

Subject Code: 2SC1000322	Subject Title: Biofertilizers And Bioinsecticides
Course Type: Subjective Elective	

Course Objective : As an applied aspect of learning Microbiology, Benefits to the Agriculture by the use of Biofertilizers and Bioinsecticides has drawn great attention of researchers in biological sciences. This course provides ample information to the curious minds for developing interests in the fields of Biofertilizers and Bioinsecticides.

Teaching scheme (hours) per week		Credit			Theory Marks		Practical Marks		Total
Theory	Practical	Theory	Practical	Total	Uni. Assessment	Cont. Assessment	Uni. Assessment	Cont. Assessment	Total
2	--	2	--	2	35	15	--	--	50

Unit	Content	Lectures	Weight (%)
1	Importance of Biofertilizers its advantage over chemical fertilizers and their limitations General account of the microbes used as biofertilizers for various crop plants Symbiotic N₂ fixers: Rhizobium - Isolation, characteristics, types, inoculum production and field application, legume/pulses plants Frankia - Isolation, characteristics, Alder, Casurina plants, non-leguminous crop symbiosis. Cyanobacteria, Azolla - Isolation, characterization, mass multiplication, Role in rice cultivation, Crop response, field application. (B) Non - Symbiotic Nitrogen Fixers Free living Azospirillum, Azotobacter - free isolation, characteristics, mass inoculums, production and field application. (C) Phosphate Solubilizers Phosphate solubilizing microbes - Isolation, characterization, mass inoculum production, field application (D) Mycorrhizal Biofertilizers Importance of mycorrhizal inoculum, types of <i>Mycorrhizae</i> and associated plants, Mass inoculum production of VAM, field applications of Ectomycorrhizae and VAM.	24	80%
2	Bioinsecticides General account of microbes used as bioinsecticides and their advantages over synthetic pesticides, <i>Bacillus thuringiensis</i>, production, Field applications Viruses – cultivation and field applications.	6	20%

Learning Outcome:

The students will learn about the different types of Biofertilizers and Bioinsecticides, their mode of action, their applications and methods involved in culturing such valuable entities.

Reference Books:

Kannaiyan, S. (2003). Bioetchnology of Biofertilizers, CHIPS, Texas.

Mahendra K. Rai (2005). Hand book of Microbial biofertilizers, The Haworth Press, Inc. New York.

Reddy, S.M. et. al. (2002). Bioinoculants for sustainable agriculture and forestry, Scientific Publishers.

Subba Rao N.S (1995) Soil microorganisms and plant growth Oxford and IBH publishing co. Pvt. Ltd. NewDelhi.

Saleem F and Shakoori AR (2012) Development of Bioinsecticide, Lap Lambert Academic Publishing GmbH KG

1. Aggarwal SK (2005) Advanced Environmental Biotechnology, APH publication.