

Training Course of Plant Tissue Culture and Biotechnology Division

1. Course Description

1.1 Introduction

Plant tissue culture is the science of growing plant cells or organs isolated from the mother plant on artificial media. It is based on the concept of totipotency, i.e. the concept that every living cell has the genetic potential to reproduce into an entire organism. It deals with the mass production of plants, under aseptic environment employing artificial growing conditions in glass (*In-Vitro*). This important technology is based on the principle that production of genetically modified plants is only possible if the target species have a successful and efficient regeneration system. The success of modern Plant Biotechnology is attributed to this very important technique, which plays an important role in *in-vitro* propagation of disease free plants and multiplying with unmatched speed of endangered species as well as species difficult to regenerate.

1.2 Application

Plant tissue culture is widely used in plant propagation science; it also has a number of commercial applications, some includes:

Micropropagation using meristem and shoot culture to produce large numbers of identical plants in a short time. Plants that were difficult to propagate traditionally can often be propagated *in-vitro*. Tissue culturing is widely being used in commercial labs for the mass scale production of disease and virus free plants both in crops and ornamental plants world wide. Plants propagate through tissue culture techniques; can be accurately programmed as it is independence of climatic changes. Plants material can be more easily exchanged between countries when grown in aseptic condition. The production and dissemination of disease free stock can be enhanced especially stock plants can be stored for extended period of time *in-vitro* conditions.

2 Proposed Program

2.1 Contents of Training

- Introduction to plant tissue culture
- General methodologies in plant tissue culture
- Sterile techniques, Media components, preparation, and contamination
- Plant growth regulators and stocks preparation
- Initiation

Plant Tissue Culture and Biotechnology Division



- Multiplication
- Callus induction
- Organogenesis (Direct, indirect)
- Regeneration and morphogenesis
- Acclimatization
- ELISA
- Molecular markers using PCR and SDS-PAGE
- Practical demonstrations of micro propagation e.g.,
fruit,
- Ornamental and medicinal plants
- Quiz/ Viva / presentation
- Report submission

2.2 Eligibility Criteria

It is recommended that participants of the training course should have either BS degree.

2.3 Examination

After the completion of training a verbal/written test will be given.

2.4 Certificate

Certificates will be issued upon the course completion

Literature, and study material will be provided

Plant Tissue Culture and Biotechnology Division

