

ZOE507 – VERMITECHNOLOGY

Teaching hours

8hrs /Unit

COURSE OUTCOME:

1. The course is structured to impart training on Earthworm culture technology, to create knowledge on Self - Employment opportunity
2. In general soil earthworms, their characteristic features, occurrence, their influence on soil fertility and solid waste management are included.
3. Vermicomposting technology broadly followed at the global level and some Indigenous methods, role of microbes in increasing the soil fertility by the action of earthworms, their advantages and limitations dealt.
4. Role of microbes in worms and in decomposition is discussed.
5. Vermiculture products and their benefits in agriculture practice, economics of vermitechnology along with the practical difficulties are included.
6. Students will be trained on how to maintain a small vermicompost bin as a simple method for converting the Kitchen waste.

UNIT I

Introduction to Vermitechnology. General characters and classification of Annelida. The habitat of earthworm: soil-major types (red soil, black soil, alluvial soil). Diversity and distribution of earthworms. Collection and preservation of earthworms. Earthworm as farmer's friend-role of earthworms in soil fertility. The selection of earthworms (endemic and exotic species) for vermitechnology.

UNIT II

Vermiculture and vermicomposting techniques. Methods of vermicomposting. Large scale manufacture of vermicompost. Factors affecting –Ph, moisture, temperature. Worm casts, vermiwash production and its applications. Evaluation of nutritional status of vermicompost. Use of vermicompost for crop production, use of vermicompost in land improvement and reclamation.

UNIT III

Role of earthworms in waste management, solid wastes an option for resource recovery, expert system for hotel waste management. Recycling of food and agricultural wastes. Growth response of some forest tree species to its application in a nursery. Vermifilter. Earthworms as bioreactors. Influence of chemical inputs on earthworm activity.

UNIT IV

Earthworms and microorganisms. The effects of earthworms on the number, biomass and activity of microorganisms. Importance of microorganisms as food for earthworms. Dispersal of microorganisms by earthworms. Role of intestinal microbes of earthworms on the decomposition of organic wastes.

UNIT V

Economic importance of earthworms. Uses of earthworms in food and medicine - ayurvedic and unani. Influence of pests and parasitic microbes affecting earthworms. Measures to control them. Packaging and marketing of vermicompost products and financial support by governments and NGOs for vermiculture. Potentiality of vermibiotechnology in India.

REFERENCES

1. Chauhan, A. (2012) Vermitechnology, Vermiculture, Vermicompost and Earthworms: Vermiculture, Vermicomposting, Vermitechnology and Microbes, Lambert Academic Publishing, Germany.
2. Christy, M. V. (2008) Vermitechnology, 1st edition, MJP Publishers.
3. Dash, M. C. (2012) Charles Darwin's Plough Tool for Vermitechnology, I.K.. International Publishing House Pvt Ltd. New Delhi, India.
4. Edwards, C.A., and Bother, B. 1996: Biology of Earthworms – Chapman Hall Publ. Co., London.
5. Gupta, P.K. 2008: Vermicomposting for sustainable agriculture [2nd edition] – Agrobios – India.
6. Ismail, S.A. 1997. Vermitechnology. The biology of Earthworm. Orient Longman, India, 92 pp.
7. Kumar, A. (2005) Verms and Vermitechnology, APH Publishing.
8. Lekshmy, M. S., Santhi R. (2012) Vermitechnology, Sara Publications, New Delhi, India,
9. Ranganathan, L.S. – 2006 – Vermicomposting technology – from soil health to human health.
10. Sinha, R. K. et.al (2010) Vermitechnology-The Emerging 21st Century Bioengineering technology for sustainable development and protection of human health and environment Review, Dynamic Soil and Dynamic Plant, Global Science Books.
11. Sharma S. et .al, (2009) Earthworm and Vermitechnology –Review, Dynamic Soil and Dynamic Plant, Global Science Books.
12. Talashikar, S.C. 2008: Earthworms in Agriculture – Agrobios - India