

# Vermicompost: preparation techniques and its uses in agriculture

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## Abstract

Vermicompost used for growing of plants before sowing of seed. Waste management is considered as an integral part of a sustainable society, thereby necessitating diversion of biodegradable fractions of the societal waste from landfill into alternative management processes such as vermicomposting. Earthworms excreta (vermicast) is a nutritive organic fertilizer rich in humus, NPK, micronutrients, beneficial soil microbes; nitrogen-fixing, phosphate solubilizing bacteria, actinomycetes and growth hormones auxins, gibberellins & cytokinins. Municipal biosolids applications, surplus earthworms might be considered as a byproduct, while the principal product is the castings, which can be a resource.

**Keywords:** vermicompost, NPK, nitrogen fixation and organic manure

## Introduction

Vermicompost mainly prepared from dried leaves, cooking waste, soil, water, earthworm, cow dung, goat excreta. Vermicompost improves growth, quality and yield of different field crops, flower and fruit crops. Vermicomposting contributes to recycling of nitrogen and augments soil physico-chemical as well as biological properties. Microbial biodiversity was checked and higher diversity was recorded in the partially decomposed organic material for the vermicompost than in the vermicompost. All kinds of organic material can be used for vermicomposting however, Gliricidia, tobacco leaves and chicken droppings are not suitable for earthworm multiplication but can be composted with earthworms. The optimum temperature for vermicomposting is about 20–30°C and moisture content ranges from 32 to 60% only. In short, earthworms through a type of biological alchemy are capable of transforming garbage into “gold” (Vermi. Co, 2001) [7].



**Fig 1:** Vermicompost

## Preparation of vermicompost

- Construct a pit by using cement and adhesive materials
- Fill the pit with sand, dried leaves and animal wastes (1:1:1) ratio
- Irrigate the pit with sufficient water to wet the pit
- Allow for decomposition of the dried leaves
- Allow /introduce the earthworms to the pit
- Allow for decomposition of the dried leaves
- Cover the pit with shade net (to provide sufficient sunlight)
- Vermicompost is harvested /collected in black, fluffy texture, looks like a coffee ground.
- The harvested vermicompost is sieved using sieve mesh to remove the residue from the vermicompost
- The vermicompost is washed with water to get the vermiwash.



**Fig 2:** Harvesting of vermicompost

## Effect of vermicompost on crops

Sunflowers (*Helianthus annuus*) yielded most after soil

treatments with 50% of the 9 recommended application rates of inorganic fertilizer and 5t/ha or 10t/ha of vermicomposts (Devi *et al.*, 1998) [2].

Murakar *et al.*, (1998) stated that Mulberry (*Morus sp*) growth increased after amending soils with vermicomposts applied at rates of 10t/ha together with 100% of the recommended application rates of inorganic fertilizers to soils.

According to Arancon *et al.*, (2003) [1] Leaf areas, numbers of strawberry suckers, numbers of flowers, shoot weights, and marketable fruit yields of strawberries all increased significantly in response to supplemented vermicompost applications compared to those from strawberries that received inorganic fertilizers only.

## Conclusion

Vermicompost is widely used in the kitchen garden crops and commercial crops. Vermiwash is used for spraying the nutrients to the plant/crop. vermicompost is mainly used for the nitrogen fixation in the crop for the better growth of the plant, Investment in the processing of vermicompost is high, so the market value of the vermicompost is doubled the investment, it is also used in nursery bed preparations, this process requires sufficient labours, requires maintenance of the pit.

***“Vermicompost is a bio-compost”***

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