

Nutrient content

The level of nutrients in casts depends upon the source of the raw materials and the species of earthworm used. A fine worm cast is generally rich in N P K besides containing other nutrients. Nutrients in vermicompost are found in readily available form and release most of the nutrients in the same year of application.

Nutrient Analysis of biofertilizer enriched vermicompost made from *Eisenia foetida*

Parameters	Content
PH	6.8
OC %	11.88
OM %	20.46
N %	2.0
P %	1.0
K%	2.0

Harvesting

Vermicompost gets ready for harvesting between 60-75 days if proper care is taken. Generally, the finished product is 3/4th of the raw materials used.

Earthworms start making compost from top layer to bottom layer of the bed, so vermicompost should be harvested periodically



from top layer. The harvested vermicompost should be sieved to make granular final product and which should be free from pebbles and indecomposable materials.

The final product is ready for application or selling.

Advantages

- It provides better usages of organic wastes/crop/animal residues
- It is a stable enriched soil conditioner
- It is economically viable and environmentally safe.
- It makes farming sustainable for organic food production.
- The farmers can easily adopt bed method.
- It is a profitable venture if properly taken up.

Doses

The rate of application of vermicompost depends up on the nature and requirement of crops.

Crops	Rate
Field crops	6-8t/ha
Fruit crops	3-5kg/plant
Pots	.100-200g/pot

Benefits of vermicompost

Vermicomposting may be a highly profitable venture for those who are having dairy units. It is possible to earn up to Rs 1 lakh annually by maintaining a unit of 3 tonnes capacity

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VERMICOMPOST

Production and Practices



TECHNOLOGY MISSION

(Mini Mission-I)



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Vermicomposting is a method of enriching compost with the use of earthworms. It is one of the easiest ways to recycle animal waste and plant parts to produce quality compost. Earthworms consume raw materials and excrete it in digested form called worm cast that is rich in nutrients, growth promoting substances, beneficial soil micro flora. Vermicompost is popularly called as **Black Gold** due to its colour and quality in supplying nutrients to plants, enriching soils by improving physicochemical and biological properties. It is highly useful for raising nursery and for plants. Vermicompost is gaining popularity and has become a major component of organic farming system.

Vermicomposting materials

Decomposable organic wastes such as animal waste, food waste and farm waste are commonly used as composting materials and are suitable food for earthworms. In



general, cow dung and dried and chopped crop residues are the key raw materials. The use of mixture of leguminous and non-leguminous crop residues enriches the quality of vermicompost.

Characters	<i>Eudrillus euginae</i>	<i>Eisenia foetida</i>
Body length	11.0cm	6.6cm
Body weight	0.8g	0.5g
Maturity	65-70 days	50-55days
Conversion rate	15kg/1000worms/week	20kg/1000 worms/week
Cocoon production	1 in every 4 days	1 in every 3 days
Incubation of cocoon	22-25 days	20-23days
Temperature	18-22° C	22-25° C

Mainly two species of earthworms are common; Red earthworm (*Eisenia foetida*) and Nightcrawler (*Eudrillus euginae*) both are epigeics (feeding on leaf litter not on soil). Of two *Eisenia* is preferred because it has high multiplication rate and thereby rapidly converts the organic matter but the quality of compost is relatively better with *Eudrillus*.

Type of vermicompost

The types of vermicomposting depend upon the amount of production and composting structures. Small-scale vermicomposting is done in the backyard to meet the personal requirement and farmer can harvest 5-10 tonnes of vermicompost annually, while Large-scale vermicomposting is done at commercial scale by recycling large quantity of organic waste with the production of more than 50-100 tonnes annually. A unit should have beds of equal size with central path of 3', harvesting floor and vermiwash pit.

Methods of vermicomposting

Generally, vermicomposting is done by pit method but bed/windrow method is also practiced. In bed method vermicomposting is done on the kachcha/pucca floor by making bed of 6'x4'x3/4' feet. In pit method vermicomposting is done in the cemented pits having a size of 5x5x3 feet. The unit should be covered with the materials of choice. The bed method of vermicomposting is relatively easy to carry out all the operations and also cost effective. In bed method the chance of waterlogging is less and aeration is better which in turn speed up the conversion process.



Process of vermicomposting

- Vermicomposting should be done in relatively cooler places
- Firstly cow dung and leafy materials should be mixed in the proportion of 3:1 and left for 15 days for partial decomposition
- Then a bed of raw material should be made.
- Each bed should be 2.5' high containing 3-4q of raw material.
- Bio-fertilizers like Azospirillum+ PSB @ 400g each should be added to raw material.
- Earthworms (2-3kg) should be released in the upper layer of bed
- After release of earthworm water should be sprinkled
- Bed should be covered with gunny bags/polythene to maintain moisture level
- Turning should be done after 25-30 days for maintaining aeration and moisture.
- Vermicompost generally gets ready between 60-75 days
- Harvesting should be done as the colour of raw material changes to brown/black

Preventive measures

- The floor should be compact enough to prevent worms migration into the soil.
- Organic wastes should not contain plastics, chemicals, pesticides and metals etc.
- For growth of earthworms proper aeration should be maintained.
- The heap should be kept moist (30-40%) but should not be wet to avoid death of worms.
- Temperature requirement for better decomposition is 18-25C.
- Fresh cow dung should not be used to avoid excess heat.

