CERTIFICATE COURSE IN VERMICULTURE

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 Plant Leaves into fertile soil.

Name of the course: Certificate Course in Vermiculture

· **Level:** Certificate

· **Stream:** Science, Art or any stream

Department : Zoology

Eligibility Criteria: 10+2+3

Duration: 06 months i. e 180 days

Language: English/Marathi

Intake: 25 seats

Fees: Rs.200/

Selection /Admission Criteria: First come first serve

Attendance: 90%

Lecture/practical timing: As per time table

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

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

Teaching Staff: Qualified, Experienced Professors &Guest Lecturers will be invited.

Non teaching staff: 1 lab assistant & 1 lab attendants.

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 Theory paper (objective/short answer type) = 50 marks, Two hours duration. Marking scheme & Award of grades: Average of the marks obtained in paper will be Calculated.

i) Below 40 % = C' grade – Fail;

ii) 40- 49 % = C +' grade;

iii) 50-55 % = B grade;

iv) 55-59 % = B+ grade;

v) 60-74 % = A grade

vi) Above 75 % = A + Grade

Award of Certificate carrying grades: after successful completion of course colourful certificate indicating grade will be awarded to the candidate.

Course Content: Syllabus/Program:

SCHEME

Vermiculture as one of the Certificate Course at undergraduate level

Unit-I General Vermiculture/ Vermicompost 12Hrs

1 Introduction to vermiculture. Definition, meaning, history, economic important,

2. their value in maintenance of soil structure, role as four r's of recycling reduce, reuse, recycle, restore.

3. The matter and humus cycle (product, qualities). Ground population, transformation process in organic matter.

4. Choosing the right worm. Useful species of earthworms. Local species of earthworms. Exotic species of earthworms.

Unit-II

Earthworm Biology and Rearing 12Hrs

5 Key to identify the species of earthworms.

6 Biology of Eisenia fetida.

a) Taxonomy Anatomy, physiology and reproduction of Lumbricidae.

b) Vital cycle of Eisenia fetida: alimentation, fecundity, annual reproducer potential and limit factors (gases, diet, humidity, temperature, PH, light, and climatic factors).

7 Biology of Eudrilus eugeniae.

c) Taxonomy Anatomy, physiology and reproduction of Eudrilidae.

d) Vital cycle of Eudrilus eugeniae: alimentation, fecundity, annual reproducer potential and limit factors (gases, diet, humidity, temperature, PH, light, and climatic factors).

Unit-III

Vermicompost Technology (Methods and Products) 12Hrs

7 Small Scale Earthworm farming for home gardens

- Earthworm compost for home gardens

8 Conventional commercial composting

- Earthworm Composting larger scale

9 - Earthworm Farming (Vermiculture), Extraction (harvest), vermicomposting harvest and processing.

Unit-IV 12Hrs

10. Types of Culture, Tank Method, Pit Method, Bed Method etc

11 Nutritional Composition of Vermicompost for plants, comparison with other fertilizers

12 Vermiwash collection, composition & use

13 Enemies of Earthworms, Sickness and worm's enemies. Frequent problems. How to prevent and fix them.

14.Economic important of Earthworm

Practicals

Unit-V 18Hrs

1 Key to identify different types of earthworms

2 Field trip- Collection of native earthworms & their identification

3 Study of Sytematic position, habits, habitat & External characters of Eisenia fetida

4 Study of Life stages & development of Eisenia fetida

5 Study of Life stages & development of Eudrilus eugeniae

6 Comparison of morphology & life stages of Eisenia fetida & Eudrilus eugeniae

7 Study of Vermiculture, Vermiwash & Vermicompost equipments, devices

8 Preparation vermibeds, maintenance of vermicompost & climatic conditions.

9 Harvesting, packaging, transport and storage of Vermicompost and separation of life stages

10 Study of verms diseases & enemies

11 Study the effects of vermicompost & vermiwash on any two short duration crop plants

12 Study the effects of sewage water on development of worms

Advantage of the Course & Future Prospects:

I. Students can construct their own compost farm & thereby can get monthly income of Rs. 7000-8000.

II. Students/ farmers by using vermicompost in their field can increase the crop yield.

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

IV. They can get the jobs in educational institutes as vermicompost/vermiculture technician.

V. The candidate can generate income by supplying Worms, vermiwash, & vermicompost.

VI. 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.

VII. It will lead towards organic farming & healthy food.

VIII. In today's world, recycling of garbage has become necessary in order to sustain our health and environment. So let's join for **Four R's of Recycling Reduce, Reuse, Recycle, Restore** i.e. certificate course in vermiculture

Reference books:

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) " 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.

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). Gandul khatashivay Naisargeek Paryay, Atul Book Agency, Pune.

7. Satchel, J.E. (1983) "Earthworm Ecology" Chapman Hall, London.

8. Wallwork, J.A. (1983) "Earthworm Biology" Edward Arnold (Publishers) Ltd. London.

9. A.K. Dahama (2008) "Organic Forming" Upadesh Purohit for Agrobios, Jodhpur.

10. Arun K. Sharma. (2001) "A Handbook of Organic Forming" Upadesh Purohit for Agrobios, Jodhpur.

11. Arun K. Sharma. (2007) “Biofertilizers for Sustainable Agriculture” Upadesh Purohit for Agrobios, Jodhpur.

12. S.C. Panda(2006) “Soil Management and Organic Forming” Upadesh Purohit for Agrobios, Jodhpur.

13. L. S. Ranganathan. (2006) “Vermibiotechnology form Soil Health to human health” Upadesh Purohit for Agrobios, Jodhpur.

14. S. C. Talshilkar and A. K. Dosani. (2008) “Earthworms in Agriculture” Upadesh Purohit for Agrobios, Jodhpur.

15. P.Bhattacharyya. (2004) “Organic Food Production in India” Upadesh Purohit for Agrobios, Jodhpur.

16. S.S. Purohit.and Dushyant Gehlot (2006) “Trends in Organic Formingin India” Upadesh Purohit for Agrobios, Jodhpur.