

Theory

Concepts and scope of plant biotechnology; Introduction to plant tissue culture- culture media and aseptic manipulation; Types of culture- organ culture, embryo culture, cell suspension culture, callus culture, anther culture, pollen culture and ovule culture and their applications; Organogenesis and embryogenesis; Micro-propagation methods; Synthetic seeds and their significance; Embryo rescue and its significance; Somatic hybridization and cybrids; Somaclonal variation and its use in crop improvement; cryo-preservation.

Introduction to rDNA technology and gene cloning, Physical (Gene gun method), chemical (PEG mediated) and Agrobacterium mediated gene transfer methods; Transgenics and its importance in crop improvement; PCR techniques and its applications; RFLP, RAPD, SSR; Biotechnology regulations.

Practical

Sterilization techniques, Preparation of MS medium, Fresh culture and Sub-culture, Micro-propagation- hardening and acclimatization, Synthetic seed development, Demonstration on isolation of DNA, Demonstration on PCR amplification, Demonstration of gel electrophoresis techniques and DNA finger printing.