

UAHS develops technology to hasten decomposition of areca waste

Time taken to form compost reduced from two years to 160 days

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At a time when concerns are being raised about the alarming levels of air pollution caused by the burning of agricultural residue in New Delhi, scientists at the University of Agricultural and Horticultural Sciences (UAHS), Shivamogga, have developed a technology that will convert arecanut husk, sheaths and dry leaves, so far considered as waste, into compost manure.

Nagaraj R., technical officer at the university, told *The Hindu* that arecanut husk and sheaths are rich in lignin, cellulose and hemicellulose, owing to which they display resistance towards biodegradation. The wide difference in ratio of carbon and nitrogen in arecanut waste is another reason for the slow decomposition, he said.

In normal conditions, it takes at least two years for arecanut husk to decompose. Owing to the slow pace of degradation, farmers don't use the husk and sheaths as manure. The waste is burnt, resulting in air pollution and loss of a potential source of organic manure. According to an estimate, six or seven tonnes of



Ready for use: Compost manure prepared from arecanut waste at the University of Agricultural and Horticultural Sciences.

organic waste is available from one hectare of arecanut plantation. Mr. Nagaraj said that *Pleurotus*, *Phanerochaete* and *Chaetomium* fungi that have potent cellulolytic enzyme systems have the capacity to decompose biowaste rich in lignin and cellulose expeditiously. The experiment of using these microorganisms for speedy decomposition of arecanut waste proved successful.

Compost preparation

On the preparation of compost manure, he said that a pit measuring 20 ft in

length, 5 ft in width and 5 ft in depth can handle seven tonnes of arecanut waste generated from one hectare. The bottom layer should have arecanut leaves, sheaths and husks. Cow dung slurry should be poured on it, after which a decomposing culture containing a consortium of *Pleurotus*, *Phanerochaete* and *Chaetomium* microorganisms should be administered. The top layer should have dry leaves and straw. Using this method, arecanut waste is decomposed in 160 days.

Mr. Nagaraj said that the

nitrogen, potash, magnesium and calcium content in arecanut compost manure is greater than that in compost manure prepared from cattle dung. At present, one tonne of biocompost manure is priced at ₹2,500. A major chunk of farmers have given up animal husbandry, because of which they have to purchase biocompost manure. Unable to afford it, small plantation owners administer biomanure once in three or four years, which results in soil degradation and affects the yield. By choosing to convert arecanut waste into manure, it is possible to enhance soil fertility and minimise dependence on chemical fertilisers.

B.R. Gurumurthy, director of research at the university, said recycling of nutrients in arecanut plantations by conversion of biowaste into compost manure has economic as well as ecological benefits. By adopting this compost production system, plantations can emerge as self-supporting nutrient utilisation units. The university plans to extend technical guidance to growers who opt for production of compost manure on their lands, he said.