

Preparation of organic fertilizer from fish waste: a new avenue in employment generation.

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Abstract

Composting is a very old practice for controlling the pollution. Fish waste creates various problems hence this fish waste can be converted into organic manure. A disgusting smell of the waste really problematic to the common people. In urban areas fish sellers throw away fish wastes into open spaces. This fertilizer can be prepared by very simple technique with very low budget. In our country this technique is not popularizing hence this should be spread among fish sellers, researchers and common people are the need of day. This will helpful to generate employment. Fish remains can be turned "waste" into wealth i.e. waste to best, not only for environment and agriculture, but also for fishery industry.

Keywords: fish waste, organic fertilizer, employment, popularization.

Introduction

Fish waste composting is an old method but unfortunately in inland fisheries sector, this technique is not used so far. India is No.2 in Fresh water aquaculture next to China. Maharashtra plays an important role in inland fisheries. Many coastal states now move towards the fish waste composting business as they have enough production recorded from Mariculture. But unfortunately in state of Maharashtra where there is an ample fish production is recorded in the form of Sea water and inland fisheries, no big industry or none of the fish farmers engage in fish waste composting business.

Fresh water fish wastes are a rich source of nutrients. Disposing of this waste is a old problem for fish sellers who cleans and processes fish, from big commercial food processors to small sport-fishing operations. This can be done with the help of composting, just like the process home gardeners use to make their own soil enhancer. Fish waste composting is a relatively fresh, practical and ecofriendly method to discard fish garbage to get rid of the undesired fish parts and their disgusting smell, turning fish waste into valuable product with marketable worth on soil.

Though fish is available throughout the year, during the post monsoon season huge quantity of fish waste as well as non-edible fish related waste are generated both in village markets and also in household kitchens. The disposal of this waste material poses a big problem. As the fish-waste contains rich proteins, it cannot be kept beyond 24 hours. This also solves the problem of pollution and waste-disposal.

The composting of fish wastes has a long history. Composting is an excellent method of recycling organic waste with possible use in modern agriculture. The application of all sorts of organic waste products by turning them into compost has, above all, an economic-ecological value and is regarded to be environmental friendly [1,2] . It enables obtaining a valuable organic fertilizer, which is substrate of humus and applying it. Among others, in crop production for consumption purposes [3]. In India few experiments were performed on marine wastes [4,5,6] prepared organic fertilizer from fish waste for the first time in Marathwada, In Maharashtra not much work has been done on composting fish waste to produce a fertilizer for use in organic agriculture.

Not much work has been done on composting fish waste and seaweed to produce a fertilizer for use in organic agriculture [7]. The present problem is taken to standardize the use of fresh water fish waste as biofertilizer and is also helpful to generate employment in this COVID-19 situation.

Need of the Day

We are in big trouble in Corona virus disease (COVID-19) pandemic since last December 2019. Almost all planet is suffer due to this. All over the economic crises observed. We are in Lockdown since last 3.5 months,whole work was stopped. All sectors are in loss, Fisheries also plays an important role in economy of our nation. Due to this pandemic this sector also affected badly. Lakhs of fishermen are not getting their income as their primary source of income is just selling of fishes. This community totally depends on this sector only.

Worldwide 70% population prefers fishes in their diet. Composting is not a new to us; we are regular done this in our garden. This preparation of fertilizer is not hard or costly. It does not require much money; hence it is very cheap activity. The method of preparation of the fertilizer is same as vermi composting. Many thousands of ton fish waste generated from fish industry, we can use this fish waste for preparing the fertilizer. Many farmers are using organic fertilizer in their farm to grow good quality crops. We know by using chemical fertilizer is harmful to soil, it decreases the soil fertility. So if you prepare this fertilizer then this will helpful to farmers as well as fish sellers.

Steps for preparation

Fish sellers can prepare one pit for decomposition of this waste; just you have to give your attention till the process of decomposition starts. Several layers should be prepared like first layer fish waste it includes digestive system, scales, fins, gills, kidney, liver, air bladder, testis, ovary, and other waste organs. The next layer should be saw dust or other wood product for carbon source. When we put fish waste into pit you have to take care for first 7 days as these days have disgusting smell from the pit hence chances of disturbing the pit from dogs and cats or any other predators. Watering is one of the most important criteria of the composition process because the bacteria that are responsible for decomposition process needs humidity. Temperature is also key factor for decomposition process, a shade is required for avoiding the dryness of

pit. Well aeration is also required for decomposition process. Some bacteria can be used such as *phosphate solubilizing bacteria* (PSB), *Bacillus*, *Azotobacter* and *Rhizobium* were beneficial bacteria for rapid decomposition process.

