CORE CONCEPT

Plant Tissue Culture and Micropropagation Course: Date Palm and Horticultural Plantlet Production

28 February – 4 March 2027
Jeddah - Corniche four-star

Plant Tissue Culture and Micropropagation Course: Date Palm and Horticultural Plantlet Production

Ref: 1951_29035 **Date:** 28 February – 4 March 2027 **Location:** Jeddah - Corniche four-star **Fees:** 19500 SAR

Introduction:

Plant tissue culture and micropropagation for date palm and horticultural plantlet production is a 1-week course for laboratory, nursery and agri-investment teams that ends with a Micropropagation Laboratory Production Plan for a case organisation. Commercial laboratories lose output when cultures become contaminated, media and growth regulator balances drift, multiplication cycles run too long and off-type plantlets reach growers after weak hardening. Nominees already run culture rooms, propagation greenhouses or plantlet supply contracts, and the course is taught as an inspection walkthrough of a laboratory process from explant to hardened plantlet. CoreConcept Training Center delivers this plant tissue culture and micropropagation course.

Course Objectives:

- Select the micropropagation pathway, organogenesis or somatic embryogenesis, that suits each crop, cultivar and output target
- Lay out a tissue culture laboratory with media preparation, transfer, growth room and hardening zones that limit contamination
- Prepare Murashige and Skoog based media and set cytokinin and auxin balances for initiation, multiplication and rooting
- Run explant sterilisation, subculture and rooting protocols for date palm, banana and ornamental plantlets
- Diagnose contamination and somaclonal variation risks and set true-to-type screening before plantlet release
- Build a plantlet unit cost model and a Micropropagation Laboratory Production Plan for a case organisation

Target Audience:

- Laboratory management teams responsible for culture room output, media quality and aseptic discipline
- Commercial nursery units responsible for receiving, hardening and dispatching tissue-cultured plantlets
- Agribusiness investment teams responsible for appraising or expanding plantlet production capacity
- Technical supervision teams responsible for subculture schedules, growth room conditions and loss records
- Quality and plant health units responsible for stock plant indexing and off-type screening

Course Outline:

Day 1: Micropropagation Pathways, Crop Targets and Laboratory Baseline

- Micropropagation Stage Sequence From Stock Plant to Hardened Plantlet
- Organogenesis and Somatic Embryogenesis Pathway Comparison by Crop
- Date Palm, Banana and Ornamental Plantlet Demand Profiling
- Stock Plant Selection, Indexing and Mother Block Hygiene
- Existing Laboratory Baseline Audit of Capacity and Losses

Day 2: Laboratory Design, Aseptic Zoning and Culture Media Chemistry

- Laboratory Zoning Plan From Media Kitchen to Growth Rooms
- Laminar Flow Cabinet HEPA Checks and Aseptic Workflow
- Autoclave Cycle Validation and Sterile Glassware Handling
- Murashige and Skoog Medium Preparation With Stock Solutions
- Cytokinin and Auxin Ratio Selection for Shoots and Roots

Day 3: Explant Initiation, Shoot Multiplication, Rooting and Hardening

- Explant Surface Sterilisation With Alcohol and Hypochlorite Washes
- Date Palm Shoot Tip Excision From Offshoot Hearts
- Banana Shoot Tip Multiplication and Subculture Cycle Scheduling
- In Vitro Rooting Medium Versus Ex Vitro Rooting Trials
- Acclimatisation Greenhouse Regime for Humidity, Light and Substrate

Day 4: Contamination, Somaclonal Variation, Scale-Up and Laboratory Economics

- Contamination Diagnosis by Bacterial, Fungal and Endophyte Signs
- Somaclonal Variation Risk From Callus Phases and Subculture Count
- True-to-Type Screening With Molecular Markers and Field Checks
- Temporary Immersion Bioreactor Scale-Up for Embryogenic Cultures
- Plantlet Unit Cost Model With Labour and Loss Rates

Day 5: Laboratory Inspection Walkthrough and the Micropropagation Production Plan

- Case Laboratory Walkthrough Using an Aseptic Practice Checklist
- Case Media and Subculture Records Review for Contamination Trends
- Case Multiplication Schedule and Plantlet Output by Crop
- Case Hardening Capacity and True-to-Type Sampling Design
- Micropropagation Laboratory Production Plan Completion and Peer Review

Skills You Will Gain:

- Micropropagation Pathway Selection
- Aseptic Laboratory Zoning
- Culture Media Formulation
- Growth Regulator Balancing
- Subculture Scheduling
- Plantlet Acclimatisation
- Off-Type Screening
- Plantlet Cost Modelling

Why Attend This Course:

- Deliver a Micropropagation Laboratory Production Plan for a case organisation to the laboratory director and the investment or operations lead
- Decide which pathway, subculture limit and rooting route to use for each crop and cultivar from laboratory and loss records
- Avoid contaminated batches, off-type plantlets reaching growers and hardening losses that raise the cost of every plantlet
- Coach technicians and nursery staff on aseptic transfer, media records and hardening routines using shared checklists

Conclusion:

Back at work, the participant presents the Micropropagation Laboratory Production Plan to the laboratory director and the investment or operations lead. They use it to approve laboratory layout changes, set media and subculture standards, size growth rooms and hardening greenhouses, and agree plantlet output and unit cost targets by crop. After the first production cycle under the plan, the unit should compare contamination rates, multiplication output, hardening survival and true-to-type results with the plan and revise the weakest stage.

Frequently Asked Questions FAQ:

What should participants know before a plant tissue culture and micropropagation course?

Participants should already work in a culture laboratory, propagation nursery or plantlet investment role and understand basic plant growth. No biotechnology degree is expected. Bringing anonymised media records, contamination logs or plantlet output figures helps them apply the walkthrough and the final plan to their own operation.

How does plant tissue culture and micropropagation differ from a tree nursery or crop cultivation course?

It concentrates on the laboratory: aseptic technique, culture media, multiplication, rooting, hardening and true-to-type checks. Nursery courses raise seedlings from seed or cuttings for planting, and cultivation courses manage orchards and fields once plants are established.

Why does somaclonal variation matter in plant tissue culture and micropropagation?

Somaclonal variation produces plantlets that differ from the mother plant, often unnoticed until they flower or fruit. Long callus phases, many subcultures and some growth regulators raise the risk, so laboratories cap subculture counts and screen samples before release.

What do participants take back from the plant tissue culture and micropropagation course?

Participants take back a Micropropagation Laboratory Production Plan for a case organisation, with a laboratory zoning plan, media and subculture standards, a multiplication schedule by crop, hardening capacity, a true-to-type sampling design and a plantlet unit cost model.