

AMB12 PLANT TISSUE CULTURE

UNIT-1 HISTORY

Important events in the history of plant tissue culture.

UNIT-2 LABORATORY REQUIREMENTS AND GENERAL TECHNIQUES

Introduction, requirements, techniques.

UNIT-3 CELLULAR TOTEPOENCY

Introduction, cyto-differentiation, orgemogenic differentiation, loss of morphogenic potential in long-term cultures, practical applications of cellular totipotency

UNIT-4 TISSUE CULTURE MEDIA

Introduction, media constituents, media selection, media preparation

UNIT-5 CELL AND SUSPENSION CULTURE

Introduction, isolation of single cells, suspension cultures, culture of single cells, plant cell reactors, applications of cell culture.

UNIT-6 PROLOPLAST CULTURE

Proloplast isolation, culture and regeneration.

UNIT-7 SOMATIC EMBRYOGENESIS

Introduction, some examples of formatic embryogenesis, factors affecting somatic embryogenesis, induction and development, maturation

UNIT-8 HAPLOID PRODUCTION

Introduction, techniques, factor affecting androgenesis, ontogeny of androgenic haploids, plant regeneration from pollen embryos, gynogenesis, haploid production through disport hybridization idiptridization to raise homozygous diploids, applications, limitations.

UNIT-9 TRIPLOID PRODUCTION

Introduction, callusing, histology and cytology of cells, organogenesis, applications of endosperm culture.

UNIT-10 EMBRYO CULTURE

Introduction, techniques, culture requirements role of the suspensor in embryo culture, precocious germination, morphogenesis in the culture of seeds with partially differentiated embryos, micronugical experiments, embryo and seed culture of parasitic angiosperms, morphogenic potential of the embryo callus, practical applications.

UNIT-11 IN-VITRO POLLINATION AND FERTILIZATION

Introduction, terminology, in vitro pollination, in vitro fertilization, applications.

UNIT-12 MICROPROPAGATION

Introduction, techniques, applications, production of pathogen free plants

UNIT-13 PRODUCTION OF SECONDARY METABOLITES

Introduction, strategies used to optimize product yield, commercial aspects

UNIT-14 GERMPLASM STORAGE

Introduction, long-term storages, short or medium term storage

Reference Books

1. Experiments in Plant Tissue Culture by John H. Dodds & Lorin W. Robert.
2. Plant tissue Culture: Theory and Practice by S.S. Bhojwani and M.K. Razdan (1996) Elsevier, Amsterdam.
3. An Introduction to Plant Biotechnology by H C Chawla Oxford and IBH 2002

