



## Newly Developed Modified Banana Peel Jeewamrit based Vermicomposting Method.

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### Vermicomposting Concept:

“Modified Banana Peel Jeewamrit based Vermicomposting is a method in which the earthworms and Banana Peel based Jeewamrit used to convert the raw organic waste/farm weeds biomass into vermicompost rich in high CEC , beneficial microfloral population and nutritional elements.

### What is modified Banana Peel Jeewamrit based?

Modified Banana Peel Jeewamrit based vermicompost is the scientific method of preparation of vermi compost by using earthworms, Banana Peel based Jeewamrit. Earthworms are added together with Banana Peel based Jeewamrit rich in mineral nutrients and beneficial microfloral populations, earthworms feed biomass and excreting it in a digested form. Modified Banana Peel based Jeewamrit vermicomposting means “Quick worm farming”. Earthworms depend feed on the raw un decomposed organic waste materials and give out excreta in the form of “vermicast” which are rich in nitrogen and other minerals such as phosphorus, Potassium, magnesium, Calcium & Sulfur. It also contains micronutrients, hormones, enzymes, and some beneficial bacteria, actinomycetes, fungi and protozoans etc.for boosting its chemical composition which increases the soil fertility when incorporated in the arable fields and thus enhanced the soil health and it’s quality.This is prepared from farm residues based vermicompost. Its chemical composition is variable depending upon the types of raw organic farm based vegetative biomass which are used.

### Modified Vermicomposting comprises two methods:

- **Bed Method:** This is an easy method in which beds of using crop weeds,vegetable residues and ,animal wastes are put in a bed ( Bed size 60 feet long × 08 feet wide × 03 feet high) to get good quality vermicompost. •
- **Pit Method:** In this method, the raw organic materials are• collected in cemented pits. However, this method is not prominent as it involves problems of poor aeration and waterlogging.

### Process of Modified Vermicomposting:

The entire process of Modified Vermicomposting is given below:

#### Aim:

To prepare good quality vermicompost using modified Banana Peel based Jeewamrit together with raw organic farm based vegetative biomass.

**Principle:**

This process is mainly required to add nutrients, hormones, enzymes, and beneficial micro flora in to the soil. Vermicompost is a eco-friendly natural Bio fertilizer that allows an easy flow of water by improving physical, biological and natural chemical nutrients to the growing plants. The earthworms and Banana Peel based Jeewamrit solution are mainly used in this method as they quickly decompose the raw organic vegetative materials and produced the good quality vermicompost at faster rate.

- The nutrients composition of modified vermicompost are as below :
- 2.12-3.10 per cent of total Nitrogen.
- 0.59– 0.71 per cent of total Phosphorus.
- 1.90-2.23 per cent of total Potassium.
- 0.6– 0.9 per cent of Calcium. • 0.90- 0.96 per cent of Magnesium.
- 0.60 percent of Sulfur.
- 610 mg Iron per kg of vermicompost
- 338 mg Manganese per kg of vermicompost
- 188 mg Zinc per kg of vermicompost
- 38 mg Copper per kg of vermicompost
- Bacteria  $24 \times 10^5$  CFU/mg of vermicompost
- Fungi  $14.8 \times 10^5$  CFU/mg of vermicompost
- Actinomycetes  $6.4 \times 10^5$  CFU/mg of vermicompost
- CEC 62.50 centi mol +/kg vermicompost

**Materials Required for preparation of Banana Peel based Jeewamrit:**

- Water @5litres
- Cow dung @ 5kg
- Cow urine @ 5 litres
- Ripe chopped Banana Peel @ 2 kg
- Pulse flour@1kg Two kg virgin soil ( specially soil found under Banyan tree or any ponds soil.
- joggery@1kg
- Slacked Lime @250 Grams
- Now kept these above mentioned materials in to a 200 litres capacity plastic drum and mixed them thoroughly with the help of stick up to 7days.
- After 07(seven) days the materials get well decomposed and then filter through using cloth sieve. Now we can use this pure aliquot of Jeewamrit @ 5-10 percent as foliar application with water as per need of type of crop or bed for making vermicompost.
- Other Materials required for one bed are as below:
- Soil + Sand two to three Inch layer at the bottom of bed for vermicompost.
- Gunny bags as per requirement.
- Earthworms @ 03 kg (Earthworms should incorporated into the cow dung +vegetative material after 30 -35 days after filling of bed
- Farm based Weed biomass or any Crop residues@ 35 Quintal per bed..
- Cow dung @ 10 Quintal per bed.
- A large shade or hut / cemented tank like structure under suitable trees except neem tree is needed.
- Dry straw and leaves collected from farm fields also can be use.
- Biodegradable wastes collected from farm fields and kitchen can also be used. **Procedure of**

**Vermicompost preparation :**

To prepare Vermicompost, either a bed or a concrete tank can be used. The size of the bed and tank depends upon the availability of raw materials.

1. Collect the farm based biomass and place it under the sun for about 7-10 days. Now chop it to the required size using the cutter.

2. Add Jeewamrit solution @5 percent (Total 110 litres pure aliquot will be required for one bed (size 60' long ,08' wide and 03' high) and sprinkle it with water on the heap for quick decomposition at alternate day starting from 30th day up to 50 days (mesophilic stage at which temperature lowered to 30-35 degree centigrades. Use only water @200 litres during transition stage (From start to 15 days) to thermophilic stage  
(from 16 to 29th days) at which temperature is around 60 degree centigrades should be spray at the start of watering at alternate day up to 29th days after which Banana Peel based Jeewamrit should be spray @ 5 percent with water.
3. Add a layer (2 – 4 inch) of soil and sand at the bottom of the bed /tank.
4. Now prepare fine bedding by adding partially decomposed cow dung, dried chopped leaves and other biodegradable wastes from farm fields and kitchen. Distribute them evenly on the soil & sand layer.
5. Continue adding both the chopped bio-waste and partially decomposed cow dung layer-wise into the bed / tank up to the height of 03 feet.
6. After adding all the bio-wastes, release the earthworm. indigenous species (@ 1kg earth worms per meter over the mixture after 35th days and cover the compost mixture with dry straw or jute bags.
7. Now Sprinkle water together with Jeevamrit solution @05 percent to maintain the moisture content as well as microfloral population and nutritional status of the vermi compost after 29th days.
8. Cover the tank with a thatch roof to prevent the entry of ants, lizards, mouse, snakes, etc. and protect the compost from rainwater and direct sunshine .Have a frequent check to avoid the compost from overheating. Maintain proper moisture and temperature.

### Result:

After the 60th day, about 8000 to 10000 new worms are introduced and the entire raw material is turned into the 30 to 35 quintel vermicompost from one bed.

### Advantages Of Vermicomposting:

The major benefits of modified vermicomposting are:

1. Develops roots of the plants.
2. Improves the physical structure (tilth) of the soil.
3. Modified Vermicomposting enhances the cation exchange capacity of soil and thereby soil fertility , infiltration and water holding capacity of the soil.
4. It Helps in germination, plant growth in drought span, and thus crop yields.
5. It also Nurtures soil with plant growth hormones such as auxins, gibberellic acid, etc.