"Dissemination of Education for Knowledge, Science and Culture"
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Department of Zoology

Certificate Course

In

Vermiculture/Vermicompost

Academic Year: - 2022-23

Syllabus

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 employments.
- They will also turn towards organic farming.
- Will help to maintain the environment pollution free.
- Will get the knowledge of biodiversity of local earthworms.

- The details of course is as follows :

Focus:

By using earthworm the unwanted, organic matter particularly food scraps and paper convert into fertile soil.

Name of the Course: Certificate course in Vermiculture.

- **Stream**: Science or any other stream
- **Duration** : 30 days

- **Language** : English/Marathi
- **Intake**: 30 seats
- **Selection/Admission criteria**: First come First serve.
- **Attendance** : 90%
- **Lecture/Practical Timing**: 10:00 a.m. to 12:00 a.m.
- **Academic calendar for the course**: Five days in a week (4 days theory periods & 1 day practical)

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. Course VT-01 Final Theory paper (objective/short /Long answer type) = **50** marks, Two hours duration.

2. Course VT-02 Practical paper =**20** marks, two hours

Course Title	Marks					
	Attendance	Home Assignment	Practical	Unit Test	Final Exam	Total
Vermiculture	10 Marks	10 Marks	20 Marks	10 Marks	50 Marks	100 Marks

Evalution system

Marking scheme & Award of grades: Average of the Marks obtained in each paper will be calculated as: 10+10+20 +10+50= 100 /2 = 50

❖ Outcomes of Course and Future Prospects:

1.The student will get knowledge of local earthworm.

2.Students can construct their own compost farm and thereby can get monthly income.

3.Students/Farmers by using vermicompost in their field can increase the crop yield.

4.Students residing in cities can produce vermicompost in small scale for garden/household plants.

5.They can get the jobs in educational institutes as vermicompost/Vermiculture technician.

6.The candidate can generate income by supplying worms and vermicompost.

7. By developing and propagating vermicompost technology he/she will directly or indirectly helps to

8. Prevent environmental pollution, by using vermicompost in the field and thereby increasing crop yield he will help to solve food problems.

9. It will lead towards organic farming and healthy food.

10. In today's world, recycling of garbage has become necessary in order to sustain our health and environment.

11. So let's join for **Four R's of Recycling– Reduce, Reuse, Recycle, Restore** i.e. **certificate course in Vermiculture.**

Unit-I (5 Periods)

1.1 Introduction to Vermiculture Definition, Classification, History, Economic important, their value in maintenance of soil structure.

1.2 External features shape and size, coloration and distribution of earthworm, Body segmentation

1.3 Species of earthworm used in Vermiculture.

1.4 Limiting factors (gases, diet, humidity, temperature, PH, light and climatic factor

Unit- II (5 Periods)

2.1 Food and Feeding Habits of earthworm.

2.2 Digestive system of earthworm

2.3 Reproduction in Earthworm

2.4 Cocoon Formation in Earthworm

2.5 Respiration in earthworm

Unit- III (5 Periods)

3.1 Earthworm for animal feeds

3.2 casting of earthworm as a bio fertilizer

3.3 Requirements for Vermiculture

3.4 Vermicomposting material Storage

3.5 Cattle dung, plant product

Unit- IV (5 Periods)

4.1 Preliminary treatment of composting material

4.2 Preparation of Vermiculture bed.

4.3 Maintenance of Vermiculture bed

4.4 Natural Enemies and their Control

Unit -V (5 Periods)

5.1 Composition of Vermicompost and worms

5.2 Harvesting Vermicompost and worms

5.3 Marketing of Vermicompost and worms

5.4 Marketing of Seed worms

5.5 Role of Vermicompost as fertilizer in agriculture.

Practical for "Certificate Course in Vermiculture"

- Key to identify different types of earthworms
- Study of Systematic position, habits, habitat, external Character of earthworm.
- Diagrammatic study of lifecycle of earthworm.
- Permanent micro preparation of Setae, Septal nephridia, Spermatheca.
- Dissection of Alimentary canal of earthworm

- Dissection of Reproductive system of earthworm
- Histological Study of Gizzard, testis, ovary, spermatheca.
- Study of Vermiculture pit.
- Preparation of Vermiculture bed, maintenance of vermicompost & climatic condition.
- Study of different Vermicomposting material.
- Harvesting, packaging, transport and storage of vermicompost and separation
- Visit to Vermiculture center.

References:

1) **Publisher: Biotech Books the Book Hand Book of Biofertilizers & Vermiculture Publisher**: Engineers India Research Institute Handbook of Organic Farming and Organic Foods with Vermicomposting Neem

2) **Publisher: Engineers India Research Institute Text Book of Applied Zoology**: Vermiculture, Apiculture, Sericulture, Lac Culture,

3) **Agricultural Pests and their Controls**: Pradip Jabde Publisher: Discovery Publishing House The Worm Farmer's Handbook Mid- to Large-Scale Vermicomposting for Farms

4) **Businesses, Municipalities, Schools, and Institutions**: Rhonda Sherman Publisher: Chelsea Green Publishing Vermiculture Technology: Earthworms, Organic Wastes, and Environmental

5) **Management: Clive A. Edwards, Norman Q. Arancon, Rhonda L. Sherman Publisher**: CRC Press 2010 Commercial Vermiculture: How to Build a Thriving Business in Redworms: Peter

6) **Bogdanov Applied Zoology**: N Arumugam , T Murugan , R Ram Prabhu ,J Johnson Rajeshwar.

7) **Publisher: Saras Publication Worm Farming**: Setup a Sustainable Vermiculture Earthworm Composting Ranch: Brian

8) Bhatt J.V. & S.R. Khambata (1959) "Role of Earthworms in Agriculture" Indian Council of Agricultural Research, New Delhi

9)Dash, M.C., B.K.Senapati, P.C. Mishra (1980) " Verms 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.

10) Edwards, C.A. and J.R. Lofty (1977) "Biology of Earthworms" Chapman and Hall Ltd., London.

11) Lee, K.E. (1985) "Earthworms: Their ecology and Relationship with Soils and Land Use" Academic Press, Sydney.

12) Kevin, A and K.E.Lee (1989) " Earthworm for Gardeners and Fisherman" (CSIRO, Australia, Division of Soils)

13) Rahudakar V.B. (2004). Gandul khatashivay Naisargeek Paryay, Atul Book Agency, Pune.

14) Satchel, J.E. (1983) “Earthworm Ecology” Chapman Hall, London. 8. Wallwork, J.A. (1983) “Earthworm Biology” Edward Arnold (Publishers) Ltd. London.

15) The Textbook of Vermicompost, Vermiwash and Bio pesticides: Keshav singh and *et al*