



Preparation of Vermicompost by Different Method

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Abstract

Vermicomposting is a method of composting by using earthworms, in this process earthworms eat biodegradable wastes (Such as vegetables and fruits peels), and they break down these natural materials into organic fertilizer. Vermicompost is generally used for organic farming and also maintains the health of the soil. The amount of Nitrogen is more as compared to Phosphorus and Potash in vermicompost. Vermicompost doesn't harmful to the soil and also helps in increasing the nutrient content of the soil. The life of earthworms is 4 - 8 years depending upon the species. The nutrients contents like Nitrogen, Phosphorus, Potash, Calcium, Magnesium, Iron, Manganese, and Zinc are found in vermicompost. Endozoic earthworms are found in a deep layer of soil and they eat 90 % soil and 10 % organic matter. Epizoic earthworms are found on the surface of the soil and they eat 10 % soil and 90 % organic matter. Epizoic earthworms are famous for vermicomposting because they produce more vermicompost as compared to Endozoic earthworms. The weight of earthworms is between 0.5 to 0.6 g. one kg earthworm produces 0.8-7 kg vermicompost per day.

Keywords: Vermicompost, Earthworms, Nutrients, Advantage and Disadvantages.

Introduction

Vermicomposting is the process of using worms to break down organic waste into compost. The worms eat the organic waste and digest it, breaking it down into compost. The compost can then be used to fertilize plants.

Methods of Vermicomposting

1. **Windrow Vermicomposting:** Windrow vermicomposting is the most popular method of vermicomposting. In this method, the worms are kept in a large pile or windrow and the organic waste is added to the top. The worms migrate down through the pile, digesting the organic matter as they go. The vermicompost is collected from the bottom of the pile. Windrow vermicomposting is a relatively cheap and easy method to set up, and it can be done on a small or large scale. However, the windrow can be difficult to manage, especially if it is wet, and it can be difficult to tell when the vermicompost is ready to harvest.
2. **Vermicomposting bins:** Vermicomposting bins are a popular alternative to windrow vermicomposting. In a bin system, the worms are kept in a container and the organic waste is added to the top. The worms migrate down through the bin, digesting the organic matter as they go. The vermicompost is collected from the bottom of the bin. Vermicomposting bins are a popular choice because they are easy to set up and manage. They are also less likely to become wet and smelly

Advantages of Vermicompost

Vermicomposting is an Eco-biotechnological method having diverse benefits and applications in the following fields:

Soil Physiology

- Vermicompost improves the soil quality, soil structure and texture by providing a humus-rich environment.
- It also nourishes and conditions the soil by increasing the soil's water-holding capacity and aeration.
- Vermicompost prevents the soil from drought and soil erosion.
- Unlike chemical fertilizers, it does not harm the soil microbiota.

Plant Physiology

- Vermicompost promotes the excellent growth of plants by providing essential nutrients.
- It also helps in the seed germination and yield of the plant.

Food and Crop Improvement

- Vermicompost minimizes the prevalence of crop diseases by the different agents like pests, bacteria, mould etc.
- It promotes healthy living by producing bio-organic food free of chemicals.

Ecological Importance

- Vermicompost reduces land pollution by converting bio-waste into plant's usable materials from being discharged into landfills.
- It curtails the emission of greenhouse gases (methane, nitric oxide, etc.) produced from landfills.
- It also reduces the demand for chemical fertilizers.

Economical Importance

- Vermicompost acts as a medium, providing a supplemental source of income by employing individuals in rural areas.
- It requires low capital investment and simple technologies.

Disadvantages of Vermicompost

Vermicomposting has few limitations:

- It requires more labour-power and skills for the operation and maintenance of vermicompost.
- The vermicomposting method also needs more space for the construction, harvesting and storage of vermicompost.
- Environmental factors like temperature, direct sunlight, drought may affect the process.

Worm Tea

It refers to the vermicompost tea or a liquid extract obtained from the vermicompost. To prepare worm tea, take any old t-shirt, muslin cloth or tea bag filled with vermicompost. Then, dip the bag into the bucket containing water for overnight. Then, you will obtain a light brown coloured solution that you need to transfer into the spray bottles. Spraying the worm tea solution to the plant foliage suppresses the transmission of plant diseases.

Conclusion

Since vermicompost is organic in nature, it is not harmful for the environment. Vermicomposting process is also easy to operate and can be successfully prepared by unskilled small and marginal farmers. Amidst the environmental degradation and increasing food demand, vermicompost can be a solution. Although, its use alone in agriculture would not be able to meet the food demand but its use with chemical fertilizer through integrated manner can achieve sustainability in food production. The adoption rate of vermicompost is low and there is tendency of adopting vermicompost by female famers only. The potentiality

of vermicompost is still not fully exploited yet. Hence, there is a need to appoint more extension worker to educate the farmers about vermicomposting and its benefits for achieving sustainability.

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