PERIYAR UNIVERSITY

(NAAC 'A'Grade-State University-NIRF Rank 68)
SALEM-636011
DEPARTMENT OF BIOTECHNOLOGY

Value added course :**Biofertilizer and Biopesticide**
Course code :**CBIT-01**
Course Mentors : **Dr. N. Elangovan**

December 2019

ABOUT THE COURSE :

Human efforts to develop agriculture have been known for a long time. Since becoming aware of the importance of this field, farmers and researchers have not ceased looking for methods and products to improve crop productivity and quality and to protect it from various aggressions and stress that it might undergo. Mechanisms using microbes as biofertilizers and biocontrol agents have been adopted recently as an alternative to agrochemicals. The use of The use of beneficial microbes is an environment-friendly strategy, which play a major role in the stimulation of plant growth and in the biocontrol of plant pathogens. A better understanding of the use of these bacterial populations could allow a reduction of chemical inputs and pollutant pesticides in agricultural soils.

COURSE OUTCOME:

- **Objective 1:** Ability to understand formulation and large scale industrial production of biofertilizers
- **Objective 2:** To gain knowledge ecofriendly agricultural inputs so as to nullify the ill effects of chemical fertilizers.
- **Objective 3 :**Explain about the types mode of action of microbes on biopesticides.
- **Objective 4 :** To gain knowledge about how technology pertinent to microbiological and physico-chemical analyses of soil samples and their assessment.

SYLLABUS

Biofertilizer:

Biofertilizer – Introduction status and scope, Types of biofertilizers: Rhizobium, Bradyhizobium, Azotobacterm Azospirillum, Phosphate Solubilizers (Bacillus subtilis, Bacillus megaterium), Microhize (VAM). Media preparation and staining techniques, Commercial production: Large scale production. Scale up and formulation, preparation of carrier based biofertilizers. Biofertilizers applications in the field: Problems, Quality control and regulations.

Biopesticides:

Principles of classical biological control – important, argumentation and conservation. Role of insect pathogenic nematodes, viruses, bacteria, fungi, virus and their mode of action production of biopesticide based on Fungi (Beauveria, Bassiana, Trichoderma spp), Bacteria (Bacillus thuriengensis, Pseudomonas, fluorescens). Virues (HaNPV and SLNPV) and nemantodes (Steinernema, Heterorhabitis). New technologigies and Microbial control