipalities in Southern Luzon	Project 1. Development of Appropriate Innovation Approaches in the Context of Selected Small Island Municipalities in CALABARZON Region	KRA 1: Transparent, Accountable and Participatory Governance	Small island communities are home to many of the poorest and most vulnerable households in the country. Examination of 2012 PSA poverty data on 48 island municipalities in the Philippines reveals 43 as having poverty incidences higher than the national average of 25 percent. On average, these municipalities have about 42 percent of their population with per capita income less than the poverty threshold. In Regions 4A and 4B, ten out of 12 island municipalities register poverty incidences lower than the national average. The municipality of Jomalig in Quezon Province, for instance, has a poverty incidence as high as 58 percent. Being separated by water from other land masses, each island communityâ€™s livelihood options and capacity for economic development is restricted by its land area and remoteness. In particular, small island states which are associated with limited land-based resources and in turn, low and lessdiversified agricultural production, have been reported to be heavily dependent on imports (IFAD, 2014). As many small islands rely mainly on sea and air transport services for access to the mainland, poor transportation and communication networks exacerbate the problem (CCS, 2011). The narrow resource base of small islands provide a limited array of development options such that large dependence on the available natural resources for food and livelihood can push them beyond natural carrying capacity (CCS, 2011). As a result, the natural ecosystems are sacrificed in pursuit for economic development.	Two market viability analysis reports (information on market viability) for S&T innovation based priority livelihood niche in the island-sites - one conference paper - one publishable journal article or working paper - one policy recommendation/paper identifying S&T interventions in Region 4A appropriate for sustainable development of small island municipalities - partnership with DOST Regional Office in 4A	UPLB	Beneficiaries of the project will include policy-makers, administrators and researchers of R&D agencies, development organizations, and ultimately, citizens in each small island municipality	1-Jan-19	31-Dec-21	ONGOING	2,529,879.00	1,187,237.79
Development of Appropriate Innovation Approaches in the Context of Selected Small Island Municipalities in Southern Luzon	Project 2. Development of Appropriate Innovation Approaches in the Context of Small Island Municipalities in the MIMAROPA Region	KRA 1: Transparent, Accountable and Participatory Governance	- Background Small island communities are home to many of the poorest and most vulnerable households in the country. Examination of 2012 PSA poverty data on 48 island municipalities in the Philippines reveals 43 as having poverty incidences higher than the national average of 25 percent. On average, these municipalities have about 42 percent of their population with per capita income less than the poverty threshold. In Regions 4A and 4B, ten out of 12 island municipalities register poverty incidences lower than the national average. The municipality of Jomalig in Quezon Province, for instance, has a poverty incidence as high as 58 percent. Being separated by water from other land masses, each island communityâ€™s livelihood options and capacity for economic development is restricted by its land area and remoteness. In particular, small island states which are associated with limited land-based resources and in turn, low and lessdiversified agricultural production, have been reported to be heavily dependent on imports (IFAD, 2014). As many small islands rely mainly on sea and air transport services for access to the mainland, poor transportation and communication networks exacerbate the problem (CCS, 2011). The narrow resource base of small islands provide a limited array of development options such that large dependence on the available natural resources for food and livelihood can push them beyond natural carrying capacity (CCS, 2011). As a result, the natural ecosystems are sacrificed in pursuit for economic development	- two market viability analysis reports (information on market viability) for S&T innovation based priority livelihood niche in the island-sites - one conference paper - one publishable journal article or working paper - one policy recommendation/paper identifying S&T interventions in Region 4B appropriate for sustainable development of small island municipalities - partnership with DOST Regional Office in 4B	UPLB	Beneficiaries of the project will include policy-makers, administrators and researchers of R&D agencies, develop organizations, and ultimately, citizens in each small island municipality.	1-Jan-19	31-Dec-21	ONGOING	2,470,121.00	1,156,926.00
Development of Mixed Method Approaches to Impact Assessment of Philippine Research Projects	Project 2. Development of Mixed Method Approaches to Impact Assessment of Selected Research Projects in Cenral Philippines	KRA 1: Transparent, Accountable and Participatory Governance	Recognizing that research for development projects are becoming increasingly complex, multi- or trans-disciplinary and occur in dynamic settings, a need for more holistic and multidimensional approaches in assessing the projectsâ€™ livelihood, economic, social and environmental impacts is evident. Hence, the mixed method approaches to impact assessment are deemed more appropriate to understand the impact pathways and appraise the resulting impacts and capacity development among the research partners and communities in which projects are implemented.	1. Products, mixed method approaches to impact assessment; 2. Publications, including guidelines for the mixed method approaches to impact assessment, 2 journal articles, workshop reports, and terminal report; 3. People and services, in terms of researchers trained on mixed method approaches; and 4. Places and partnerships, including partnership with ACIAR and CSIRO; partnership with regional impact assessment stakeholders; Landcare implementers (LGUs and Landcare Foundation)	VSU	policy-makers, administrators of R&D agencies, researchers pursuing impact assessment activities, and stakeholders of each of the selected research programs.	1-Mar-18	31-Aug-20	COMPLETED	3,134,128.00	734,636.10

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Analysis of the Socio-cultural, Economic, Institutional and Technological Drivers Causing Youth's Disinterest in Agriculture as a Profession and Livelihood Source	KRA 1: Transparent, Accountable and Participatory Governance	This research aims to address the dearth of knowledge involving Filipino youth and agriculture. Agriculture will rely on young people with better education, ability, and entrepreneurial skills so that innovations and better transformations may occur in the sector to make it more dynamic, competitive, and profitable.	Publication: At least 1 Paper for publication: Socio-cultural, economic, institutional, and technological drivers causing youthâ€™s disinterest in agriculture One (1) Policy Paper Policy: Policy recommendations in relation to motivating the youth to get interested in agriculture as a profession and source of livelihood Product: Database on socio-cultural, economic, institutional, and technological drivers about youth and agriculture R&D Framework to enhance youth engagement in agriculture Partnerships: Partnership with Department of Agriculture and Department of Education at the Municipal level Economic Impacts 1.Addresses food security through efficient agricultural technologies 2.Provides employment for the youth by making agriculture more attractive Social Impacts 1.A stronger curriculum that underscores the relevance of agriculture among the youth 2.Better agricultural policies that support youth engagement in agriculture	UPLB	1.Policy and decision makers to improve national R&D/S&T system and the funding agencies supporting R&D activities. 2.Researchers who are directly involved in youth and agriculture, and agricultural development	1-Oct-20	30-Sep-22	NEW	5,000,000.00	3,024,373.20
	Assessment of Cost and Benefits of Various Crop Management Options using Crop Advisories of SARAI Advisory System (Assessing the Market Potential of Selected Technological Outputs of SARAI)	KRA 1: Transparent, Accountable and Participatory Governance	Farmers must be assisted in becoming wiser in their farm decision making process by ensuring that they are knowledgeable in how utilize weather and climate forecasting results provided by SARAI along with the market trends of the agricultural commodities they intend to plant. As such, the costs and benefits to be incurred by the farmer in relation to utilizing a combination of SARAI technological outputs would be critical in understanding its likelihood of adoption both in the short- and the long-term farming decision scenarios. Given that this kind of analysis is usually absent in many technological interventions in the agricultural sector in the Philippines in general and in the case of SARAI in particular, this study will specifically assess the costs and benefits of various crop management options using technological outputs of SARAI, and to be complemented with market analysis of technological outputs of the SARAI program. Combining all these information, once available in due time, will surely afford all government planners and regulators a clear basis as to how large-scale agricultural technological systems interventions like SARAI be made more effective and responsive to the need of its target farmer beneficiaries. Thereby ensuring that massive investment on large agricultural technological systems will indeed redound to substantial net benefits.	Publication: â€¢ One (1) information bulletin â€¢ One (1) draft journal for publication in ISI journal Policy: â€¢ Policy advocacy for the enhancement of uptake of the advisory system People and services: â€¢ 5 researchers trained on choice experiment, demand forecasting, and crop management options analysis	UPLB	Local farmers, cooperatives, and organizations in the Philippines Government agencies such as Department of Agriculture (DA) and the Department of Science and Technology (DOST)	1-Jul-20	31-Dec-21	NEW	4,934,693.00	3,376,345.00
	Assessment of Policy Constraints to the Effective and Efficient Conduct of Public R&D in the Philippines	KRA 1: Transparent, Accountable and Participatory Governance	In May 2019, PCAARRD presented its legislative agenda to the Congressional Policy and Budget Research Department. A systematic evaluation of the procurement law, rather than anecdotes alone, is highly suggested to point the specific weakness/ problems of the law and how the specific provision really stifles the R&D in the Philippines. It should be able to determine the specific nature of S&T that makes it different from other sectors and would support the need for a separate manual or legislation.	â€¢ Publication- 1 draft for journal article and 1 policy brief â€¢ People Services- Seminar series for the presentation of findings to relevant policy makers â€¢ Policy- Policy recommendations on financial management of public R&D Economic Impact - Improved innovative capacity Social Impact - Improved R&D governance	UPLB	Scientists, researchers, R&D personnel, SUCs, RDIs, DOST	1-Jun-20	31-May-21	NEW	3,500,000.00	3,500,000.00
	Development of a Blue Economy-based Science and Technology Innovation (STI) System for the Agriculture, Aquatic and Natural Resources Sectors	KRA 1: Transparent, Accountable and Participatory Governance	At present, there have been several programs related to coastal and marine resources in the Philippines, however whether these are complementary with the blue economy remains as a question. The management of the coastal and marine resources have been enshrined through and operationalized by the Coastal Resources Management (CRM) program. The program aims to conserve these valuable ecosystems and ensure that its ability to support larger societal goals are realized particularly in terms of food security and poverty reduction. At the outset, there may be low regard for challenges that a blue economy may face like handling system for marine-based products, offseason livelihood options for fisherfolk, rising tourism versus intra-island food security, available natural capital and infrastructure vis-Ã -vis appropriate technologies, and high dependency on natural resources. In addition, much of the governmentâ€™s support to agriculture has for years been largely on landbased farming that surely would still need more in the coming years, but comparable support to aquatic-based agriculture must also be met with equal measure to ensure a more diverse agriculture-based economic system. Due to this, conventional land use planning perspectives has not maximized the full potential growth of the national economy particularly the huge growth potential by the coastal and marine resources both at the local and national levels.	Policies â€¢ A set of policy recommendations for the strengthening of science and technology innovation (STI) system to support the blue economy implementation in the country People and services â€¢ Training of three (3) researchers, and at least two (2) graduate students in UPLB Publication â€¢ Compendium of dataset on the quantity and quality of agricultural commodities related to coastal and marine resources in Eastern Samar and Siargao Island; â€¢ At least one (1) journal draft article for publication in ISI journals.	UPLB	â€¢ Communities (farmers and fisherfolk) of Siargao Island and Eastern Samar â€¢ Municipalities and peopleâ€™s organizations of Siargao Island and Eastern Samar â€¢ Department of Science and Technology (Regions 8 and 13) â€¢ Department of Agriculture (DA) â€¢ Philippine Climate Change Commission	1-Sep-20	30-Nov-21	NEW	5,000,000.00	3,231,719.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Development of Guidance Document for Contained Use and Importation of Genetically Modified Fish (GM Fish)	KRA 1: Transparent, Accountable and Participatory Governance	The DOST Biosafety Committee, during its meeting on 15 December 2018, decided to develop a regulatory guidance document for the importation for R&D and utilization of GM Fish in the Philippines. The need to have a guidance in place was emphasized when the Department of Agriculture â€" Bureau of Fisheries and Aquatic Resources solicited the opinion of the DOST-BC, as to whether or not to allow the importation of two (2) varieties of GM Zebra fish from Singapore. During the deliberations of the DOST-BC, it was recognized that the country needs to have a guidance for the importation and contained use of GM Fish. The idea of developing a policy on the regulation of GM Fish in the Philippines was first considered when the topic Risk Assessment and Risk Management on GM Fish was repeatedly brought to the attention of the Parties to the Cartagena Protocol on Biosafety during the biennial Conference of the Parties, where the Philippines is a member. As with any breakthrough, GM fish have considerable potential to further increase the yield of fish farms but have prompted serious concerns in a number of countries about the possible environmental impact on the wild species. Proponents of GM fish argues that this technology can provide better resistance, faster growth and improved food use. On the contrary, some believed that GM fish could further upset the oceanâ€™s delicate ecology which could lead to ecological disruption or species extinction.	1. People Services a. The Competent National Authorities, (Departments of Science and Technology, Health, Agriculture and Environment and Natural Resources), through their representatives in the group are expected to be acquainted with the GM Fish technology and be capacitated in carrying out risk assessment, as per their Departmentâ€™s mandate. b. The technical experts are expected to keep abreast of the recent developments in GM Fish technology, existing international and national standards, laws, and procedures pertaining to GM Fish technology. The Competent National Authorities, technical experts, technology developers are expected to build strong institutional collaboration and linkage conducive to the conduct of research and development and importation of GM Fish by ensuring that an effective. Efficient and predictable decision-making process on GM fish is in place. 2. Partnership a. The Competent National Authorities, technical experts, technology developers are expected to build strong institutional collaboration and linkage conducive to the conduct of research and development and importation of GM Fish by ensuring that an effective, efficient and predictable decision-making process on GM fish is in place. 3. Policy a. The group is expected to develop a guidance document on GM Fish, for presentation to and adoption by the National Committee on Biosafety of the Philippines for implementation by the Competent National Authorities in the country.	UPD	The project will greatly benefit the following agencies and research institutions: 1. Department of Agriculture â€" Bureau of Fisheries and Aquatic Resources 2. Institute of Environmental Science and Meteorology, University of the Philippines Diliman 3. Department of Science and Technology 4. Department of Environment and Natural Resources 5. Department of Health 6. National Committee on Biosafety of the Philippines Other beneficiaries: 1. Private and Public technology developers domestically and internationally 2. Exporters of GM Fish 3. Public Research Institutions 4. Members of the Public	1-Jul-20	31-Dec-20	NEW	1,187,267.60	1,187,257.60
	Development of Inclusive and Resilient S&T-based Vegetable Supply Chains for the New Normal	KRA 1: Transparent, Accountable and Participatory Governance	This project proposes to develop a supply chain for vegetables that can operate in both lockdown and post-lockdown scenarios, with a reliable production scale and is befitting limited cross-border transfers. The vegetables supply chain shall be inclusive, i.e., income generated is equitably shared with small farmers, with a production base that is highly supported by science and technology (S&T) and is compliant to food safety and proper handling. The production base shall adopt the internal control system (ICS) protocol and cleaning and disinfection protocol. Most importantly, it will involve a seamless supply chain management software solutions that will handle supply sourcing, inventory, distribution, and retail to minimize contact among suppliers, distributors, and consumers, as well as contamination of products.	Economic â€¢ Contribution towards supply/value chain that is more responsive to the new normal Social â€¢ Contribution to relief efforts: improved well-being especially of small farmers Publications â€¢ 3 Article about vegetable supply chains for the new normal â€¢ 5 Sanitation and handling protocol People Services â€¢ 8 Inputs to decision makers and policy makers on the improvement of vegetable industry in the municipality. â€¢ 5 Farmers trained on internal control system and PCAARRD recommended package of technology on vegetable production â€¢ 1 MAO-LGU and farmer groups capacitated on supply chain management â€¢ 1 Increased consumer awareness on safe vegetables Places and Partnerships â€¢ 2 Partnership with farmer groups, barangay officials, LGU and academe Product â€¢ 1 Vegetable supply chain model for the new normal Policy â€¢ 2 Policy recommendations based on issues and problems that would arise from the project â€¢ 1 Development of municipal ordinance for the promotion of safe vegetable production and	LGU-LB	The vegetable farmers of Barangays Tadlac, Timugan, Bagong Silang and Bayog are the primary beneficiaries of this study as supply chain management provides information and the opportunity to them on how to maximize their production and market their produce at the most efficient way under the new normal scenario. This opportunity for farmers has to be provided to them with assistance from LGU in order to increase the incentives available to them and motivate them to continue in vegetable production amid the pandemic. The other group of beneficiaries are the consolidators and distributors which would benefit from the spatial and temporal information about the vegetable production. Processors may benefit from this study as the information on the volume of vegetable may become available to them.	1-Aug-20	31-Jul-21	NEW	4,689,137.28	4,689,137.28
	Development of Smart Food Value Chain Models for Selected Agricultural Products	KRA 1: Transparent, Accountable and Participatory Governance	This project would then conduct a value chain analysis and develop intervention models to build a smart food value chain. The first part would embark on mapping and properly diagnosing the root causes of the problems. Building on the findings of the value chain analysis, the second part would design a mix of interventions that will address not only pre-existing issues but also new threats in the new normal. The mix of interventions shall emanate from the suite of production and post production technologies, technology diffusion modalities, processing innovations, smart technologies, and other solutions already developed through DOSTDOSTâ€™s funding. Examples are the integrated crop management and smart farming solutions for the production related problems, vacuum packaging machines and immersion freezers for post production needs, S&T Community based farms as means to diffuse technology, among others. All throughout the project implementation, different DOST agencies (Research Councils, RDIs, etc.) shall be onboard to participate in the design of intervention models and the Regional Offices shall particularly be the supply chain managers for their regions. The private sector, taking major roles at the downstream part of the value chain, shallalso be engaged at the onset of the model development.	Economic - Contribution towards supply/value chain more responsive to the new normal Social - Contribution to relief efforts: improved well being especially of small farmers Outputs Product - 5 supply chain maps; 5 intervention models Partnerships - At least 15 institutional partnerships (private companies, LGUs, schools, DOST regional offices) Publication - At least 5 Information Bulletin (1 per model) People Services - 5 regional offices capacitated on supply chain management	UPLB, CMU, UPV	â€¢ DOST regional offices â€¢ Farmers and fisherfolk, cooperatives and associations â€¢ Technology-based startups/spinoffs â€¢ Industry â€¢ General public/consumers â€¢ Local government units â€¢ Schools	1-Oct-20	30-Sep-21	NEW	5,000,000.00	4,766,039.28
	Development of Socioeconomics Research Remote Data Collection Protocols under the New Normal	KRA 1: Transparent, Accountable and Participatory Governance	The project will catalogue and evaluate protocols and good practice models in the remote and online collection of social research data. Focusing on current and future data needs of PCAARRD projects, the project will conduct remote surveys and FGDs among various stakeholders in the agriculture sector as well as different actors in the sector where data and information for various social researches in agriculture are typically sourced.	The project is expected to produce the following: 1. 1 Remote data collection protocols and guidelines for survey; 2. 1 Remote data collection protocols and guidelines for FGDs; 3. 1 Publications, including guidelines for the remote data collection protocols, policy paper, and terminal report; and 4. 10 Undergraduate and graduate students trained in designing and implementing remote data collection	UPLB	The beneficiaries of the project will include researchers, students, the academe, PCAARRD staff, policymakers, administrators of R&D agencies, researchers social research in agriculture, and stakeholders of each of the selected research programs.	10-Nov-20	30-Apr-21	NEW	535,000.00	515,348.90

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Enhancing the Development of Sweetpotato Food Value Chains in Central Luzon, Albay, Leyte and Samar, and Linking with Related Industries Phase 2	KRA 1: Transparent, Accountable and Participatory Governance	From the SP-ISP Phase 1, Tan, et al (2018), PhilRootcrops-VSU, has developed a portable vacuum frying system which costs about half and double the capacity compared to the existing vacuum frying system in the market. This is now used for the production of vacuum-fried sweetpotato products. The project was able to develop 2 types of portable vacuum fryers: the single-cylinder and the twin-cylinder vacuum fryers. The main component in the system that generates the vacuum is the water jet ejector system that replaces the expended vacuum pump. The water jet ejector system only uses the ordinary water pump for it to generate the vacuum, hence, less moving parts, and therefore low maintenance cost. Furthermore, the developed vacuum frying system does not need a condenser unit to remove the moisture in the vapor before entering the vacuum pump, as in the case of the conventional system.	Publications: - SP zero-waste system - (1) SP Products Development - (1) Value chain mapping and performance analysis guide - (2) ISN brochures â€" technology investment portfolio, and products profile: SP products from the zero-waste system Patents/IP: - Utility model for technically and economically improved portable vacuum fryer for Sweetpotato and other rootcrops Products: - 3 Food Products - Improved packaging and standards compliance People Services: - Capacitated partners and beneficiaries Places and Partnerships: - Samahang Nayon Polomolok (SN Polo) â€" Polomolok, South Cotabato; Camote Creations, Daraga Albay, Tarlac DA Experiment Station Policy: - Recommendation to streamline technology transfer especially of machineries - Recommendation to improve sustainability especially of MSE value chains	VSU	Primary: - 22 SP food MSEs, ca. 1000 farmers - Consumers, health food businesses Secondary: - Extension and development workers - Researchers, academician	1-Jun-20	31-Aug-21	NEW	5,000,000.00	4,139,507.00
	Impact Assessment of the Integrated and Sustainable Development Program for the Shrimp Industry	KRA 1: Transparent, Accountable and Participatory Governance	As support to the shrimp industry, the DOST-PCAARRD implemented an R&D program entitled â€œIntegrated and Sustainable Development Program for the Shrimp Industryâ€in June 2011 to August 2014. The project was implemented by researchers from UP Visayas and partners that included SEAFDEC AQD, and the private sector. The main tasks involved were two-fold (Corre and Amar 2014): developing techniques for the production of the captive broodstocks and spawners, and developing sustainable and environmentally-friendly production techniques. The program has five project components: Project 1. Development of techniques for the production of good quality captive Penaeus monodon broodstock and spawners Project 2. Development of sustainable and environment-friendly production techniques for Penaeus monodon Project 3. Handling protocols and value chain analysis for fresh/frozen/chilled panaeid shrimps reared in commercial and organic culture systems Project 4. Reducing losses in the shrimp industry using developed technologies Project 5. Improvement of the reproductive performance in captive Penaues monodon The DOST-PCAARRD funded shrimp R&D program had a total budget of PhP 64.45 million for the three-year duration. With that time difference, the impacts of the projects are sought to see their performance towards their set goals.	Publication: â€c IA Bulletin â€c One (1) draft for journal article Policy: â€c Policy options for the enhancement of uptake of the technologies generated from the shrimp R&D program People and services: â€c 4 researchers trained on the integrated IA approach	UPV	This IA project will provide an assessment and account of the Integrated and Sustainable Development Program, which the following may find useful: a) Funding agencies and research and development institutions; b) Adopters (and potential adopters) of shrimp technologies (e.g. hatchery farms and grow-out farms); c) Farm managers and other stakeholders in the shrimp/aquaculture industry; and d) Scientists interested in shrimp technologies.	1-Oct-20	31-Dec-21	NEW	3,600,000.00	2,938,110.00
	Impact Assessment of the Program "Enhancing Research Utilization for Sweet Potato Livelihood Development on Disaster-Prone Communities in Tarlac and Albay	KRA 1: Transparent, Accountable and Participatory Governance	In 2009, the program on â€¯Enhancing Research Utilization for Sweetpotato Livelihood Development in Disaster-Prone Communitiesâ€™ was implemented to enhance the role of sweetpotato as a key food and cash crop for livelihood rehabilitation in farming communities affected by natural disasters. The strategy was to use existing significant sweetpotato research outputs to enhance productivity and livelihoods. The program was implemented in Tarlac and Albay, both recognized as major sweetpotato-growing areas and characterized by high rates of disaster vulnerability and poverty. The program has three components: Project 1. Developing Capacities of Local Institutions for Addressing Sweetpotato Production and Marketing Constraints Faced by Resource-Poor Farmers in Tarlac and Albay (implemented by Visayas State University in collaboration with CIP-Philippines and UPLB) Project 2. Enhancing Livelihood Opportunities of Small Resource Poor Sweetpotato Farmers in Tarlac Province (implemented by Tarlac College of Agriculture in collaboration with DA-CLIARC and Tarlac Provincial Agriculture) Project 3. Improving Food Security and Livelihoods Among Households in Albay through Sweetpotato Production and Utilization (implemented by Albay Provincial Agricultural Services in collaboration with Bicol University and DA-Agricultural Experiment Station-Tabaco)	Publication ¡· Documentation of the activities related to the conceptualization and implementation of the program; ¡· Documentation of the inputs, outputs, and outcomes of the program; ¡· Documentation of the impact pathway and level of adoption; ¡· Data on adoption rate or growth rates in the number of adopters per year; ¡· Measurement of the programâ€™s economic, social, and environmental impacts; ¡· Estimates of return on R&D investment Policies ¡· Policy recommendations for the enhancement of the adoption of technology generated to further develop the sweetpotato industry	PSAU, BU	The beneficiaries of the program would include (a) policy and decision makers, national R&D/S&T system and the funding agencies supporting R&D activities; and (b) researchers who are directly involved in technology transfer/extension and economic evaluation.	1-Aug-19	31-Jan-21	ONGOING	2,781,262.00	1,352,570.60

