

# **University of Kota**

Skill Enhancement Course (S.E.C)

## **Subject: Vermicomposting**

**Maximum Marks: 50**

**Credit: 2**

A comprehensive syllabus for Vermicomposting covers earthworm biology, ecological requirements, waste management techniques, and product harvesting, designed to provide both theoretical and practical knowledge for organic farming and waste management.

### **Course Learning Outcomes**

After successful completion of this course, the student will learn to:

1. CO1: Cultivate skills to understand Vermiculture.
2. CO2: Understand and Learn the techniques of Vermicomposting.
3. CO3: Develop technical skills of harvesting and management of Vermicompost.
4. CO4: Understand the scope of Vermicomposting as entrepreneurship and also for employment.

**There will be a single multiple choice based (OMR based) question paper of one and half hours.**

### **Unit I: Introduction of Vermicomposting**

- Definition & Significance: Introduction, scope and Significance of vermiculture and vermicomposting. History of Vermicomposting – ancient roots and modern methods. Difference between vermiculture and vermicomposting. Selective features of earthworms for vermiculture and vermicomposting.

### **Unit II: About Earthworm**

- Identification and biology of common earthworm species responsible for fast composting. Basic body structure of earthworm (General body plan, Prostomium, Peristomium, Metamerism, Cuticle, Setae, Different body pores, Clitellum, Digestive System).
- Earthworm Biology: Anatomy, classification (Epigeic, Endogeic, Anecic), and morphology of species like *Eisenia fetida* and *Eudriluseugeniae*.
- Reproduction & Ecology: Life cycle, cocoon formation, fecundity, and environmental requirements (temperature, pH, moisture, humidity).

### **Unit III: Habitat of Vermicomposting Earthworms**

- Habitat of vermicomposting earthworms, Scientific name of native and exotic vermicomposting earthworms (Native Indian earthworms: *Perionyx excavatus*, *ceylanensis*).

#### **Unit IV: Vermicomposting Technology**

- Principle of Vermicomposting, Components of Vermicomposting system (Appropriate species of earthworms with suitable population characteristics, proper substrate, optimum environmental factors under Indian conditions).
- Methods: Low cost floor beds, Tank system. System Setup: Preparation of vermibeds/Composting pit, bedding materials, and selection of organic waste. Inoculation of earthworm.
- Management: Maintenance of moisture and temperature, management of enemies (ants, birds) and diseases and composting unit.

#### **Unit V: Products & Applications**

- Harvesting: Techniques for harvesting vermicompost, separation and conservation of earthworms, and sieving, further utilization and sale.
- Vermiwash: Collection, composition, and agricultural uses.
- Nutritional Value: Comparison with other fertilizers and use in organic farming.

#### **References**

- i. Kale, R.D. (1998). Earthworms: Cinderella of Organic Farming. Prism Books Pvt. Ltd., Bangalore.
- ii. Ismail, S.A. (1997). Vermicology – The Biology of Earthworms. Orient Longman, 92 pages.
- iii. Das, M.C. (2012). Charles Darwin's Plough: Tools for Vermitechnology. I.K. International Publishing House, ISBN: 978-93-81141-27, 182 Pages.