The waste generated from kitchen and other garden waste can be dumped into pit.

After one month all layers should be mixed for well aeration this work should repeated for every 15 days till the fertilizer is prepared. You have to monitor pit in every month. In 180 days a good quality fertilizer was prepared (6). After preparation of fertilizer it should be filtered through mesh and a sample should be send to any KVK for NPK and other micronutrients analysis.

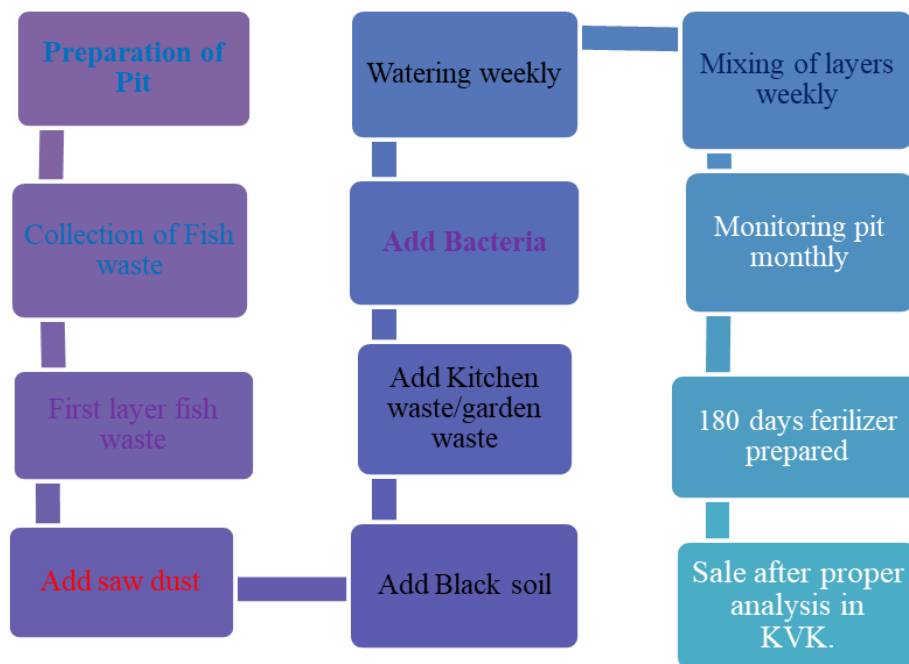


Fig: Various steps involved in preparation of organic fertilizer from fish waste.

Selling of Fertilizer

Selling of fertilizer is skill so first of all you have to popularize this product in local news paper or other electronic media. Nowadays various online shopping platforms are available so you can sale it through e-sale. In this digital era number of population are using various e platforms.

Advantages of Fish waste fertilizer

- Composting overcoming the disposal problem and produces a viable product.
- Composting is a pollution free practice and it reduces the potential for surface and groundwater foulness.
- Composting demolish disease-causing organisms and fly larvae.
- Compared to other disposal alternative, composting is not a costly method of fish waste disposal.
- There was no disgusting smell from the fish waste fertilizer. Fish waste can be converted into organic manure.
- It can be useful to fish farmers or sellers who throw the fish waste.
- By dumping in proper way, it can generate employment by selling this generates money.
- This waste can be a huge source of NPK production and helpful to farmers for organic farming.

- Nowadays many farmers are moved towards organic farming, they used Vermicompost, vermi wash etc. in their farm to grow crops.
- In market the crops, vegetables etc harvested from organic farming have huge demand.
- Hence if we are preparing the fertilizer from fish waste surely, farmers can buy it for their organic farming.

Conclusion

Composting is a best way to eradicate the fish waste to overcome the problem of pollution. It is safe and natural process and demolishes disease-causing organisms and flies larvae. Composting is a cheap method of fish waste disposal compared to other disposal alternative. Fertilizer prepared from fish waste is beneficial to increase soil nutrient content, restrain some plant disease, decrease parasites and eliminate weed seeds. Fish waste compost can be applied into farm, garden, vegetable production, field crops, trees and landscapes as soil amendment and fertilizer supplement to increase soil organic matter and nutrients, promote moisture holding ability, and then enhance production and quality.

Conflicts of interest:

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