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Inter-consortia Convergence in Socio-economics R&D: Institutionalization of the Socio-Economics Research and Data Analytics Centers in Consortia Operations	KRA 1: Transparent, Accountable and Participatory Governance	In 2017, PCAARRD strongly supported the program Socio-Economics Research and Data Analytics Centers (SERDACs) with a purpose of enhancing socio-economics research capacity and leveraging socio-economics research and development (R&D) in providing assistance to other research fields. The SERDACs were established in Central Luzon State University (CLSU), Visayas State University (VSU), and the University of Southeastern Philippines (USEP) to serve as research hubs in Luzon, Visayas, and Mindanao, respectively. Core functions of the SERDACs included: (1) provision of access to research facilities with research software and online journal subscriptions; (2) platform for socio-economics data and research papers repository; (3) consultancy and research services; and (4) capacity building. A major accomplishment of SERDAC is its mainstreaming efforts as a key step to the institutionalization. As approved by the respective Board of Regents (BoR), SERDAC-Luzon is now part of CLSUâ€™s Research, Extension and Training Office and SERDAC-Mindanao as a research center under USEPâ€™s College of Applied Economics. ViSERDAC is currently being proposed to be a center under VSU. As a result, a total amount of PhP 2,389,200 (PhP 864,200 in Luzon, PhP 875,000 in Visayas, and PhP 650,000 in Mindanao) was generated to support the operations as a result of mainstreaming it in the universities.	Products ïƒ¼ Three (3) training arms of PCAARRD on capacity building ïƒ¼ Nine (9) trainings conducted ïƒ¼ Three (3) training-workshops for the development of e-learning courses ïƒ¼ Three (3) seminars ïƒ¼ Collection of 2018-2020 ASTI indicators People and services ïƒ¼ 180 non-SE researchers capacitated (each for Luzon, Visayas and Mindanao) ïƒ¼ 32 SERDAC focal persons capacitated Places and partnerships ïƒ¼ 16 consortia capacitated on SERDAC services ïƒ¼ Three (3) consultant networks Policy ïƒ¼ Three (3) regional platforms on policy analysis and advocacy	CLSU, VSU, USeP	ï¿· Researchers ï¿· Development workers ï¿· Program planners ï¿· Students	1-Oct-20	30-Sep-21	NEW	5,000,000.00	4,706,186.63
	Supply Chain Analysis of Pummelo in Selected Regions of the Philippines	KRA 1: Transparent, Accountable and Participatory Governance	The latest available information on the production of pummelo in the country was reported in the study of Pangan and Alaba in 2008 entitled â€œSupply Chain of Pummelo in Davao Region.â€ This reported that the countryâ€™s pummelo production experienced a 3% average decline. The countryâ€™s pummelo production has also been declining since 2003 and the industry clearly awaits for the needed intervention. Multiple issues leading to low production and low farm productivity has to be addressed. The countryâ€™s pummelo industry suffers from very low farm productivity, only averaging at 5.414 MT/Ha or 5,414 Kgs/Ha. In Davao City the highest average production per tree was 175.37 kgs/bearing tree compared to 108 kgs/bearing tree in Isabela. Furthermore, a study by Pangan and Alaba in 2008 concluded that Davao regionsâ€™ production subsystem was even relatively inefficient and produces low quality products at high costs on top of significant pest and disease incidence among pummelo farms in the area. Issues regarding profitability, land conversion or crop shifting and the lack of institutional support to motivate and encourage pummelo farmers, nonadoption of good agricultural practices and proper insect pest management to promote farm productivity and poor post-harvest facilities and product handling may still be surrounding the industry as of the present. In addition, the control of citrus rind borer as the major insect pest for pummelo which claims around 60 to 80% of the entire produce might still be affecting commercial productivity of pummelo farmers. Marketing activities of pummelo also claimed a significant role in the overall supply chain. Pangan and Alaba in 2008 reported about the high marketing margin of middlemen in the pummelo supply chains making its price highly sensitive to its supply. They documented high product losses ranging 30% to 50% that were experienced during the handling activities of middlemen such as wholesalers while	Publications ï¿· Published scientific journals on agriculture, economics and business management. People Services ï¿· Inputs to decision makers and policy makers on the improvement of pummelo industry in the region. Pummelo farmers are also expected to benefit from information outputs (production, processing, and marketing). Places and Partnerships ï¿· Department of Trade and Industry (DTI), Davao Pummelo Stakeholders Association Inc. (DPSAI), Department of Agriculture R11 (DA 11), University of Southeastern Philippines (USeP) Policy ï¿· Policy recommendations based on issues and problems that would arise from the project	USeP, CMU, NVSU, USM	ï¿· Pummelo farmers ï¿· Pummelo traders and processors	1-Jan-20	31-Mar-22	NEW	3,000,000.00	2,524,022.00
	Supply Chain Management: Cacao Agro-Logistics in the Southern Philippines Context	KRA 1: Transparent, Accountable and Participatory Governance	The study will provide a thorough investigation of the GVC of cocoa in Davao Region. The proponents envisage understanding the intricacies of the supply chain of cocoa from this part of the country on towards the global market. This project hopes to reinvigorate marketability and production of locally produced cocoa beans as well as capture global opportunities to increase the viability of production, processing and trade.	Publication: Strengthening Linkages Among Cacao Supply Chain Actors; Applying the CTEs-KDEs Framework in the Cocoa-Chocolate GVC Participated by Philippine companies; Product: Cacao Supply Chain Model People Services: Training for at least 200 people Partnership: Institutional partners like Kennemer Foods, Inc., Philippine Cacao, CIDAMI	USeP	farmers and actors in the cacao industry	1-Jan-21	31-Mar-21	ONGOING	3,000,000.00	2,650,000.00
	Understanding Food Security Response Strategies of Disaster Victims: The Case of Taal Volcano Eruption	KRA 1: Transparent, Accountable and Participatory Governance	Results of the study will focus on the human interactions and behavior, resilience, and capacity to adapt to natural hazards and risks. With the recent eruption of Taal Volcano, physical rehabilitation, and evaluation have been foremost in the agenda of both local and national governments. The eruption and the resulting chaos on how risks are perceived highlighted several issues and challenges that the affected communities and households face and must contend with. It also highlighted the need for a deeper understanding and adaptation behavior and risks perception of the affected population.	Policies: - A set of policy recommendations for enhanced resilience of volcanic eruption affected communities Product: -Analysis of autonomous adaptation strategies employed by household in volcanic eruption People and services: - Capacitated researchers of Batangas State University Publication: - At least one (1) journal draft article for potential publication in ISI journals Economic Impact: - Reduced economic loss through short-term livelihood Social Impact: - Most resilient communities	DOST-IV-A	Lakeshore communities of Agoncillo, San Nicolas, and Talisay which have been seriously affected by the recent eruption of Taal Volcano last January 2020. Together the three municipalities account for 35% of the total number of households affected by the eruption and stayed in the evacuation centers as more than 50% of the houses in the three communities have been totally damaged.	1-Jul-20	30-Jun-21	NEW	2,985,612.00	2,802,182.16

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Agroforestry Support Program for Enhancing Resiliency of Community-based Forest Management Areas (ASPIRE-CBFM)	Project 1. Development of Agroforestry Support System for Sustainable CBFM Areas	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This proposed project will focus on the capacity-building programs of the upland farmers, existing peopleâ€™s organizations (POs), concerned government organizations/agencies (GOs/GAs) and other key stakeholders to improve processes, networking, marketing and policy support in CBFM communities. Up-to-date knowledge and information on various aspects of agroforestry as the main production technology of CBFM is a key towards promoting sustainable CBFM implementation. Thus, this project will also highlight the Agroforestry Database Information System (ADISS) that will provide and disseminate information about the practice of agroforestry in selected and specific CBFM sites in CALABARZON areas with mostly records and information generated by associated projects within the program. The system will generate timely and relevant information about promoting agroforestry technologies and models for farmer beneficiaries and all other users in support for their decisions demanding detailed information about agroforestry products and services of CBFM sites. Stakeholders will be capacitated and manual will be developed to ensure continuing maintenance and updates of the database after project completion.	1 baseline data 4 sites measured (level of resiliency) 4 sites identified (land capability class) 4 ALCAMS applied 1 agroforestry design for 4 sites developed, established and maintained 1 AF database and info system developed and maintained 1 handbook on database management 5 flyers produced 4 training modules 2 scientific publication 1 guidebook 80 key leaders and beneficiaries identified and trained per site 20 forestry students carried out and conducted their research and practicum in the sites 8 training on agroforestry conducted 20 personnel from LGUs, DENR-ERDB, DENR CENRO and PENRO in Region IVA and POs in four sites trained on agroforestry database and information system Technical and organizational capabilities of four (4) CBFM POs strengthened 4 local partnerships strengthened Soil erosion in four (4) agroforestry models within the tolerable soil loss rate of less than 10 tons/ha/year 4 organizational policies 1 policy forum convened 1 policy recommendation 10 MOAs forged 9 copyrights filed 2 copyright on guidebook	UPLB	CBFM Beneficiaries	1-Jul-19	30-Jun-22	ONGOING	14,822,836.00	3,520,564.00
Agroforestry Support Program for Enhancing Resiliency of Community-based Forest Management Areas (ASPIRE-CBFM)	Project 2. Assessment of Ecological Services of Agroforestry in Selected CBFM Areas	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Philippines is known as one of the megadiverse countries in terms of flora and fauna. Addressing biodiversity conservation through various strategies will give a healthful and balanced ecology. CBFM was adopted as the national strategy to ensure the sustainable development of the country's forestlands resources. It is a key component in the conservation of biodiversity in the Philippines. Under CBFM is agroforestry which is one of the successful and effective activities leading to more ecological and economic benefits. Agroforestry activities vary in some ways. Assessment of agroforestry in various sites where it is implemented will give the baseline information/data on the ecological and even in the socio-economic dimensions of the area.	8 CBFM Biophysical profiles 4 general recommendations on the use of CBFM areas 4 sets of info effects of interventions established 1 handbok 1 comparative analysis of the soil physico-chemical properties, soil fertility, carbon stocks, biodiversity of flora and fauna and water quality and quantity of the four (4) CBFM areas based on the interventions made by Project 1 8 PO members oriented 1 GREAT Scholar 30 technical people oriented and trained 4 IEC materials 2 technical/ popular articles prepared 2 technical publications 1 guidebook 2 flyers and brochures 10 MOAs forged 1 policy recommendations 10 copyrights filed	ERDB	CBFM beneficiaries	1-Jul-19	30-Jun-22	ONGOING	8,494,080.00	1,808,815.00
Agroforestry Support Program for Enhancing Resiliency of Community-based Forest Management Areas (ASPIRE-CBFM)	Project 3. Community Empowerment thru S&T (CEST) Program for Community-based Forest Managment (CBFM) Sites	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Department of Science and Technology â€“ CALABARZON (DOST CALABARZON) has initiated various poverty reduction projects which focuses on achieving sustainable solutions to existing and emerging pressing issues in the country. One of which is the program on â€œCommunity Empowerment thru Science and Technologyâ€ dubbed as the CEST Program. The said program aims to empower the poor and the marginalized sector and to improve the quality of their life thru science and technology. Packaged S&T interventions are focused to five (5) entry points: Health and Nutrition, Water and Sanitation, Basic Education Literacy, Economic Enterprise Development, and Disaster Risk Reduction/Climate Change Mitigation. As part of poverty elimination, the use of forest resources will help lift a householdâ€™s status. In the publication, â€œManaging Ecosystems to Fight Povertyâ€ four main strategies are identified to improve the poverty reduction potential of local ecosystems. These include: 1. Strengthening resource management to ensure higher productivity and greater returns; 2. Improving governance so that the poor are empowered to "profit from nature"; 3. Commercializing goods and services through marketing and enterprise development; 4. Developing mechanisms for payments for environmental services (WRI et al., 2005). The empowerment of CBFM communities, will take place thru capacity-building of the upland farmers and existing peopleâ€™s organizations for Economic Enterprise Development while also supporting other aspects of improvement in Health and Nutrition, Education, DRR/CCA, and Water and Sanitation; these holistic approach will be part of the CEST Program for CBFM areas.	4 CNA profile produced 4 assessment reports 4 profitability analysis produced 4 units ARG 1 unit LGUIDS 1 unit WLMS 2 units EWS 80 CBFM members participated in the CNA/TNA, trained on livelihood equipment 14 trainings condcuted 13 MOAs forged 4 linkages 16 IEC materials produced 4 AVPs produced 16 copyrights filed	DOST 4A	CBFM Beneficiaries	1-Jul-19	30-Jun-22	ONGOING	9,424,458.00	5,024,616.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Developing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies - Batch 2	IP-TBM Coordination and Capacity Building	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	1. People and Services: - Conducted at least 16 monitoring and evaluation visits - Conducted the 12-module DOST-PCAARRD IP Master Class and Technology Commercialization Mentorship Series - At least 16 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series - Conducted at least 1 exploratory meeting with Business Groups/Marketing or Trade Institutions - Conducted at least 1 sustainability planning workshop - Conducted at least 1 policy review 2. Publications: - At least 16 monitoring and evaluation reports - At least 2 consolidated technical reports - 12-module training evaluation and documentation reports - At least 2 activity evaluation and documentation reports	FPRDI	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs/RDIs Technology transfer officers/managers SUC/RDI Researchers/Inventors	16-Jul-18	31-Dec-20	ONGOING	7,435,830.00	1,228,729.18
Developing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies - Batch 2	Project 1. Enhancing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Ifugao State University (IFSU)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The IP-BDO will be established in IFSU's main campus located at Lamut, Ifugao. The activities related in the operationalization of this office is essential in equipping the technology transfer personnel of the university in various technology promotion and commercialization activities and management of IP assets of the university.	Y1 - 1 inventory of IP assets - At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series - At least 1 IP-TBM staff attended a local IP workshop - At least 1 promotional IEC for SUC/RDI technologies - At least 2 IP (patent and utility model only) applications - 1 IP-TBM established/enhanced - 1 Letter of Commitment from SUC/RDI - 1 Memorandum of Agreement signed - At least 1 partnership agreement with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions - 1 Institutional IP Policy reviewed/ crafted - 1 Technology Transfer Protocol reviewed/ crafted Y2 - At least 1 Technology Commercialized - At least 1 IP-TBM staff attended a foreign IP workshop - At least 20 SUC/RDI trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainor/speaker - At least 2 networking events and technology promotion conducted by the SUC/RDI - At least 1 technology taker/adoptor - At least 1 promotional IEC for SUC/RDI technologies - At least 3 IP (patent and utility model only) applications - 1 IP-TBM institutionalized - At least 1 commercialization agreement executed	IFSU	Ifugao State University its Counterpart and the Different stakeholder of the University	16-Jul-18	31-Dec-20	ONGOING	2,210,069.00	340,801.77
Developing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies - Batch 2	Project 10. Strengthening the Capacity of Bohol Island State University (BISU) on Intellectual Property and Technology Business Management (IP-TBM) for Sustained Technology Commercialization	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This proposed project, under the Intellectual Property Management and Business Development (IP-TBM) program, envisions to mirror the initiatives of the DPITC. The Innovation and Technology Support Office (ITSO) at BISU was established in 2013. It was manned by Mr. Bernabe Mejares from 2013 to 2016. Accomplishments of the ITSO Office for the first four (4) years of its operations were merely participation of the Office Incharge (Mr. Mejares) and some selected faculty members in local and national trainings. The importance of IPR protection has been imbibed in the whole university system, though each of the six (6) campuses has its own separate independent plan for IPR protection. For instance, the budget for the 2018 operations of the ITSO at BISU Main Campus is around PhP500,000.00 which includes P250,000.00 for the regular operations including hiring of staff and conduct of in-service trainings; P50,000.00 for IPR protection; and PhP200,000 for commercialization. The R&D Office at BISU Bilar (Agricultural Campus), on the other hand, appropriated an amount of P200,000.00 solely for IPR protection and commercialization. The Intellectual Property (IP) Policy of BISU has been finalized in 2014, but since then it has not undergone any review. There were plans of reviewing the IP policy but it has not been done since its creation. Therefore, one of the major activities in the IP-TBM Enhancement Project, if funding will be provided by PCAARRD, is the IP policy review since it serves as the guiding principle and the legal basis in the conduct of organizationâ€™s technology transfer activities. It is timely that a funding from PCAARRD will be made available for the sustained university-wide operation of the ITSO (soon IP-TBM) as a separate independent unit from R&D for the whole university. It is expected that the IP-TBM, to-be-situated at the BISU Main Campus, will spearhead the unified management and protection of intellectual property generated at the university by its faculty, researcher, support	Year 1: ï¿· At least 1 inventory of IP assets ï¿· At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series ï¿· At least 1 IP-TBM staff attended a local IP workshop/fora ï¿· At least 1 promotional IECs for SUC/RDI technologies ï¿· At least 2 IP (patent and utility model only) applications ï¿· 1 IP-TBM established/enhanced ï¿· 1 Institutional IP Policy reviewed/ crafted Year 2: ï¿· At least 1 Technology Commercialized ï¿· At least 1 IP-TBM staff attended a foreign IP workshop/for a ï¿· At least 20 SUC/RDI trained (short duration/echo seminar) on IP Management and Technology Commercialization with IPTBM staff as trainer/speaker ï¿· At least 2 networking events and technology promotion conducted by the SUC/RDI ï¿· At least 1 promotional IECs for SUC/RDI technologies ï¿· At least 3 IP (patent and utility model only) applications ï¿· 1 IP-TBM institutionalized	BISU	The project will benefit the Intellectual Property Office of the University, primarily. This represents the staff, the researchers, and the recipient of the seminar sponsored by the Office through the project, thus enhancing the technology transfer in the University. Indirect beneficiaries will go to the students of the University as the function of the Office will also encourage the students to participate in the objective of the Office through their studies. The community through technology adapters may also serve as potential beneficiaries.	16-Jul-18	31-Dec-20	ONGOING	3,232,007.00	492,324.80

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Developing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies - Batch 2	Project 11. Strengthening the IP-TBM Operations in Samar State University (SSU)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project aims to strengthen the capacities of Intellectual Property and Technology Business Management (IP-TBM) Operations of Samar State University, Catbalogan City, Samar. Moreover, its goal is also to enhance their technology commercialization activities. Outputs of the project shall include training of at least one of IP-TBM staff under the IP Master Class and Technology Commercialization Mentorship Series which will be echoed to fellow researchers, publications, commercialization of at least one technology, industry partnerships and crafting or review of policies.	Products 1 inventory of IP assets At least 1 Technology Commercialized People and Services At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series At least 1 IP-TBM staff attended a local/foreign IP workshop/fora At least 20 SUC/RDI trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainor/speaker At least 2 networking events and technology promotion conducted by the SUC/RDI At least 1 technology taker/adoptor Publications At least 4 promotional IECs for SSU technologies Patents At least 8 IP (patent and utility model only) applications Places and Partnerships 1 IP-TBM enhanced/established and institutionalized 1 Letter of Commitment from SSU 1 Memoranda of Agreement signed	SSU	Intellectual Property and Technology Business Management (IP-TBM) of Samar State University SSU Technology transfer officers/managers SSU Researchers/Inventors	16-Jul-18	31-Dec-20	ONGOING	2,333,354.00	491,233.28
Developing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies - Batch 2	Project 12. Enhancing the IP-TBM Operations in Western Mindanao State University (WMSU)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Establishment of a unit/ center that will facilitate the commercialization of technologies generated in the AANR sectors. It will be stationed at the University Research Center that would provide Institutional arrangement orientation and collaboration to different stakeholders; conduct of Policy review and IP audit; Training, mentorship, IP protection; Branding, technology promotion and advocacies, and Manage in business network, partnership and institutionalization. The implementation of the project is expected to impact to society in terms of technologies commercialized, jobs and income generated, products available at lower cost and the facilitation of R.A.10055.	Products 1 inventory of IP assets At least 1 Technology Commercialized People and Services At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series At least 1 IP-TBM staff attended a local/foreign IP workshop/fora At least 20 SUC/RDI trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainor/speaker At least 2 networking events and technology promotion conducted by the SUC/RDI At least 1 technology taker/adoptor Publications At least 2 promotional IECs for SUC/RDI technologies Patents At least 5 IP (patent and utility model only) applications Places and Partnerships 1 IP-TBM enhanced/established and institutionalized 1 Letter of Commitment from SUC/RDI 1 Memoranda of Agreement signed At least 1 partnership agreement with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions At least 1 commercialization agreement executed	WMSU	Intellectual Property and Technology Business Management (IP-TBM) of the University; Technology transfer officers/managers SUC/RDI Researchers/Inventors	16-Jul-18	31-Dec-20	ONGOING	2,409,594.00	494,478.16
Developing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies - Batch 2	Project 13. Enhancing the IP-TBM Operations in Central Mindanao University (CMU)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Strengthening the capacity of CMUâ€™s IPLO for the Intellectual Property and Technology Business Management (IP-TBM) Operations, to be an operational one-stop-shop for technology owners and generators, investors, end users and other stakeholders to facilitate the commercialization of technologies generated, preferably along the AANR sectors	Products 1 inventory of IP assets At least 1 Technology Commercialized People and Services At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series At least 1 IP-TBM staff attended a local/foreign IP workshop/fora At least 20 SUC/RDI trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainor/speaker At least 2 networking events and technology promotion conducted by the SUC/RDI At least 1 technology taker/adoptor Publications At least 2 promotional IECs for SUC/RDI technologies Patents At least 5 IP (patent and utility model only) applications Places and Partnerships 1 IP-TBM enhanced/established and institutionalized 1 Letter of Commitment from SUC/RDI 1 Memorandum of Agreement signed	CMU	Intellectual Property and Technology Business Management (IP-TBM) of CMU Technology transfer officers/managers CMU Researchers/Inventors	16-Jul-18	31-Dec-20	ONGOING	2,489,284.00	472,947.12

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Developing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies - Batch 2	Project 14. Revitalizing the IP-TBM Operations in the University of Southern Mindanao (USM)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project is intended mainly to satisfy the role of the University of Southern Mindanao in the technology transfer aspect as mandated by Republic Act No. 10055 or the Act providing the framework and support system for the ownership, management, use and commercialization of intellectual property generated from research and development funded by government and for other purposes.	Year 1: ¡ˌ At least 1 inventory of IP assets ¡ˌ At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series ¡ˌ At least 1 IP-TBM staff attended a local IP workshop/fora ¡ˌ At least 1 promotional IECs for SUC/RDI technologies ¡ˌ At least 2 IP (patent and utility model only) applications ¡ˌ 1 IP-TBM established/enhanced ¡ˌ 1 Institutional IP Policy reviewed/ crafted Year 2: ¡ˌ At least 1 Technology Commercialized ¡ˌ At least 1 IP-TBM staff attended a foreign IP workshop/for a ¡ˌ At least 20 SUC/RDI trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainer/speaker ¡ˌ At least 2 networking events and technology promotion conducted by the SUC/RDI ¡ˌ At least 1 promotional IECs for SUC/RDI technologies ¡ˌ At least 3 IP (patent and utility model only) applications ¡ˌ 1 IP-TBM institutionalized	USM	The project will benefit the Intellectual Property Office of the University, primarily. This represents the staff, the researchers, and the recipient of the seminar sponsored by the Office through the project, thus enhancing the technology transfer in the University. Indirect beneficiaries will go to the students of the University as the function of the Office will also encourage the students to participate in the objective of the Office through their studies. The community through technology adapters may also serve as potential beneficiaries.	16-Jul-18	31-Dec-20	ONGOING	2,368,297.00	301,661.97
Developing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies - Batch 2	Project 15. Enhancing the IP-TBM Operations in Caraga State University (CarSU)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project aims to capacitate and provide resources for the establishment and operationalization of the Intellectual Property and Technology Business Management (IP-TBM) in Caraga State University to pursue IP protection and technology transfer & commercialization activities	Products At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series At least 1 IP-TBM staff attended a local/foreign IP workshop/fora At least 20 SUC/RDI trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainor/speaker At least 2 networking events and technology promotion conducted by the SUC/RDI At least 1 technology taker/adoptor Publications At least 2 promotional IECs for SUC/RDI technologies Patents At least 5 IP (patent and utility model only) applications Places and Partnerships 1 IP-TBM enhanced/established and institutionalized 1 Letter of Commitment from SUC/RDI 1 Memoranda of Agreement signed At least 1 partnership agreement with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions	CarSU	Direct Beneficiaries: 1. CSU Researchers/Inventors 2. Intellectual Property and Technology Business Management (IP-TBM) Team in CSU 3. CSU ITSO Technical Staff/Experts Indirect Beneficiaries: 4. MSMEâ€™s in Caraga Region 5. Inventors in Caraga Region	16-Jul-18	31-Dec-20	ONGOING	3,611,304.00	528,944.81
Developing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies - Batch 2	Project 16. Enhancing the IP-TBM Operations in Maguindanao State University - Iligan Institute of Technology (MSU-IIT)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project focuses on the establishment of Intellectual Property and Technology Business Management (IP-TBM) that mirrors DPITCs initiatives to strengthen the capacities of Mindanao State University - Iligan Institute of Technology (MSU-IIT) with sustainability interventions to enhance its technology commercialization activities.	Products 1 inventory of IP assets At least 1 Technology Commercialized People and Services At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series At least 1 IP-TBM staff attended a local/foreign IP workshop/fora At least 20 researchers of MSU-IIT/RDI trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainor/speaker At least 2 networking events and technology promotion conducted by MSU-IIT/RDI through the IP-TBM At least 1 technology taker/adoptor Publications At least 2 promotional IECs for MSU-IIT/RDI technologies Patents At least 5 IP (patent and utility model only) applications Places and Partnerships 1 IP-TBM enhanced/established and institutionalized 1 Letter of Commitment from MSU-IIT/RDI	MSU-IIT	Intellectual Property and Technology Business Management (IP-TBM) of MSU-Iligan Institute of Technology Technology Transfer personnel, officers, managers, researchers/Inventors in MSU-IIT	16-Jul-18	31-Dec-20	ONGOING	2,731,771.00	565,519.37

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Developing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies - Batch 2	Project 2. Strengthening and Sustaining the IP-TBM of Mariano Marcos State University (MMSU)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD) through its platform: the Innovation and Technology Center (DPITC) has initiated the capacitation of SUCs in enhancing their technology promotion and commercialization activities through the application of innovative platforms in nurturing MMSUâ€™s human resources. In view of this, MMSU, with the technical support of DOST-PCAARRD-DPITC will establish the Intellectual Property and Technology Business Management (IP-TBM) to support its overall technology transfer program.	Year 1: ¡ At least 1 inventory of IP assets ¡ At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series ¡ At least 1 IP-TBM staff attended a local IP workshop/fora ¡ At least 1 promotional IECs for SUC/RDI technologies ¡ At least 2 IP (patent and utility model only) applications ¡ 1 IP-TBM established/enhanced ¡ 1 Institutional IP Policy reviewed/ crafted Year 2: ¡ At least 1 Technology Commercialized ¡ At least 1 IP-TBM staff attended a foreign IP workshop/for a ¡ At least 20 SUC/RDI trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainer/speaker ¡ At least 2 networking events and technology promotion conducted by the SUC/RDI ¡ At least 1 promotional IECs for SUC/RDI technologies ¡ At least 3 IP (patent and utility model only) applications	MMSU	Mariano Marcos State Universityâ€™s Faculty and Full-time Researchers and Inventor Potential target technology adopters	16-Jul-18	31-Dec-20	ONGOING	2,166,895.00	533,157.40
Developing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies - Batch 2	Project 3. Enhancing the Intellectual Property and Technology Business Management (IP-TBM) Operations of Isabela State University (ISU)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Isabela State University (ISU) Intellectual Property Unit will be created for the overall management, planning, implementing, monitoring of IP, and evaluation of IP-related activities of the university. The establishment of the Intellectual Property and Technology Business Management (IP-TBM) will be instrumental in developing innovative strategies that could enhance protection and management of IP. The IP-TBM Office will be located in ISU's Main Campus in Echague, Isabela. The Technology Transfer Unit personnel to ISU will be trained under the IP Master Class and Technology Commercialization Mentorship Series of DPITC.	Year 1 1. At least (one) 1 IP Management and Business Development Office Staff extensively trained on IP 2. At least (one) 1 Technology Transfer Office Personnel attended an IP-TBM workshop/fora (local/foreign. 3. One (1) Technology Transfer Office institutionalized 4. At Least 12 campus IP-TBM Coordinators trained (short duration) on IP management and Tech Commercialization (with TTO as trainer). 5. One (1) institutional IP Policy; One (1) Technology Transfer Protocol 6. One (1) inventory of IP assets Year 2 1. At least five (5) IP applications 2. At least two (2) promotional IECs for SUC/RDI technologies 3. At least one (1) technology taker/adoptor 4. At least two (2) networking events and product promotion conducted by SUC/RDI 5. One (1) letter of commitment from ISU Officials/RDI; one (1) RFA; at least one (1) commercialization agreement forged; At least one (1) partnership agreement with Philippine Chamber of Commerce Inc./ Marketing/Trade Institution	ISU	1. Intellectual Property (IP) and Technology Business Management offices of ISUE/RDIs 2. Technology transfer officers/managers 3. ISUE/RDIs Researchers/Inventors 4. Farmers, Entrepreneurs/private organization	16-Jul-18	31-Dec-20	ONGOING	3,769,914.00	587,135.37
Developing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies - Batch 2	Project 4. Enhancing the Intellectual Property and Technology Business Management (IP-TBM) Operations of theNueva Vizcaya State University (NVSU)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project will enhance the existing Intellectual Property Rights and Business Affairs Office of the university. This will be located in main campus of NVSU at Bayombong, Nueva Vizcaya. Target stakeholders (R&D Institutions/Units, Researchers, Students and IPR-BA personnel) will be trained in IP management and technology commercialization to efficiently and effectively manage the IP assets of the university.	¡ Conducted Inventory of IP assets ¡ One (1) Technology Commercialized ¡ One (01) IP-TBM Staff extensively trained under the IP Master class and Technology Commercialization Mentorship Series ¡ 1 IP-TBM staff attended IP workshop/fora (foreign/local) ¡ At least 20 SUC staff trained on IP management and technology commercialization (echo seminar) with IP-TBM staff as trainor/speaker ¡ 1 technology transfer office institutionalized ¡ 1 networking events and product promotions conducted by the SUC ¡ 1 technology taker/adoptor ¡ At least 2 promotional IECs for NVSU technologies ¡ 5 IP applications (patent and UM only) ¡ 1 PMM-BDO established/enhanced and institutionalized ¡ At least 1 commercialization agreement executed ¡ 1 Letter of Commitment from NVSU ¡ 1 Memorandum of Agreement signed ¡ At least 1 partnership agreement with the Philippine Chamber of Commerce Inc. / Business Groups/marketing or trade institutions ¡ 1 Institutional IP Policy reviewed/crafted ¡ 1 technology transfer Protocol reviewed/crafted	NVSU	Inventors, scientists, entrepreneurs, writers, innovators, and students in the province of Nueva Vizcaya	16-Jul-18	31-Dec-20	ONGOING	2,639,990.00	477,019.25

