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Composting of Mango Wastes

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Abstract

India is world's largest produced or mango (approximately 21 million tonnes). During the processing of mango, voluminous of solid and liquid wastes are generated. Mangoes are called the "King of Fruits" for its taste, nutrients and uses. The solid waste comprised of mango peel, stones, stalk, trimmings and fibrous materials constitute about 40-50 percent of total fruits waste of which 12-15 percent is peel, 5-10 percent is pulper waste and 15-20 percent is kernel. Significant quantities of mango peel are to be composted in a hot composting system is recommended by using fresh cow dung (3:1 ratio; 3 parts mango peel or waste : one part water) and 2.5% Urea dissolved in water. The compost heap is turned once in a week and should maintain 50% moisture. The manurial value of mango waste compost shows around 1.5% Nitrogen, 0.40% Phosphorus and 1.4% Potassium.

Introduction

Mango is one of the major consumable fruit crops of India. India is world's largest produced or mango (approximately 21 million tonnes). During the processing of mango, voluminous of solid and liquid wastes are generated. Mangoes are called the "King of Fruits" for its taste, nutrients and uses. Mango consists of between 33-85 % edible pulp, with 9-40 % inedible kernel and 7-24 % inedible peel. Although the fruit peel contains urushiol that causes skin allergies and it is used for many purposes. According to a research conducted in India, mango peel extracts are rich in anthocyanins, carotenoids and polyphenols. The solid waste comprised of mango peel, stones, stalk, trimmings and fibrous materials constitute about 40-50 % of total fruits waste of which 12-15 percent is peel, 5-10 percent is pulper waste and 15-20 percent is kernel. Mango peel is generally termed as total waste. A huge amount of waste is generated during industrial processing. Such by-products are a serious disposal problem, so a commercial utilization for mango peel and its associated wastes were used for compost making is the only way of solid waste management.

Composting Mango Wastes

Composting is an age-old waste management practice that allows transformation of organic waste into a stabilized product, which can be used beneficially for agricultural or land reclamation purposes. Different varieties of Mango are grown throughout the tropics and these give us a delicious tropical fruit. Significant quantities of mango peel are to be composted in a hot composting system is recommended by using fresh cow dung (3:1 ratio; 3 parts mango peel or waste : one part water) and 2.5% Urea dissolved in water. The compost heap is turned once in a week and should maintain 50% moisture.

The mango seed can be composted but this will take a longer time to compost similar to the eggshells, will not be decomposed the first time and it passes through cold composting technology. The composting of mango seeds will take so many months to decompose and sometimes the seed will started to germinate in the cold composting process because of the temperature and it may be used for planting of mango seedlings in orchards. If you want to allow the seeds in cold composting technology for easy germination and establishment in orchards, the seeds were soaked in hot water for two to four hours and then it may be used for composting making. So many waste management methods are there to reduce the waste disposal in open environment and the leaves from Mango trees can be composted in the normal way and are suitable for vermiculture. The dried leaves can also been ground with a pestle and mortar or a shredder and used as an organic fertiliser or mulch.

Make a pit and dump the collected dead leaves, branches, grass clippings, fruit and vegetable scraps, and other compostable materials, moisten the dry materials and combine in a pit. Dispose the mango peel and seed in a pit containing composting materials, and it will breakdown everything else. To speed up the process for the peel, cut it into thin strips before adding. The seed will take a while to completely compost, but just have some patience with it and will breakdown eventually.

Mango waste is either used as cattle feed or it is dumped in open areas where it pose environmental pollution. Composting can be suggested as a solution to two main problems, namely environmental pollution due to waste disposal and the important need for recycling of organic wastes. Degradation of mango peel is very difficult and it takes around twelve months' period for decomposition. Mango peel is difficult to decompose because of its complex lignocellulosic composition. Although, partial degradation takes place, complete composting is difficult to achieve because of wide

C:N ratio and absence of cellulolytic and lignin degrading micro-organisms.

Mixing mango peel with cow dung can fasten the composting of mango peel. This is co-composting of mango wastes with cowdung and the cowdung can favour the degradation process of mango wastes. This type of management of mango wastes lead to make cleaner environment, pollution free atmosphere, improving economy of people and improving the soil fertility. The manurial value of mango waste compost shows around 1.5% Nitrogen, 0.40% Phosphorus and 1.4% Potassium.

Conclusion

To make the environmental clean by adopting composting technology of mango waste that was invariably around 20 percent and it could be adopted by composting technology either aerobic or anaerobic pile composting and in addition to co-composting technology with other fruit and vegetable waste. This method will keep the environment clean and give opportunity for job and economy and increase the soil fertility by revitalization.

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