

Loknete Dr. Balasaheb Vikhe Patil (Padma Bhushan Awardee)
Pravara Rural Education Society's
Arts, Commerce and Science College, Satral
Department of Zoology
CERTIFICATE COURSE IN VERMICOMPOST TECHNOLOGY

(Syllabus)

INTRODUCTION:

Vermicomposting truly is nature's great disappearing act! Aristotle once said, "Worms are the Intestines of the Earth". Using worms to convert decomposing food waste into nutrient-rich fertilizer is simple, inexpensive, energy efficient, and a great way to teach students to become life-long recyclers. Vermicomposting technology is known throughout the world. It may be considered a widely spread, though not necessarily popular technology. As a process for handling organic residuals, it represents an alternative approach in waste management, in as much as the material is neither land filled nor burned but is considered a resource that may be recycled. In this sense, vermicomposting is compatible with sound environmental principles that value conservation of resources and sustainable practices. Vermicomposting is however faster, produces fewer odors and produces a superior product. But vermicomposting requires greater surface area, more moisture, and is susceptible to heat, high salt levels, high ammonia levels, and substances that may be toxic to earthworms. Of the 4400 identified earthworm species, specific species of litter dwelling earthworms are required for this purpose. Vermicomposting in developing countries 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 soil amendment. In the past ten years an organization in India has promoted over 3,000 farmers and institutions to switch from conventional chemicals to the organic fertilizer, vermicompost. Vermiculture enables any scale or size of operation. Vermicompost is being used in over 1, 00,000 hectare cultivated area in almost all agro-climatic zones in India.

Noted for its ability to increase organic matter and trace minerals in soil, vermiculture has been the primary focus at Maharashtra Agricultural Biotech in India, an organization that has initiated both commercial and educational ventures to promote vermiculture. In 1985, Maharashtra Agricultural Biotech was formed and established a small plant to manufacture vermicompost from agricultural waste. The organization currently produces 5,000 tons of vermicompost annually. Its real achievement, however, has been in raising awareness among farmers, researchers and policy makers in India about regenerative food production methods. The group is directly responsible for 2,000 farmers and horticulturalists adopting

vermicomposting. These converts have begun secondary dissemination of the principles they were taught.

In 1991-1992, Maharashtra Biotech and the India Department of Science and Technology promoted the adoption of vermicompost technology in 13 states in India. Educational institutes in Maharashtra & other states have started conducting certificate/diploma/regular courses on vermiculture, vermiculture biotechnology, and vermiculture & vermicompost technology. The duration of courses ranges from 10 days to six months. The Department of Zoology running this course.

Aims & Objective:

- 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 the employment,
- They can generate employments,
- They will also turn towards organic farming,
- Will help to maintain the environment pollution free and
- Will get the knowledge of biodiversity of local earthworms.
- The detail of the course is as follows: Focus: To convert unwanted, organic matter,
- particularly food scraps and paper into fertile soil.

Level: Certificate

Stream: Science or any stream

Eligibility Criteria: All UG Student

Duration: 3months

Language: English

Intake: 40 seats

Selection /Admission Criteria: First come first serve

Attendance: 90% Lecture/practical timing: 4.00 PM to 4.50 PM

Academic calendar for the course: Three days in a week (2days theory periods & 1day practical)

Available infrastructure: Well-equipped laboratory, small & large scale vermiculture units

Examination structure & schedule: At the end of course, the examination will be conducted. Its notice & time table will be displayed for communication to the students at least before 15 days of the date of examination.

1. Theory paper (objective/short answer type) = 25marks, 1.5 hour's duration.

2. Practical paper =25 marks, two hours duration

Marking scheme & Award of grades: Average of the marks obtained in each paper will be calculated as: $25+25 = 50$;

- i) 45-50 marks= O grade
- ii) 40-44 marks =A+ grade
- iii) 35-39 marks =A grade
- iv) 30-34 marks = B+ grade
- v) 25-29 marks = B' grade
- vi) 20-24marks = C' grade – pass
- vii) Below 19 Fail

Award of Certificate carrying grades: After successful completion of course, indicating grade will be awarded to the candidate.

Syllabus Content

Theory paper + Practical course/paper:

02 credits

Certificate Course in Vermicompost Technology

Unit-I

(08Periods)

1. Introduction of vermiculture. Definition, History, Scope and economic.
2. Earthworm – Taxonomic Position and different types of earthworms.
3. Types of earthworms and different types of cocoons.

Unit- II

(12 Periods)

1. Common species of earthworm rearing.
2. Significance of earthworm.
3. Infection and diseases causes of earthworm.
4. Key to identify the species of earthworms.
5. Life cycle of Eisenia fetida.

Unit-III Practical

(10 Periods)

1. Study of different species of earthworms.
2. To study morphological study of earthworm.
3. Life cycle of earthworm
4. Diseases of earthworm.
5. Preparation of vermibeds.
6. Small Scale Earthworm farming for home gardens
7. Earthworm compost for home gardens
8. Conventional commercial composting of Earthworm Composting larger scale
9. Earthworm Farming (Vermiculture), Extraction (harvest), vermicomposting harvest and processing.

Course outcomes:

- Students can construct their own compost farm & thereby can get monthly income.
- Students/ farmers by using vermicompost in their field can increase the crop yield.
- Students residing in cities can produce vermicompost in small scale for garden/household plants.
- They can get the jobs in educational institutes as vermicompost/vermiculture technician.

- The candidate can generate income by supplying verms, vermiwash, & vermicompost.
- By developing & propagating vermicompost technology he/she will directly or indirectly help to prevent environmental pollution, by using vermicompost in the field & thereby increasing crop yield he will help to solve food problems.
- It will lead towards organic farming & healthy food.

Reference:

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) "Vermis 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. Rahudakar V.B. (2004). Gandulkhatashivay Naisargeek Paryay, Atul Book Agency, Pune.
7. Satchel, J.E. (1983) "Earthworm Ecology" Chapman Hall, London. 8. Wallwork, J. Biology" Edward Arnold (Publishers) Ltd. London.
8. Work, J.A. (1983) "Earthworm Biology" Edward Arnold (Publishers) Ltd. London.



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