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Developing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies - Batch 2	Project 5. Establishment of the Intellectual Property and Technology Business Management (IP-TBM) in the Philippine Carabao Center (PCC)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (June 1, 2018 - May 31, 2020) by Philippine Carabao Center with a total PCAARRD-GIA funding of PhP 1,804,104.00. It generally aims is to establish an Intellectual Property and Technology Business Management (IP-TBM) in PCC that will promote and enhance technology generation, protection, and commercialization activities of the Agency. Specifically, the project will focus on strengthening its IP Management system to further strengthen its R&D program. PCC will basically anchor itself on major Legal basis/laws governing IP management, protection and commercialization mainly the IP code of the Phil (8293) and the Republic Act 10055, otherwise known as the â€œPhilippine Technology Transfer Act of 2009â€™, which provides that research and development funded by the government and other purposes should have framework and support system for the ownership, management, use and commercialization of intellectual property.	Y1 - 1 inventory of IP assets -At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series -At least 1 IP-TBM staff attended a local IP workshop -At least 1 promotional IEC for SUC/RDI technologies -At least 2 IP (patent and utility model only) applications - IP-TBM established/enhanced - Letter of Commitment from SUC/RDI - Memorandum of Agreement signed -At least 1 partnership agreement with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions - Institutional IP Policy reviewed/ crafted - Technology Transfer Protocol reviewed/ crafted Y2 - At least 1 Technology Commercialized -At least 1 IP-TBM staff attended a foreign IP workshop -At least 20 SUC/RDI trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainor/speaker -At least 2 networking events and technology promotion conducted by the SUC/RDI -At least 1 technology taker/adoptor -At least 1 promotional IEC for SUC/RDI technologies -At least 3 IP (patent and utility model only) applications - IP-TBM institutionalized -At least 1 commercialization agreement executed	PCC	The target beneficiaries of the Project, such as but not limited to: PCCâ€™s technology transfer manager/officers and researchers, inventors, students and farmer-clients	16-Jul-18	31-Dec-20	ONGOING	2,793,104.00	556,413.38
Developing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies - Batch 2	Project 6. Enhancing the Intellectual Property and Technology Business Management (IP-TBM) of Pampanga Agricultural State University (PSAU)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Intellectual Property Management â€"Business Development Office will serve as an area for researchers and other individuals in gaining deeper understanding and appreciation on what Intellectual Property is all about. It will also serve as the backbone of the technologies generated from different research initiatives of the University.	Y1: a) 1 institutional IP Policy reviewed/ crafted b) 1 Technology Transfer Protocol reviewed/ crafted c) At least 1 IP Mgt. and Business Development Office Staff extensively trained on IP d) At least 1 Technology Transfer Office Personnel attended an IP-TBM workshop/for a e) At Least 20 SUC staff trained (short duration) on IP mngt. And Tech Commercialization(with TTO as trainer) f) 1 inventory of IP assets g) At least 2 IP applications h) At least 1 promotional IECs were published and disseminated i) at least 1 commercialization agreement; At least 1 partnership agreement with Philippine Chamber of Commerce Inc./ Marketing/Trade Institution Y2: a. At Least 20 SUC staff trained (short duration) on IP mngt. And Tech Commercialization(with TTO as trainer) b. At least 3 IP applications c. At least 1 promotional IECs were published and disseminated d. At least 1 Technology Commercialized e. At least 1 technology taker/adoptor	PSAU	The University, researchers, students and other interested individuals	16-Jul-18	31-Dec-20	ONGOING	2,369,104.00	489,344.45
Developing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies - Batch 2	Project 7. Enhancing and Strengthening the Intellectual Property and Technology Business Management (IP-TBM) Operations in Forest Products Research and Development Institute (FPRDI)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project primarily aims to enhance and strengthen FPRDIâ€™s capacity for a more effective and efficient IP management and commercialization system by providing its women and men engaged in technology transfer activities opportunities to hone their knowledge and skills thru highlevel trainings and mentorship programs. The activities under this project also include pro-active approach in promoting the technologies and services as well as in strengthening linkages with stakeholders by developing appropriate IEC materials, rendering echo seminars to researchers/inventors and formalizing partnerships with local industries and communities.	Products: 1 inventory of IP assets At least 1 Technology Commercialized People and Services: At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series At least 1 IP-TBM staff attended a local/foreign IP workshop/fora At least 20 SUC/RDI trained (short duration/echo seminar) on IP Management and Technology Commercialization with IPTBM staff as trainor/speaker At least 2 networking events and technology promotion conducted by the SUC/RDI At least 1 technology taker/adoptor Publications : At least 2 promotional IECs for SUC/RDI technologies Patents: At least 5 IP (patent and utility model only)	FPRDI	- At least 2 FPRDI technology transfer personnel - FPRDI researchers and scientists with patentable and/or commerciable technologies - Prospective adoptors of IP-protected and/or commercaible technologies in the local forest-based indsutries and communities	16-Jul-18	31-Dec-20	ONGOING	2,296,417.00	591,205.24

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Developing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies - Batch 2	Project 8. Reestablishment and Enhancement of the Intellectual Property and Technology Business Management (IP-TBM) Operations in Laguna Polytechnic State University (LSPU)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	There is not yet established technology transfer system in LSPU as the role of intellectual property and technology transfer office needed to be defined further, thus a need to re-establish and enhance the technology transfer system.	Y1 - 1 inventory of IP assets - At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series - At least 1 IP-TBM staff attended a local IP workshop - At least 1 promotional IEC for SUC/RDI technologies - At least 2 IP (patent and utility model only) applications - 1 IP-TBM established/enhanced - 1 Letter of Commitment from SUC/RDI - 1 Memorandum of Agreement signed - At least 1 partnership agreement with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions - 1 Institutional IP Policy reviewed/ crafted - 1 Technology Transfer Protocol reviewed/ crafted Y2 - At least 1 Technology Commercialized - At least 1 IP-TBM staff attended a foreign IP workshop - At least 20 SUC/RDI trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainor/speaker - At least 2 networking events and technology promotion conducted by the SUC/RDI - At least 1 technology taker/adoptor	LSPU	University personnel, school stake holders, extension community, research and development department, students	16-Jul-18	31-Dec-20	ONGOING	1,917,844.00	503,864.07
Developing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies - Batch 2	Project 9. Enhancing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Western Philippines University (WPU)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The ultimate goal is to establish the IP-TBM office in the campus. The IP-TBM will be the venue for intellectual property assistance and guide for researches, technology, and products generated in the university. Specifically, it will provide technical services on how to patent technologies or products for commercialization. The first quarter will cover review of previous guidelines existing in the University and its modification to cope up and associate with the recent improvements and issues on patenting, finalization of involved personnel, capacitating the technology transfer personnel of the University, and IP assets inventory. The succeeding months will be allotted for the improvement of the office, processing legalization documents and sealing of by-laws and newly-amended IP guidelines as well as delivery of outputs as means of assessment of objective realizations. Series of capacity building activities to enhance personnel on IP patenting processes and as well as echo-seminars in the academe level will be implemented. In this matter, the seminars will extend to students for them to inculcate awareness of the IP system in the university. In a way, this can also serve as a form of networking or promotional activities that could enhance responsiveness of IP awareness in the University. The second year of the project shall be focused on patent applications, establishment of technology transfer protocol, exploration and establishment of possible business partnerships and technology commercialization.	Products 1 inventory of IP assets At least 1 Technology Commercialized People and Services At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series At least 1 IP-TBM staff attended a local/foreign IP workshop/fora At least 20 SUC/RDI trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainor/speaker At least 2 networking events and technology promotion conducted by the SUC/RDI At least 1 technology taker/adoptor Publications At least 2 promotional IECs for SUC/RDI technologies Patents At least 5 IP (patent and utility model only) applications Places and Partnerships 1 IP-TBM enhanced/established and institutionalized	WPU	Intellectual Property and Technology Business Management (IP-TBM) of WPU Technology transfer officers/managers WPU Researchers/Inventors	16-Jul-18	31-Dec-20	ONGOING	2,344,846.00	517,021.42
DOST-PCAARRD Technology Business Incubation (TBI) Program Batch 2	Project 1. TBI Program Management, Networking, and Capacity Building	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Commercialization of technologies that were developed from government funding is a relatively unexplored area by both GFAs and RDIs in the Philippines, and not surprisingly viewed as significantly below its potential for evolving to later stages of research, advancing welfare of Filipinos, and spurring economic growth. Since the law took effect, several commercialization efforts of locally developed technologies with government support took off. Unfortunately, technology managers are perhaps, relatively inexperienced and may have been unable to negotiate the best position for the commercialization of their technologies. There may also be a need for other modalities by which these technologies should be promoted and transferred to target clients. By virtue of RA 10055, PCAARRD has effectively acquired additional mandate for technology transfer, since as a GFA, PCAARRD is mandated to provide assistance to RDIs in protecting and managing intellectual properties, including commercialization. In March 2016, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC). The DPITC is envisioned to serve as a one-stop hub for technology owners and generators, investors, end users and other stakeholders to facilitate the commercialization of technologies generated in the AANR sectors. The Philippine Development Plan (PDP) 2017-2022 promotes the improvement of the mechanism for the diffusion and utilization of technologies through the establishment of innovation hubs such as the food innovation centers, technology business incubators (TBIs) and shared service facilities. The government therefore aims to proliferate TBIs by instituting the establishment of new TBIs in partnership with the private sector and higher educational institutions.	1 training module prepared 1 Annual Report prepared 2 IEC materials on TBI best practices developed At least 3 publications for copyright filed At least 2 national trainings attended by TBI management and staff At least 16 TBI personnel trained on TBI management At least 2 program reviews conducted At least 4 partnerships/linkages developed/enhanced 8 TBIs joined 1 National Network/Association of Agri-Aqua TBI At least 8 TBIs provided with assistance	BSU	For this Project: 8 TBIs For the 8 TBIs: MSMEs, spin-offs and start-ups in AANR enterprises, AFNR graduates, cooperatives, associations	16-Aug-18	30-Jun-21	ONGOING	5,169,824.00	1,794,195.60

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
DOST-PCAARRD Technology Business Incubation (TBI) Program Batch 2	Project 2. DOST-PCAARRD-CapSU Agriculture and Aquaculture Technology Business Incubator	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The ATBI will be under the Knowledge and Technology Transfer Division which will be one of the divisions under the Intellectual Property Management Office (IPMO) of the university. This Technology incubator center is intended to be a technology transfer and commercialization support facility that aims to translate or develop products of research into a feasible technology-based enterprise.	2 partnerships established and developed through MOA or MOU At least 7 ATBI-related IEC Materials Developed and disseminated At least 7 technology incubatees mentored/supported in the ATBI 7 Awareness Seminars/Promotional Activities Conducted for the ATBI 70 Participants/Attendees to the Awareness Seminars/ Promotional Activities At least 7 ATBI-related IEC Materials Developed and disseminated At least 7 ATBI trainings conducted for incubatees At least 7 technology incubatees recruited and mentored/supported in the ATBI At least one of technology matching/pitching activities 1 Networking Event conducted per year with at least 30 participants 15 jobs generated (direct or indirect) 2 Technologies Packaged on the 2nd year with at least 30% increase every year on the next 3 years. 7 technologies with IP Protection	CapSU	CAPSU Community (9 campuses) Municipalities in the Province of Capiz Agri-Fishery Industry sector SMEs NGOs	16-Aug-18	30-Jun-21	ONGOING	4,832,040.00	1,017,643.56
DOST-PCAARRD Technology Business Incubation (TBI) Program Batch 2	Project 3. DOST-PCAARRD-CMU Agriculture, Food, and Natural Resources Technology Business Incubator	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Central Mindanao University is one of the leading universities in the fields of agriculture, forestry and related fields. Research, being one of the four-fold functions of CMU, generated technologies in different fields. However, commercialization of these technologies remains a cloudy realization. Business incubation is one of the ways to commercialize these technologies. It has been globally recognized as an important tool in economic development and job creation. The ATBI will be developed based on the need to commercialize research based technologies to its target clients. Some of the matured technologies spawned from CMU researches are mushroom production, vermicomposting, poultry, dairy and beef, swine, goat production. Thus, these technologies are the focus for incubation for the first two years of its operation. Incubatees will be guided in all aspects of starting up the business until they are able to stand on their own and finally manage their established business. Eventually, the ATBI will cater to other technologies generated by researchers and existing research centers in the university such as food processing and natural products. Lastly, the ATBI is a way of responding RA 10055 or the technology transfer act, mandating the institutions conducting research to look into technology transfer as one of their strategic mission so the technologies generated can be of use to the Filipino people.	Policy: Operational Procedure prepared 1 List of ATBI Offerings prepared 1 ATBI Curriculum prepared 1 Training Modules prepared 6 ATBI Busines Plan prepared 1 List of Technologies for Incubation prepared 1 M&E Instrument prepared 1 ATBI Organization Structure with TOR developed 1 Publication: Operations Manual published 1 ATBI Service Offering published 1 ATBI Curriculum published 1 Training Modules published/printed 6 ATBI Business Plan printed/published 1 List of Technologies for Incubation printed/published 1 IEC Material printed 2 IEC Material dessiminated 2 Product: Equipment purchased 4 Places and Partnership: TBI Facility set up 1 Experts Pool established 1 1 MOA/MOU forged 2 Networking Activities conducted 1 1 People and Services: 2 2 Capability Building attended by ATBI Personnel 6 6	CMU	Municipalities in the Province of Bukidnon Agri-Fishery Industry sector SMEs NGOs	16-Aug-18	30-Jun-21	ONGOING	4,730,270.00	1,384,810.50
DOST-PCAARRD Technology Business Incubation (TBI) Program Batch 2	Project 4. DOST-PCAARRD-DMMMSU Agriculture, Aquaculture, and Food Technology Business Incubator	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Agriculture, Aquaculture, and Food Technology Business Incubator project will be established in DMMMSU, Bacnotan, La Union with two satellite stations in South La Union Campus at the College of Fisheries in Sto. Tomas, La Union and College of Agriculture in Rosario La Union. The technologies to be included for adoption are goat farming systems and chevon products processing, seaweed farming systems and value added products, mango and banana farming systems and processing that were previously funded by DOSTPCAARRD. Technologies generated thru the university funds will also be included such as honey, honey vinegar, and yam powder. The project team will screen all participants based on the established criteria. Trainings will also be conducted to identify potential incubatees. They will undergo series of trainings on farming and value-adding. The project will consist of three phases, namely: the pre-incubation phase, incubation phase, and post incubation phase. Of the technologies generated thru PCAARRD funding, none are being commercialized at present. Hence, there is a need for the University to establish mechanisms such that the technologies are adopted and utilized by potential entrepreneurs as start-up business. Thus, the establishment of DOST PCAARRD-DMMMSU TBI facility in the University shall provide services for the training of potential entrepreneurs, facilitate the establishment of technologybased enterprises, and eventually help create jobs for the community.	Products 4 Curricula 40 Modules People and Services 10 Pre-Commercialization Services Provided 5 Incubatees accepted/trained/mentored 15 faculty/staff experts in training and mentoring Places and Partnerships 1 TBI facility established 2 Farming Communities 5 MOAs executed 2 Funding institutions 4 National Agency Partners 2 Private Sector Partners Policies 3 Business plans 1 Operational manual 3 TBI curricula 1 Techno-preneurship Manual Publications 3 Business plans 1 Operational manual 3 TBI curricula 1 Techno-preneurship Manual	DMMMSU	Incubatees such as: a. Private individuals b. Goat Farmers and processors c. Seaweed Farmers and processors d. Mango farmers and processors e. Banana Farmers and Processors f. Farmers and fishermen cooperative, and g. Peoples organizations (POs) h. Technology generators from DMMMSU	16-Aug-18	30-Jun-21	ONGOING	7,798,712.00	1,325,200.40

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
DOST-PCAARRD Technology Business Incubation (TBI) Program Batch 2	Project 5. DOST-PCAARRD-FPRDI Technology Business Incubator for Wood and Non-wood Processing Technologies	KRA 3: Rapid, Inclusive and Sustained Economic Growth	FPRDIâ€™s technology transfer and commercialization activities started in the 80â€™s with the first successful adoption of the Furnace Type Lumber Dryer (FTLD) which, until the present enjoys continued adoption. The commercialization of other FPRDI technologies â€“ spray booth, charcoal briquetting, wood wool cement boards, etc. â€“ soon followed within that decade. However, not all resulted in sustained adoption. The successful adoption of a technology depends not only on whether it answers the needs of the adopter and the market but also on other equally important logistical and managerial inputs required in running a business. MSMEs in particular often lack these and their adoption of a superior technology alone does not ensure business success. One technology transfer mechanism to address this is through a Technology Business Incubator (TBI). A TBI is a facility "where start-ups are hosted and business development services are provided." TBIs offer office space as well as technical services and facilities to help start-ups get their businesses established. The technologies to be prioritized for incubation and commercialization under the TBI includes the resin refining technology, production of pyroligneous liquid from bamboo, production of bamboo veneer, and wine barrel production from local wood species. A TBI attached to FPRDIâ€™s commercialization program can help MSMEs struggling to take off by providing temporary office space, factory facilities and various services at lower cost. Access to technical and marketing support will also be within their	Publication - 1 TBI Operations Manual printed/published - 1 List of technologies for potential adoption - 1 list of TBI service offerings published - 1 TBI Business Plan enhanced - 1 curriculum published - 3 IEC materials developed - IEC materials disseminated to 150 individuals - At least 1 Business Plan developed for an incubate - 3 IEC materials reviewed and revised - IEC materials disseminated to 150 individuals Places & Partnerships - 1 TBI office/facility enhanced - 3 FPRDI personnel involved in providing services - At least 2 consultants	FPRDI	Start-up MSMEs in the wood and non-wood processing industry	16-Aug-18	31-Mar-21	ONGOING	5,827,544.58	1,373,479.53
DOST-PCAARRD Technology Business Incubation (TBI) Program Batch 2	Project 6. DOST-PCAARRD-LSPU Technology Business Incubation Hub for Agri-Fishery and Natural Products	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This proposed project involves the establishment of a TBI hub in the LSPU Siniloan Campus with the aim of promoting potential agri- and fishery-based products towards sustainable commercialization. The TBI will primarily aid the promotion of certain agri-fishery products such as natural oil extracts and synbiotic-enriched aqua feeds. This TBI hub initiative will also provide rural partner micro-entrepreneurs with a portfolio of venture support infrastructure, including: business services, networking, access to professional services and university resources. The intent is to help start-ups by enabling linkages to help the new businesses survive, scale up, and grow.	Commercially competitive: Agri-based product /Natural oil product Aqua-based product Incubatees Accepted as Start-Up Incubatees Trained/Mentored Incubatees Graduated Faculty Involved Trained/Mentored Private Sector Trained/Mentored Pre-commercialization Services Offered TBI Facility Hub RDIs Involved in TBI Private Sector Partners National Gov. Agency Partners Funding Institution Partners MOAs Executed TBI Operations Manual TBI Curriculum TBI Business Plan Technopreneurship /manual/guidelines Patents/UMs/Trademarks Filed Patents/UMs/Trademarks Approved Licensed Technologies Operational and Procedural Framework	LSPU	Disadvantaged rural inhabitants (farmers, fisherfolks), microentreprenuers, food processors in the province of Laguna, techdevelopers and industry researchers, students and graduates through employment/OJT opportunities, faculty through the TBI as â€œliving laboratoryâ€ Direct Beneficiaries: 3-4 potential business incubatees (SMVA, SKEA, Yulâ€™s chicharon, Mushroom Growers Association) 10 faculty trained/mentored; More student-entrepreneurs who will be doing the On-the-Job Training like: Senior High School students, Business Administration students and BS Agribusiness students in the Siniloan campus and nearby colleges in the province of Laguna.	16-Aug-18	15-Aug-20	COMPLETED	6,737,558.40	1,649,373.48
DOST-PCAARRD Technology Business Incubation (TBI) Program Batch 2	Project 7. DOST-PCAARRD-SKSU Agri-Aqua Technology Business Incubator	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The SKSU Agri-Aqua Technology Business Incubator will provide technical services to the incubatees for the promotion and commercialization of the developed technologies. The project will focus on the halal goat production, mushroom production, and processing of fishery products.	At least 10 incubatees for business incubators extensively trained by technical experts At least 5 faculty/technical experts involved in the capacity building At least 3 Private Sector Involved in Training & Mentoring At least 6 Trainings Conducted At least 2 Promotional Activities conducted At least 2 TBI Personnel Trained 2 Networking activities conducted/participated At least 1 Technopreneurship Manual At least 2 IEC Materials developed At least 1 Technology Guide/ Operations Manual developed A least 1 Curricula developed At least 1 business plan developed At least 1 Technology Guide/ Operations Manual copyrighted A least 1 Curricula copyrighted At least 1 business plant copyrighted 1 echnopreneurship manual copyrighted 1 Technology Business Incubator established 1 Mushroom Laboratory enhanced At least 2 partnership agreement with private sector/private individual At least 2 MOU with technical experts At least 10 MOAs with incubatees 1 TBI Operational Guidelines developed At least 1 TBI Curriculum developed 1 TBI Business Plan developed	SKSU	Meat processors, meatshops, goat raisers, Agrarian Reform Beneficiariesâ€™ Organization, BAT graduates, Fishermanâ€™s Housewives Association	16-Aug-18	30-Jun-21	ONGOING	6,541,040.00	1,746,639.57

