

PRACTICAL SYLLABUS

OBJECTIVE: To enable the students to

- To enable the students to learn the techniques of Genetic engineering
- Acquire the techniques and inoculation methods in plant tissue culture

COURSE OUTCOMES: Students will

- **CO1:** Be expertise in formulating the concentrations of tissue culture media constituents
- **CO2:** Capable to identify the economized protocols for both the classical & hybrid varieties, with the available tissue culture concepts.
- **CO3:** Able to breed the haploid cultivars and enhance vegetative propagation, virus free stocks, flexible to current agriculture practice

COURSE:

1. Isolation of plasmid DNA (alkaline lysis method)
2. Analysis of plasmid DNA by Agarose gel electrophoresis
3. Southern blotting (theory exercise)
4. PCR Amplification (theory exercise)
5. Preparation of plant tissue culture media (Composition of MS media)
6. Raising of aseptic seedlings
7. Induction of callus from different explants
8. Micropropagation (shoot tip and Nodal culture)
9. Establishing a plant cell culture (both in solid and liquid media)
10. cell suspension culture

REFERENCES:

1. Plant Tissue Culture: Theory and Practice by S.S. Bhojwani and A. Razdan, 1998
2. Dr. Anurudh K. Singh, Santhosh K. Tiwari & Dr. J. P. Yadav (2017), Practical Manual, Plant Genetic Engineering.
<https://www.researchgate.net/publication/322152584>
3. Sambrook J, Fritsch EF and Maniatis T. (2001). Molecular Cloning-A Laboratory Manual. 3rd edition. Cold Spring Harbor Laboratory Press.
4. Vennison, S. John (2009), Laboratory manual for Genetic Engineering, Prentice Hall India Learning Private Limited.
5. Dr. Sandhya Mitra, (2015) Genetic Engineering: Principles and Practice, 2nd Edition, McGraw Hill Education (India) Private Limited, New Delhi.

6. Dr. Anurudh K. Singh, Santhosh K. Tiwari & Dr. J. P. Yadav (2017), Practical Manual, Plant Genetic Engineering.
<https://www.researchgate.net/publication/322152584>
7. P. N. Arora & P. K. Malhan. 2012, Biostatistics: Himalaya Publishing House (January 2012), ISBN-10, 8183186912.

** ** **