

Hort. 309**IN VITRO PROPAGATION****2(1-1)****Objectives:**

To acquaint the students with modern techniques of plant multiplication.

Theory:

Introduction and importance; Basic terminology, application and constraints of plant tissue culture; Nutritional components of culture media (nutrients, carbohydrates, vitamins, growth regulators, amino acids and antibiotics), their types & functions; aseptic techniques; Initiation and maintenance of cultures; Physical factors for growth; transplanting and acclimatization; Preparation of synthetic seed; Concepts of plant biotechnology and its role in improvement of horticultural crops.

Practical:

Laboratory safety precautions, sanitation, equipment; Calculations (preparation of molar, percent, normal, ppm etc solutions); Preparation of stock solutions & media, sterilization techniques, inoculation and culture of explants, Acclimatization & transplanting.

Learning Outcomes:

Students must understand the basic tissue culture techniques for in vitro propagation of horticultural crops.

Books recommended:

- Hartmann, H.T., D.E. Kester and F.T. Davies. 2011. Plant propagation: principles and practices (8th Ed.). prentice Hall, New Jersey, USA.
- Lindsey, K. (Ed). 2007. Plant Tissue Culture Manual. Springer-Kluwer Academic Publishers New Delhi, India.
- George, E.F., M.A. Hall and G.J. De Klerk. 2008. Plant Propagation by Tissue Culture. 3rd Ed. Springer, Dordrecht, Netherlands.
- Razdan, M.K. 2003. Introduction to Plant Tissue Culture. Science Publishers Inc. (ISBN: 1-57808-237-4).
- Scoggins, H. and M. Bridgen. 2014. Plants from Test Tubes: An Introduction to Micro propagation (4th Ed.) Tiber Press.
- Smith, R. H. 2013. Plant Tissue Culture: Techniques and Experiments. Academic Press, London, UK.
- Trigiano, R. N. and J. G. Denis. 2011. Plant Tissue Culture, Development, and Biotechnology. CRC press, Boca Raton, Florida, USA.
- Margit, L. and W. Rucker. 2004. Plant Tissue Culture: Plant Tissue Culture – 100 years since Gottlieb Haberlandt. CPL Scientific Publishers, (ISBN: 3211838392).
- Chandra, R. and M. Mishra (Eds). 2005. Comprehensive Micropropagation of Horticultural Crops International Book Distributing Co. (Publishing Division), Lucknow, India.