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
DOST-PCAARRD Technology Business Incubation (TBI) Program Batch 2	Project 8. DOST-PCAARRD-WMSU Agriculture and Food Technology Business Incubator	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The WMSU-TBI unit is under the jurisdiction of the Research Development and Evaluation Center. Its main office is at the 2nd floor of the Research Building of Western Mindanao State University. It is aimed to provide services that promote technology transfer and commercialization. The creation of WMSU Technology Business Incubation Unit (WMSU-TBIU) was approved during the 178th of the WMSU Board of Regents meeting on December 11, 2017. It is in support to the Universityâ€™s mission to deliver quality research and technology commercialization (WMSU-BOR, 2017). The goal of the TBIU is to help researchers, students, and agri-business sectors to commercialize the generated agriculture and food technologies. In return, it generates more jobs and eventually it paves way for the regional and national development. With its core functions, TBIU plays a significant role to identify and assess technologies with commercial viability. In the process, it provides opportunities for developing strong partnerships, linkages and collaboration between the universities and industries. Currently, WMSU has several technologies needed to be commercialized. They are native chicken technology (Zampen native chicken live and dressed), oyster mushroom production and processing (fresh mushroom and mushroom kropek), vermicomposting (wafer form vermicast fertilizer), and organic vegetable production â€“ organic native/hot pepper (fresh vacuumpumped chili) and organic lettuce production (fresh lettuce). However, RDEC is facing resource constraints such as capacity building of the technical personnel, human resource augmentation, and equipment. There is a demand to hire manpower for the TBI unit and to train the technical personnel to equip them with skills related to IP protection and business related processes. With the support of DOST-PCAARRD, the services offered by the WMSU-TBIU would shape the technology innovation landscape and eventually improve the economic performance of the country.	People and Services ¡ No. of incubatees recruited ¡ No. of TBI personnel trained ¡ No. of incubatees trained ¡ No. of trainings conducted for TBI personnel ¡ No. of trainings conducted for incubates ¡ No. of networking activities ¡ No. of benchmarking activity conducted Publications ¡ No. of IEC materials developed (Native Chicken, Vermicast, Oyster Mushroom, and Organic Vegetables) Patents ¡ No. of copyright Places and Partnerships ¡ No. of partnerships established ¡ No. of pool of experts established ¡ No. of Agriculture and Food TBI Hub Policies ¡ No. of Operational Guidelines Prepared ¡ No. of TBI Curriculum Developed ¡ No. of TBI Business Plan Prepared ¡ No. of WMSU Board Resolution Products ¡ No. of database system developed	WMSU	The target beneficiaries are the start-up and spin-off companies, farmers and inventors/generators of agriculture and food technology, university graduates	16-Aug-18	30-Jun-21	ONGOING	4,546,531.56	1,430,790.77
DOST-PCAARRD Technology Business Incubation (TBI) Program Batch 2	Project 9. DOST-PCAARRD-WPU Agriculture and Food Technology Business Incubator	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The goal is to establish the Western Philippines University-Technology Business Incubator (WPU-TBI) office in Puerto Princesa City Camus where other government and private agencies that could be collaborators of future partners are at most accessible. The WPU-TBI will be at the center for technology transfer and business incubation of technologies generated in the university. Specifically, it will provide technical services to incubatees for commercialization of mature technologies in the production of agriculture and aquatic species and products. The technologies to be prioritized for incubation and commercialization under the TBI includes the long-line culture of green mussel, development of green mussel-based food products, multiple longline seaweed farming, and development of seaweed-based food products.	Products: 10 incubatees People and Services: - At least 1 TBI personnel extensively trained under Technology Commercialization Mentorship Series - At least 10 faculty-researchers involved in training and mentoring mentored by the TBI personnel - At least 4 representatives from the private sector and/or funding institutions participated in the training and mentoring mentored by the TBI personnel Publications: - At least 1 TBI Business plan - 1 operations manual - 1 TBI curriculum - 1 Monitoring and Evaluation plan - 1 Sustainability plan - At least 1 promotional IEC for WPU Technologies - At least 2 trademarks files - At least 2 Patent applications filed Places and Parterships - 1 WPU TBI established and institutionalized - 1 letter of commitment from WPU - 1 Memoranda of Agreement signed - At least 1 partnership agreement with Business Groups/Marketing/Trade/Financing Institutions Policies: - 1 Institutional TBI policies reviewed/crafted - 1 Technology Transfer Protocols reviewed/crafted	WPU	Technology and Business Development Office of WPU Technology Business Incubator personnel and manager WPU Researchers/Inventors Technology adapters	16-Aug-18	30-Jun-21	ONGOING	6,609,094.40	2,059,670.32
Enhancing Livelihood Opportunities in Conflict-Vulnerable Areas in Mindanao through the LIFE (Livelihood Improvement through Facilitated Extension) Model	Project 1. Scaling Out the LIFE Model to Improve the Productivity of Select Upland Farmers Group in Surallah, South Cotabato	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Livelihood Improvement through Facilitated Extension (LIFE) Model is a result of the ACIAR Mindanao Agricultural Extension Project (AMAEP) which started in 2013. The model has been developed and implemented in selected conflict-vulnerable areas in Mindanao, namely, Ampatuan in Maguindanao, Koronadal in South Cotabato, and Ipil in Zamboanga Sibugay. This project was made possible by funding from the Australian Center for International Agricultural Research (ACIAR). The project benefited from the years of experience gained from previous projects in non-conflict areas of Mindanao and the Visayas involving the Landcare Foundation of the Philippines, Inc. (LFPI) and other partners. A review of proven extension approaches from these projects covering the period from 1999 to 2011 resulted in the development of 16 principles that formed the basis of the initial implementation in the three pilot sites of the AMAEP, namely Barangay Assumption of Koronadal, Barangay Kauran of Ampatuan, and Barangay Magdaup of Ipil. The 16 principles are implemented under three strategies: 1. Improving farmer access to technical innovations; 2. Building community social capital; 3. Collaborating closely with local institutional (extension and technical) partner agencies.	Places and Partnerships: MOA/MOU with Brgy Canahay, Surallah to implement the LIFE model, Expanded networks of farmer Brgy Canahay cooperators People and Services: Conducted capacity building/mentoring for new facilitators; Organized at least 30 farmer cooperators into one cluster; Conducted at least one cross visit and one other capacity building activity for cooperators; Improved access of farmer groups to government programs thru Barangay, Municipal/City LGU as well as agencies such as PCA, DA, DTI and DOST; Established at least one learning area; Registered the farmer cooperators group with DOLE; Conducted at least 2-3 other capacity building activities for cooperators; One Field Day Products: Increased farmersâ€™ income by 30% (based on results of the baseline data) Policies: Initiated stakeholdersâ€™ consultation with cooperators for policy development, Ordinance or Resolution passed in the local government unit Publication: One video material for experience of implementing the LIFE Model , At least 2 papers published that are peer reviewed; Training module published; Terminal report	UPMin	The target beneficiaries of the project include extension service providers, local government units, farmer partners, policy makers and even the R&D community.	16-Dec-17	15-Mar-21	ONGOING	7,449,037.00	879,672.23

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Enhancing Livelihood Opportunities in Conflict-Vulnerable Areas in Mindanao through the LIFE (Livelihood Improvement through Facilitated Extension) Model	Project 2. Scaling Out the LIFE Model to Improve the Productivity of Select Lowland Farmers Group in Datu Abdullah Sangki, Maguindanao	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Livelihood Improvement through Facilitated Extension (LIFE) Model is a result of the ACIAR Mindanao Agricultural Extension Project (AMAEP) which started in 2013. The model has been developed and implemented in selected conflict-vulnerable areas in Mindanao, namely, Ampatuan in Maguindanao, Koronadal in South Cotabato, and Ipil in Zamboanga Sibugay. This project was made possible by funding from the Australian Center for International Agricultural Research (ACIAR). The project benefited from the years of experience gained from previous projects in non-conflict areas of Mindanao and the Visayas involving the Landcare Foundation of the Philippines, Inc. (LFPI) and other partners. A review of proven extension approaches from these projects covering the period from 1999 to 2011 resulted in the development of 16 principles that formed the basis of the initial implementation in the three pilot sites of the AMAEP, namely Barangay Assumption of Koronadal, Barangay Kauran of Ampatuan, and Barangay Magdaup of Ipil. The 16 principles are implemented under three strategies: 1. Improving farmer access to technical innovations; 2. Building community social capital; 3. Collaborating closely with local institutional (extension and technical) partner agencies.	Places and Partnerships: MOA/MOU with one barangay of DAS, Maguindanao to implement the LIFE model; Expanded network of farmer cooperators of Barangay of DAS, Maguindanao cooperators and at least one other govt agency People and Services: Conducted capacity building/mentoring for new facilitators; Organized at least 30 farmer cooperators into one cluster; Conducted at least one cross visit and one other capacity building activity for cooperators; Improved access of farmer groups to government programs thru Barangay, Municipal/City LGU as well as agencies such as PCA, DA, DTI and DOST; Initiated to establish at least one demo farm; Conducted at least 2-3 other capacity building activities for cooperators; Registered/Enhanced the farmer cooperators group with DOLE; Conducted at least 23 other capacity building activities for cooperators; Established at least one demo farm; One Field Day Products: Increased farmers' income by 20%, Increased farmersâ€™ income by 30% (based on results of the baseline data) Policies: Initiated stakeholdersâ€™ consultation with cooperators for policy development Publication: One video material for experience of implementing the model; At least 2 papers published that are peer reviewed and ISI; Training module published; Terminal report	UPMin	The target beneficiaries of the project include extension service providers, local government units, farmer partners, policy makers and even the R&D community.	16-Dec-17	15-Dec-20	COMPLETED	7,270,702.00	1,098,242.67
Enhancing Livelihood Opportunities in Conflict-Vulnerable Areas in Mindanao through the LIFE (Livelihood Improvement through Facilitated Extension) Model	Project 3. Scaling Out the LIFE Model to Improve the Productivity of Select Coastal Community Group in Ipil, Zamboanga Sibugay	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Livelihood Improvement through Facilitated Extension (LIFE) Model is a result of the ACIAR Mindanao Agricultural Extension Project (AMAEP) which started in 2013. The model has been developed and implemented in selected conflict-vulnerable areas in Mindanao, namely, Ampatuan in Maguindanao, Koronadal in South Cotabato, and Ipil in Zamboanga Sibugay. This project was made possible by funding from the Australian Center for International Agricultural Research (ACIAR). The project benefited from the years of experience gained from previous projects in non-conflict areas of Mindanao and the Visayas involving the Landcare Foundation of the Philippines, Inc. (LFPI) and other partners. A review of proven extension approaches from these projects covering the period from 1999 to 2011 resulted in the development of 16 principles that formed the basis of the initial implementation in the three pilot sites of the AMAEP, namely Barangay Assumption of Koronadal, Barangay Kauran of Ampatuan, and Barangay Magdaup of Ipil. The 16 principles are implemented under three strategies: 1. Improving farmer access to technical innovations; 2. Building community social capital; 3. Collaborating closely with local institutional (extension and technical) partner agencies.	Places and Partnerships: MOA/MOU with Ipil, Zamboanga Sibugay to implement the LIFE model, Expanded networks of farmer cooperators of Ipil, Zamboanga Sibugay People and Services: Conducted capacity building/mentoring for new facilitators; Organized at least 30 farmer cooperators into one cluster/association; Conducted at least one cross visit and one other capacity building activity for cooperators; Improved access of farmer groups to government programs thru Barangay, Municipal/City LGU as well as agencies such as BFAR, PCA, DA, DTI and DOST; Established at least one learning area; Registered the farmer cooperators group with DOLE; Conducted at least 2-3 other capacity building activities for cooperators; One Field Day Products: Increased farmersâ€™ income by 30% (based on results of the baseline data) Policies: Initiated stakeholdersâ€™ consultation with cooperators for policy development , Ordinance or Resolution passed in the local government unit Publication: One video material for experience of implementing the LIFE Model; At least 2 papers published that are peer reviewed; Training module published; Terminal report	UPMin	The target beneficiaries of the project include extension service providers, local government units, farmer partners, policy makers and even the R&D community.	16-Dec-17	15-Dec-20	COMPLETED	7,008,952.00	1,320,035.74
Establishment of DOST-PCAARRD Science for the Convergence of Agriculture and Tourism (SciCAT)	Project 1. Providing Interventions and Accelerating Capability through Assessment & Mentorship Towards Science for the Convergence of Agriculture & Tourism (PInACA-SciCAT) (Old Title: Science and Technology-based Tourism for Agri-Aqua & Natural Resources (STAR))	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Project CBM Program for SciCAT will be focusing on the transformation of the identified potential MS farm sites. This project will facilitate the building of entrepreneurial and managerial skills of the MSF. It will require soft (i.e. marketing and financial competence) and hard (i.e. physical structure and landscape) components. The transformation of the traditional farm into SciCAT will require the following key activities: 1. Profiling â€“ Determine baseline data, current condition/status of multi sectors that may affect the proposed site. 2. Feasibility Study â€“ Determine products, organization, business model, POT, etc. that will yield the best profit margin and most sustainable. 3. Business Planning â€“ Determine strategies for establishing the SciCAT Farm and how to transform known risks and weaknesses into opportunities. 4. Mentorship Program â€“ MS / beneficiaries will be guided and coached from starting the SciCAT Farm to operation and sustainability. 5. Landscape and Construction- MS will be guided in the art of modifying their traditional farm into a farm tourism site thru landscape planning and construction of tourism facilities inside their farm. Data will be gathered through focus group discussion, surveys, secondary data from national and local government, and expertsâ€™ knowledge/advise.	1. Established 7 SciCAT sites in the following areas: 1.1 La Trinidad, Benguet 1.2 Sto. Tomas, La Union 1.3 Los Banos, Laguna 1.4 Indang, Cavite 1.5 Bilar, Bohol 1.6 Banay-banay, Davao Oriental 1.7 Malaybalay City, Bukidnon 2. 6 MS and 1 institutional farm Trained and Mentored; 3. Align 7 SciCAT sites to the DOT initial accreditation requirements; 4. Demonstrated optimal farm productivity and profitability in each SciCAT site; 5. SciCAT owner established linkages with co-farmers, marketing associations, students, government institutions, among others; 6. Developed 7 Profiling Reports, Feasibility Studies, Farm Enterprise plan, and Layout & Design plan; 7. Developed 12 Mentoring Reports for the whole duration of the program;	UPD	MSF community of chosen sites	1-Aug-18	31-Jul-21	ONGOING	17,230,253.40	4,864,683.02
Establishment of DOST-PCAARRD Science for the Convergence of Agriculture and Tourism (SciCAT)	Project 2. Transforming Silan's Farm in Indang, Cavite into Science for the Convergence of Agriculture and Tourism (SciCAT) - Batch 1 (Old Title: Transforming Silan Farm in Indang, Cavite into a Science and Technology-based (S&T-Based) Agri-tourism Site)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project is anchored on United Nation's Sustainable Development Goal on Sustainable Cities and Communities and on Industry, Innovation and Infrastructure promotes participatory,integrated and sustainable development projects that can solve economic and environmental challenges through investments in scientific research and innovation. This is also anchored on the socio-economic agenda of President Rodrigo Duterte which involve promotion of rural tourism and the use of science and technology in the development of such communities. The support of the local government unit of Indang is also expected as the municipality envisions itself to be the Center of Agri-tourism imbued with nurturing and respectful people in a progressive, healthy and balanced environment governed by honest leaders. Hence, the project is expected to have a great positive contribution to the society as it will innovate and transform Silan Farm from a local farming site into a science and technology based agri-tourism site that will benefit the industry, the academe and most especially, the community.	Publications 1 customer satisfaction survey report 1 journal article Patent/IP 3 copyrighted IEC materials 1 trademark Products 2 promotional videos At least 10 IEC materials At least 2 POTs downloaded People & Services 5 capability and skills training for 200 beneficiaries 50 technology adopters Places & Partnerships 1 learning/recreational site 1 farm tourism site 1 MOA for project sustainability Policies 1 municipal ordinance recognizing the SciCAT site as municipal tourist destination	CvSU	ï¿· Magsasaka Siyentista and workers ï¿· Farmer cooperatives/organizations ï¿· Farming communities in Indang, Cavite ï¿· Entrepreneurs ï¿· LGUs ï¿· Visitors who want to escape urban/city life and want to experience actual farm activities while appreciating the value of farm produce	1-Aug-18	31-Dec-20	ONGOING	4,703,278.40	913,982.80

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Establishment of DOST-PCAARRD Science for the Convergence of Agriculture and Tourism (SciCAT)	Project 3. The Making into a SciCAT of the Seeds and Seedling (S&S) Plaza - Batch 1(Old Title: The Making into a STAR of the Seeds and Seedlings (S&S) Plaza)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	In support to agri-tourism, BPI-LBNCRDPSC proposed and established the S&S Plaza which is strategically situated at the back of DOST-PCAARRD Technology Innovation Center (DPITC) building. The plaza generally aims to promote different technologies on planting material preparation as showcased in different edible landscape designs.	1. Documentation of the entire realignment and or transformation phase (including experiences, best practices and lessons learned) of the S&S Plaza into a SciCAT; 2. Provided information to UP ISSI in the preparation of the farm profile of the S&S Plaza 3. Participated in the preparation of the Feasibility Study (FS) and Business Plan (BP) of UP ISSI for the S&S Plaza 4. Established showcase of selected POTâ€™s at the S&S Plaza 5. IEC materials (10 Flyers/brochures/ Videos 6. Demonstrated optimal farm productivity and profitability at the S&S Plaza 7. Established linkages with other government and private institutions, agritourism farms, marketing associations, farmers, entrepreneurs, students, among others. 8. Trained 350 farmers and farming enthusiasts 9. Identified 20 potential and 4 actual adopters 10. Established linkages and networks of potential SciCAT sites in terms of production, postharvest and marketing activities 11. Increased visibility and market awareness of the S & S Plaza 12. Initial DOT accreditation of the S&S Plaza	BPI-LBNCRDC	Farmers, farm entrepreneurs, private and government agencies/organizations, SUCs, students, farming enthusiast and the like	1-Aug-18	31-Jul-20	COMPLETED	6,683,085.60	1,722,309.52
Establishment of DOST-PCAARRD Science for the Convergence of Agriculture and Tourism (SciCAT)	Project 4. Mt. Kitanglad Agro Eco-Tourism Farm, Science for the Convergence of Agriculture and Tourism (SciCAT) Project of Bukidnon, Region 10 - Batch 1 (Old Title: Mt. Kitanglad Agri Eco-tourism Farm, a Science and Technology-based Tourism for Agri-Aqua and Natural Resources (STAR) Project of Bukidnon, Northern Mindanao)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Mt. Kitanglad Agri Eco Farm is a DA-ATI 10 Learning Site and School of Practical Agriculture, hence the possibility of turning into a farm tourism accredited by DOT through the intervention of the SciCAT extension â€" research results utilization modality of PCAARRD â€" DOST is of great potential. Section 12 of RA 10816 specifically give mandate to the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARD), one of the councils of the DOST, to include the technology needs, in the context of innovation, of farm tourism sites in its research and development programs. Particularly at M.K.A.E. it will be enhanced in its capability to produce chemical free high value crop vegetables being one of its niche offering in providing meal package to tourists and visitors. This is through providing package of technologies (POT) in chemical free cabbage and sweet pepper among other high value vegetable produce in the farm such as lettuce in combination with various kinds of mints. Realizing the potential of developing a science-based tourism farm sites that will feature common farm tourism activities such as farm tours, training, farm exhibits, pick-and pay, hands-on activities for tourists (i.e. actual planting, harvesting, processing, etc.) while also promoting mature technologies developed through DOST PCAARRD various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs), PCAARRD will now engage in developing farm tourism sites of the MS. This farm site will be known as Science and Technology-based Convergence of Agriculture and Tourism (SciCAT) Farm sites. SciCAT is a technological convergence to improve productivity and capacity for sustainable farming practices while showcasing its beauty and attraction in scenery and unique experiences through recreational activities that will captivate curiosity and excitement among tourists.	1 MS trained At least 50 farmers/farming enthusiasts trained At least 10 additional employment opportunities At least 2 Laboratory services facilitated for citronella oil products At least 1 copyrighted IEC materials 1 Trademark (logo, signage, etc.) At least 2 POTs downloaded At least 3 abaca based handicrafts At least 3 indigenous HandLooms modified 4 progress reports 1 terminal report 1 set of IEC materials At least 1 social media site 3 Progress Report 1 Terminal report At least 4 signed MOA 1 Municipal ordinance recognizing SciCAT site as municipal tourist destination	DOST X	Mt. Kitanglad Agri-Eco Farm (MS Benjamin Maputi), IP Women RIC of Imbayao, Malaybalay City, Out of School Youth and High Value Crop Farmers within the Mt. Kitanglad Natural Range Natura Park.	1-Aug-18	31-Dec-20	ONGOING	4,704,422.40	1,026,387.79
Establishment of DOST-PCAARRD Science for the Convergence of Agriculture and Tourism (SciCAT)	Project 5. A SciCAT of ORGANIC CHAMPION: A Science for the Convergence of Agriculture and Tourism (SciCAT) for Organic Farming of a Champion Family in Banay-banay, Davao Oriental - Batch 1 (Old Title: A STAR for ORGANIC CHAMPION: A Science and Technology-based Tourism for Agri-Aqua and Natural Resources (STAR) for Organic Farming of a Champion Family in Davao Oriental)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The identified farm site of a Magsasaka Siyentista (MS) Naomi Dimpas is a DA-ATI accredited School for Practical Agriculture (SPA). It has already housed 18 trainings related to organic agriculture in two years since 2016 with more than 500 persons being trained. In addition, there were nearly 2,000 visitors who made their day tour visit coming from the different sectors in the Davao region and other parts of the country. The source of earning in this site are organic rice production, organic aqua culture, herbal production & processing, vermiculture, rabbit production and ornamental flower production. It has met most of the minimum requirement in terms of amenities/facility set by the DOT. Hence, such site is a potential farm site to introduce SciCAT as a modality. During the implementation of the project, UseP shall provide necessary technical assistance to capacitate the MS through downloading POTs on Agriculture and Business mentoring. The MS will also be assisted by the USeP in the promotion and marketing of the regionâ€™s tourist site. They will also be linked to LGUs, PLGUs, DOT offices and other stakeholders so that the MS will have the opportunity to avail any additional projects and other opportunities from these offices. Eventually, USeP will assist the SciCAT site in the DOT accreditation (initial phase). The MS and the community will both benefit from this undertaking. The MS will gain knowledge on agricultural technologies and business sustainability to be provided by the USeP. Through the project, the visibility of the site in the region and the linkages of the said site will be strengthened and broadened. Finally, the SciCAT site will have an initial DOT accreditation. On the other hand, the community will also be effected as there will be job creation and income generation in the locality. Market opportunities for farmers adjacent to the site such as commercial organic vegetable farmers will be associated. Significantly, the project will also serve as demonstration	â€¢ 1 MS trained/mentored â€¢ At least 100 trained farmers â€¢ At least 100 farm visitors per month â€¢ At least 20 identified potential POT Adopters and 4 actual adopters â€¢ At least 3 Copyrighted IEC Materials â€¢ At least 1 Trademark (logo or signage) â€¢ At least 3 POT Implemented â€¢ At least 4 IEC Materials â€¢ At least 10 Promotional campaign and materials â€¢ At least 1 FB page â€¢ 6 quarterly reports â€¢ At least 3 MOA signed â€¢ 1 SciCAT site ï¿· At least 1 Municipal ordinances supporting SciCAT sites as Farm Tourism sites	USeP	Magsasaka Siyentista (MS) Naomi Dimpas, PLGU/LGU, Local Community/Farmers, Students and Tourists	1-Aug-18	31-Jul-20	COMPLETED	4,702,755.20	1,009,641.84

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Establishment of DOST-PCAARRD Science for the Convergence of Agriculture and Tourism (SciCAT)	Project 6. Highland Science for the Convergence of Agriculture and Tourism: Benguet Landscape and Ornamental Offerings of a Magsasaka Sitentista (Highland SciCAT: BLOOMS) Batch 2(Old Title: Highland S&T-Based Tourism for Agriculture, Aquatic and Natural Resources: Benguet Landscape and Ornamental Offerings of Magsasaka Siyentista (Highland STAR:BLOOMS))	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will be in collaboration with Magsasaka Siyentista Andy Colte. Activities shall be geared towards the improvement of his cut flower farm and the surrounding farms operated by his relatives. In order to give prospective visitors a pleasant experience in the farm, basic amenities of a farm tourist site shall be provided like parking space, briefing/orientation area, photo spots, toilet, footpath, farm store, clean water supply. Landscaped centerpieces will be strategically located in the farm to enhance the natural beauty of the blooms.	A. Products: 1. At least 2 POTs downloaded 2. Potted plants for sale 3. Flora-inspired souvenir items B. People and Services: 1. At least 20 identified POT adopters, 4 actual POT adopters 2. At least 200 trained farmers 3. At least 700 trained students 4. At least 100 monthly average visitors/tourists C. Publications: 1. At least 5 IEC Materials (1 video documentary about the farm, 2 posters, IEC materials on POTs) 2. 2 Ornamental Plant production guides 3. 10 press release news/ feature articles 4. Website for the Farm Tourism Site 5. 1 annual progress report 6. 1 terminal report D. Patents: 1. Copyright on IEC materials 2. Copyright on Ornamental Plant Production Guides 3. Trademark for SciCAT logo E. Places and Partnerships: 1. 1 SciCAT site	BSU	Farmers, farm entrepreneurs, private and government agencies/organizations, SUCs, students, farming enthusiast and the like	1-Oct-19	30-Sep-21	ONGOING	4,705,622.40	2,363,658.80
Establishment of DOST-PCAARRD Science for the Convergence of Agriculture and Tourism (SciCAT)	Project 7. Enhancing Pera's Farm for SciCAT Farm Development in La Union - Batch 2(Old Title: Enhancing Pera's Farm for STAR Farm Tourism Development in La Union)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project aims to transform Magsasaka-Siyentista Eliseo Pera's farm into SciCAT Farm Enterprises that will serve as the communityâ€™s main tourist farm attraction leading to the creation of employment and entrepreneurship opportunities in the community.	A. Products: 1. At least 2 POTs downloaded B. People and Services: 1. At least 20 identified POT adopters, 4 actual POT adopters 2. At least 10 jobs generated 3. At least 100 monthly average visitors/tourists 4. At least 100 farmers/farming enthusiasts trained C. Publications: 1. At least 1 set of IEC materials 2. At least 1 social media site 3. 1 SciCAT techno video 4. 1 terminal report D. Patents: 1. At least 1 copyrighted IEC materials 2. 1 Trademark (logo, signage, etc.) E. Places and Partnerships: 1. 1 SciCAT site 2. MOA signed with ATI, LGU, Magsasaka-Siyentista (MS) & Tourism Office F. Policies: 1. 1 Municipal resolution recognizing SciCAT site as municipal tourist destination	DMMMSU	MS, Farming communities and LGUs	1-Oct-19	30-Sep-21	ONGOING	3,695,067.60	2,749,152.00
Establishment of DOST-PCAARRD Science for the Convergence of Agriculture and Tourism (SciCAT)	Project 8. Establishment of Science for the Convergence of Agriculture and Tourism (SciCAT) Farm in Sitio Lagiwliw, Zamora, Bilar, Bohol - Batch 2(Old Title: Establishment of Science and Technology-based Tourism for Agriculture, Aquatic and Natural Resoures (STAR) Farm in Bohol)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will be conducted at BISU adopted village, the Sitio Lagiwliw in Zamora, Bilar, Bohol. This village was adopted during the establishment of the Climate Change Center in which it is named as â€œGreen Village.â€ The village has 20 household mainly engaged in farming activities such as production of rice, corn, banana, coconut, fruit trees, vegetables and other crops and management of poultry, pig, and livestock.	A. Products: 1. At least 2 POTs downloaded B. People and Services: 1. At least 20 identified POT adopters, 4 actual POT adopters 2. At least 100 monthly average visitors/tourists 3. At least 100 trained farm owners and interested individuals C. Publications: 1. At least 1 social media site 2. 1 SciCAT technology promotional video 3. At least 1 brochure 4. At least 3 flyers 5. At least 10 mentoring (technical) reports 6. At least 8 progress reports 7. 1 Terminal report D. Patents: 1. At least 1 copyright on IEC materials 2. 1 Trademark (logo, signage, etc.) E. Places and Partnerships: 1. 1 SciCAT site 2. MOA signed with DOT/Tourism Office, DA-ATI, LGU, and Magsasaka-Siyentista (MS) F. Policies: 1. 1 Municipal resolution recognizing SciCAT site as municipal tourist destination	BISU	â€¢ People in Sitio Lagiwliw â€¢ MS (Mr. Adelo D. Mangaya-ay) â€¢ Farm owners in the selected site â€¢ Local and foreign tourists â€¢ Farm entrepreneurs â€¢ Students â€¢ Other interested individuals and groups	1-Oct-19	30-Sep-21	ONGOING	3,669,166.80	2,795,397.20

