

# **AMBT19 PLANT BIOTECHNOLOGY**

## **UNIT-1 INTRODUCTION**

Definition, Classical vs modern approach

## **UNIT-2 PRODUCTION OF DISEASE FREE PLANTS**

Explant, shoot tip culture, shoot tip grafting, viricidtel compounds

## **UNIT-3 MICROPROPAGATION**

Basic technique, Automation in the area scope as an commercial venture.

## **UNIT-4 TISSUE CULTURE AS SOME OF GENETIC VARIABILITY**

Somaclonal and gametoclonal variation, Selection, Sources and causes of variation, Application in crop improvement.

## **UNIT-5 PROTOPLAST RELATED TECHNIQUES**

Protoplast, Isolation, Culture and fusion, Selection of hybrid cells, regeneration of hybrid plants, somatic hybridization and cybridization, Applications in crop improvement.

## **UNIT-6 PLANT AS BIOFACTORIES**

Concept, Production of Chemicals, Pigments, Perfume, Flavors, Insecticides, anticancer agents and other important compounds.

## **UNIT-7 TRANSFORMATION TECHNIQUES**

Physical methods, Agro bacterium, Mediated transformation

## **UNIT-8 TRANSGENICS**

Basic concept and essential steps of the process, Some examples of transgenic plants, Use of suitable promoters, Gene silencing and measures to overcome it, Commercial aspects of the technology.

## **UNIT-9 NITROGEN FIXATION**

Basic concepts, nif genes and their regulation, potential scope in crop improvement

## **UNIT-10 TRANSFORMATION OF ORGANELLES**

Methods and success, advantages of organller transformation.

## **UNIT-11 MOLECULAR MARKERS**

Concept, SNPs, RAPD, RFLP, ISSR, STMS, role in crop improvement and genome mapping.

### **Reference Books**

1. Plant Tissue Culture: Applications and Limitations. S.S. Bhojwani (1990), Elsevier, Amsterdam.