TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE (GIRLS)-KHAMMAM

STUDENT PROJECT

With

VERMICOMPOST– SOIL LOVES COMPOST

Background in taking up the project:

- Vermicomposting has been gaining a strong toehold from many years in the country due to simple production techniques, natural, financial and human health benefits associated with it.
- Since our college generates a lot of garbage, like dry leaves, kitchen waste, fruit peels and vegetable peels, we have chosen this method to recycle it.
- We are doing this from January month for 2023-24 academic years in our college.
- In many states like Tamil Nadu, Karnataka, Kerala, Gujarat, Rajasthan and Madhya Pradesh Entrepreneurs have popularized the usage of vermicompost.
- But this type of initiation lacking in Telangana, so our college has initiated this as a college level unit.
- So this promotes more usage of vermicompost rather than pesticides and fertilizers.
- Not only it's advantages to environment, but also our students will also try to become future entrepreneur in vermicomposting.
- **Advantages of vermicomposting:**
  - Production of compost using earth worms is called the vermicomposting technology.
  - In this technology earthworms eat dried leaves and vegetables and excrete in digested form which is known as vermicompost.
  - Vermicompost is rich in all essential plant nutrients.
  - Provides excellent effect on plant growth, encourage the growth of new shoots/leaves and improves the quality and shelf life to produce.
  - Vermicompost is free flowing, easy to apply, handle and store and does not have bad odour.

- It improves soil structure, texture, aeration, and water holding capacity and prevents soil erosion
- Due to the fact that vermicompost is organic, neither does it harm human health nor pollute the soil or water. Additionally, it doesn't leave a lasting impression. Some chemical fertilizers, such as urea, leave behind an acidic residue that reduces soil production.
- It enhances the soil's biologic, physical, and chemical characteristics, such as aggregation of soil, porosity, water-holding capacity, buffering capacity, nutrient retention, and microbe population, all of which support the production of our agricultural products
- One of the advantages of vermicomposting is that it helps improving growth rate of plants. The fertilizer is rich in enzymes, vitamins, and other vital nutrients such as Gibberellin and Auxin.
- The liquid obtained from vermicomposting can directly be sprayed on the leaves. This liquid is beneficial for the growth of plants.
- It gives self-employment for students those who are interested in farming in small scale level.

PROCEDURE FOR PREPARATION OF VERMICOMPOST :

- Decomposable organic wastes such as animal excreta, kitchen waste, farm residues and forest litter are commonly used as composting materials.
- In general, animal dung mostly cow dung and dried chopped crop residues are the key raw materials.
- Mixture of leguminous and non-leguminous crop residues enriches the quality of vermicompost.

Species of earthworms that we have used:

➢ **Eiseniafoetida**(Red earth worm).

- Red earthworm is preferred because of its high multiplication rate and thereby converts the organic matter into vermicompost within45-50 days.
- Since it is a surface feeder it converts organic materials into vermicompost from top.

Important characteristics of red earthworm (Eiseniafoetida)

Characters Eiseniafoetida

- Body length - 3-10cm
- Body weight- 0.4-0.6g
- Maturity - 50-55days
- Conversion rate - 2.0 q/1500worms/2months

- Cocoon production 1 in every 3 days
- Incubation of cocoon 20-23days .

Method of Vermicomposting we used

Pit method:

➢Composting is done in the cemented pits of size 5x5x3 feet. The unit is covered with thatch grass or any other locally available materials.

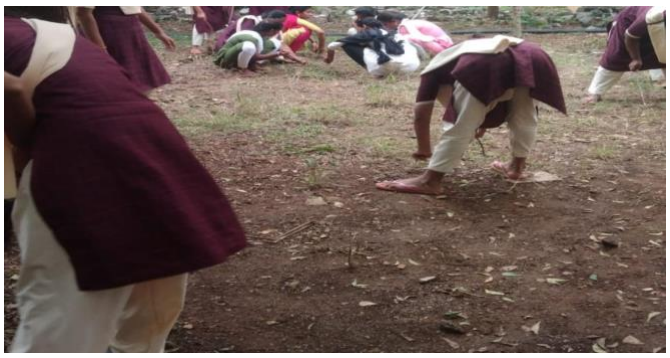
Sample collection:

Processing involves collection of wastes, shredding, mechanical separation of the metal, glass and ceramics and storage of organic waste.

Collecting and drying leaves and vegetables

Preparation of vermicompost:

Pre digestion of organic waste for twenty days by heaping the material along with cattle dung slurry. This process partially digests the material and fit for earthworm consumption. Cattle dung and biomass slurry may be used after drying. Wet dung should not be used for vermicompost production.



➢Preparation of earthworm pit. A plastic tub is required to put the waste for vermicompost preparation. Loose soil will allow the worms to go into soil and also while watering, all the dissolvable nutrients go into the soil along with water.

Preparation of vermicomposting

How to manage the pits

➢The floor of the unit should be compact to prevent earthworms' migration into the soil.