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
S&T Community Based Program for Inclusive Development (STC4iD)	Project 1. Capacity Development and Program Monitoring and Evaluation for S&T Community-based Project for Inclusive Development (STC4iD) State Universities and Colleges (SUCs) (Old Title: Capacity Development Program for Science and Technology for Inclusive Development (STC4iD) Partners)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Despite the governmentâ€™s efforts to push for inclusive development, farmers and fishermen remained the poorest of the poor in the country. The Philippine Statistics Authority (PSA) data showed that these sectors recorded the highest poverty incidences in 2015 at 34.3 percent and 34 percent, respectively. The same scenario was seen in the past years. These sectors, followed by children from poor families were found to be the poorest of the poor in the PSA study in 2006, 2009 and 2012. In response to this situation, the government continue to implement programs that aims to help alleviate poverty among our countryâ€™s poorest sectors of the society. The 2017-2022 Harmonized National Research and Development Agenda (HNRDA) was recently created by the Department of Science and Technology to directly address three of President Rodrigo Duterteâ€™s 10-point socioeconomic agenda: promotion of rural and value chain development towards increasing agricultural and rural enterprise productivity and rural tourism; promotion of science and technology and creative arts to enhance innovation and creative capacity towards selfsustaining, inclusive development; and improve social protection program to protect the poor against instability and economic shock. The 2017-2022 HNRDA ensures that the studies and researches will be beneficial to the stakeholders through the â€œdevelopment of innovative and improvement of traditional extension modalities for the efficient transfer of technologies to end-usersâ€ Thus, the Science and Technology for Inclusive Development (STC4iD), an innovative technology program under the HNRDS. The STC4iD will serve as a vehicle for reaching the stakeholders at the grassroots level by bridging the gaps in technology, information and social practices, hereafter, assuming a critical role in alleviating poverty and developing empowered	1 capacity building activities for STC4iD project team members conducted 30 project team members capacitated 1 Training Modules developed 5 Community enterprise sustainability plan developed 1 IEC material produced 1 publishable paper submitted 1 AVP Produced	UPLB	Project Team Members of STC4iD in five SUCs partners	1-Jan-19	31-Dec-21	ONGOING	11,207,578.00	3,559,695.10
S&T Community Based Program for Inclusive Development (STC4iD)	Project 2. S&T Community-Based Project For Inclusive Development (STC4iD) through the Community-based Livelihood Improvement for Bukidnons (Project CLImB) (Old Title: S&T Community-based Livelihood Improvement for Bukidnons (PROJECT CLImB))	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The 2017-2022 HNRDA ensures that scientific breakthroughs and research results will benefit stakeholders through the â€œdevelopment of innovative and improvement of traditional extension modalities for the efficient transfer of technologies to end-usersâ€Therefore, to address three of President Rodrigo R. Duterteâ€™s 10-point agenda: #5) promotion of rural and value chain development toward increasing agricultural and rural enterprise productivity and rural tourism; and #8) promotion of science, technology and creative arts to enhance innovation and creative capacity towards self-sustaining, inclusive development. Agenda #9, â€œto improve social protection programsâ€¦ to protect the poor against instability and economic shock,â€STC4ID as the innovative technology transfer program under the HNRDA proposed to cater not just the poor, but to priority disadvantaged communities and social groups across the nation. In close coordination with the regional consortia, the State University and Colleges (SUCs) and the DOST regional offices, STC4ID will serve as a vehicle for reaching the stakeholders at the grassroots level by bridging the gaps on technology, information and practices, hence, assuming a critical role in alleviating poverty and the advancement of the AANR sector. Bukidnon is a landlocked mountainous province with an agricultural economy and considered as the food basket of Mindanao. In 2015, Bukidnon was identified as the 6th impoverished province in the Philippines having a poverty incidence of 58.7% (PSA, 2015). Of the 20 towns of Bukidnon, Maramag has a relatively low incidence of poverty (47.90%) with about 30% of its households have income below the food threshold level. However, Barangay Kiharong ranks 4th of the 20 barangays in the municipality with high poverty incidence of 64.90% and	1 MOA signed with government agency/NGO partner 1 PO registered at DOLE 2 new capability building activities to at least 30 farmers 1 Techno Field Day conducted 2 new commodities produced and marketed Farmerâ€™s income increased by at least 10-20% 1 Enabling and/or support policy identified and recommended 1 LGU resolution/ordinance formulated 1 Terminal Report submitted 1 publishable paper submitted	CMU	The target beneficiaries of the project are the AANR households in upland Brgy. Kiharong who are below poverty and food threshold levels.	1-Jan-19	31-Dec-21	ONGOING	6,941,722.00	2,447,289.67
S&T Community Based Program for Inclusive Development (STC4iD)	Project 3. S&T Community-Based Project for Inclusive Development (STC4iD) for the Upland Farmers in Salangsang, Lebak, Sultan Kudarat (Old Title: Enhancing Vegetable Production thru S&T Community-based Organic Farming Interventions for Marginalized Upland Farmers)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	As mentioned by the Asia Development Bank (ADB), Indigenous Peoples (IPs) are often found to lack access to assets and opportunities required for them to participate in mainstream development, on account of social exclusion, as well as the lack of adequate access to health and education services, that can enable them to participate in informed and effective ways. Considerable efforts are made by the Philippine government and civil society to bring the IPs into the mainstream development process, while fully respecting their culture and tradition, as well as their rights. IPs remain among the poorest groups in the country, reason why they require special support (https://www.adb.org/sites/default/files/project-document/65345/37749-phiipdf.pd). The STC4iD program development, an innovative technology program under the HNRDS, is a demonstration of technology transfer modality in multi-locations that focuses on Geographically, Economically, and Socially Disadvantaged communities and social groups in the AANR-based S&T community livelihoods. The STC4iD therefore is a timely mechanism that can provide opportunity among the farmers, specifically those settled in Barangay Salansang, by providing project inputs such as improved farming practices/technologies, individual and organizational strengthening, agricultural facilities and skills development to effect change the agricultural landscape in the area. It is envisioned that in 1-3 years from now, the community can initially focus on addressing their basic food requirements and income needs through the adoption of production technology options for vegetables. For the midterm, 3-5 years from now, the community can pursue and expand production and marketing of quality vegetables to improve their livelihood opportunities and have their income increased to at least 60 to 100% of food threshold and toward poverty threshold;	- Sustained linkage with LGU and other partners - Increased number of market linkages to 4 - Increased the land area for vegetable production by 10% - Increased number of stakeholders trained to 20% - At least 2 Value-added products are commerciali	SKSU	The target beneficiaries of the project are the farmer-cooperators themselves, academe, research and extension institutions, vegetable growers, LGUs, and food processors.	1-Jan-19	31-Dec-21	ONGOING	6,783,635.00	2,130,852.85

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
S&T Community Based Program for Inclusive Development (STC4iD)	Project 4. S&T Community-Based Project for Inclusive Development (STC4iD) For Selected Internally Displaced Persones (IDPs) and Farmers in Jolo, Sulu (Old Title: Science and Technology Community-based Project for Inclusive Development in Barangay San Raymundo, Jolo, Sulu)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Thus, the STC4iD program development, an innovative technology program under the HNRDS, is the demonstration of technology transfer modality in multi-locations that focuses on Geographically, Economically, and/or Socially Disadvantaged (GESDA) communities and social groups in the AANR sector. The program offers to serve the poor and priority disadvantaged communities across the Philippines by leading them to establish sustainable and resilient AANR-based S&T community livelihoods. In particular, it would like to give (wider) primary priority to any or a combination of the following: a) Poverty-stricken areas (based on PSA data, 20 poorest provinces); b) Indigenous people; c) Conflict-vulnerable communities (includes conflict-affected or victims of conflict); d) Coastal or fishing communities; e) Upland farm communities; f) Isolated AANR communities. Cassava has a strong economic relationship with resource constrained farmers situated in marginal land of the area. This means that the development of cassava industry in this part of Mindanao and understanding of its unrealized ability is to provide something to the improvement of living conditions of communities. Specifically, in the province, cassava is widely considered as their staple food. Thus, it is very vital to bring a system that sufficiently meets the requirements of high yielding cultivars of cassava in the area. This will make possible the supply of tubers and its intermediate products such as feeds and traditional food of rural people in the province	3 MOAs 1 Market agreement 2 capacity building (faci) 3 capacity building (farmers) 1 techno field visit 3 technology trainings 1 demo farm 1 initial livelihood program 1 techno field day 2 high yielding cassava production 3 cassava produced and marketed achieved 100% food threshold (Y3) 1 policy advocacy plan developed 1 LGU resolution 1 community baseline documeneted 2 IEC materials produced 1 publishable paper 1 terminal report	MSU-Sulu	Cassava farmers and IDPs who came from the Municipality of Indanan, Patikul, Parang, Talipao, Maimbung, and Luuk Sulu who are now living in San Raymundo, Jolo, Sulu	1-Jan-19	31-Dec-21	ONGOING	5,938,012.00	1,882,926.68
S&T Community Based Program for Inclusive Development (STC4iD)	Project 5. S&T Community-Based Project for Inclusive Development (STC4iD) For Selected Farmers and Fisherfolks in Enrique Villanueva, Siquijor (Old Title: Agri-Fishery Program Initiatives for Livelihood Enhancement Services (Agri-Fishery PILES) in Selected Communities in the Six Municipalities of Siquijor Province)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The creation of 2017-2022 Harmonized National Research and Development (HNRD) by the Department of Science and Technology was aimed at achieving the three of President Rodrigo Dutertâ€™s 10- point socioeconomic agenda: promoting science, technology and the creative arts to enhance innovation and creativity toward self-sustaining and inclusive development; Improving social protection programsâ€¦ in order to protect the poor against instability and economic shocks; Promoting rural and value chain development toward increasing agricultural and rural enterprise productivity and tourism. The STC4iD program development, is a demonstration of technology transfer modality in multi-locations that focuses on Geographically, Economically, and/or Socially Disadvantaged (GESDA) communities and social groups in the AANR sector, is an innovative technology program under the HNRDS. It is a program offered to serve the priority poor and disadvantaged communities all over the country by leading them to establish and develop sustainable and resilient AANR-based S&T community livelihood. Siquijor Province is included in the 10 marginal provinces in the Philippines. According to 2016 reports of the Philippine Statistics Authority (PSA), Siquijor has 55.2% poverty incidence. Enrique Villanueva is one of the six municipalities located in the northern most of Siquijor Island. It has a total land area of 28.60 square kilometers and is considered the smallest municipality of the island of Siquijor. The town is composed of 14 barangays and has a total of 6,104 people in the 2015 census. Bitaug, the target partner, is one of the 14 rural barangays in the Municipality of Enrique Villanueva situated along the shoreline and partly hilly land. It has a total land area of 177.9263 hectares with a population of 887 representing 14.53% of the total population of Enrique Villanueva and 269 number	1 MOA/MOU signed with new govâ€™t agency or NGO-partner market agreement signed At least 2 more capacity building activities for 30 farmers conducted Technology Field Day conducted More commodities produced and marketed Farmers income increased to meet at least 75% of food threshold policy advocacy plan developed; LGU resolution/ordinance formulated 1 publishable paper submitted	Siquijor State College	AANR Households from Barangay Bitaug, Enrique Villanueva, Siquijor	1-Jan-19	31-Dec-21	ONGOING	5,593,920.00	2,014,379.48
S&T Community Based Program for Inclusive Development (STC4iD)	Project 6. S&T Community-Based Project for Inclusive Development (STC4iD) For Selected Farmers and Fisherfolks in Magallanes, Sorsogon (Old Title: Technology Roll-out, Extension and Deployment - S&T Community-based Project for Inclusive Development (ST4iD) in Biga, Magallanes, Sorsogon)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The 2017-2022 Harmonized National Research and Development Agenda (HNRDA) was recently created by the Department of Science and Technology to directly address three of President Rodrigo Dutertâ€™s 10-point socioeconomic agenda: promotion of rural and value chain development towards increasing agricultural and rural enterprise productivity and rural tourism; promotion of science and technology and creative arts to enhance innovation and creative capacity towards self-sustaining, inclusive development; and improve social protection programsâ€¦to protect the poor against instability and economic shock. The 2017-2022 HNRDA ensures that the studies and researches will be beneficial to the stakeholders through the â€œdevelopment of innovative and improvement of traditional extension modalities for the efficient transfer of technologies to end-usersâ€Thus, the ST4iD program development, an innovative technology program under the HNRDS, is the demonstration of technology transfer modality in multi-locations that focuses on Geographically, Economically, and/or Socially Disadvantaged (GESDA) communities and social groups in the AANR sector. The program offers to serve the poor and priority disadvantaged communities across the Philippines by leading them to establish sustainable and resilient AANR-based S&T community livelihoods. The ST4iD will be implemented in Magallanes, Sorsogon. The Province of Sorsogon is included in the ten 10 marginal provinces in the Philippines. According to 2015 reports of the Philippine Statistics Authority (PSA), Sorsogon has 31.65% poverty incidence. Poverty threshold per capita in Sorsogon is at P10,483 while food threshold per capita is at P7,320 (PSA, 2015). The municipality of Magallanes has a higher poverty incidence than the provincial rate at 44.1%. It is one of the six priority	o At least 2 MOA/MOU signed with new govt agency- or NGOpartner o At least 2 market agreement signed o At least 2 capacity building activities for â‰¥30 F/F-cooperators conducted o 1 Techno Field Day conducted o F/Fsâ€™ income increased to at least 60-100% of food threshold o 1 commodity produced with valueaddition initiated o 1 CESP developed; o 1 policy advocacy plan developed; o â‰¥1 LGU resolâ€™n/ordinance formulated o 1 Terminal Report submitted o 1 publishable paper submitted	Sorsogon State College	AANR households from Barangay Biga, Magallanes, Sorsogon (Community partner: Biga Farmers and Fishermen Association)	1-Jan-19	31-Dec-21	ONGOING	6,986,287.00	2,223,817.53

