

Proposal by:

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Title of the work:

Organic Vermicompost Fertilizer

Village where it is to be implemented:

Lootu

Brief description of the problem and Significance of project

Vermicomposting is the product or process of composting using various worms, usually red wigglers, white worms, and other earthworms, to create a heterogeneous mixture of decomposing vegetable or food waste, bedding materials, and Vermicast, also called worm castings, worm humus or worm manure, is the end-product of the breakdown of organic matter by an earthworm. These castings have been shown to contain reduced levels of contaminants and a higher saturation of nutrients than do organic materials before vermicomposting. Containing water-soluble nutrients, vermicomposting is an excellent, nutrient-rich organic fertilizer and soil conditioner. This process of producing



Vermicompost Redworms

vermi-compost is called vermicomposting. While vermicomposting is generally known as a nutrient rich source of organic compost used in farming and small scale sustainable, organic farming, the process of vermicasting is undergoing research as a treatment for organic waste in sewage and wastewater plants. *Vermicomposting* is the process of

turning organic debris into worm castings. The worm castings are very important to the fertility of the soil. The castings contain high amounts of nitrogen, potassium, phosphorus, calcium, and magnesium. Castings contain: 5 times the available nitrogen, 7 times the available potash, and 1 ½ times more calcium than found in good topsoil. Several researchers have demonstrated that earthworm castings have excellent aeration, porosity, structure, drainage, and moisture-holding capacity. The content of

the earthworm castings, along with the natural cultivation by the worms burrowing action, enhances the permeability of water in the soil. Worm castings can hold close to nine times their weight in water. "Vermiconversion," or using earthworms to convert waste into soil additives, has been done on a relatively small scale for some time. A recommended rate of vermicompost application is 15-20%.

Need for customisation and Present status:-

Any types of biodegradable wastes-

1. Crop residues
2. Weed biomass
3. Vegetable waste
4. Leaf litter
5. Hotel refuse
6. Waste from agro-industries
7. Biodegradable portion of urban and rural wastes

Phase of vermicomposting

Phase 1	Processing involving collection of wastes, shredding, mechanical separation of the metal, glass and ceramics and storage of organic wastes.
Phase 2	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 biogas slurry may be used after drying. Wet dung should not be used for vermicompost production.
Phase 3	Preparation of earthworm bed. A concrete base 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.

Phase 4	Collection of earthworm after vermicompost collection. Sieving the composted material to separate fully composted material. The partially composted material will be again put into vermicompost bed.
Phase 5	Storing the vermicompost in proper place to maintain moisture and allow the beneficial microorganisms to grow.



Fig. 1 Bed method



Fig. 2 Pit method



Fig.3 Bed of raw materials



Fig.4 Red earthworms for use



Fig.5 Watering of beds



Fig.6 Beds covered with gunny bags



Fig.7 Harvesting in heaps

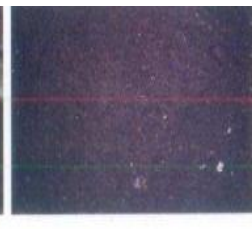


Fig.8 Final product after sieving

Vermicompost Production Methodology

- i) Selection of suitable earthworm
- ii) Selection of site for vermicompost production
- iii) Containers for vermicompost production
- iv) Vermiculture bed
- v) Worm Food
- vi) Selection for vermicompost production
- vii) Putting the waste in the container
- viii) Watering the vermibed

- ix) Harvesting vermicompost
- x) Harvesting earthworm
- xi) Nutritive value of vermicompost
- xii) Storing and packing of vermicompost

Cost of the facility:

Rs.100000

Role of your institute:

University will conduct workshop about its methodology for production of vermin compost Organic source through farmer organic wastes required pre-processing such as composting all such process will be guided by expert. We also emphasize on growing the production of vermin compost. From the start to end process of vermicompost Production University will be with the villagers and also help them out find the market place for the same.

Activity	Month (2-3 months -worms selling can possible), vermin compost will / Vermicast —can sell for plantation		
	June 2019	July 2019	August 2019
Plan Execution			
Implementation and Training			
Monitoring			
Reach Market			

Future prospects of the work:

Vermicomposting is done on small and large scales. In the 1996 Summer Olympics in Sydney, Australia, the Australians used worms to take care of their tons and tons of waste. They then found that waste produced by the worms was could be very beneficial to their plants and soil. People in the U.S. have commercial vermicomposting facilities, where they raise worms and sell the castings that the worms produce. Then there are just people who own farms or even small gardens, and they may put earthworms into their compost heap, and then use that for fertilizer. University will try to produce maximum productivity of vermin compost which helps to improves soil structure, texture, aeration, and water holding capacity. It prevents nutrient losses and increases the use efficiency of chemical fertilizers. Vermicompost minimizes the incidence of pest and diseases. It enhances the decomposition of organic matter in soil. Over all in organic farming vermin compost maximize the efficiency of the waste management system and make the industry to realize the value addition in terms of environmental management and at the same time earn profits. Gathering data from various food processing industries, agri industry itself will be a great task and make these industries realize about the resource utilization. A team effort and in house R& D facilities within the industries will bring greater sustainability in the industrial development

Availability of any other funding:

No

Details of the funds raised from other agencies:

Not applicable

Duration of the work:

3 months