

# VERMICOMPOST UNIT

## N.S.C.B.M. Govt. College Hamirpur, Himachal Pradesh.

A vermicompost unit has been established in N.S.C.B.M Govt. college in 20<sup>th</sup> October, 2022 of approximately 12x10 feet. In this unit, we are using *Eisenia foetida* species of earthworm for conversion of organic waste into compost. This species of earthworm is considered as the most promising species for decaying organic matter in a less time. We are providing training to students and to local farmers on the process of making vermicompost from organic waste materials. We are also organising campus training programmes for local farmers and during these trainings farmers were made aware about the uses of bio fertilizers (compost) which is economically viable and sustainable.

### Objectives:

- To provide students with experiential learning and learn by doing.
- To train the students in vermiculture and composting methods, its application in agricultural practices, and their role in waste management.
- promote the production of vermicompost.
- To develop the management and marketing skills of students.
- To develop a research culture among the students.
- To maintain an eco-friendly college campus.

### Benefits of Vermicompost:

#### Soil

- Improves soil aeration.
- Enriches soil with micro-organism (adding enzymes such as phosphatase and cellulase).
- Microbial activity in worm castings is 10 to 20 times higher than in the soil and organic matter that the worm ingests.
- Attracts deep-burrowing earthworms already present in the soil.

- Improves water holding capacity.

### **Plant growth**

- Enhances germination, plant growth, and crop yield.
- It helps in root and plant growth.
- Enriches soil organisms (adding plant hormones such as auxins and gibberellic acid).

### **Economic**

- Biowaste conversion reduces waste flow to landfills.
- Elimination of bio-wastes from the waste stream reduces contamination of other recyclables collected in a single bin (a common problem in communities practicing single-stream recycling).
- Creates low-skill jobs at the local level.
- Low capital investment and relatively simple technologies make vermicomposting practical for less-developed agricultural regions

### **Environmental**

- Helps to close the "metabolic gap" through recycling waste on-site
- Large systems often use temperature control and mechanized harvesting, however other equipment is relatively simple and does not wear out quickly
- Production reduces greenhouse gas emissions such as methane and nitric oxide (produced in landfills or incinerators when not composted).

### **Vermicomposting materials:**

Decomposable organic wastes such as kitchen waste, garden residues, and tree litter are commonly used as composting materials. In general, animal dung mostly cow dung and dried chopped crop residues are the key raw materials. A mixture of leguminous and non-leguminous crop residues enriches the quality of vermicompost. There are different species of earthworms viz. *Eisenia foetida* (Red earthworm), *Eudriluseugeniae* (night

crawler), *Perionyx excavatus* etc. Red earthworm is preferred because of their high multiplication rate and thereby converts the organic matter into vermicompost within 45-50 days. Since it is a surface feeder it converts organic materials into vermicompost from the top.

### **Process of vermicomposting:**

- Vermicomposting unit should be in a cool, moist and shady site
- Kitchen waste and chopped dried leafy materials are mixed in the proportion of 3: 1 and are kept for partial decomposition for 15 – 20 days.
- A layer of 15-20cm of chopped dried leaves/grasses should be kept as bedding
- The material at the bottom of the bed.
- The bed should contain 1.5-2.0q of raw material.
- Red earthworm (1500-2000) should be released on the upper layer of bed.
- Water should be sprinkled with the can immediately after the release of worms
- Beds should be kept moist by sprinkling of water (daily) and by covering with gunny bags/polythene.
- Beds should be turned once after 30 days for maintain aeration and for proper decomposition.
- Compost gets ready in 45-50 days.
- The finished product is 3/4th of the raw materials used.

The college has established vermicomposting unit of the size 12x12 feet in the college campus. *Eisenia foetida* species of earthworm was introduced. There were two vermicomposting beds in the unit. The unit was maintained properly by watering and other necessary management practices. Harvested manures are used to maintain the college gardens and vegetation of the campus.

Vermicomposting is a process of Earthworms digesting the organic matter to a material that is essential for improving the growth and yield of different fields. This material is called Vermicompost which contains nutrients, plant growth hormones and helps to

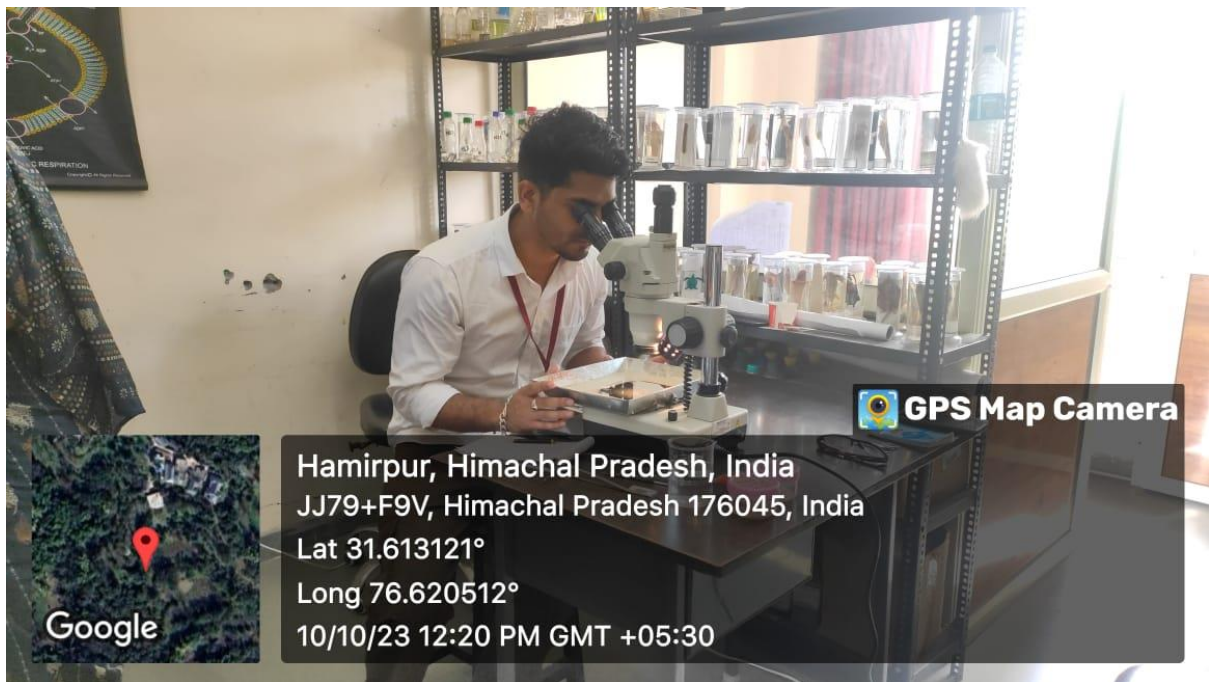
improve soil structure by increasing the water-holding capacity of the soil. This process is called Bio-oxidation and stabilization of the organic material, where the organic materials pass through the earthworm gut and produce the compost hence called vermicompost. As the earthworms plough the field making the soil fertile by releasing nutrients and other useful substances, they are popularly known as “Farmers Friends”. Vermicomposting is a profitable business as in recent times and these are fond of organic vegetables, fruits, and other products as they are not produced by using harmful chemical substances i.e. organic farms where they use these naturally produced composts and manures from the waste of animal and plant. These results in eco-friendly without disturbing the natural process of the environment.











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