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 1. SUSTAIN IP-TBM Program Coordination, Capacity Building, and IP Policy Development and Assessment(Old Title: Support to University Strategy in Technology Acceleration Initiatives by Nurturing (SUSTAIN) Intellectual Property and Technology Business Management (IP-TBM) Office)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Philippines marked its first innovation achiever position in the 2019 Global Innovation Index, posting a big jump to 54th place from the previous yearâ€™s 73rd position as it catches up with world leaders (www.pna.gov.ph). With a total score of 38.18 over 100, the report said the Philippines is among the countries that have â€œabove expectations for level of developmentâ€ among lower-middle-income economies. The report said governments around the globe had increased the use of intellectual property in their quest for innovation, with investments on R&D growing more than double between 1996 and 2016. It said R&D expenditures of governments around the world rose by 5 percent while business R&D expenditures went up by 6.7 percent, the most significant jump since 2011. According to the EU Patent Office, patents are essential signals of innovation as statistics reveal that 70% of technology disclosed in patent literature was not disclosed in any non-patent literature; 80% of unique information in patent literature is not published elsewhere and $60BN wasted for developing things that are already documented in a patent specification. Intellectual property represents the principal value component of many global trade transactions (Ezell and Cory 2019, Information Technology and Innovation Foundation (ITIF)). Global cross-border exports of commercial knowledge- and technology-intensive goods and services reached an estimated $4 trillion in 2014, consisting of $1.6 trillion of commercial knowledge-intensive services and $2.4 trillion of exports of high-tech products. In fact, knowledgeâ€"rather than labor, capital, or resource-intensive componentsâ€"represents about one-half of current global trade ï¬‚ows, and this knowledge-intensive component is growing faster, at	Conducted at least 30 monitoring and evaluation visits Conducted the modules 4-10 of the DOST-PCAARRD IP Master Class and Technology Commercialization Mentorship Series At least 25 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series (modules 4-10) Conducted at least 2 exploratory meetings with Business Groups/Marketing or Trade Institutions Conducted 2 technology pitch days Conducted at least 5 policy reviews Conducted 1 commitment meeting	CvSU	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs/RDIs Technology transfer officers/managers SUC/RDI Researchers/Inventors Technology takers	1-Jan-20	31-Dec-21	NEW	11,370,297.20	8,495,551.60
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 2. Sustaining Mariano Marcos State University's (MMSU) IP-TBM Office and Enhancing IP-TBM Offices among Member Agencies of the Ilocos Agriculture and Resources Research and Development Consortium (ILARRDEC)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	There are about 111 SUCs in the Philippines, and six of which are in the Ilocos Region. Despite these numbers, still the Philippines ranked 73rd in the 2018 Global Innovation Index (GII) out of 126 economies and ranked 9th among the 30 lower-middle-income countries included in the index and placed 13th among 15 below average-income countries in Southeast Asia and Oceania (Tubayan 2018). In terms of R&D, public HEIs contributed almost 43% in total, on average to agricultural R&D. Overall, in the government, HEIs and private non-profit sectors, the top socio-economic objective of R&D was for agricultural production and technology with 23% of total expenditures (Catibog, 2016). The Philippine government spent on agricultural R&D remained low at about 0.13% of gross value added (GVA) in agriculture from 2003-2011 (Ravago and Balisacan, 2016). As early as 2008, CHED and IPOPHL already inked a memorandum of understanding to strengthen collaboration on IP protection and technology transfer in HEIs (Yadao-Sison, 2010). This was cascaded to the SUCs by CHED through Joint Circulars 08-01 and 08-02, mandating attendance to participant HEIs to the National Conference on IP on May 21-22, 2008 and directing all public and private HEIs to develop their respective policy guidelines on IP with the assistance of IPOPHL on July 31, 2018, respectively. The role of HEIs in developing inventrepreneurs towards sustainable development cannot be denied. Through Circular Memorandum Order (CMO) No. 46, s 2012 which is the policy-standard to enhance quality assurance (QA) in the Philippine Higher Education through an Outcomes-based and Typology QA â€" mandating HEIs to contribute to building quality nation capable of transcending the social, political, economic, cultural and ethical issues that constrain the countryâ€™s human development, productivity and global competitiveness (Ancheta 2018). Specifically,	1 updated inventory of IP Asset 1 Technology Commercialization Plan - 40 PAS reports of R&D proposals and IP applications At least 2 Technologies (products, processes, and systems) Commercialized 1 Regional Sustainability Plan	MMSU	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs/RDIs Technology transfer officers/managers SUC/RDI Researchers/Inventors Technology takers	1-Jan-20	31-Dec-21	NEW	4,128,594.20	2,203,709.52
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 2A. Enhancing Technology Transfer through IP-TBM in Don Mariano Marcos Memorial State University (DMMMSU) (Old Title: Strengthening and Sustaining Intellectual Property and Technology Business Management (IP-TBM) of Don Mariano Marcos Memorial State University (DMMMSU))	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The IP-TBM project will enhance/complement the DMMMSU through PCAARD-DPITCâ€™s assistance by: capacitating its personnel in handling/facilitating technology promotion and commercialization activities; and establishing linkages among MMSUâ€™s technology owners/generators with investors, end users, and other stakeholders. The IP-TBMâ€™s intensive training will enhance project membersâ€™ (manager, technology transfer officers, science research assistant, administrative assistant) capacity to: evaluate and package technology for commercialization; come up with a market research; design and present business proposals among end-users, industry companies and investors; design IEC and communication campaign as promotional strategies.	Year 1: â€¢ At least 1 inventory of IP assets â€¢ At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series â€¢ At least 1 IP-TBM staff attended a local IP workshop/fora â€¢ At least 1 promotional IECs for SUC/RDI technologies â€¢ At least 2 IP (patent and utility model only) applications â€¢ IP-TBM established/enhanced â€¢ Institutional IP Policy reviewed/ crafted Year 2: â€¢ At least 1 Technology Commercialized â€¢ At least 1 IP-TBM staff attended a foreign IP workshop/fora â€¢ At least 20 SUC/RDI trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainer/speaker â€¢ At least 2 networking events and technology promotion conducted by the SUC/RDI â€¢ At least 1 promotional IECs for SUC/RDI technologies â€¢ At least 3 IP (patent and utility model only) applications â€¢ IP-TBM institutionalized	DMMMSU	(DA-RFO 1)-Faculty members and Full-time Researchers and Inventor	1-Jan-20	31-Dec-21	NEW	1,631,716.00	855,093.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 2B. Enhancing Technology Transfer through IP-TBM in Ilocos Sur Polytechnic State College (ISPSC) (Old Title: Strengthening and Sustaining Intellectual Property and Technology Business Management (IP-TBM) of Ilocos Sur Polytechnic State College (ISPSC))	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The IP-TBM project will enhance/complement the ISPSCâ€™s CIPO through PCAARD-DPITCâ€™s assistance by: capacitating its personnel in handling/facilitating technology promotion and commercialization activities; and establishing linkages among MMSUâ€™s technology owners/generators with investors, end users, and other stakeholders. The IP-TBMâ€™s intensive training will enhance project membersâ€™ (manager, technology transfer officers, science research assistant, administrative assistant) capacity to: evaluate and package technology for commercialization; come up with a market research; design and present business proposals among end-users, industry companies and investors; design IEC and communication campaign as promotional strategies.	Year 1: â€¢ At least 1 inventory of IP assets â€¢ At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series â€¢ At least 1 IP-TBM staff attended a local IP workshop/fora â€¢ At least 1 promotional IECs for SUC/RDI technologies â€¢ At least 2 IP (patent and utility model only) applications â€¢ IP-TBM established/enhanced â€¢ Institutional IP Policy reviewed/ crafted Year 2: â€¢ At least 1 Technology Commercialized â€¢ At least 1 IP-TBM staff attended a foreign IP workshop/for a â€¢ At least 20 SUC/RDI trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainer/speaker â€¢ At least 2 networking events and technology promotion conducted by the SUC/RDI â€¢ At least 1 promotional IECs for SUC/RDI technologies â€¢ At least 3 IP (patent and utility model only) applications â€¢ IP-TBM institutionalized	ISPSC	ISPSC Faculty and Full-time Researchers and Inventor	1-Jan-20	31-Dec-21	NEW	1,631,716.00	855,093.00
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 2C. Enhancing Technology Transfer through IP-TBM in North Luzo Philippines State College (NLPSC)(Old Title: Strengthening and Sustaining Intellectual Property and Technology Business Management (IP-TBM) of North Luzon Philippines State College (NLPSC))	KRA 3: Rapid, Inclusive and Sustained Economic Growth	B.Project/ Activity Description The IP-TBM project will enhance/complement the NLPSCâ€™s IPO through PCAARD-DPITCâ€™s assistance by: capacitating its personnel in handling/facilitating technology promotion and commercialization activities; and establishing linkages among NLPSCâ€™s technology owners/generators with investors, end users, and other stakeholders. The IP-TBMâ€™s intensive training will enhance project membersâ€™ (manager, technology transfer officers, science research assistant, administrative assistant) capacity to: evaluate and package technology for commercialization; come up with a market research; design and present business proposals among end-users, industry companies and investors; design IEC and communication campaign as promotional strategies.	Year 1: â€¢ At least 1 inventory of the potential research outputs for patent â€¢ At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series â€¢ At least 1 IP-TBM staff attended a local IP workshop/fora â€¢ At least 1 promotional IECs for SUC/RDI technologies â€¢ IP-TBM established/enhanced â€¢ Institutional IP Policy reviewed/ crafted Year 2: â€¢ At least 1 Technology Commercialized â€¢ At least 1 IP-TBM staff attended a foreign IP workshop/for a â€¢ At least 10 SUC/RDI trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainer/speaker â€¢ At least 2 networking events and technology promotion conducted by the SUC/RDI â€¢ At least 1 promotional IECs for SUC/RDI technologies â€¢ At least 1 IP (patent and utility model) applications â€¢ IP-TBM institutionalized	NLPSC	North Luzon Philippines State Collegeâ€™s Faculty Full-time Researchers and Inventor Potential target technology adopters	1-Jan-20	31-Dec-21	NEW	1,631,716.00	855,093.00
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 2D. Enhancing Technology Transfer through IP-TBM in Pangasinan State University (PSU)(Old Title: Strengthening and Sustaining Intellectual Property and Technology Business Management (IP-TBM) of Pangasinan State University (PSU))	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The IP-TBM project will enhance/complement the PSU-IPRU through PCAARD-DPITCâ€™s assistance by: capacitating its personnel in handling/facilitating technology promotion and commercialization activities; and establishing linkages among MMSUâ€™s technology owners/generators with investors, end users, and other stakeholders. The IP-TBMâ€™s intensive training will enhance project membersâ€™ (manager, technology transfer officers, science research assistant, administrative assistant) capacity to: evaluate and package technology for commercialization; come up with a market research; design and present business proposals among end-users, industry companies and investors; design IEC and communication campaign as promotional strategies.	Year 1: â€¢ At least 1 inventory of IP assets â€¢ At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series â€¢ At least 1 IP-TBM staff attended a local IP workshop/fora â€¢ At least 1 promotional IECs for SUC/RDI technologies â€¢ At least 2 IP (patent and utility model only) applications â€¢ IP-TBM established/enhanced â€¢ Institutional IP Policy reviewed/ crafted Year 2: â€¢ At least 1 Technology Commercialized â€¢ At least 1 IP-TBM staff attended a foreign IP workshop/fora â€¢ At least 20 SUC/RDI trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainer/speaker â€¢ At least 2 networking events and technology promotion conducted by the SUC/RDI â€¢ At least 1 promotional IECs for SUC/RDI technologies â€¢ At least 3 IP (patent and utility model only) applications â€¢ IP-TBM institutionalized	PSU	PSU-Faculty members and Full-time Researchers and Inventor	1-Jan-20	31-Dec-21	NEW	1,631,716.00	855,093.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 2E. Enhancing Technology Transfer through IP-TBM in University of Northern Philippines (UNP)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The IP-TBM project will enhance/complement the UNP through PCAARD-DPITCâ€™s assistance by: capacitating its personnel in handling/facilitating technology promotion and commercialization activities; and establishing linkages among MMSUâ€™s technology owners/generators with investors, end users, and other stakeholders. The IP-TBMâ€™s intensive training will enhance project membersâ€™ (manager, technology transfer officers, science research assistant, administrative assistant) capacity to: evaluate and package technology for commercialization; come up with a market research; design and present business proposals among end-users, industry companies and investors; design IEC and communication campaign as promotional strategies. This institution provides advanced instructions in the arts, agriculture, fishery, engineering and natural sciences, as well as in other technological and professional fields; promote research and engage in extension work.	Products â€¢ inventory of IP assets â€¢ 1 Technology (products, processes, and systems) commercialized â€¢ PAS reports People and Services â€¢ least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series â€¢ least 20 SUC Staff trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM-Mentee staff as trainer/speaker â€¢ least 2 exploratory meetings/networking events and technology promotion activities conducted by the SUC â€¢ least 1 technology takers/adopters Publications â€¢ least 2 promotional IECs for SUC technologies Patents â€¢ least 5 IP (patent and UM) applications Places and Partnerships â€¢ IP-TBM established/enhanced/institutionalized â€¢ Letter of Commitment from SUC â€¢ least 1 commercialization agreements executed â€¢ least 1 partnership agreements with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions	UNP	UNP-Faculty members and Full-time Researchers and Inventor	1-Jan-20	31-Dec-21	NEW	1,631,716.00	855,093.00
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 3. Sustaining CvSU's IP-TBM Office and Enhancing IP-TBM Offices Among Member Agencies of the Southern Tagalog Agriculture and Resources Research and Development Consortium (STARRDEC)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Philippines marked its first innovation achiever position in the 2019 Global Innovation Index, posting a big jump to 54th place from the previous yearâ€™s 73rd position as it catches up with world leaders (www.pna.gov.ph). With a total score of 38.18 over 100, the report said the Philippines is among the countries that have â€œabove expectations for level of developmentâ€ among lower-middle-income economies. The report said governments around the globe had increased the use of intellectual property in their quest for innovation, with investments on R&D growing more than double between 1996 and 2016. It said R&D expenditures of governments around the world rose by 5 percent while business R&D expenditures went up by 6.7 percent, the most significant jump since 2011. According to the EU Patent Office, patents are essential signals of innovation as statistics reveal that 70% of technology disclosed in patent literature was not disclosed in any non-patent literature; 80% of unique information in patent literature is not published elsewhere and $60BN wasted for developing things that are already documented in a patent specification. Intellectual property represents the principal value component of many global trade transactions (Ezell and Cory 2019, Information Technology and Innovation Foundation (ITIF)). Global cross-border exports of commercial knowledge- and technology-intensive goods and services reached an estimated $4 trillion in 2014, consisting of $1.6 trillion of commercial knowledge-intensive services and $2.4 trillion of exports of high-tech products. In fact, knowledgeâ€"rather than labor, capital, or resource-intensive componentsâ€"represents about one-half of current global trade ï¬,ows, and this knowledge-intensive component is growing faster, at	Conducted at least 30 monitoring and evaluation visits Conducted the modules 4-10 of the DOST-PCAARRD IP Master Class and Technology Commercialization Mentorship Series At least 25 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series (modules 4-10) Conducted at least 2 exploratory meetings with Business Groups/Marketing or Trade Institutions Conducted 2 technology pitch days Conducted at least 5 policy reviews Conducted 1 commitment meeting At least 8 promotional IECs IP Policy template Technology Transfer Protocol template	CvSU	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs/RDIs Technology transfer officers/managers SUC/RDI Researchers/Inventors Technology takers	1-Jan-20	31-Dec-21	NEW	2,123,011.00	1,276,513.00
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 3A. Enhancing Technology Transfer through IP-TBM in Southern Luzon State University (SLSU)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Philippines marked its first innovation achiever position in the 2019 Global Innovation Index, posting a big jump to 54th place from the previous yearâ€™s 73rd position as it catches up with world leaders (www.pna.gov.ph). With a total score of 38.18 over 100, the report said the Philippines is among the countries that have â€œabove expectations for level of developmentâ€ among lower-middle-income economies. The report said governments around the globe had increased the use of intellectual property in their quest for innovation, with investments on R&D growing more than double between 1996 and 2016. It said R&D expenditures of governments around the world rose by 5 percent while business R&D expenditures went up by 6.7 percent, the most significant jump since 2011. According to the EU Patent Office, patents are essential signals of innovation as statistics reveal that 70% of technology disclosed in patent literature was not disclosed in any non-patent literature; 80% of unique information in patent literature is not published elsewhere and $60BN wasted for developing things that are already documented in a patent specification. Intellectual property represents the principal value component of many global trade transactions (Ezell and Cory 2019, Information Technology and Innovation Foundation (ITIF)). Global cross-border exports of commercial knowledge- and technology-intensive goods and services reached an estimated $4 trillion in 2014, consisting of $1.6 trillion of commercial knowledge-intensive services and $2.4 trillion of exports of high-tech products. In fact, knowledgeâ€"rather than labor, capital, or resource-intensive componentsâ€"represents about one-half of current global trade ï¬,ows, and this knowledge-intensive component is growing faster, at	Conducted at least 30 monitoring and evaluation visits Conducted the modules 4-10 of the DOST-PCAARRD IP Master Class and Technology Commercialization Mentorship Series At least 25 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series (modules 4-10) Conducted at least 2 exploratory meetings with Business Groups/Marketing or Trade Institutions Conducted 2 technology pitch days Conducted at least 5 policy reviews Conducted 1 commitment meeting At least 8 promotional IECs IP Policy template Technology Transfer Protocol template	SLSU	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs/RDIs Technology transfer officers/managers SUC/RDI Researchers/Inventors Technology takers	1-Jan-20	31-Dec-21	NEW	1,631,716.00	855,093.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 3B. Enhancing Technology Transfer through IP-TBM in University of Rizal System (URS)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products â€¢ inventory of IP assets â€¢ 1 Technology (products, processes, and systems) commercialized â€¢ PAS reports People and Services â€¢ least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series â€¢ least 20 SUC Staff trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM-Mentee staff as trainer/speaker â€¢ least 2 exploratory meetings/networking events and technology promotion activities conducted by the SUC â€¢ least 1 technology takers/adopters Publications â€¢ least 2 promotional IECs for SUC technologies Patents â€¢ least 5 IP (patent and UM) applications Places and Partnerships â€¢ IP-TBM established/enhanced/institutionalized â€¢ Letter of Commitment from SUC â€¢ least 1 commercialization agreements executed â€¢ least 1 partnership agreements with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions Policies â€¢ Institutional IP Policy reviewed/crafted/presented to approving bodies â€¢ Technology Transfer Protocol reviewed/crafted/ presented to approving bodies	URS	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,631,716.00	855,093.00
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 3C. Enhancing Technology Transfer through IP-TBM in Marinduque State College (MSC)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products â€¢ inventory of IP assets â€¢ 1 Technology (products, processes, and systems) commercialized â€¢ PAS reports People and Services â€¢ least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series â€¢ least 20 SUC Staff trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM-Mentee staff as trainer/speaker â€¢ least 2 exploratory meetings/networking events and technology promotion activities conducted by the SUC â€¢ least 1 technology takers/adopters Publications â€¢ least 2 promotional IECs for SUC technologies Patents â€¢ least 5 IP (patent and UM) applications Places and Partnerships â€¢ IP-TBM established/enhanced/institutionalized â€¢ Letter of Commitment from SUC â€¢ least 1 commercialization agreements executed â€¢ least 1 partnership agreements with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions Policies â€¢ Institutional IP Policy reviewed/crafted/presented to approving bodies â€¢ Technology Transfer Protocol reviewed/crafted/ presented to approving bodies	MSC	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,631,716.00	855,093.00
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 3D. Enhancing Technology Transfer through IP-TBM in Batangas State University (BatSU)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products â€¢ inventory of IP assets â€¢ 1 Technology (products, processes, and systems) commercialized â€¢ PAS reports People and Services â€¢ least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series â€¢ least 20 SUC Staff trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM-Mentee staff as trainer/speaker â€¢ least 2 exploratory meetings/networking events and technology promotion activities conducted by the SUC â€¢ least 1 technology takers/adopters Publications â€¢ least 2 promotional IECs for SUC technologies Patents â€¢ least 5 IP (patent and UM) applications Places and Partnerships â€¢ IP-TBM established/enhanced/institutionalized â€¢ Letter of Commitment from SUC â€¢ least 1 commercialization agreements executed â€¢ least 1 partnership agreements with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions Policies â€¢ Institutional IP Policy reviewed/crafted/presented to approving bodies â€¢ Technology Transfer Protocol reviewed/crafted/ presented to approving bodies	BatSU	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,631,716.00	855,093.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 3E. Enhancing Technology Transfer through IP-TBM in Rizal Technological University (RTU)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products â€¢ inventory of IP assets â€¢ 1 Technology (products, processes, and systems) commercialized â€¢ PAS reports People and Services â€¢ least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series â€¢ least 20 SUC Staff trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM-Mentee staff as trainer/speaker â€¢ least 2 exploratory meetings/networking events and technology promotion activities conducted by the SUC â€¢ least 1 technology takers/adopters Publications â€¢ least 2 promotional IECs for SUC technologies Patents â€¢ least 5 IP (patent and UM) applications Places and Partnerships â€¢ IP-TBM established/enhanced/institutionalized â€¢ Letter of Commitment from SUC â€¢ least 1 commercialization agreements executed â€¢ least 1 partnership agreements with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions Policies â€¢ Institutional IP Policy reviewed/crafted/presented to approving bodies â€¢ Technology Transfer Protocol reviewed/crafted/ presented to approving bodies	RTU	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,631,716.00	855,093.00
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 4. Sustaining BU's IP-TBM Office and Enhancing IP-TBM Offices among Member Agencies of the Bicol Consortium for Agriculture, Aquatic and Natural Resources Research and Development (BCAARRD) (Old Title: Sustainability of the IP-TBM Operations of Bicol University and Establishment of IP-TBM Offices in SUCs/HEIs in Bicol Region)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The program shall deal with the challenges of sustainability of the IP-TBMâ€™s initial efforts in protecting and managing intellectual properties (IP) and pursuing technology commercialization. The program will implement a mentor-mentee-regional approach to further enhance the innovation ecosystem in the agriculture, aquatic and natural resources sectors. The program involves five mentor-agencies and 25 mentee-agencies across Regions I, IV, V, VI and XI. Mentoring, according to Zachary (2005, p3) is â€œa reciprocal and collaborative learning relationship between two (or more) individuals who share mutual responsibility and accountability for helping a mentee work towards achievement of clear and mutually defined career goalsâ€ and thus is a good method for developing a talent pool within an organization and more ambitiously, a whole industry.	Expected output of the Mentor-Agency: - 1 updated inventory of IP Asset - 1 Technology Commercialization Plan - 40 PAS reports of R&D proposals and IP applications - At least 2 Technologies (products, processes, and systems) Commercialized - 1 Regional Sustainability Plan Expected output of the 5 Mentee-Agencies: - 25 inventories of IP assets - At least 25 Technologies Commercialized	BU	- Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs/RDIs - Technology transfer officers/managers - SUC/RDI Researchers/Inventors - Technology takers	1-Jan-20	31-Dec-21	NEW	3,413,273.72	1,981,394.36
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 4A. Enhancing Technology Transfer through IP-TBM in Camarines Norte State College (CNSC)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products - 1 inventory of IP assets - At 1 Technology (products, processes, and systems) commercialized - 5 PAS reports	CNSC	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,631,716.00	855,093.00
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 4B: Enhancing Technology Transfer through IP-TBM in Camarines Sur Polytechnic College (CSPC)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products - 1 inventory of IP assets - At 1 Technology (products, processes, and systems) commercialized - 5 PAS reports	CSPC	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,631,716.00	855,093.00
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 4C. Enhancing Technology Transfer through IP-TBM in Sorsogon State College (SSC)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products - 1 inventory of IP assets - At 1 Technology (products, processes, and systems) commercialized - 5 PAS reports	SSC	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,631,716.00	855,093.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 4D. Enhancing Technology Transfer through IP-TBM in Catanduanes State University (CatSU)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products - 1 inventory of IP assets - At 1 Technology (products, processes, and systems) commercialized - 5 PAS reports	CatSU	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,631,716.00	855,093.00
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 4E. Enhancing Technology Transfer through IP-TBM in Central Bicol State University for Agriculture (CBSUA)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products - 1 inventory of IP assets - At 1 Technology (products, processes, and systems) commercialized - 5 PAS reports	CBSUA	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,631,716.00	855,093.00
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 5. Sustaining CapSU's IP-TBM Office and Enhancing IP-TBM Offices among Member Agencies of the Western Visayas Agriculture and Resources Research and Development Consortium (WESVAARRDEC) (Old Title: Sustaining the Existing Intellectual Property and Technology Business Management (IP-TBM) Office of Capiz State University (CapSU) and Establishing New IP-TBMO among Member Agencies of the Western Visayas Agriculture and Resources Research and Development Consortium (WESVAARRDEC))	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Philippines marked its first innovation achiever position in the 2019 Global Innovation Index, posting a big jump to 54th place from the previous yearâ€™s 73rd position as it catches up with world leaders (www.pna.gov.ph). With a total score of 38.18 over 100, the report said the Philippines is among the countries that have â€œabove expectations for level of developmentâ€ among lower middle income economies. The report said governments around the globe have increased the use of intellectual property in their quest for innovation, with investments on R&D growing more than double between 1996 and 2016. It said R&D expenditures of governments around the world rose by 5 percent while business R&D expenditures went up by 6.7 percent, the biggest jump since 2011. MalacaÃ±ang also welcomed results of the latest GII report, saying in a statement that it commends the departments and agencies (e.g., Department of Science and Technology (DOST) and Department of Trade and Industry (DTI)) that helped achieve the improvement in the countryâ€™s global rank. â€œMay this good news further motivate them in creating an environment that nurtures innovation and creates business opportunities as we become one of the fastest growing economies in the globe,â€Presidential Spokesperson Salvador S. Panelo was quoted as saying. (https://www.bworldonline.com/philippines-breaks-into-ranks-of-innovation-achievers-report/) The DOST is one of the identified â€œstart-up enablersâ€ in the Innovative Startup Act and is intent on providing the rightful support. The recently signed â€œInnovative Startup Actâ€ will provide us the mechanism to further improve our support to new businesses with brilliant ideas and fast-track innovation and trade in	1 updated inventory of IP Asset 1 Technology Commercialization Plan 40 PAS reports of R&D proposals and IP applications At least 2 Technologies (products, processes, and systems) Commercialized 1 Regional Sustainability Plan At least 5 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series (modules 1-3) At least 2 exploratory meetings/networking events and technology promotion activities conducted by the SUC At least 2 technology takers/adopters At least 30 SUC trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM-Mentor staff as trainer/speaker At least 4 promotional IECs for SUC/RDI technologies At least 2 consolidated technical reports (with report of income from commercialization agreements) At least 2 activity evaluation and documentation reports	CapSU	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs/RDIs Technology transfer officers/managers SUC/RDI Researchers/Inventors Technology takers	1-Jan-20	31-Dec-21	NEW	4,002,914.44	2,332,964.72
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 5A. Enhancing Technology Transfer through IP-TBM in Aklan State University (ASU)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products - 1 inventory of IP assets - At 1 Technology (products, processes, and systems) commercialized - 5 PAS reports	ASU	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,686,966.00	843,992.70
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 5B. Enhancing Technology Transfer through IP-TBM in University of Antique (UA)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products - 1 inventory of IP assets - At 1 Technology (products, processes, and systems) commercialized - 5 PAS reports	UA	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,686,966.00	843,992.70

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 5C. Enhancing Technology Transfer through IP-TBM in Guimaras State College (GSC)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products - 1 inventory of IP assets - At 1 Technology (products, processes, and systems) commercialized - 5 PAS reports	GSC	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,686,966.00	910,343.00
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 5D. Enhancing Technology Transfer through IP-TBM in Northern Iloilo Polytechnic State College (NIPSC)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products - 1 inventory of IP assets - At 1 Technology (products, processes, and systems) commercialized - 5 PAS reports	NIPSC	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,686,966.00	910,343.00
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 5E. Enhancing Technology Transfer through IP-TBM in Central Philippines State University (CPSU)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products - 1 inventory of IP assets - At 1 Technology (products, processes, and systems) commercialized - 5 PAS reports	CPSU	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,686,966.00	910,343.00
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 6. Sustaining USeP's IP-TBM Office and Enhancing IP-TBM Offices Among Member Agencies of the Southern Mindanao Agriculture, Aquatic and Natural Resources Research and Development Consortium (SMAARRDEC)(Old Title: Sustaining the Intellectual Property and Technology Business Management (IP-TBM) Office of University of Southeastern Philippines (USeP) and Establishing IP-TBM in Consortium Member Institution (CMI) of SMAARRDEC in Davao Region)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	It is significant to note that for more than a decade, USeP has been the base agency of Southern Mindanao Agriculture, Aquatic and Resources Research and Development Consortium (SMAARRDEC), a 23-member consortium of line agencies and research institutions in agriculture and agri-related research and development. It housed the Innovation and Technology Support Office (ITSO), a franchise of the Intellectual Property Office of the Philippines (IPOPHL) where said office was awarded as the top patent filer of the IPOPHIL for the year 2014-2015. In 2016, the Knowledge and Technology Transfer Division was created by virtue a board resolution. Its mandate is to carry out the innovation mandate of the University from the generation of idea to the commercialization. The need to establish and support TTOs in SUCs and RDIs was reiterated in two recently held important events: The National Conference of the Philippine California Advanced Research Institutes (May 2017) and the official launching by IPOPHL of the National IP Strategy (June 2017). Both events were attended by high ranking officials of the DOST, CHED and IPOPHL who also served as speakers. Likewise, the recent collaboration of PCAARRD with World Intellectual Property Office (WIPO) also hopes to strengthen the existing SUC/RDI-based TTOs. The transfer and commercialization of the findings of research in various fields has demonstrable benefits for the productivity of university researchers, research institutions and local economic development. Information about the recent advancement on Research and Development (R&D) and S & T-based Technologies is the cornerstone of any long-range competitive strategy. For these reasons, USeP is motivated to develop and capacitate its human resource in IP protection and management, licensing of its technologies or engaging into commercialization. USeP also aims to help its community by developing and	Products â€¢ 1 updated inventory of IP Assets â€¢ 1 Technology Commercialization Plan â€¢ 30 Prior Art Search (PAS) reports of R&D proposals and IP applications â€¢ At least 2 Technologies (products, processes, and systems) Commercialized â€¢ 1 Regional Sustainability Plan People and Services â€¢ At least 5 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series (modules 1-3) â€¢ At least 2 exploratory meetings/networking events and technology promotion activities conducted by the SUC â€¢ At least 2 technology takers/adopters â€¢ At least 30 SUC trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM-Mentor staff as trainer/speaker Publications â€¢ At least 4 promotional IECs for SUC technologies Patents â€¢ At least 10 IP applications (patent and UM) Places and Partnerships â€¢ 1 Letter of Commitment from SUC â€¢ At least 2 partnership agreements with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions â€¢ At least 2 commercialization agreements executed Policies â€¢ Full implementation of IP policy and technology transfer protocol (with internal memos, AOs)	USeP	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs/RDIs Technology transfer officers/managers SUC/RDI Researchers/Inventors Technology takers	1-Jan-20	31-Dec-21	NEW	3,392,884.84	1,917,449.92

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 6A. Enhancing Technology Transfer through IP-TBM in University of the Philippines Mindanao (UPMin)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products â€¢ inventory of IP assets â€¢ 1 Technology (products, processes, and systems) commercialized â€¢ PAS reports People and Services â€¢ least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series â€¢ least 20 SUC Staff trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM-Mentee staff as trainer/speaker â€¢ least 2 exploratory meetings/networking events and technology promotion activities conducted by the SUC â€¢ least 1 technology takers/adopters Publications â€¢ least 2 promotional IECs for SUC technologies Patents â€¢ least 5 IP (patent and UM) applications Places and Partnerships â€¢ IP-TBM established/enhanced/institutionalized â€¢ Letter of Commitment from SUC â€¢ least 1 commercialization agreements executed â€¢ least 1 partnership agreements with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions Policies â€¢ Institutional IP Policy reviewed/crafted/presented to approving bodies â€¢ Technology Transfer Protocol reviewed/crafted/ presented to approving bodies	UPMin	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,686,966.00	910,343.00
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 6B. Enhancing Technology Transfer through IP-TBM in Davao del Norte State College (DNSC)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products â€¢ inventory of IP assets â€¢ 1 Technology (products, processes, and systems) commercialized â€¢ PAS reports People and Services â€¢ least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series â€¢ least 20 SUC Staff trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM-Mentee staff as trainer/speaker â€¢ least 2 exploratory meetings/networking events and technology promotion activities conducted by the SUC â€¢ least 1 technology takers/adopters Publications â€¢ least 2 promotional IECs for SUC technologies Patents â€¢ least 5 IP (patent and UM) applications Places and Partnerships â€¢ IP-TBM established/enhanced/institutionalized â€¢ Letter of Commitment from SUC â€¢ least 1 commercialization agreements executed â€¢ least 1 partnership agreements with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions Policies â€¢ Institutional IP Policy reviewed/crafted/presented to approving bodies â€¢ Technology Transfer Protocol reviewed/crafted/ presented to approving bodies	DNSC	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,686,966.00	910,343.00
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 6C. Enhancing Technology Transfer through IP-TBM in Davao Oriental State College of Science and Technology (DOSCST)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products â€¢ inventory of IP assets â€¢ 1 Technology (products, processes, and systems) commercialized â€¢ PAS reports People and Services â€¢ least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series â€¢ least 20 SUC Staff trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM-Mentee staff as trainer/speaker â€¢ least 2 exploratory meetings/networking events and technology promotion activities conducted by the SUC â€¢ least 1 technology takers/adopters Publications â€¢ least 2 promotional IECs for SUC technologies Patents â€¢ least 5 IP (patent and UM) applications Places and Partnerships â€¢ IP-TBM established/enhanced/institutionalized â€¢ Letter of Commitment from SUC â€¢ least 1 commercialization agreements executed â€¢ least 1 partnership agreements with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions Policies â€¢ Institutional IP Policy reviewed/crafted/presented to approving bodies â€¢ Technology Transfer Protocol reviewed/crafted/ presented to approving bodies	DOSCST	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,686,966.00	910,343.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 6D. Enhancing Technology Transfer through IP-TBM in Davao del Sur State College (DSSC) (formerly SPAMAST)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products â€¢ 1 inventory of IP assets â€¢ At 1 Technology (products, processes, and systems) commercialized â€¢ 5 PAS reports People and Services â€¢ At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series â€¢ At least 20 SUC Staff trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM-Mentee staff as trainer/speaker â€¢ At least 2 exploratory meetings/networking events and technology promotion activities conducted by the SUC â€¢ At least 1 technology takers/adopters Publications â€¢ At least 2 promotional IECs for SUC technologies Patents â€¢ At least 5 IP (patent and UM) applications Places and Partnerships â€¢ 1 IP-TBM established/enhanced/institutionalized â€¢ 1 Letter of Commitment from SUC â€¢ At least 1 commercialization agreements executed â€¢ At least 1 partnership agreements with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions Policies â€¢ 1 Institutional IP Policy reviewed/crafted/presented to approving bodies â€¢ 1 Technology Transfer Protocol reviewed/crafted/ presented to approving bodies	SPAMAST	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,686,966.00	843,992.70
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 6E. Enhancing Technology Transfer through IP-TBM in Compostela Valley State College (CVSC)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives of the DPITC.	Products â€¢ 1 inventory of IP assets â€¢ At 1 Technology (products, processes, and systems) commercialized â€¢ 5 PAS reports People and Services â€¢ At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series â€¢ At least 20 SUC Staff trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM-Mentee staff as trainer/speaker â€¢ At least 2 exploratory meetings/networking events and technology promotion activities conducted by the SUC â€¢ At least 1 technology takers/adopters Publications â€¢ At least 2 promotional IECs for SUC technologies Patents â€¢ At least 5 IP (patent and UM) applications Places and Partnerships â€¢ 1 IP-TBM established/enhanced/institutionalized â€¢ 1 Letter of Commitment from SUC â€¢ At least 1 commercialization agreements executed â€¢ At least 1 partnership agreements with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions Policies â€¢ 1 Institutional IP Policy reviewed/crafted/presented to approving bodies â€¢ 1 Technology Transfer Protocol reviewed/crafted/ presented to approving bodies	CVSC	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	1-Jan-20	31-Dec-21	NEW	1,686,966.00	910,343.00
	"Level-up Assistance Project for the Commercialization of Agriculture, Aquatic and Natural Resources Technologies (LEAP-AANR)"	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The primary focus of the project is providing assistance to spinoff/startup companies and/or incubatees of the DOST-PCAARRD Agri-Aqua Technology Business Incubators (ATBI) intending to commercialize and/or currently commercializing PCAARRD-funded/assisted technologies (including non-PCAARRD-funded technologies which will be evaluated on a case-to-case basis). The project would help these spinoff/startup companies and/or incubatees during their early/start-up stages of enterprise/business development wherein they only have minimal capital investment and low productivity. Most companies during this stage will have to overcome the challenge of market acceptance and should identify its niche opportunity in the market. This project would also support the Republic Acts No. 11293 theâ€œPhilippine Innovation Actâ€ and 11337, the Innovative Start-up act both underlines the importance of innovation as vital component of national development and sustainable economic growth.	Publications1.1 compendium of experts developed 2. At least 17 IEC and promotional materials (2 for the project and 16 for the spinoff/startup companies and/or incubatees) developed/produced 3. At least 9 promotional videos developed Product1.1 At least 16 startups/spinoffs assisted People and Services1. At least 5 personnel of TAPI trained 2. At least 32 personnel of spinoff/startup companies and/or incubatees trained 3. At least 2 awareness seminars or promotional activities conducted or participated in 4. At least 2 business pitching events, industry meetups, or networking events conducted or participated in 5. Royalty payments to tech generators and owner monitored Places and Partnerships1. At least 16 MOAs with the spinoff/startup companies and/or incubatees forged 2. At least 5 MOAs/MOUs with organizations from the public and private sectors forged Social Impact1. 16 Enterprises supported 2. Bringing AANR technologies to emerging markets. 3. Establishing/maintaining a sustainable business model Economic Impact/Benefits1. At least 48 Jobs generated by the project 2. Approximately PhP 40M	TAPI	1. Spinoff Companies 2. Startup Companies 3. Incubatees 4. OFWs	1-Jan-21	31-Dec-22	ONGOING	49,159,708.80	20,960,296.72

