

**Title of the Course: Certificate Course in Bio-fertilizer: Vermicompost technology**

**Offered by**

**The Department of Zoology, Dhemaji College, Dhemaji**

*(Approved by Dibrugarh University)*

**COURSE DETAILS**

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| <b>Course level:</b>         | Certificate Course (Certificate shall be awarded by Dhemaji College)               |
| <b>Type of the course:</b>   | Add-on (Students enrolled in different UG course may also get themselves enrolled) |
| <b>Fund / Finance:</b>       | Self-financing course                                                              |
| <b>Course Duration:</b>      | 06 months (1 semester)                                                             |
| <b>Stream:</b>               | Science or any stream                                                              |
| <b>Eligibility Criteria:</b> | 10+2 (Higher secondary passed with any stream)                                     |
| <b>Admission schedule:</b>   | 1 <sup>st</sup> week of August.                                                    |

**INTRODUCTION:**

Aristotle once said, "Worms are the Intestines of the Earth". Earthworms may be used to convert decomposing food waste into nutrient-rich fertilizer, which is an inexpensive, energy efficient, and a great way to produce fertilizer and is an environment-friendly green technology. Vermicomposting technology is known throughout the world. By way of handling organic wastes, vermicomposting is an alternative approach in waste management, whereby the wastes need not be dumped to pollute land, air and water, rather use the same as a resource. It is a nature-friendly and sustainable process. Vermicomposting is however faster, produces fewer odors and produces a superior product compared to other similar methods. In India, Vermicomposting could prove to be useful in many instances where accumulation of food wastes, paper, cardboard, agriculture waste, manures and biosolids is problematic, composting and vermicomposting offer potential to turn waste material into a valuable fertilizer.

The proposed course will introduce the principles and practices of vermicomposting among aspiring students. The students will be sufficiently trained to develop such vermicompost facilities at their houses. The local people of Dhemaji, especially the villagers, rear cattle and pigs; and cultivation of crop like banana, paddy and other vegetables is widespread. Thus, Dhemaji has enormous potential of vermicomposting, and thus inculcation of the vermicomposting techniques in the area has been considered by the Dhemaji College as a new endeavour. The college has its own vermicompost facility comprising of three vermipits. The classes shall be taken by the faculties of the Department of Zoology, Botany and Chemistry. Further, technical and other supports may be availed from the Department of Agriculture (Govt. of Assam), ICAR-Krishi Vigyan Kendra, etc.

## AIMS & OBJECTIVES:

- Students will be able to compost in a limited space and describe the decomposing process.
- The interested students will get the knowledge of composting,
- Students will get self-employment and generate employment for others.
- They will also turn towards organic farming,
- Will help to maintain the environment pollution-free

## **Syllabus and Examination**

Course Code: **VCT-01 (Theory)**

Course Title: Vermicomposting Theory paper

Time / Lectures: **45 (01 hour each)**

Marks: **50**

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| <b>Unit-1:</b> | <b>15 lectures</b> |
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Introduction to vermiculture: Definition, meaning, history, economic importance, their value in maintenance of soil structure; Role as four R's of recycling (reduce, reuse, recycle, restore). Life history of Earthworms (Earthworm Species *Eisenia foetida*)

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| <b>Unit-2:</b> | <b>15 lectures</b> |
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Vermicompost Production, Establishment of Vermicomposting and Vermiwash unit, Different Methods of Vermicomposting: Small and large scale; Bed method, Pit method, Harvesting the Compost, Storing and packing of vermicompost

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| <b>Unit-3:</b> | <b>15 lectures</b> |
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Precautions while Vermicomposting, Physico-chemical analysis of vermicompost, Physical Parameters of vermicompost, Nutrient content of vermicompost and their role in agriculture, Benefits of vermicompost, Pests and diseases of Earthworms

**Course code: VCP – 02 (Practical)**

**Course title: Vermicomposting Practical paper**

**Duration: 20 hours**

**Marks: 50**

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1. Study of external morphology of Earthworm- *Eisenia foetida*
  2. Study of habit and habitat of Earthworm- *Eisenia foetida*
  3. Study of Digestive system of earthworm
  4. Study of Reproduction of earthworm
  5. Establishment of vermicomposting unit Pit method
  6. Establishment of vermicomposting unit Bed method
  7. Establishment of vermiwash unit
  8. Vermicompost production, harvesting and packaging
  9. Study of cocoon and vermicast
  10. Study of Pests and diseases of Earthworms
  11. Project Report / Report on visit to KVK, etc.

### **Suggested Readings**

1. Bhatt J.V. & S.R. Khambata (1959) "Role of Earthworms in Agriculture" Indian Council of Agricultural Research, New Delhi
2. Dash, M.C., B.K.Senapati, P.C. Mishra (1980) " Vermes and Vermicomposting" Proceedings of the National Seminar on Organic Waste Utilization and Vermicomposting Dec. 5-8, 1984, (Part B), School of Life Sciences, Sambalpur University, Jyoti Vihar, Orissa.
3. Edwards, C.A. and J.R. Lofty (1977) "Biology of Earthworms" Chapman and Hall Ltd., London.
4. Lee, K.E. (1985) "Earthworms: Their ecology and Relationship with Soils and Land Use" Academic Press, Sydney.
5. Kevin, A and K.E. Lee (1989) " Earthworm for Gardeners and Fisherman" (CSIRO, Australia, Division of Soils)
6. Satchel, J.E. (1983) "Earthworm Ecology" Chapman Hall, London. 8. Wallwork, J.A. (1983) "Earthworm Biology" Edward Arnold (Publishers) Ltd. London

### **Examination:**

**Total marks:** 100 (Theory: 50; Practical: 50)

**Examination:** At the end of course the examination will be conducted.

**Examination pattern:**

| Course                   | Full marks | Examination duration |
|--------------------------|------------|----------------------|
| VCT-01 (Theory paper)    | 50 marks   | Two hours            |
| VCP-02 (Practical paper) | 50 marks   | Two hours            |