

What is vermicompost?

Organic wastes when subject to decompose with the help of earthworms as natural bioreactor the resultant product is vermicompost and the process is known as vermicomposting. Vermicompost is similar to plain compost, except it uses worms in addition to microbes and bacteria to turn organic wastes into a nutrient-rich fertilizer. Vermicomposting is an easy and effective way to recycle agricultural waste, city garbage, kitchen wastes, etc., converting these organic waste materials into nutritious compost by the activity of earthworms. Worms transform the waste into high quality fertilizer. The castings of these worms are popularly known as vermicompost. N, P, K and other macro and micro nutrients are more in it than conventional compost. It increases physical, chemical and biological characteristics of the soil. Vermicompost is a proven technology which can also enhance soil fertility and crop productivity for sustainable agriculture and thereby enhance the employment generation and source of income.

Production technology for vermicompost:

Raw materials for vermicomposting:

- Composter earthworms (Epeigic type-*Eisenia fetida*, *Perionyx excavatus*).
- Vegetable wastes, banana stem peels, coir pith, leaves, sugarcane trash, grasses or husk, and any moistened organic material etc, kitchen wastes, municipality wastes, fruit skin and seeds (rejected), refused cattle food, saw dust, biogas slurry, fish scraps, sewerage slurry, sugarcane waste, soft plant residue, livestock and fish intestine, azolla, water hyacinth etc.
- Cow/chicken/duck/goat dung.

Methods:

There are three methods which are used for producing vermicompost in Bangladesh. These are: i) Ring method, ii) Chari method and iii) Bed/Tank/Pit method.

For Chari method:

1. Estimated quantity of mixture for one Chari is maximum 160 kg (green weight). Mix all the organic wastes, chop together, wrap/fill in a black polythene sheet/bag and keep in a dry place for 7-8 days. After fermentation, leave the whole material in an open space till the moisture percent reduces up to 50-60%. The cowdung is to be partial decomposed for 7-10 days.
2. In the meantime, a shed/house is to be made where the chari will be kept. After completion of fermentation and decomposition of the ingredients, mix cowdung and kitchen or vegetable market wastes in 3:1 ratio, place them in 8 chari equally, add 200 no. *Eisenia fetida* earthworm (both clitellated and non-clitellated) in each of the chari. The material should have 40 to 50 percent moisture. The container is to be covered with gunny bags to protect the earthworms from light as earthworms like to feed and stay in

a dark place.

3. Check the mixture in every 1-2 days for water. If needed, spray some water in it.
4. Before placing earthworms in the chari, drain should be made around the shed/house for protecting ant, insects etc.
5. Earthworms are to be put on the top of the composted materials.
6. Immediately after introduction of worms, first lot of vermicompost is ready within 60-70 days. Gradually with bacterial decomposition and increase in numbers of worms, vermicompost is ready in 30-40 days only.
7. According to available extrapolative estimates, 1kg of earthworms (i.e. nearly 1000 adult *Eisenia* species worms) would produce 10kg casts in 60-70 days.

Collection of vermicompost:

- When top layers of mixed materials appear somewhat dark brown, granular as if used dry tea leaves have been appeared over the layer, the vermicompost is ready to collect.

Vermi-Compost Sieving:

- Collected vermicompost is to be dried, passed through a 5 mm sieve to recover the cocoons, young worms, and unconsumed organic material.
- The screened vermicompost is bagged and used as required.

The extra worms that are produced can be used as feed for poultry and fish or can be sold @ 1500-2000 taka/kg. Vermicompost is sold @ 15-20 taka/kg.