

**SKILL DEVELOPMENT COURSE**  
**VERMITECHNOLOGY**  
**AND SOLID WASTE MANAGEMENT**



**Course Code-M2&M4ZOO-SE-01 A**

**NO OF CREDIT-2**

# SYLLABUS

## PART I: BIOLOGY OF EARTHWORMS

### UNIT I - Morphology & Anatomy:

Earthworms Taxonomic position ,external features- shape , size,colour,segmentation,setae&clitellum.Bodywacoelom,locomotion,digestive ,excretory & nervous system.

### UNIT II - Biology

Reproductive system-Male & Female, copulation, cocoon formation & fertilization, development of earth worm.

### UNIT III - Habitat Ecology:

Burrowers, casts, nocturnal, poikilothermal, ecological grouping – Epigeic species, Endogeic species and Anecics.

### UNIT IV - Diversity of species:

Detailed study of Lumbricus terrestris, Eisenia eugenia,Eudrilus Eugenia, Amynthas gracilus, Perionyx excavates.

### UNIT V - Economic importance of Earthworms:

In sustainable agriculture, organic farming, earthworm activities, soil fertility & texture, soil aeration, water impercolation, decomposition & moisture, bait & food.

## **PART II: VERMITECHNOLOGY AND SOLID WASTE MANAGEMENT**

### **UNIT – I**

Vermitechnology- Definition, history, growth and development in other countries & India, significance.

### **UNIT – II**

Vermiculture – definition, scope and importance; common species for culture; Environmental parameters; culture methods – wormery – breeding techniques; indoor and out door cultures - monoculture and polyculture – merits and demerits.

### **UNIT – III**

Vermicomposting of wastes in field pits, ground heaps, tank method, roof shed method, static pile windrows, top fed windrows, wedges & bin method, harvesting the compost, storage, Vermiwash-Preparation and application.

### **UNIT – IV**

Applications of vermiculture – Vermiculture Bio-technology, vermicomposting, use of vermicastings in organic farming/horticulture, earthworms for management of municipal/selected biomedical solid wastes; as feed/bait for capture/culture fisheries; forest regeneration.

### **UNIT – V**

Future perspectives – Predator / pathogen control in wormeries; Potentials and constraints for vermiculture in India. Marketing the products of vermiculture – quality control, market research, marketing techniques – creating the demand by awareness and demonstration, advertisements, packaging and transport, direct marketing. Visit to relevant Labs/Field Visits

## **PRACTICALS**

Based on above topics

1. Procurement of Worms (Exotic and Inegenous )
2. Procurement of cowdung and different waste collections
3. Decomposition of waste materials
4. Formation of composting pits
5. Preparation of vermibeds
6. Harvesting of worms and compost
7. Chemical analysis of Compost and comparison of FYM and chemical fertilizers
8. Small scale demonstration of compost and vermiwash on any two vegetable grown locally
9. Helping the trainee to get self employment by contacting various agencies

## **SUGGESTED READING**

1. Sultan Ahmed Ismail, 2005. The Earthworm Book, Second Revised Edition. Other India Press, Goa, India.
2. Bhatnagar & Patla,2007. Earthworm vermiculture and vermin-composting, Kalyani Publishers,New Delhi
3. Mary Violet Christy,2008. Vermitechnology,MJP Publishers, Chennai.
4. Aravind Kumar, 2005.Vermis & Vermitechnology, A.P.H. Publishing Corporation, New Delhi.
5. Sultan Ahmed Ismail, 2005. The Earthworm Book, Second Revised Edition. Other India Press, Goa, India.
6. Bhatnagar & Patla,2007. Earthworm vermiculture and vermin-composting, Kalyani Publishers, New Delhi.
7. Jordan & Verma,2009. Invertebrate Zoology , Chand & Company Ltd.

- 8 Edwards, C.A & P.J Bohlen, 1996. Biology and ecology of earthworms  
III Edn. Chapman & Hall N.Y.U.S.A.
- 9 Lee, K.E. 1985. Earthworms their ecology and relationships