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Assessment of Stakeholders' compliance to the Philippine Technology Transfer Act of 2009 (RA10055) (Old Title: Technology Transfer Performance Assessment of Government Research and Development Institutions (RDIs) and Higher Education Institutions (HEIs))	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project will assess the degree of compliance to RA10055 of various stakeholders in the agricultural innovation system (AIS). The project will identify potential gaps in the process, outlining areas for improvement, and identifying implementation obstacles, constraints and success factors. According to World Bank (2012), an innovation system is a network of organizations, enterprises, and individuals focused on bringing new products, new processes, and new forms of organization into economic use, together with the institutions and policies that affect their behavior and performance. Agricultural innovation typically arises through dynamic interaction among the multitude of actors involved in growing, processing, packaging, distributing, and consuming or otherwise using agricultural products. The project will assess the degree of compliance to RA10055 of various stakeholders in the agricultural innovation system broadly categorized into a) knowledge and education domain, b) business and enterprise domain, and c) bridging institutions that link the two domains.	Publications: - Compilation of current policies and operational mechanism of various agencies with the AIS in relation to RA 10055 Patents: - Copyright of published articles People Services: - At least 22 HEIs assessed - 9 RDIs assessed - 3 FOB members interviewed; FOB guidelines assessed Policy: - Policy Recommendations	UPLB	- National Government Agencies - Research and Development Institutions - Higher Education Institutions - Policy Makers	1-Aug-19	31-Jul-21	ONGOING	3,495,582.00	1,210,141.20
	Assessment of the Performance, Reach and Outcomes of the Technology Transfer Modalities in Agriculture, Aquatic and Natural Resources(Old Title: Analysis of Extension and Technology Transfer Modalities in Agriculture, Fisheries, and Natural Resources in the Philippines (Analysis of Extension and Technology Transfer Modalities in Agriculture, Fisheries, and Natural Resources in the Philippines from the PAEPI's Biennial Conference Proceedings))	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project aims to assess the performance, reach and outcomes of the technology transfer modalities in the AANR sectors to determine the best implementation approaches, investments and gains of the technology transfer modalities' delivery system. The project will involve a two-stage study: 1) The first stage will involve a desk review and tracking of the technology transfer modalities from 2009 to 2016, focusing on AANR sectors, and the characterization of these modalities; and 2) using the modified Reach, Outcomes, and Impact (ROI) framework, will assess and evaluate the past (listed in Baconguis, 2015) and those technology transfer modalities to be identified in the current proposal.	Publications: - Project Reports - FGD/KII summary results Products: - Compilation of technology transfer modalities, best implementation approaches, investments and gains of the modalities' delivery system - Compilation of technologies transferred in the technology transfer interventions People Services: - FGDs conducted - KIIs conducted - Institutions assessed Partnerships: - Partnership with PCAARRD and other organizations or agencies interviewed or involved during the assessment activities	UPLB	- Researchers - Technology Transfer Officers	1-Aug-19	31-Jul-21	ONGOING	4,867,280.00	1,512,348.80
	Biological Interventions In Coconut Scale Insect (CSI) Calamity Areas In Basilan, ARMM - Phase II	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project titled â€œBiological Interventions in the Coconut Scale Insect (CSI) Calamity Areas in Basilan, ARMM - Phase 2â€ is proposed to address the urgent need to continuously control the devastations brought about by the Coconut Scale Insect (CSI) infestation in Basilan Island,. It intends to continue benefitting the municipalities where Phase 1 Project had not served. There are yet other 6 municipalities with a total of 106 barangays, with a total of 2,497,517 coconut trees and with a total of 8,420 coconut farmers in Basilan Province that need information and technology about the biological interventions. Other beneficiaries of the project include the coconut industry players, exporters, academe, researchers/SUCs, allied industries, households in both urban and rural areas	1. 1,000 coconut farmers and 12 LGU personnel trained 2. 10 trainings conducted 3. 2 Banker laboratory set ups â€“ 2 for Parasitoids and 2 for Predators 4. 2 SUCs, 2 Line Agencies & 6 LGUs 5. 6 Municipal resolutions on the application of CSI Biological Control Protocols and Quarantine 7. 400,000 Parasitoids harvested per year (minimum of 10 harvests per year @ 40,000 parasitoids per harvest) 8. 300,000 Predators harvested per year (minimum of 10 harvests per year @ 30,000 predators per harvest) 9. 4,000 copies of IEC materials produced & disseminated (2 Titles @ 2,000 copies per title) 10. 2 copyrights	MSU-Maguindanao	Coconut Farmers	1-Sep-19	31-Aug-20	COMPLETED	4,879,640.00	1,884,640.00
	Communication Planning and Media Campaigning for the DOST-PCAARRD Agri-Aqua Technology Business Incubation (ATBI) Program	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 9 months (September 1, 2020 - May 31, 2021) by the Central Luzon State University (CLSU) in Science City of MuÃ±oz, Nueva Ecija in cooperation with the agri-aqua technology business incubators (ATBIs) in the country. It has a total PCAARRD-GIA funding of P1,503,362.90. It generally aims to position the DOST-PCAARRD as a pioneer and major player in promoting innovation and technopreneurship in the agriculture, aquatic and natural resources (AANR) sector through its flagship DOST-PCAARRD National Agri-Aqua Technology Business Incubation (ATBI) Program. Specifically, the project will focus on increasing the awareness of target audiences/clients about the ATBI program as one of DOST-PCAARRDâ€™s flagship programs in promoting technology transfer and commercialization in the AANR sector; developing the branding identity of the ATBI program; showcasing and promoting the initiatives and activities of the ATBIs to potential incubatees; and increasing the media presence, online visibility, and engagements of the ATBIs.	Publications: At least 16 IEC and promotional materials developed At least 3 promotional videos developed Patents: At least 1 trademark filed People and Services: At least 16 ATBIs promoted through traditional and social media At least 16 potential incubatees linked to the ATBIs Places and Partnerships: 1 compendium of target audiences/clients prepared At least 1,600 target audiences/clients reached	CLSU	Startups, spinoffs, farmers, fisherfolk, industry, general public, researchers/students, NGAs/NGOs	1-Nov-20	31-Jul-21	NEW	1,503,362.90	1,503,362.90

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	DOST-PCAARRD-CLSU Agriculture and Food Technology Business Incubator Phase 2	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Central Luzon State University Agriculture and Food Technology Business Incubator (CLSU-AFTBI) is a facility that assists in educating/training budding entrepreneurs, thus increasing the survival rate of innovative start-up businesses. These core mandates can be achieved by offering packages of specialized services on production and processing technologies of rice, tilapia, goat, mango, mushroom, vegetables, and dairy carabao which are relevant to countryâ€™s economic development. The implementation of the DOST-PCAARRD-CLSU Agriculture and Food Technology Business Incubator Phase 2 is a continuation of the project funded by PCAARRD from 2017 to 2019. In Phase 2, the project aims to enhance the business performance of start-up incubatees through an acceleration program that are integrated, sustainable, and innovative, thereby improving the CLSU-AFTBI incubation ecosystem.	The expected outputs of the project are the following: A. Publications 1. 1 TBI business plan revised as needed; 2. 1 TBI operations manual revised as needed; 3. At least 1 acceleration program curriculum/syllabus developed; 4. At least 4 training modules developed; 5. At least 3 IEC materials developed/revised and disseminated; 6. 1 operations manual on TBI web-based management information system developed; 7. 3 semi-annual reports prepared and submitted; 8. 3 annual reports prepared and submitted; 9. 1 terminal report prepared and submitted; B. Products 1. At least 10 technologies commercialized/adopted for incubation/acceleration; 2. 1 TBI web-based management information system developed; C. People and Services 1. At least 15 incubatees enrolled to the incubation program and launched as startup/spinoff; 2. At least 10 acceleratees enrolled to the acceleration program; 3. At least 25 business plans of the incubatees/acceleratees developed/improved; 4. At least 15 incubatees graduated from the incubation program; 5. At least 10 acceleratees graduated from the acceleration program; 6. At least 6 trainings for the incubatees/acceleratees conducted;	CLSU	The beneficiaries of this project are the following: â€¢ AFNR students and graduates â€¢ Micro, small, and medium enterprises (MSMEs) â€¢ Established companies â€¢ Start-up and spin-off companies â€¢ Farmer-entrepreneurs â€¢ CLSU faculty and staff â€¢ Business organizations and cooperatives â€¢ Local government units (LGUs)	1-Dec-19	30-Nov-22	ONGOING	14,162,396.80	7,929,091.60
	DOST-PCAARRD-MMSU Agri-Aqua Technology Business Incubator	KRA 3: Rapid, Inclusive and Sustained Economic Growth	In response to the challenge of establishing and enhancing agribusiness TBIs to create jobs, promote public-private partnerships, and develop entrepreneurs for regional economic development, MMSU is taking the leap to improve its technology promotion and transfer programs to enhance client service and reach. As such, there is a seeming need to establish MMSU-TBI to promote entrepreneurship and produce successful and viable firms by providing business development services. This endeavor is envisioned to support the launch and growth of promising ventures in the Ilocos Region. Moreover, MMSU-TBI will also assist MSMEs in the region in improving their business operations and productivity specifically in providing assistance in regulatory requirements, intellectual property protection and other services. The establishment of MMSU-TBI will provide a more conducive ecosystem for entrepreneurs to promote and nurture technology-based enterprises and at the same time complement the existing MSMEs in the locality. Hopefully, through the MMSU-TBI, the University will be able to commercialize R&D outputs, transfer technologies to intended users, create employment, and accelerate the creation of new enterprises in the region for economic development.	Publications - TBI business plan enhanced - TBI operations manual developed - At least 4 TBI curricula developed - At least 8 IEC and promotional materials developed - At least 2 promotional videos developed - 2 semi-annual reports prepared and submitted - 2 annual reports prepared and submitted - Terminal report prepared and submitted - List of technologies for incubation/commercialization prepared and promoted - List of TBI service offerings prepared and promoted - List of TBI service facilities prepared and promoted Patents - At least 2 trademarks filed Products - At least 4 technologies incubated/commercialized People and Services - At least 8 incubatees enrolled - At least 8 business plans for the incubatees developed - At least 4 trainings for the incubatees conducted - At least 5 startups or spinoffs registered and launched - At least 3 benchmarking activities conducted - At least 5 trainings for the project team conducted and participated in - At least 4 awareness seminars and promotional activities conducted	MMSU	Startups, spinoffs, farmers, fisherfolk, industry, general public, researchers/students, NGAs/NGOs	1-Jan-20	31-Dec-21	NEW	4,999,756.80	2,860,544.00
	DOST-PCAARRD-UPV Fisheries Technology Business Incubator Phase 2	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Coastline 5023: DOST-PCAARRD-UPV Fisheries Technology Business Incubator (FTBI) is a technology transfer and commercialization support facility of the University of the Philippines Visayas (UPV). It aims to play a great part in the â€œThe Hub of Institutional Synergy, Innovation, Sustainability and Impact Translation (THIS IS IT)â€ agenda of UPV in the effort to translate, through technology-based enterprise development, the technologies and innovations generated under the College of Fisheries and Ocean Sciences and other colleges into products and services for the use and benefit of the greater society.	The expected outputs of the project are the following: A. Publications 1. 1 TBI business plan revised as needed; 2. 1 TBI operations manual revised as needed; 3. At least 1 incubation curriculum revised as needed; 4. At least 1 advanced incubation curriculum developed; 5. At least 21 IEC materials developed/revised and disseminated; 6. 2 semi-annual reports prepared and submitted; 7. 2 annual reports prepared and submitted; 8. 1 terminal report prepared and submitted; B. Patents 1. At least 2 copyrights registered; C. Products 1. At least 7 technologies commercialized/adopted for incubation; D. People and Services 1. At least 10 new incubatees enrolled to the incubation program; 2. At least 8 continuing incubatees enrolled to the advanced incubation program and launched as startup/spinoff; 3. At least 18 business plans of the incubatees developed/improved;	UPV	The beneficiaries of this project are the following: â€¢ UPV students and graduates â€¢ UPV faculty, researchers, and staff â€¢ Micro, small, and medium enterprises (MSMEs) â€¢ Farmers and fisherfolks â€¢ Local government units (LGUs)	1-Jan-20	31-Dec-21	NEW	4,999,921.82	2,778,727.14

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	DOST-PCAARRD-USM Agri-Aqua Technology Business Incubator	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The DOST-PCAARRD-USM Agri-Aqua Technology Business Incubator or the USM SeedLink will serve as intermediary in transferring USM agri-aqua based technologies to farmers and fish-farm operators and in turn, secure market channels for produced products. Thus, the USM SeedLink will not only help improve the farmerâ€™s production but also ensuring their income. In this manner, technology transfer operations in the University can be sustainable. The USM SeedLink will operationalize commercialization of research-based technologies to potential adaptors and target clients. The incubatees for agri-aqua startups will have the advantage because the USM SeedLink will provide assistance via training, business plan services, and business consultations in order to maximize income and manage enterprise effectively. This undertaking will provide incubatees the grounds for building their business thus very beneficial for potential entrepreneurs in the locality.	Publications - TBI business plan enhanced - TBI operations manual developed - At least 4 TBI curricula developed - At least 8 IEC and promotional materials developed - At least 2 promotional videos developed - 2 semi-annual reports prepared and submitted - 2 annual reports prepared and submitted - Terminal report prepared and submitted - List of technologies for incubation/commercialization prepared and promoted - List of TBI service offerings prepared and promoted - List of TBI service facilities prepared and promoted Patents - At least 2 trademarks filed - At least 10 copyrights filed Products - At least 4 technologies incubated/commercialized People and Services - At least 8 incubatees enrolled - At least 8 business plans for the incubatees developed - At least 4 trainings for the incubatees conducted - At least 5 startups or spinoffs registered and launched - At least 3 benchmarking activities conducted - At least 3 trainings for the project team conducted and participated in	USM	Startups, spinoffs, farmers, fisherfolk, industry, general public, researchers/students, NGAs/NGOs	1-Jan-20	31-Dec-21	NEW	4,997,800.00	3,059,090.00
	Enhancing GAP Compliance & Climate Resilience of Spray-Type Chrysanthemum Production in La Trinidad, Benguet (Old Title: Enhancing Science-based Community Agri-tourism (SciCAT) on Spray-type Chrysanthemum Production in La Trinidad, Benguet)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The proposed project on enhancing GAP compliance and climate resilience of spray-type chrysanthemum through the STCBF Modality will be implemented by BSU in partnership with the LGU- La Trinidad through the Municipal Agriculture Office, PLGU- Office of the Tourism, Agricultural Training Institute (ATI-CAR) La Trinidad Cutflowers and Ornamentals Growers Association (LaTCOGA) and the Department of Tourism, Province of Benguet. The upscaling of the S&T interventions from the regular Science and Technology Based-Farm (STBF) to STCBF enhanced the quality in terms of increased in the number (dozen) of spray-type chrysanthemum classified under AA, improved flower color intensity and bigger florets and reduced pesticide application. This is an opener that there is an opportunity to expand tourism opportunity in science-based farm tourism. On the other hand, this will be in response to the growing rural farms becoming attractive as tourist destinations because more visitors are nostalgic for a "simpler" time (Sunstar, 2017). Through the technology interventions, this will prepare the cooperators and their farms develop an eco-friendly environment and climate resilient, while reducing the synthetic fertilizer farm inputs and pesticide applications does not compromise the quality of the cutflower and income derived from it. The project sites will include existing five (5) clusters composed of forty-six (46) farmer cooperators from the major chrysanthemum producing barangays of La Trinidad, Benguet in the STCBF Phase 1 & 2. They were already clustered in Phase 1 showcasing of the STCBF on spray-type chrysanthemum and will serve as farm tourism sites.	1) Established GAP compliant and climate resilient STCBF farms 2) Installed reinforced terrace farms and structural windbreaks 3) Increased income by 75% through increase production of Class AA spray-type Chrysanthemum 4) Capacitated farmers on GAP compliant and climate resilient spray-type chrysanthemum production 5) Conducted technology field days and harvest festival 6) Produced IEC materials and video clip	BSU	- Cut flower industry - Chrysanthemum growers	16-Sep-19	15-Feb-21	ONGOING	4,000,000.00	1,500,000.00
	Enhancing the Agri-Aqua Food Value Chain through Smart Technologies and Partnerships towards Food Resiliency in the New Normal in CALABARZON	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will demonstrate the convergence of technology transfer modalities using the supply and value chain improvement approach in multi-locations, focusing on building community-based coffee production enterprises and improving the operations of Technology Business Incubators (TBIs) for coffee towards food resiliency in the new normal.	Products: No. of POTs and SMART technologies used at the farm level-3 No. of POTs and SMART technologies used at the processing enterprise-2 No. of existing coffee plantation supported-4 No. of newly established coffee farm enterprise-1 No. of deployed locally-developed coffee processing equipment (technology transfer)-4 Amount of green coffee bean produced-5000 People and Services: No. of farm enterprises supported/mentored-5 No. of food processors supported/mentored-4 No. of farmers trained-180 No. of trainings conducted for farm enterprises-4 No. of trainings conducted for processing enterprises-4 No. of new incubatees supported-3 No. of consultation meetings conducted-2 No. of benchmarking activities conducted-2 No. of pool of experts maintained-1 Places and Partnerships: No. of linkages and partnerships forged-8 Publications: No. of Promotional videos developed for the STCBF enterprises-1 No. of IEC and promotional materials developed/produced for the STCBF enterprises and processor-2 No. of TBI Operations Manual updated-1	CvSU	*Community-based farm enterprises *Technology-based startups/spinoffs *Farmers and fisherfolk, cooperatives and associations *Industry (Traders, Retailers) *General public/consumers *Local government units *National government agencies *Non-governmental organizations	1-Sep-20	31-Aug-21	NEW	2,912,672.00	2,912,672.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Enhancing the Agri-Aqua Food Value Chain through Smart Technologies and Partnerships towards Food Resiliency in the New Normal in Region 10	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This specific project will focus on the food value chain for carrots in Region 10. Carrots is considered as one of the high value commercial vegetable in the region with an average production of 13,629 metric tons and ranks third in the country with 1.9% of the total production (PSA, 2016). Vegetable farmers in the region experienced low farm gate price since traders are in control of the total supply chain, losses and (Soliven et al, 2008 and Dejarme et al, 2015).	People Services: No. of farm enterprises supported/mentored-8 No. of food processors supported//mentored-8 No. of farmers trained-80 No. of food processors trained-8 No. of trainings conducted for farm enterprises-4 No. of trainings conducted for processing enterprises-4 No. of new incubatees supported-2 No. of consultation meetings conducted-4 No. of benchmarking activities conducted-2 No. of pool of experts maintained-4 Publications: No. of Promotional videos developed for the STCBF enterprises-1 No. of Information, Education and Communication (IEC) and promotional materials developed/produced for the STCBF enterprises and processor-4 No. of TBI Operations Manual updated-1 No. of TBI Curricula updated-1 No. of incubatee Business plans prepared/ updated-2 No. of Food value chain sustainability plans developed-1 No. of sustainable business models for community based enterprises and technology business incubationestablished/maintained Patents/IP: No. of Copyrights filed for the developed IEC materials, videos and websites-5 Places and Partnerships:	DOST-PSTC Bukidnon	High value vegetable farmers in Lantapan and Talakag, Bukidnon	1-Sep-20	31-Aug-21	NEW	2,999,999.75	2,999,999.75
	Enhancing the Agri-Aqua Food Value Chain through Smart Technologies and Partnerships towards Food Resiliency in the New Normal in Region 2	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project therefore is being proposed to enhance the food value chain for goat in Region 2 towards improving agricultural productivity, competitiveness, efficiency and inclusive food sustainability.	People and Services: No. of farm enterprises supported/mentored-120 No. of food processors supported//mentored-5 No. of farmers trained-120 No. of food processors trained-5 No. of trainings conducted for farm enterprises-2 No. of trainings conducted for processing enterprises-2 No. of new incubatees supported-2 No. of consultation meetings conducted-2 No. of benchmarking activities conducted-2 No. of pool of experts maintained-1 Publications: No. of Promotional videos developed for the STCBF enterprises-1 No. of Information, Education and Communication (IEC) and promotional materials developed/produced for the STCBF enterprises and processor-2 No. of TBI Operations Manual updated-1 No. of TBI Curricula updated-1 No. of incubatee Business plans prepared/ updated-5 No. of Food value chain sustainability plans developed-0 No. of sustainable business models for community based enterprises and technology business incubation established/maintained-1 Patents: No. of Copyrights filed for the developed IEC materials, videos and websites-3 Places and Partnerships:	ISU	*Goat raisers *Restaurant owners *LGUs *Goat Industry	1-Sep-20	31-Aug-21	NEW	2,999,646.32	2,999,646.32
	Enhancing the Agri-Aqua Food Value Chain through Smart Technologies and Partnerships towards Food Resiliency in the New Normal in Region 3	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This specific project will focus on enhancing the food value chain for Tilapia in Region 3. Second to milkfish, tilapia is the most cultured freshwater fish in the country. Based on the 2019 Philippine Statistics Office (PSO) data, fresh tilapia production in the Philippines totalled 1,344,382.36 MT with Central Luzon contributing 644,113.05 MT or 47.91% to the total national production.	Publications: At least 1 Promotional videos developed for the STCBF enterprises At least 2 Information, Education and Communication (IEC) and promotional materials developed/produced for the STCBF enterprises and processor At least 1 TBI Operations Manual updated At least 1 TBI Curricula updated At least 2 incubatee Business plans prepared/ updated At least 1 Food value chain sustainability plans developed at the end of the project At least 1 sustainable business models for community based enterprises and technology business incubation established/maintained Patents/IP: At least 3 Copyrights filed for the developed IEC materials, videos and websites Products: At least 2 POTs and SMART technologies used at the farm level At least 2 POTs and SMART technologies used at the processing enterprise Amount of Tilapia to be produced (45,000 kg) Amount of the products processed (4,500kg) People Services: At least 10 farm enterprises supported/mentored At least 2 food processors supported/mentored At least 10 farmers trained At least 2 food processors trained At least 2 trainings conducted for farm enterprises At least 2 trainings conducted for processing enterprises	CLSU	*Community-based farm enterprises *Technology-based startups/spinoffs *Farmers and fisherfolk, cooperatives and associations *Industry (Traders, Retailers) *General public/consumers *Local government units *National government agencies *Non-governmental organizations	1-Sep-20	31-Aug-21	NEW	2,988,753.60	2,988,753.60

