Of the known 62 species or varieties of indigenous and introduced bamboo in the Philippines, 10 were identified and recommended by the Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (PCAARRD) for widespread planting and culture as priority bamboo species for development. These selected species exhibit superior characteristics and high commercial value over the other species grown in the country. They are cultivated primarily for pole or edible shoot production.

One of these exceptional bamboo varieties is Machiku (Dendrocalamus latiflorus). Machiku is a large "sympodial" or clumping type bamboo indigenous to Southern China and Taiwan. It is characterized by its erect culms or poles, with smooth green, long internodes that grow leaf free initially, then follow a profuse mass of attractive and very large dark green leaves. It is fast growing and matures early in just three to five years. It also produces more number of shoots per season than other bamboo species grown for its shoots.

The tasty and highly edible shoots have smooth light green culm leaves, with orange to bronze tops. Machiku is the main plantation species for shoot production in Taiwan. It was reported that Taiwan is consuming and exporting an average of 90,000 tons of fresh and processed Machiku shoots yearly. This volume of production amounts to several millions of dollars in annual income to bamboo growers in Taiwan as well as sizeable revenue taxes for the Taiwanese government.
An old introduction to the Philippines, Machiku, however, is also one of the bamboo species that is more difficult to propagate and multiply thru vegetative means – particularly the “one node” cutting which is the simplest, most practical, and easiest propagation method employed in bamboo nowadays. Offset or culm division can be used but this method is tedious and could damage the whole clump if not done properly. It lends well also to tissue culture but the procedure is costly and highly specialized.

Most bamboo species, moreover, do not produce seeds yearly or regularly like other plants. Hence vegetative propagation is the preferred method. Some produce seeds only sporadically while the majority takes many years before they do. Interestingly, some may even take a hundred years or so before they reproduce naturally. And when they do, finally, those particular species die. This phenomenon in bamboo flowering and seeding is not yet well understood even by many bamboo experts. It remains a mystery up to this day.

Against this backdrop, the authors decided to try a different approach: induce rooting to the Machiku branches and nodes while the culms are still standing. When the roots develop, separate the rooted branches from the culms and transfer to rearing pots as in normal “one node” or “branch” cutting method. Vegetative propagation by air-layering or marcotting is being done successfully with other plants, why not with bamboo?
In 2009 air-layering was done on a sample Machiku clump. They began the procedure commencing from the month of May and ending in September, a five-month period. To their pleasant surprise, the method worked! They found out that air layering Machiku is best done during the month of June. It can also be carried out in the months of May, at the earliest and July, at the latest. But the most successful and profuse rooting is observed in June suggesting that it is the time of the year when bud growth for this particular species of bamboo is the most active. Incidentally, the month of June has very high relative humidity occurrence in the year which is conducive for vegetative propagation and rooting of bamboo.

Materials:
1. Rooting medium.
   Equal proportion of coco coir dust, loam soil or compost, river sand (1:1:1) or; 2 parts coco coir dust and 1 part compost (2:1) or; 1 part coco coir dust, 1 part carbonized rice hull (CRH), and 1 part compost (1:1:1).
2. Plastic (PET) soda bottle.
   Use 1 or 1.5 liter size plastic used soda bottles. Cut the soda bottle in two. Retain the bottle cap on the upper portion. Cut a slit lengthwise on one side of the halved plastic soda bottle and form a hole halfway of the cut the size of the branch to be air layered (Figure 3). You can use a scissor or a tin snip to do this. Punch small drainage holes at the bottom of the halved soda bottle.
3. Tie wire.
   Preferably electrician’s plastic cable tie-wire. Or any appropriate material to tie the plastic soda bottle in place to the culm may be used if plastic cable tie-wire is not available.

Procedure:
1. Preparation of rooting medium
   Remove stones or other debris from the rooting medium. Mix thoroughly adding just enough water to make it wet.
2. Branch preparation.
   Choose a branch to be air-layered from 1 to 2 year old culms. Remove carefully the layer of sheaths or the hard “false leaves” covering the basal portion of the branch. The basal portion should have active or visible “root eyes”. Cut or lop off the branch after the second or third node from the basal portion. This will concentrate nutrients on the remaining portion and will encourage rooting.
3. Air layering.
   Attach the halved portion of the plastic soda bottle below the branch as shown in photos (Figure 1 and 2). Fill the soda bottle with the wet rooting medium fully covering the basal portion of the branch. The plastic bottle must be securely tied to the culm. Use electrician’s plastic cable tie-wire or any tying material that will keep the bottle in place until the air layering procedure is done or until such time the rooted branch is separated from the culm. Ensure that adequate moisture to the rooting medium is provided throughout the air layering period.
4. Rooted branch separation.
   After 2-3 weeks, if the air layering is successful, emerging roots will be seen through the clear soda bottle (Figure 2). Cut off the rooted branch from the culm together with the rooting bottle using a sharp pruning or carpenter saw. Do not use bolo as the cutting blows will jar and damage the delicate and still developing roots.
5. Potting.
   Use the air layering plastic soda bottle initially as a rearing pot until the propagule has recovered from stress and growing on its own. Water daily to prevent dehydration. Avoid waterlogging to avert root rot. Inspect drainage holes regularly for blockages.
   Place the potted propagule under partly shaded area for the first two weeks or so to allow it to recover from stress. Move to a nursery area where sunlight is adequate after it has recovered from stress. Transfer to a bigger pot as the need arises. Ensure that the propagule receives adequate moisture for proper growth and development before field planting.

Cutting or separating the rooted branch from the culm may be delayed until such time the “active leaf buds” on the branch have emerged. This may take 1 to 2 weeks after the onset of roots or one to one and a half months after starting the air layering procedure. It may vary depending on location and climatic condition.

This method of air layering can also be used on other hard to propagate bamboo species.