

## CONVERSION OF WASTE TO USEFUL COMPOST

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### Introduction;

The use of the squander, throwaway, waste to produce compost is a very useful phenomenon to the safety of the earth. It is easily possible to convert organic wastes into compost by composing. Composting is a natural process. No equipment is needed to break down organic scraps into something useful. Earthworms feed on various organic wastes; break complex residues into simpler water soluble substances. Along with the food several kinds of soil microorganisms also enter into the gut and multiply in the gut. Among these microorganisms several types of useful bacteria and actinomycetes are very important. These microorganisms produce vitamins, growth stimulators and antibiotics in large quantities, which are important for plant growth. Therefore Earthworms are used to convert large amount of biodegradable solid wastes into useful compost. Vermicompost is good organic manure to crops. India is the chief producer of organic wastes originating from animals (2000 millions tons), agriculture (300 million tons) and agro – industrial waste such as pulp, sugar, distillery and sericulture industries produce large quantities of organic waste (ICAR, 1998).

On the other hand the consumption of chemical fertilizers in the country is around 16 million tons (Fert news 2000). Therefore there is tremendous scope for recycling of organic wastes under Indian context to use vermicompost

### Objectives;

- To convert waste into useful compost.
- To protect environment getting polluted.
- To increase the fertility of the soil.
- To avoid adverse effect of chemical compost.

### Materials;

**Agriculture waste;** Paddy, wheat and millets chopped straw and cut pieces of pretreated maize stem etc. Sugar cane upper tender portion including leaves. Piths (after removal of seeds) of maize and sunflower crops. Banana stems. **Weeds:** Parthaneium, Cassia, Eupatorium, Grass, Dung and fecal pellets of other animals, buffalo, cow, horse, goat and sheep. Fruit industry & Distillery waste. Silk pupae after reeling cocoons. Waste vegetables from city markets, Hotels, Houses, Bakeries etc.

**Methods:** Indoor vermicomposting; This is small scale vermicomposting unit designed for kitchen and garden waste management in households. Plastic crates, wooden boxes, cement tanks, earthen pots are normally used. The kitchen waste and garden waste are used for Outdoor Vermicomposting.

Field Vermicomposting: Vermicomposting units can be established in fields. Following methods are used;

**I. Pit method:**

In this method, pits are dug in the ground. The normal size of pit is 10 meters long, 1 meter wide and 0.3 to 0.5 meter depth.

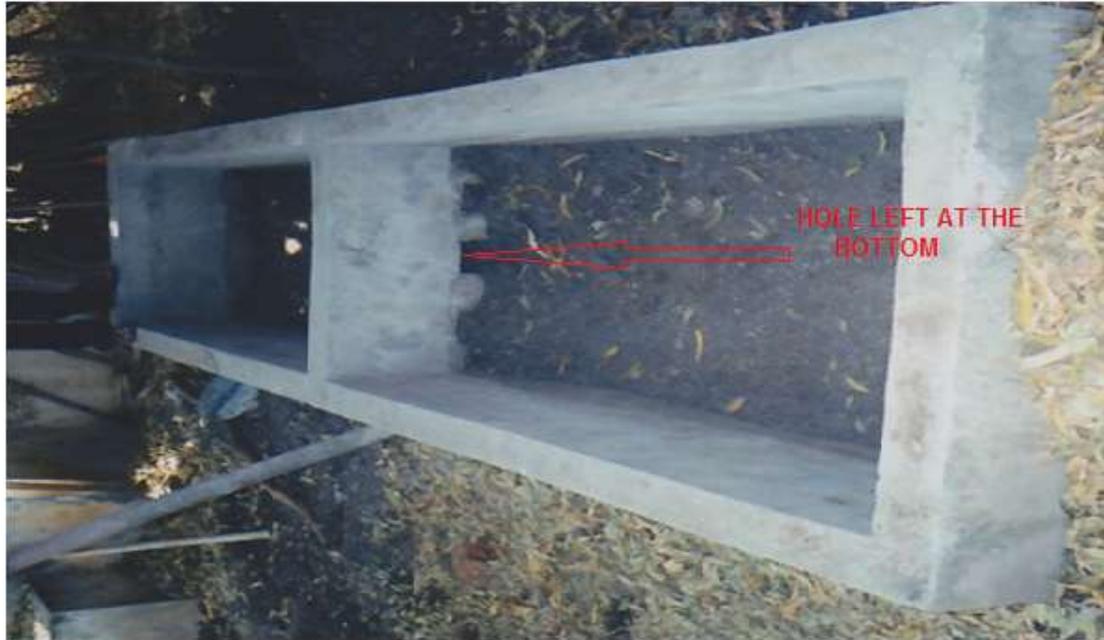
**II. Heap method:**

In this system, instead of pits, the various organic waste materials are heaped in order (1 – 9, shown below) on the ground itself in a rectangular shape. Similarly, brick wall can be constructed with mud.