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Enhancing the Agri-Aqua Food Value Chain through Smart Technologies and Partnerships towards Food Resiliency in the New Normal in Region I	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This specific project will focus on enhancing the food value chain for milkfish in Region 1 specifically in Sto. Tomas, La Union, a major producer of milkfish in the province of La Union. This project will implement some interventions aimed to address constraints in the milkfish value chain especially among the producers and processors.	People and Services: No. of farm enterprises supported/mentored-10 No. of milkfish processors supported/mentored-5 No. of grow-out fishfarmers trained-10 No. of food processors trained-5 No. of trainings conducted for farm enterprises-2 No. of trainings conducted for processing enterprises-2 No. of new incubatees supported-2 No. of consultation meetings conducted-2 No. of benchmarking activities conducted-2 No. of pool of experts maintained-1 Publications: No. of Promotional videos developed for the STCBF enterprises-1 No. of IEC and promotional materials developed/produced for the STCBF enterprises and processor-2 No. of TBI Operations Manual updated-1 No. of TBI Curricula updated-1 No. of incubatee business plans prepared/updated-2 No. of Food value chain sustainability plan developed-1 No. of sustainable business models for community based enterprises and technology business incubation established/maintained-1 Patents: No. of Copyrights filed for the developed IEC materials, videos and websites Places and Partnerships:	DMMMSU	*Fishfarmers,fisherfolks *Industry (Traders, Retailers) *General public/consumers *Local government units *National government agencies *Non-governmental organizations	1-Sep-20	31-Aug-21	NEW	2,999,945.20	2,999,945.20
	Enhancing the Agri-Aqua Food Value Chain through Smart Technologies and Partnerships towards Food Resiliency in the New Normal in Region VI	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This specific project will focus on enhancing the food value chain for native chicken in Region VI. Currently, the demand for native chicken meat is high because majority of the consumers prefer native chicken due to its distinct taste, unique flavour and texture and lower fat content over broiler chickens.	People Services: Support/mentor 100 farm enterprises Support/mentor 10 food processors Train 100 farmers both for technical and business Train 10 food processors Conduct 2 trainings to farm enterprises Conduct 2 trainings in processing enterprises Support 4 new incubatees Conduct 2 consultation meetings Conduct 2 benchmarking activities Maintain 2 pool of experts Publications: Develop 2 promotional videos for the STCBF enterpises Develop/produce 4 IEC and promotional materials for STCBF enterprises and processor Update 1 TBI Operation Manual and Curricula Update 1 TBI Curricula Prepare/update 10 incubatee business plan Develop 1 Food value chain sustainability plans Established/maintained 1 sustainable business models for community based enterprises and technology business incubation Patents/IP: File 3 copyrights for the developed IEC materials, videos and websites Places and Partnerships: Forge 10 linkages and partnerships to LGUs, farmer associations, DOST Regional offices, DTI	CapSU	*Community-based farm enterprises *Technology-based startups/spinoffs *Farmers and fisherfolk, cooperatives and associations *Industry (Traders, Retailers) *General public/consumers *Local government units *National government agencies *Non-governmental organizations	1-Sep-20	31-Aug-21	NEW	2,999,987.20	2,999,987.20
	Enhancing the Agri-Aqua Food Value Chain through Smart Technologies and Partnerships towards Food Resiliency in the New Normal in Region XII	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The specific project will focus on enhancing the food value chain for halal goat in Region XII. The protocol on the production of halal compliant goat production which was developed by a PCAARRD funded research has already been approved as the Philippine National Standard on the Code of Halal Goat Production.	People and Services: No. of farm enterprises supported/mentored-20 No. of farmers trained-120 No. of training conducted for farm enterprises-4 No. of new incubatees supported-4 No. of consultation meeting conducted-4 No. of benchmarking activities conducted-4 No. of pool of experts maintained-1 Publications: No. of promotional videos developed for the STCBF enterprises-1 No. of IEC and promotional materials developed/produced for the STCBF enterprises and processor-2 No.of TBI Operations Manual updated-1 No. of TBI Curriculum updated-1 No. of incubatee Business plans prepared/updated-5 No. of Food value chain sustainability plans developed-1 Patents: No. of Copyrights filed for the developed IEC materials, videos, and websites-3 Places and Partnerships: No. of linkages and partnerships forged- Policies: No. of Policies developed/policy inputs in support of the food value chain operations-1	SKSU	*Community-based farm enterprises *Technology-based start-ups/spinoffs *Farmers, cooperatives and associations *Industry (Traders, Retailers) *General public/consumers *LGU *NGA *NGO	1-Sep-20	31-Aug-21	NEW	1,861,932.00	1,861,932.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	Enhancing the Agri-Aqua Food Value Chain through Smart Technologies and Partnerships towards Food Resiliency in the New Normal in the Cordillera Administrative Region (CAR)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This specific project will focus on enhancing the food value chain for strawberry in the Cordillera Administrative Region. The project will concentrate on the steps related to production up to primary processing giving emphasis on quantity of yield and enhancement of quality along these.	People and Services: No. of farm enterprises supported/mentored-10 No. of food processors supported//mentored-5 No. of farmers trained-10 No. of food processors trained-5 No. of trainings conducted for farm enterprises-2 No. of trainings conducted for processing enterprises-2 No. of new incubatees supported-2 No. of consultation meetings conducted-2 No. of benchmarking activities conducted-2 No. of pool of experts maintained-1 Publications: No. of Promotional videos developed for the production enterprises-1 No. of Information, Education and Communication (IEC) and promotional materials developed/produced for the production, including STCB, enterprises and processors group-2 No. of TBI Operations Manual updated-1 No. of TBI Curricula updated-1 No. of food processing incubateesâ€™ Business plans prepared/ updated-5 No. of Food value chain sustainability plans developed-1 No. of sustainable business models for community based enterprises and technology business incubation established/maintained-1 Patents:	BSU	*Community-based farm enterprises *Technology-based startups/spinoffs *Farmers cooperatives and associations *Industry (Traders, Retailers) *General public/consumers *Local government units *National government agencies *Non-governmental organizations	1-Sep-20	31-Aug-21	NEW	2,999,970.00	2,999,970.00
	Performance Assessment of PCAARRD Technology Transfer Modalities	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The findings of this project will help in the various policy responses to encourage the use of technology transfer modalities and other improved technologies to reverse the slide in agricultural productivity and help boost production and enhance food security. Further, the knowledge to be generated from the project will be utilized to recommend policy redesign scaling-out of technology transfer activities in terms of enhanced adoption and diffusion of in the different regions of the country.	Product 1) Twenty-seven (27) technology transfer projects documented, analyzed, processed & results summarized 2) List of potential adopters and partners Publication 1) One IEC of completed technology transfer projects 2) One AVP on successful technology transfer projects 3) One (1) publishable article on successful PCAARRD technology transfer projects Policy 1) One (1) policy recommendation on technology transfer implementation	BSU	PCAARRD and NAARRDN	1-Aug-20	31-Oct-21	NEW	5,000,000.00	3,500,000.00
	Phase 2: Management and Commercialization of Technologies Generated from PCAARRD-funded Research Projects in UPLB	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The Phase 2 project is a two-year undertaking which aims to continue and enhance/expand the efforts ofthe UPLB-TTBDO on the management and commercialization of technologies generated from PCAARRD-funded projects. This project will also focus on the monitoring and evaluation of the approved licensing deals achieved in Phase 1 by tracking the activities conducted by the licensees. Phase 2 will also enable the UPLB-TTBDO to conduct new activities that will support the IP management and commercialization efforts of the University, such as the creation of IP management plans, financial and investment analysis, and IP prosecution and maintenance. The actual experiences from the Phase 1 project will also serve as basis for exploring new approaches to achieve a more effective IP management and commercialization system at UPLB. Moreover, the proposed activities in Phase 2 will cover technologies identified in Phase 1 as well as those that will be audited encompassing R&D projects implemented from 2016 to 2021. The Phase 2 project will be of service to university researchers, students and staff, as well as to the external agencies/individuals who would like to seek assistance in terms of IP management and technology commercialization. The Phase 2 project will be implemented at the UPLBTTBDO located at the Science and Technology Park of UPLB.	The following are the target deliverables of the proposed project in its two-year duration: Stage 1. Capacity Building and Provision of Technical Assistance â€¢ Capacity building activities through IP management and technology commercialization trainings for: o 8 Internal activities conducted for UPLB researchers and staff o 10 Consultations and technical assistance provided to external agencies/individuals/partners Stage 2. Policy Development â€¢ Packaging and formalization of internal policies developed in Phase 1 for dissemination to the university constituents and stakeholders o 1 Compendium of policies â€¢ IEC materials on policies developed, printed and disseminated o 1 Compendium of policies printed and copies disseminated	UPLB	1. University Researchers, Students and Staff 2. Industry Partners and Collaborators 3. Agriculture Sector, Aquatic, and Natural Resources (AANR) Sector	1-Mar-19	28-Feb-21	ONGOING	4,995,180.00	1,256,044.96
	Promotion of Aquashade Technology in Luzon to Increase Nile Tilapia Seed Production During Warm Months (Old Title: S&T Promotion of Aquashade Technology: Solution to the Low Nile Tilapia Seed Production during Warm Months)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This project will involve an interdisciplinary team who will work for wider adoption of the technology in Luzon where most of the tilapia hatcheries are located. The dissemination of technology will be in collaboration with other SUCs and LGUs that will result in increased seed production in their respective areas which is highly needed for increased growout production.	Publication: ï¿· 2 IEC materials developed, translated and distributed ï¿· 1 AVP produced Patent: 2 publications with copyright Products: 5 aquashade technologies installed in tilapia hatcheries that will serve as a model in Luzon People and Services: ï¿· 5 seminars/trainings conducted on aquashade technology and latest technologies on tilapia seed production and hatchery management ï¿· 5 tilapia hatchery operators identified as model for aquashade technology ï¿· At least 50 tilapia hatchery operators trained Places and Partnership: ï¿· 4 MOAs/MOUs signed (1 per SUC) ï¿· 5 MOAs signed with hatchery operators ï¿· Established linkages with the following: ï¿5 Hatchery operators ï¿3 SUCs ï¿At least 5 LGUs Policies: 1 guideline developed in using the aquashade technology for tilapia seed production	CLSU	Tilapia hatchery operators in Luzon (Bataan, Nueva Ecija, Tarlac, Isabela, Region 4, Region 5)	1-Jul-19	30-Nov-21	ONGOING	4,932,944.00	1,352,209.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	S&T BASED REHABILITATION OF DAMAGES CAUSED BY SUPER TYPHOON ROLLY IN CAMARINES NORTE, MABATE AND SORSOGON	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project is a response to decrease the impacts of STY Rolly and reduce further risk by capacitating the affected communities in Camarines Norte, Masbate, and Sorsogon. by providing S&T based interventions to the affected communities. It will be implemented by the Bicol University (BU) in collaboration with the SUCs in Masbate (DEBESMSCAT), Camarines Norte (CNSC), and Sorsogon (SSC), LGUs, PDRRMO, and other government and private institutions. The project has six (6) components: (1) AANR damage and hazard, risk, vulnerability, and capacity assessment - survey of actual damage in the target communities to determine the assistance needed; (2) Procurement and distribution of S&T products and other immediate needs - food and non-food packs, hygiene kits would be distributed to the affected families; (3) Assessment of the potential community-based S&T interventions in the future; (4) Capacity building â€“ conduct of technical trainings on crop production, aquaculture, and raising native animals, and stress debriefing to deal with physical and psychological effects associated with the trauma brought about by the disaster; (5) Provision of agricultural inputs â€“ procurement and distribution of vegetable seeds and other planting materials (i.e., sweet potato, etc.) as well as other production inputs; and (6) IEC materials distribution â€“ techno guide and other publications.	Publications ïƒ¼ One (1) profile report of the identified communities ïƒ¼ One (1) video documentation ïƒ¼ One (1) documentation report and lessons learned ïƒ¼ One (1) damage assessment report Products ïƒ¼ 2,500 S&T product packages prepared and distributed ïƒ¼ One (1) damage assessment report People and Services ïƒ¼ 2,500 families assessed and profiled ïƒ¼ 2,500 families assisted through distributed product packages ïƒ¼ 10 trainings conducted benefitting at least 150 individuals Places and Partnerships ïƒ¼ Three (3) SUCs collaborations: Masbate (DEBESMSCAT), Camarines Norte (CNSC), and Sorsogon (SSC), three (3) LGUs, three (3) PDRRMO established Patents/IP ïƒ¼ Copyright applications for the videos Social Impact ïƒ¼ Provided immediate food to affected families ïƒ¼ Promoted wellness to affected communities ïƒ¼ Develop technical skills in crop production, aquaculture, and raising native animals	BU	Selected communities affected by STY Rolly in Camarines Norte, Masbate, and Sorsogon	1-Dec-20	31-May-21	NEW	5,000,000.00	5,000,000.00
	S&T BASED REHABILITATION OF DAMAGES CAUSED BY SUPER TYPHOON ROLLY IN CAMARINES SUR	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project is a response to abate the impacts of STY Rolly in the Municipalities of Buhi, Nabua, and Baao in the province of Camarines Sur by providing S&T based interventions to the affected communities. It will be implemented by the Central Bicol State University of Agriculture (CBSUA) in collaboration with respective LGUs. The project has six (6) components: (1) AANR damage assessment - survey of actual damage in the target communities in order to determine the assistance needed; (2) Procurement and distribution of S&T products and other immediate needs - food packs and hygiene kits would be distributed to the affected families since nutrition and health are the major concerns during calamities; (3) Assessment of the potential community-based S&T interventions in the future; (4) Capacity building â€“ conduct of technical trainings on crop production, aquaculture, and raising native animals, and stress debriefing to deal with physical and psychological effects associated with the trauma brought about by the disaster; (5) Provision of agricultural inputs â€“ procurement and distribution of vegetable seeds and other planting materials (i.e., sweet potato, etc.) as well as other production inputs; and (6) IEC materials distribution â€“ techno guide and other publications.	Publications: - One (1) profile report of the identified communities - One (1) video documentation - One (1) documentation report and lessons learned - One (1) damage assessment report Products: - 3,000 S&T product packages prepared and distributed - One (1) damage assessment report People and Services: - 3,000 families assessed and profiled - 3,000 families assisted through distributed product packages - Ten (10) training conducted benefitting at least 150 individuals Places and Partnerships - Three (3) institutional collaborations established Patents/IP: - Copyright applications for the videos Social Impact: - Provided immediate food to affected families - Promoted wellness to affected communities - Develop technical skills in crop production, aquaculture, and raising native animals Economic Impact:	CBSUA	Farming Families affected by STY Rolly in the municipalities of Buhi, Nabua, and Baao, Camarines Sur	1-Dec-20	31-May-21	NEW	5,000,000.00	5,000,000.00
	S&T BASED REHABILITATION OF DAMAGES CAUSED BY SUPER TYPHOON ROLLY IN CATANDUANES	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project is a response to abate the impacts of STY Rolly in the province of Catanduanes by providing S&T based interventions to the affected communities. It will be implemented by the Catanduanes State University (CatSU) in collaboration with the LGUs. The project has six (6) components: (1) AANR damage assessment - survey of actual damage in the target communities in order to determine the assistance needed; (2) Procurement and distribution of S&T products and other immediate needs - food packs and hygiene kits would be distributed to the affected families since nutrition and health are the major concerns during calamities; (3) Assessment of the potential community-based S&T interventions in the future; (4) Capacity building â€“ conduct of technical training on crop production, aquaculture, and raising native animals, and stress debriefing to deal with physical and psychological effects associated with the trauma brought about by the disaster; (5) Provision of agricultural inputs â€“ procurement and distribution of vegetable seeds and other planting materials (i.e., sweet potato, etc.) as well as other production inputs; and (6) IEC materials distribution â€“ techno guide and other publications.	Publications: - One (1) profile report of the identified communities - One (1) video documentation - One (1) documentation report and lessons learned - One (1) damage assessment report Products: - 3,000 S&T product packages prepared and distributed - One (1) damage assessment report People and Services: - 3,000 families assessed and profiled - 3,000 families assisted through distributed product packages - Ten (10) training conducted benefitting at least 150 individuals Places and Partnerships - Three (3) institutional collaborations established Patents/IP: - Copyright applications for the videos Social Impact: - Provided immediate food to affected families - Promoted wellness to affected communities - Develop technical skills in crop production, aquaculture, and raising native animals Economic Impact:	CatSU	Selected communities affected by STYRolly in Catanduanes	1-Dec-20	31-May-21	NEW	5,000,000.00	5,000,000.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	S&T BASED REHABILITATION OF DAMAGES CAUSED BY TYPHOON ULYSSES AND THE WIDESPREAD FLOODING IN ISABELA PROVINCE	KRA 3: Rapid, Inclusive and Sustained Economic Growth	This S&T intervention is designed to support the provision of necessary services and facilities that would address the impacts of typhoon Ulysses and the widespread flooding in the heavily devastated communities in the Province of Isabela. The project will be implemented by the Isabela State University (ISU) particularly at Cabagan Campus, in collaboration with the Provincial Government of Isabela (PGI) and other government institutions such as DOST offices in the region and in the province. The project has seven (7) components: (1) AANR damage assessment - survey of actual damage in the target communities in order to determine the assistance needed; (2) Procurement and distribution of S&T products and other immediate needs - food packs and water, water treatment interventions and sanitation and hygiene kits, would be distributed to the affected families since nutrition and health are the major concerns during calamities; (3) Assessment of the potential community-based S&T interventions in the future; (4) Assessment of climate change adaptation and mitigation mechanisms of affected populace; (5) Capacity building â€" conduct of technical trainings on crop production, aquaculture, and raising native animals, among others, and conduct of stress debriefing to deal with physical and psychological effects associated with the trauma brought about by the disasters; (6) Provision of agricultural inputs â€" procurement and distribution of seedlings (i.e. fruit/forest tree species) and vegetable seeds (e.g. High Value Crops (HVCs)) and other planting materials as well as other production inputs; and (7) IEC materials distribution â€" techno guide and other publications.	Publications - One (1) profile report of the identified communities - One (1) video documentation - One (1) documentation report and lessons learned - One (1) damage assessment report Products - 3,000 S&T product packages prepared and distributed - One (1) damage assessment report People and Services - 3,000 families assessed and profiled - 3,000 families assisted through distributed product packages - 120 farmer-beneficiaries assisted through distributed agricultural inputs - 6 training conducted benefitting at least 120 individuals Places and Partnerships - Three (3) institutional collaborations established (PGI, DOST-Isabela, Selected Municipal/City LGUs) Policy - Executive Order and/or Ordinance adopting the S&T Intervention to become a regular program of the PLGU and the selected Municipal/City LGUs under their LCCAP and/or LDRRMP Patents/IP - Copyright applications for the videos	ISU	Selected communities affected by typhoon Ulysses and the widespread flooding in Isabela province	1-Dec-20	31-May-21	NEW	5,000,000.00	5,000,000.00
	S&T BASED REHABILITATION OF THE DAMAGES CAUSED BY TYPHOON ULYSSES AND THE WIDESPREAD FLOODING IN CAGAYAN PROVINCE	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project is a response to abate the impacts of typhoon Ulysses in the province of Cagayan by providing S&T based interventions to the affected communities. It will be implemented by the Cagayan State University (CSU) in collaboration with the LGUs and other government institutions. The project has six (6) components: (1) AANR damage assessment - survey of actual damage in the target communities in order to determine the assistance needed; (2) Procurement and distribution of S&T products and other immediate needs - food packs and hygiene kits would be distributed to the affected families since nutrition and health are the major concerns during calamities; (3) Assessment of the potential community-based S&T interventions in the future; (4) Capacity building â€" conduct of technical trainings on crop production, aquaculture, and raising native animals, disease and other flood risks related precautionary and preparedness measures and stress debriefing to deal with physical and psychological effects associated with the trauma brought about by the disaster; (5) Provision of agricultural inputs â€" procurement and distribution of vegetable seeds and other planting materials (i.e., high value lowland vegetable crops) as well as other production and agri-fisheries based food and non-food processing inputs; and (6) IEC materials distribution â€" techno guide and other publications.	Publications ïƒ¼ One (1) profile report of the identified communities ïƒ¼ One (1) video documentation ïƒ¼ One (1) documentation report and lessons learned ïƒ¼ One (1) damage assessment report Products ïƒ¼ 3,000 S&T product packages prepared and distributed ïƒ¼ One (1) damage assessment report People and Services ïƒ¼ 3,000 families assessed and profiled ïƒ¼ 3,000 families assisted through distributed product packages ïƒ¼ 10 trainings conducted benefitting at least 150 individuals Places and Partnerships ïƒ¼ Six (6) institutional collaborations established (DOST-Region 02, DA- Region 02, MLGUs of Cagayan Province, DRRMO, DOH and DSWD Patents/IP ïƒ¼ Copyright applications for the videos Social Impact ïƒ¼ Provided immediate food to affected families ïƒ¼ Promoted wellness to affected communities ïƒ¼ Develop technical skills in crop production, aquaculture, and raising native animals	CagSU	Selected communities affected by Typhoon Ulysses in Cagayan province	1-Dec-20	31-May-21	NEW	5,000,000.00	5,000,000.00
	S&T Community-based Bamboo Nursery and Plantation for Pole Production in Iligan City (Old Title: Establishment of a Smart Community Based Bamboo Nursery and Plantation for Pole Production in Iligan City)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	For the past 10 years, the Bamboo Technology Resource Center of MSU â€" Iligan Institute of Technology has been extending technical assistance and has provided skills trainings in handicraft making, housewares products, finishing techniques, bamboo charcoal production to these aforementioned barangays, the CARAGA region and some municipalities of the Autonomous Region of Muslim Mindanao (ARMM). The LGU of Iligan is one of the cities in the Philippines that has created its own local bamboo council and has strived to strengthen the industry by giving a seed fund (20% City Development Plan). The city in partnership with the Department of Trade and Industry have conducted a value chain mapping activity to determine gaps in the local bamboo industry in Iligan City. One major constraint identified is the lack of bamboo pole supply and no established bamboo nursery and plantation. Moreover, Region 10 where Iligan City belongs has the highest number of Shared Service Facility (SSF) totaling 21 bamboo hubs and nodes. Of these, Iligan City has 3 engineered bamboo producers and 2 bamboo slats processors. A single producer has a production capacity of 25 square meter monthly. The project on bamboo nursery and plantation is proposed to fill in the gaps identified in the bamboo value chain specifically, the lack/inadequate supply of bamboo poles and the absence of bamboo nurseries and plantation through the STCBF modality. One of the goals stipulated in the Philippines Bamboo Industry Roadmap 2016-2040 and PCAARRDs bamboo ISP is to increase hectares of bamboo plantation to increase pole production in order to meet the	1. produced 30,000 bamboo propagules 2. planted and grown 4,000 bamboo propagules 3. rehabilitated 350 clumps of kawayang tinik, 350 clumps of bontong and 350 clumps of Giant bamboo 4. produced business plan and sustainability plan 5. produced Techno guides on kawayang tinik and bontong production 6. identified 70 farmer cooperators 7. trained 70 farmer cooperators per barangay 8. conducted 1 farmer field day 9. forged 3 MOA/MOUs 10. developedat least 1 policu recommendation	MSU-IIT	Bamboo farmers, engineered bamboo and GDH manufacturers and producers, bamboo entrepreneurs	1-Aug-19	31-Jul-22	ONGOING	4,990,000.00	1,464,996.60

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	S&T Community-Based Farm (STCBF) on Enhancing Coffee Production in Sultan Kudarat	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project will be implemented in the three major coffee producing municipalities of Sultan Kudarat namely Sen. Ninoy Aquino, Kalamansig & Lebak. The project has a goal to increase coffee productivity of the farmer-participants in the project sites from 0.5-ton green beans to 1.5 tons green beans per hectare through STCBF technology transfer modality within the project duration. This involves the introduction of key technologies in the whole coffee production chain (such as selection and use of high yielding clone, rejuvenation of old unproductive trees then proper fertilization of coffee farms and provision of all-weather dryer) that will ensure high productivity of coffee farms and improved quality of coffee beans. These technologies should fill up the critical S & T gaps in the production operations of coffee farmers in Sultan Kudarat Province as well as in most coffee growing areas in the country.	1. Produced 40,000 rooted coffee seedlings (Arabica and Robusta) 2. Established 1 clonal garden and nursery 3. Organized and trained 3 groups of farmer cooperators (w/20 farmers per group) 4. Conducted 27 trainings (3 trainings per site, 3 batches) 5. Signed 7 MOAs (Between SKSU and 4 farmer cooperators and 3 LGUs) 6. Sustained linkages with 1 PLGUs and 3 MLGUs, Peoples Organization, DTI, DOST R12, and NESTLE 7. Produced, distributed and reprinted 2 IEC materials 8. Produced 2 training modules, 1 video clip and 1 coffee manual 9. Proposed/draft a policy on intensive promotion of GAP in coffee (ie. Coffee Festival) and local land use 10. Applied 5 copyrights	SKSU	Coffee farmers	1-Jun-20	31-May-23	NEW	9,143,527.00	4,385,509.00
	S&T Community-based Gmelina Farms in the Province of Isabela	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The establishment of the STCBF will serve as a model for the establishment of ITP in Region 2 with Yemane (Gmelina arborea) as main commodity. It aims to increase the income of farmers as sources of Gmelina raw materials for the furniture industry in the region.	1) Produced 10,000 seedlings of quality planting materials from genetically superior Gmelina 2) Identified and capacitated 30 tree farmers in Isabela 3) Conducted 8 trainings 4) Signed 5 MOAs with partner agencies 5) Produced 5 IEC materials and 1 publishable article on the profitability of Gmelina-based agroforestry systems 6) Provided policy inputs/recommendations on the use of genetically superior seeds of Gmelina in R2	ISU	Tree farmers in Cabagan and Mallig, Isabela	1-Aug-19	31-Jul-22	ONGOING	4,998,834.00	1,461,247.00
	S&T Community-based Nursery, Plantation and Seedling-Seed Orchard (SSO) Establishment and Management of Falcata (Falcataria moluccana) in Tagbalili, Esperanza, Agusan Del Sur	KRA 3: Rapid, Inclusive and Sustained Economic Growth	Caraga Region has a total land area of 1,913,842 hectares, with a total forestland area of 1,331,491 hectares of which 999,705 or about 75% are classified as production forest. With this, tree farming has been a way of life of the Caraganons. The Philippine Forestry Statistics shows that majority of the log requirement of the country are being supplied by Caraga Region, hence dubbed as the Timber Corridor in the southern Philippines. Owed to its vast area of land, favorable climatic condition, social and economic appreciation and acceptance of tree farming and available wood-based industries and market, it is projected that more falcata plantations will be established and demand for planting materials is expected to rise. Carandang (2011) mentioned that tree farming provides plenty of livelihood opportunities for local people, from seedling production to planting, maintenance, harvesting, and marketing activities that entail hiring of local labor. Even the communities dependent on traditional forestry benefit from employment in these tree farms as part time labor during peak labor seasons of maintenance and harvesting. He further cited that tree farming and high value forest plantations seem to offer the best prospects of generating real livelihoods for people from forestry (Brown, 2011, comments). It is important, however, for the government to address many constraints in this respect (e.g., policy, social, environmental, etc.). The operationalization of the Mindanao Tree Seed Center of DENR with funding support from DOST-PCAARD already established system in the selection, collection, processing and recording of tree seeds from quality sources especially Falcata which is the major tree species planted by farmers in the region. Through the Forest and Wetland	1. 30,000 Seedlings produced from selected sources 2. 1 S&T community-based farm with expansion 3. 1 SSO established 4. 1 farmer group with 30 farmer cooperators organized 5. 30 farmer cooperators capabilities enhanced 6. 1 farmers' field day conducted 7. 1 Techno guide packaged 8. 1 documentary video produced 9. 1 MOA forged 10. provided policy inputs	ERDB	Tree farmers in Tagbalili, Esperanza, Agusan del	1-Jul-19	30-Jun-22	ONGOING	4,998,854.00	1,309,949.60
	S&T-BASED REHABILITATION FOR DAMAGES CAUSED BY SUPER TYPHOON ROLLY IN ALBAY	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The project is Bicol Universityâ€™s contribution to sustain recovery of Albay province after the onset of Typhoon Rolly within the context of reducing risk instead of merely giving relief aid.	One (1) profile report of the identified communities One (1) video documentation One (1) documentation report and lessons learned One (1) damage and risk assessment report 3,000 S&T product packages prepared and distributed One (1) damage and risk assessment report One (1) Regional Summit on S&T based DRR Initiatives Eight (8) Self Help Groups 3,000 families assessed and profiled 3,000 families assisted through distributed product packages Ten (10) trainings conducted benefitting at least 150 individuals Sixteen (16) institutional collaborations established (DOST V, APAO, DSWD V, DOLE V, DENR V, DTI V, Microfinance Organization, and 8 affected LGUs) Local statute to involve academe in the DRR Structures at LGU level for robust S&T interventions Copyright applications for the videos Copyright application for the community-managed S&T based DRR Copyright application for Self-Help Group formation for resiliency Provided immediate food to affected families Provided BioSand Filters to communities without potable water sources Promoted mental health wellness to affected communities Promoted geriatric, maternal, and child health and nutrition counselling Develop technical skills in home gardening; windbreak/shelterbelt establishment; agroforestry; soil and water conservation; aquaculture; nursery establishment and management of endemic timber and fruit trees, and ornamentals; food processing as nature-based enterprise; organizational development and management; group savings mobilization; and community-managed S&T based DRR	BU	Selected communities affected by typhoon Rolly in Albay	1-Dec-20	31-May-21	NEW	5,000,000.00	5,000,000.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2020	Total Project Cost	2020 PCAARRD GIA
	SAFE Project on Philippine Native Animals for Disaster Risk Reduction in Hazard-Prone Areas of Benguet (SAFE-PNADRRHAB) (Old Title: SAFE Project on Philippine Native Animals for Disaster Risk Reduction with the Integration of RFID System for Identification, Traceability and Tracking of Distributed Stock in Hazard-Prone Areas of Benguet)	KRA 3: Rapid, Inclusive and Sustained Economic Growth	The provision of livestock to rehabilitate livelihoods after humanitarian disasters has been practiced regularly for over thirty years. This is often in the form of herd reconstitution for those largely dependent upon livestock following massive animal mortality. This SAFE project is proposed in an attempt to provide assistance to disaster-prone communities in Benguet both to prevent large damages and massive animal losses as well as to support in faster rebuilding following a major crisis event caused by natural hazards and climate-related disasters. The SAFE project will utilize the initial outputs of the PCAARRD funded program on Philippine Native Pig Conservation, Improvement and Profitable Utilization. It will operationalize a paradigm shift from reactive emergency relief to pro-active disaster risk reduction measures.	Publications - 6 different IEC material topics, 2 training modules Patent - 1 geographic indication filed; 1 Trademark/Collective mark filed Product- 1 native pig strain developed; People and services - 1 native animal facility for breeding and conservation; At least 30 farmer cooperators involved in SAFE project; At least 10 technical personnel trained Places and Partnership- 1 MOA signed among stakeholders; 15 breeders distributed to established SAFER farms Policy - 3 policy recommendations developed	BSU	Indigenous people and women in disaster-prone upland communities	1-Mar-18	30-Sep-20	COMPLETED	4,883,288.00	364,024.00
	Testing and Evaluation of Machinery Generated from PCAARRD-funded Projects Phase 2	KRA 3: Rapid, Inclusive and Sustained Economic Growth	For years, the Department of Science and Technologyâ€™s (DOST) Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD) has funded various projects that developed agricultural machines that would later be commercialized locally. In 2017, PCAARRD-DOST also funded the project titled â€œTesting and Evaluation of Machinery Generated from PCAARRD-funded Projectsâ€ in which 11 machines were AMTEC-tested; and eight Philippine National Standards (PNS), Specifications and Methods of Test, were developed. The proposed project is the continuing phase of the aforementioned project. It aims to conduct the testing and evaluation of new machineries generated from PCAARRD-funded projects that are ready for commercialization, as well as develop the standards for such. The project also aims to conduct the retesting of machineries included in the previous phase of the project to obtain unmeasured performance parameters and determine machine performance after certain improvements and further modifications of the technology generators.	People and Services 1. At least 20 machine testing conducted; 2. Eight (8) consultations conducted; Policies 1. Eight (8) PNS/PABES, Specifications and Methods of Test, for the following machines without the aforementioned standards are developed: a. Dehydrator; b. Green Coffee Sorter; c. Peanut Stripper/Thresher; d. Sea Cucumber Dryer; Publications 1. At least 20 test reports of AMTEC-tested machines are finalized and released; 2. Eight (8) PNS/PABES, Specifications and Methods of Test, are developed	UPLB	AANR Stakeholders	1-Sep-20	31-Aug-22	NEW	4,350,755.20	2,315,377.60