➢The organic wastes should be free from plastics, chemicals, pesticides and metals etc.

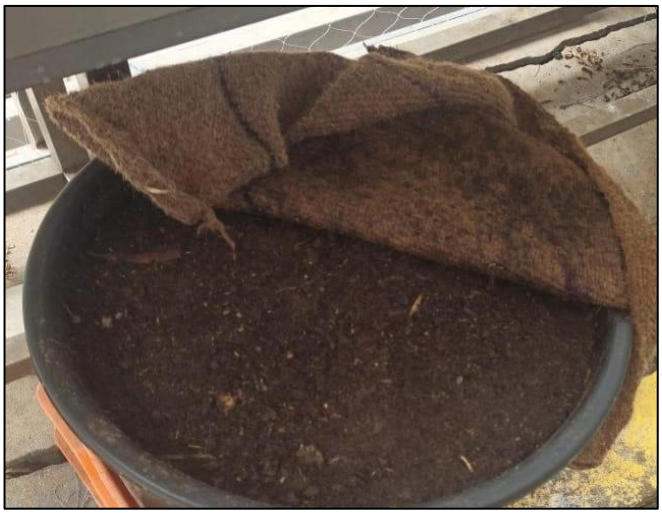
➢ Optimum moisture level (30-40 %) should be maintained.

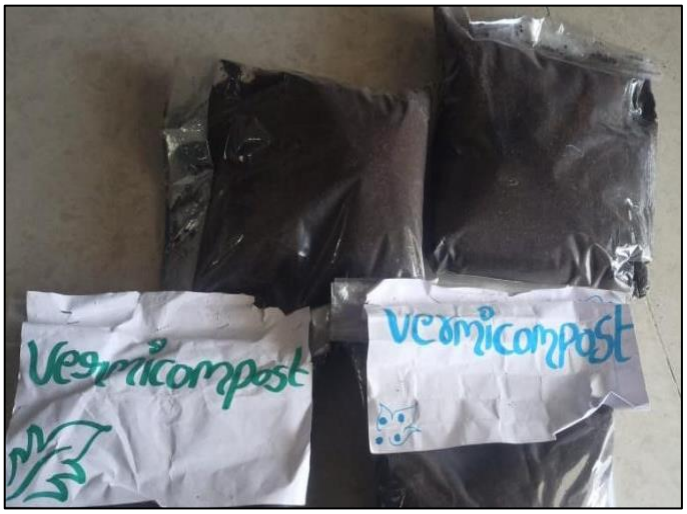
➢Temperature level should be maintained at 18- 25°C.

Storage:

Storing the vermicompost in proper place to maintain moisture and allow the beneficial microorganisms to grow.

Arranging protection net for vermicompost





Collection of vermiwash:

After some days we have to collect vermiwash . Vermiwash is a brown coloured, odourless, liquid biofertilizer, which is collected after passes via column of worm culture. It is considered as storehouse of nutrients and microorganisms, used as foliar spray for crops.

Extraction of Vermiwash

Harvesting:

➢When raw material is completely decomposed it appears black and granular.

➢Watering should be stopped as compost gets ready.

➢The compost should be kept over a heap of partially decomposed cow dung so that earthworms could migrate to cow dung from compost. ➢After two days compost can be separated and sieved for use.

PRODUCTION: some quantity of the vermicompost is used to the plants in our campus , remaining quantity vermicompost is packed in packets and put up for sale to the lecturers in our campus.

S.No	Academic year	Duration of the vermicompost	Quantity
1	2023-24	January-March	25kgs
2	2024-25	August-September	30 kgs

Using compost to the plants in the college campus

Trouble shooting

Bad odor: Due to food rotting, poor oxygen, accumulation of ammonia.

- ➢ In such case remove excess food.
- ➢ The pit should be aerated properly and mix up the all material. Fliesare attracted to food and lays the eggs and cause huge infection.
- ➢ In such case cover the bed with shredded newspaper.**Water not draining bin becomes too wet**:
- ➢ Worm bins must have proper drainage Even the accumulation of worm castings also leads to escape of worms from the bin.
- ➢ Then separate the worm castings.

Worms wandering and leaving the bin:

➢If the system is anaerobic, production of ammonia, or due to high temperature the worms attempt to escape from the bin.

- ➢ In such condition maintain proper ventilation
- ➢ Mix the material to improve oxygen.

CONCLUSION

- ➢ By adapting the vermicomposting technology, we can efficiently manage the waste
- ➢ We can produce enriched compost with low cost thereby helping the farmers to reduce the expenditure on farming
- ➢ Vermicomposting reduce the risk of pollution and helps in maintaining the ecological balance through enriched biodiversity
- ➢ Vermicomposting helps in reducing the usage of chemical fertilizers and increase the soil fertility

- Now a days people are very interested in roof gardening.
- The domestic wastage also can be converted into vermicomposting.
- And that can be used for roof gardening.
- We can farm flowering plants, vegetables and even some fruit plants too.