UNIVERSITY OF MADRAS

B.Sc. DEGREE PROGRAMME IN ADVANCED ZOOLOGY AND BIOTECHNOLOGY

SYLLABUS WITH EFFECT FROM 2023-2024

121S0C

SEC-III: VERMITECHNOLOGY

LEARNING OBJECTIVES

1. **To acquire** knowledge on the morphology of earthworm. To **understand** its characteristics features and their types using ICT**.**
2. **To identify** and **distinguish** different species of earthworm suitable for vermicomposting. To develop and explain the various methods of collection and preservation of earthworms using ICT
3. **To recall and discuss** different methods of vermicomposting. **To categorize** the nutrient value of vermicompost
4. **To recognize and demonstrate** the uses of vermicompost for crop production. To apply the knowledge gain for the production of vermiwash.
5. To **create awareness and knowledge** of vermicompost on pollution control. Students will be able **to infer** the economic importance of vermiculture and aspirants can **recommend** vermicompost units and the financial support from Government, by using interactive tools, PPT, web resources

UNIT 1

Introduction to Earthworm, Scope and Importance of Vermitechnology. Classification, Habit and Habitat of Earthworm.

Morphology of Earthworm and Digestive System, Excretion and Reproduction and Life Cycle of Earthworm.

UNIT 2

Types of earthworms for vermiculture. Selection of Suitable worm species for vermicomposting -Exotic and native species-. Collection of Earthworm, Rearing and preservation of earthworms- Culture of earthworms. Factors Influencing the culture of earthworms- Environmental benefit of Vermitechnology.

UNIT 3

Vermicomposting: Materials required for vermicomposting, Site selection for vermicompost. Vermicomposting preparation – Procedure and Applications. Methods of vermicomposting: Pit method, Heap method, tray method and Bed method.

UNIT 4

Role of earthworms in Soil Fertility. Use of Vermicompost for crop Production. Role of earthworms in Waste management. Vermiwash- Preparation -Composition and Applications. Advantages of Vermicompost**.**

UNIT 5

Earthworm as Farmer's friend -Economic importance of Earth Worm -Pests and diseases of Vermicompost. Vermiremediation-. Financial support by Government NGO for Vermiculture-Training Programmes on Vermicompost.

TEXT BOOKS

1. Bhatt J.V. & S.R. Khambata (1959) "Role of Earthworms in Agriculture" Indian Council of Agricultural Research, New Delhi
2. Peter Davies Vermiculture and Vermicomposting. Kindle Edition
   Dash, M.C., B.K.Senapati, P.C. Mishra (1980) " Worms 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.

SUGGESTED READINGS

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). GandulkhatashivayNaisargeekParyay, 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.

WEB RESOURCES

a. http://lancaster.unl.edu/pest/resources/107Vermi.pdf
b. http://www.morarkango.com/biotechnology/research.php
c. https://www.sciencelearn.org.nz/resources/7-niches-within-earthworms-habitat

COURSE OUTCOMES

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