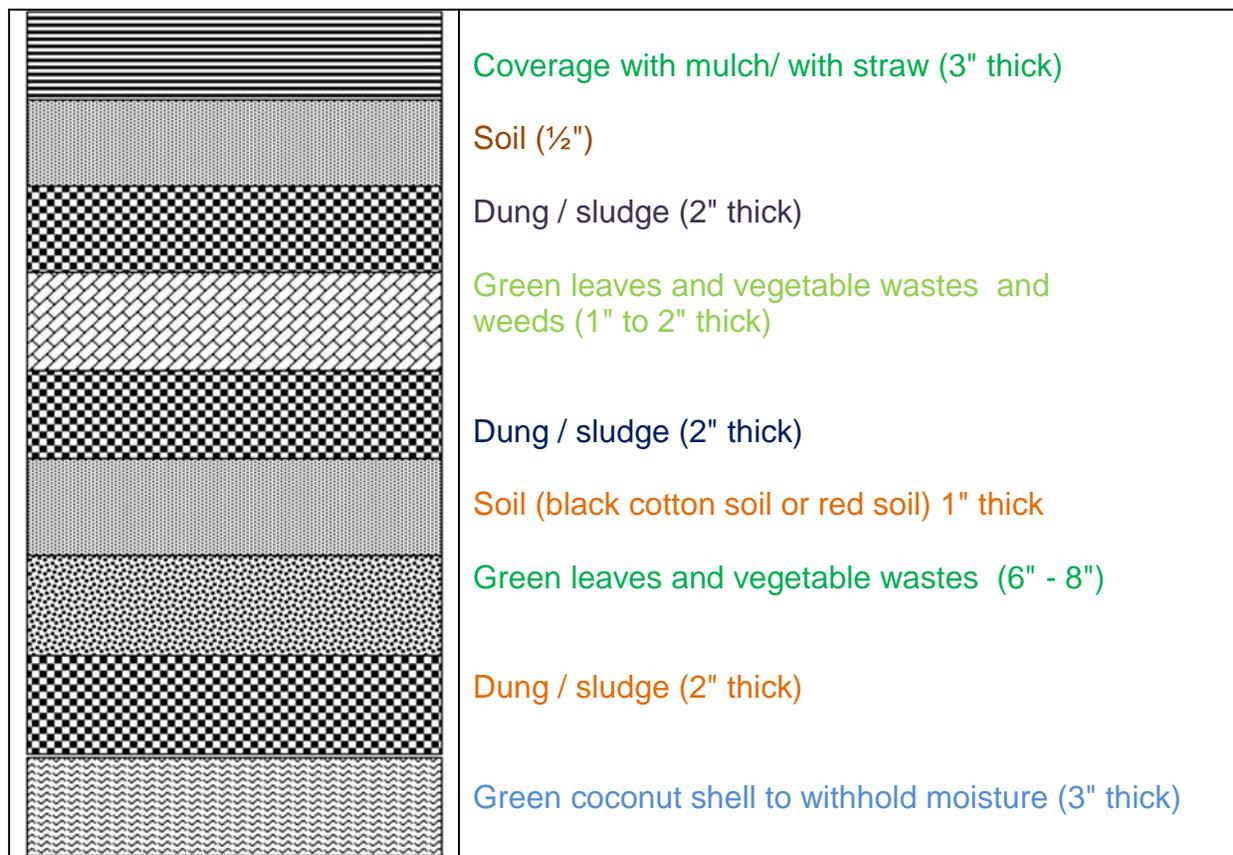
The pit is dug in the ground



The pit is constructed by brick and cement. The pit is divided in to two parts by partition wall (Length 7+7 feet). At the bottom of the partition wall three holes are left.



**Waste Materials arranged as below**



### Release of Earthworms into the Unit:

After 10 days of watering the pits (heap system) on day 11 adult earthworms approximately 100 worms for every one meter are released at a depth of 10 cm from the surface. More number of worms can also be released to reduce the number of days required to get the vermicompost.

**Maintenance of Humidity:** On an average 75 to 85% humidity has to be maintained by regular watering.

**Earthworm species used:** *Eudrilus eugeniae* (kinberg)



**Results;** Fecal pellets on the surface begins to appear in about 40 – 45 days after the release of worms. After another 30 – 40 days 80% to 90% of organic waste is being converted into pellets. At this stage watering the unit should be stopped.

**Harvest of Vermicompost:** When 90% of waste has been recycled, watering of beds is to be stopped so that worms settle at the bottom position of the bed. After 7 days later vermicompost from the bed can be collected out and shade dried for 12 to 24 hours. The vermicompost may be then packed in gunny bags.

Enemies of Earthworms: i. Termites ii. Red ants iii. Pigs iv. Birds v. Frog. Mixing neem powder with waste material has been suggested against termites and red ants. Pigs, birds and frog have to be controlled with regular watch.

**Use of Vermicompost in Soil Fertility;** Vermicompost is rich source of plant nutrients such as nitrogen, phosphorous, potash, magnesium, calcium, iron, zinc, copper, boron etc. and plant promoter substances, and beneficial microflora which are vital for crop

nutrition. Therefore vermicompost is considered as one of the best organic manure to crops. In addition, continuous application of vermicompost to fields, the soil physical, chemical and biological properties improve considerably. Soil water holding property will be increased and at the same time various salts which cause great change to soil will gradually reduce on the whole the soil fertility will be increased

**Conclusion:** Organic wastes from the cities and rural areas can be converted into useful compost. It is eco-friendly. Vermicompost is considered as one of the best organic manure to crops. Environment can be protected from the pollution.

References;

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