



Commercial-Scale Propagation

Dip Rooting Gel Integrated Workflow

1. Purpose

Define a clean, repeatable, commercial-scale cloning process that delivers uniform callusing, rapid root initiation, and high survival rates across large batch runs using **Dip** rooting gel.

2. Scope

This SOP applies to all commercial propagation activities including mother plant cutting, media preparation, rooting gel application, humidity management, and early clone establishment.

3. Responsibilities

Propagation Lead

- Verifies environmental targets
- Confirms correct solution mixing and tray labeling
- Audits sanitation and logging compliance

Cultivation Technicians

- Execute cutting, sticking, and humidity procedures exactly as written
 - Maintain tray-level hygiene and documentation
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4. Materials & Equipment

- Healthy mother plants
- Sterile scissors or scalpels





- 10% bleach solution **or** broad-spectrum disinfectant and virucide (or last-resort 70% Isopropyl alcohol)
 - Clean gloves
 - **Dip Rooting Gel**
 - Propagation media (rockwool, coco plugs, peat plugs)
 - Clone trays and humidity covers
 - Clean pitchers or containers
 - Clean water or RO water
 - pH meter
 - Labels, plant tags, or masking tape
 - Marker
 - Shock solution for sanitation
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5. Environmental Targets & VPD

- Air temperature: **70–80 °F**
- Relative humidity: **65–75%**
- Target VPD: **0.8–1.0 kPa**
- Photoperiod: **18/6**

Cloning relies on maintaining a low-VPD microclimate at the tray level while cuttings are unrooted. Proper VPD supports controlled transpiration, internal nutrient movement, CO₂ exchange, and stress reduction during callus formation and early root development.

The room should be set to post-hardening conditions so clones can transition smoothly as humidity support is gradually reduced.

6. Mother Plant Cutting Standards

1. Select healthy, vigorous shoots
2. Cutting length: **2–6 inches**
3. Make the initial cut **just above a node**
4. Leave **at least two nodes** on each mother shoot
 - a. This effectively tops the mother plant
 - b. Encourages two new shoots per cut site
 - c. Increases future cutting count while shaping the mother
5. Immediately place fresh cuttings into a pitcher of cloning solution as cuts are taken to prevent wilting or dry-out.





7. Propagation Media Preparation

1. Insert propagation media into trays.
2. Pre-soak media using **FLUIDS** or **POWDER** cloning solutions.
 - a. **FLUIDS Cloning Solution**
 - i. CaMg: **2 mL/gal**
 - ii. Base A: **12 mL/gal**
 - iii. Base B: **12 mL/gal**
 - b. **POWDERS Cloning Solution**
 - i. Powder A: **4–5 g/gal**
 1. **17–21 mL/gal of stock**
 - ii. Powder B: **4–5 g/gal**
 1. **17–21 mL/gal of stock**
 - iii. Powder D: **0.2 g/gal**
 1. **17 mL/gal of 40 g/gal stock**
 2. or **21 mL/gal of 36 g/gal stock**
3. Adjust solution to **pH 5.5–5.8**.
4. Drain excess moisture thoroughly.
 - a. Media should be **moist, not dripping**.

8. Cutting Preparation

1. Sanitize tools before starting and between plants using a **10% bleach solution** or a labeled **broad-spectrum disinfectant and virucide** approved for horticultural use.
2. Select shoots **2–6 inches** in length.
3. Make the initial cut **just above a node** on the mother plant.
4. Remove lower leaves.
5. Trim large fan leaves.
6. Keep cuttings in cloning solution until sticking.
7. Immediately before applying rooting gel, re-cut the base of each cutting at a 45-degree angle.
 - a. Exposes fresh vascular tissue
 - b. Improves gel contact and callus formation





9. Dip Rooting Gel Application Methods

Method 1: Direct-to-Media

1. Apply Dip directly into the media opening.
2. Insert cutting immediately.
3. Minimizes handling and cross-contamination.

Method 2: Direct-to-Stem

1. Apply Dip directly to the cut stem.
2. Insert into media.
3. Suitable for small runs or spot work.

Method 3: Dispense and Dip

Preferred for high-throughput propagation but introduces a higher risk of cross-contamination.

1. Dispense Dip into a clean container such as a shot glass
2. Dip each cutting, then insert into media.
3. Discard remaining gel after use.

Insertion depth: 0.75–1 inch

Pro tip:

Avoid using the pre-formed hole in rockwool. Insert the cutting gently next to the hole for a firmer hold.

10. Tray Setup, Misting & Labeling

1. Lightly mist clones or the inside of the humidity cover with water.
2. Cover trays immediately after sticking.

Required Tray Labeling

Each tray must include:

- Date cut
- Strain or cultivar
- Mother plant ID
- Initials of cultivator(s)





11. Tray Humidity Procedure

Day 1 – Setup

- Place trays on benches or racks.
- Keep covers fully closed.

Day 2 – Humidity Build

- Leave domes and vents closed all day to stabilize internal humidity and support callusing.

Day 3–7 – Ventilation & Burping

- Gradually open the ventilation vents more each day, increasing airflow incrementally until vents are fully open.
- Begin daily dome removal (burping) for **5–20 minutes** to exchange air.
- Dome removal may extend up to **4 hours** if clones remain turgid.
- Remove excess condensation from domes by wiping or shaking off before replacing.
- Adjust vent opening and dome removal duration based on plant response to avoid wilting or stress.

Daily Inspection

- Check leaf turgor
- Leaf color
- Callus formation
- Early root emergence

12. Feeding & Dryback Management

- If media was properly pre-soaked, re-feed typically on:
 - **Days 5, 7, 9, and 11**
- **Do not oversaturate media.**
- Maintain **30–50% dryback** between irrigations.
- Intentional drydown supports oxygen exchange and faster rooting.





13. Hardening Off (Days 7–10)

1. Begin once roots are established.
 2. Gradually increase ventilation.
 3. Remove humidity support once clones maintain turgor independently.
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14. Sanitation & Turnover

1. Clean trays and humidity covers between every run using **Shock solution**.
 2. Allow to air dry before reuse.
 3. Never reuse propagation media.
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15. Documentation & Review

Record for each batch:

- Tray label data
- Rooting timeline
- Success rate
- Deviations from SOP

Review performance after each cycle and refine environmental or timing variables as needed.

