



Simplified Cloning SOP_{v1.1}

UNIVERSAL: USA(METRIC)



Make Every Cutting Count

This S.O.P. describes a simplified process for making clones, including: preparing a plug soak solution, trimming clones, plugging clones, and clone maintenance.

Supplies Checklist

- ☐ 5 gal (20L) bucket with markings
- ☐ Two small cups: 2-5oz (60-150mL)
- ☐ Spray bottle
- ☐ Sharp scissors
- ☐ New scalpel
- ☐ Cutting board
- ☐ Gloves
- ☐ 10'x20' (25x50cm) Propagation flats
- ☐ 10'x20' (25x50cm) Propagation domes
- ☐ Insert tray - 50ct or 72 ct
- ☐ Labeling tags and pen
- ☐ Substrate:
 - ☐ 1.5" (4cm) Rockwool plugs OR
 - ☐ Peat plugs e.g. iHort plugs
- ☐ Sanitation:
 - ☐ 10% bleach solutions OR 2% Virkon-S
 - ☐ 70% isopropyl alcohol
- ☐ Nutrients:
 - ☐ FRA Part A
 - ☐ FRA Part B
 - ☐ Triologic (optional)
 - ☐ pH Up/Down
 - ☐ Rooting Hormone e.g. Cloning Gel
 - ☐ Calibrated pH and EC meter
- ☐ Scale for weighing flats (optional)



Step 1. Setting Up Supplies and Sanitizing

- A. Gather your materials** and set up a cup filled with 10% bleach solution (1 part bleach to 9 parts water) to soak cutting tools in. This is important for preventing the spread of Hops Latent Viroid (HpLVd) and other pathogens. HpLVd is spread by cutting tools that have contacted sap from an infected plant.
- B. Spray** any surfaces, tools, and materials (unless they are brand new) with 10% bleach.
- C. Each person should have at least 2 cutting implements** in a cup of 10% bleach solution. Switch between implements for each plant, making sure to soak 3 min before reuse.

Step 2. Taking Cuttings

- A. Take cuttings.** Cuttings can be taken the day before or on the day of cloning. Prioritize healthy cuttings from the tops of large, healthy moms and avoid cutting from lower branches if possible. Use sharp scissors, sterilized in bleach between each strain.
- B. Remove lowers.** Cut off all nodes/leaves below the top 3.
- C. Cut the tips** (30-50%) of the remaining big leaves off, to reduce the space they take up.
- D. Keep cuttings hydrated.** They can be kept overnight in a cup filled with the mix in Step 6 Rooting Phase & Maintenance.

Step 3. Soaking Clone Plugs

- A. Fill** the 5 gallon bucket with the same “Feed Inputs” mix listed in Step 6 Rooting Phase & Maintenance
- B. Break up** the cloning plugs into the bucket.
- C. Soak** for 30 minutes.
- D. Load** plugs into the insert tray.
For 72 cell trays, use every other cell in a checkered grid. For 50-cell trays, use every cell.

Step 4. Plugging Clones

- A. Stay clean.** Keep cutting tools in 10% bleach solution, switching tools with each new plant.
- B. Prepare cloning solution**
- Wear clean gloves to prevent cloning hormone from contacting skin.
 - Fill a small cup with $\frac{3}{4}$ " of cloning gel.
- C. Cut stem.** Use a fresh scalpel to cut the stem at a 45 degree angle, preferably about $\frac{1}{2}$ " below a node. Clones should be about 7". If a node isn't available at that height, don't worry about it.
- D. Dip** the 45 degree cut end of the clone into the cloning gel.
- E. Place.** Immediately insert the clone about $\frac{2}{3}$ of the way into the plug. For thick stems, use the precut hole and for smaller stems use halfway between the hole and the corner of the plug. You do not want air next to the stem.

Step 5. Finishing The Tray

- A. Mist the inside of the dome** with plain water and place the dome on top of the tray with the vents closed, once all the cells (or every other in checkerboard) are filled.
- B. Label the tray** (using a piece of tape on the outside or a tag inside the dome) with:
- Your initials
 - Strain name
 - Number of clones (if less than full tray)
 - Initial Tray weight (optional)
 - Date made



Step 6. Rooting Phase & Maintenance

Guide your clones through the rooting phase by keeping each stage within the **Environmental and Feeding Targets** shown here.

Follow the **Stage-by-Stage Chart** to adjust feed frequency and ventilation for optimal growth.

Environmental & Feeding Targets

Lighting	150 umol x 24 hrs/day			
Air temp	78 deg			
RH%	75%			
Root temp	75 deg			
CO2	400-600 ppm			
Feed EC	2.0 - 3.0 EC			
Feed pH	5.8 pH			
Feed inputs	Front Row Ag's Veg Recipe at ~2 EC:			
	Part A	Part B	Triologic	Rootsheild Plus
	4.1 g/gal* (1.08 g/L)	2.7 g/gal* (0.71 g/L)	2 ml/gal (0.53 g/L)	1.6 g/gal (0.42 g/L)

*If using 3-2-2 Stock Concentrate this converts to 23ml/gal (6ml/L) for Part A and Part B.

Stage-By-Stage Chart

Stage	Soaking/ Pre-Plug	Day 1 - 4	Day 5 - 10	Day 11 - 15
Feed Frequency	Weigh tray when fully loaded and saturated	Feed when the tray drops to ~50% of starting weight, usually around day 5.	Feed every 1-2 days, as tray weight drops to ~50% of starting weight	Daily feeds required once multiple roots are showing
Events	Take cuttings from mother plants	Open vents ~48-72 hrs after cloning. Remove domes for 3 min/day, drain off excess water.	Remove domes around day 5-10 (if room is 75%+ RH). Monitor for wilting after 10min and replace domes if necessary.	Plant day 14-15