🧬 Wizardly Genetics
Advanced Cannabis Cloning – Indoor/Outdoor Protocol

Complete SOP – Version 1.0 – August 2025

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🌱 Objective
Take 6–8 cm cannabis cuttings, treat for pests and microbial contamination and optional treatment for powdery mildew with UV-C, potassium bicarbonate ($KHCO_3$), and 70% IPA + 0.1% Southern Ag Surfactant, and prepare for immediate cloning.

🧪 Materials
Plants
- Healthy cannabis plants with 6–8 cm semi-hardwood/softwood shoots.

Tools
- Sharp scissors/scalpel
- Sterile gloves
- 70% or 91% Isopropyl alcohol (IPA)
- Southern Ag Surfactant (80% non-ionic)
- 3% Hydrogen peroxide (H_2O_2, optional for microbial dip)
- Dawn dish soap (Ultra Original, for initial pest rinse on outdoor cuttings)
- Potassium Bicarbonate ($KHCO_3$)
- Distilled water
- Lukewarm tap water (30–35°C)
- UV-C light (200–300 µW/cm²)
- UV-C safety goggles (e.g., Tool Klean Safety Glasses, ANSI Z87.1-certified, blocking 99.99% UV-C up to 400 nm)
- Rooting hormone (e.g., 0.5–1.0 mg/L IBA gel, like Clonex)
- Cloning medium (e.g., Rapid Rooter plugs or rockwool cubes)
- Cloning tray with humidity dome
- Spray bottle
- Graduated cylinder (10–500 mL)
- 1 mL pipette or syringe
- Mixing container (HDPE/glass)
- Amber/HDPE bottle
- Thermometer
- Timer
- Magnifying glass or 10x loupe (for pest inspection on outdoor cuttings)

Safety
- Gloves
- UV-C safety goggles
- Ventilated area for IPA

🧬 Procedure

✂️ *Cutting Preparation*

Timing

- Take cuttings in the morning when plants are turgid.

Sterilization

- Sterilize scissors/scalpel with 70% IPA (use 70% IPA as-is; if 91%, dilute to 70% by mixing 770 mL 91% IPA + 230 mL distilled water for 1 L), rinse with water. Wear sterile gloves.

Selection

- Choose 6–8 cm shoots with 1–2 nodes from middle/upper plant sections. Avoid visibly mildewed areas.

Technique

- Make a clean, diagonal cut below a node. Remove lower leaves, leaving 1–2 sets at the top. Place cuttings immediately in lukewarm tap water (30–35°C) to prevent air embolism.

🫧 Initial Pest Rinse (for Outdoor Cuttings)

Prepare Solution

- Measure 946.35 mL lukewarm tap water (30–35°C) into a clean HDPE or glass container.
- Add 0.5–1 mL Dawn Ultra Original dish soap (0.5 mL for 0.05%, 1 mL for 0.1%) using a 1 mL pipette or syringe.
- Stir gently for 1–2 minutes to disperse evenly, avoiding excessive foaming. Use immediately.

Rinse

- Submerge cuttings in the solution for 30–60 seconds, gently agitating to dislodge pests or debris.
- Rinse thoroughly with lukewarm tap water (30–35°C, 1–2 minutes) to remove soap, keeping leaves as dry as possible.

Inspection

- Examine cuttings under a magnifying glass or 10x loupe for pests (e.g., spider mites, aphids, eggs).
- Trim and discard affected areas in a sealed bag.

🦠 Microbial and Optional Powdery Mildew Treatment

Inspection

- Check for white powdery mildew spots. Trim 1–2 cm above infected areas, discard debris in a sealed bag.

UV-C Treatment

- Place cuttings on a sterile tray in a single layer in a ventilated enclosure.
- Apply UV-C light (200–300 µW/cm²) at 12–24 inches for 5–10 minutes, rotating halfway.
- Wear UV-C safety goggles (e.g., Tool Klean Safety Glasses) and gloves. Avoid direct UV-C exposure.
- Monitor for wilting; reduce time to 3–5 minutes if damage occurs.

🧂 Optional Add for Powdery Mildew – Potassium Bicarbonate Dip

Prepare Solution

- Prepare 0.5% $KHCO_3$ solution (5 g/L lukewarm tap water, 30–35°C).
- For 1 L, dissolve 5 g $KHCO_3$ in 1 L water.
- Add a trace of liquid soap (<0.1%, ~0.9 mL) if desired for better coverage.

Dip & Rinse

- Dip cuttings for 1–2 minutes, agitating gently.
- Rinse thoroughly with lukewarm tap water (30–35°C, 1–2 minutes).

💧 Hydrogen Peroxide Dip

Prepare Solution

- Prepare a dilute 3% H_2O_2 solution (10 mL of 3% H_2O_2 per 1 L lukewarm tap water, 30–35°C).

Dip & Rinse

- Submerge cuttings for 30 seconds, gently agitating to ensure contact.
- Rinse thoroughly with lukewarm tap water (30–35°C, 1–2 minutes) to remove residual H_2O_2.
- Use for outdoor cuttings or when higher microbial loads are suspected (e.g., Botrytis, Alternaria).

🍶 70% IPA + Surfactant Dip

Prepare Solution

- With 70% IPA: Mix 946.35 mL 70% IPA with 1.183 mL Southern Ag Surfactant (~1.2 mL, 80% active) for 1 quart.
- With 91% IPA: Mix 727.5 mL 91% IPA, 218.85 mL distilled water, and 1.183 mL Southern Ag Surfactant for 1 quart.
- Measure with a graduated cylinder and 1 mL pipette, stir gently for 2–3 minutes in a ventilated area.
- Store in an amber/HDPE bottle, label as “70% IPA + 0.1% Southern Ag, Made mm/dd/yyyy.”

Dip & Rinse

- Submerge cuttings for 30–60 seconds, stirring gently to ensure contact.
- Rinse thoroughly with lukewarm tap water (30–35°C, 1–2 minutes), keeping leaves as dry as possible.

🌱 Rooting Hormone Application

- Dip the cut end (0.5–1 cm) in rooting hormone (e.g., Clonex gel, 0.5–1.0 mg/L IBA) immediately after rinsing.
- Tap off excess to prevent over-application.

🪴 Planting

- Insert cuttings into pre-soaked cloning medium (e.g., Rapid Rooter plugs or rockwool cubes, moistened with pH 5.5–6.0 distilled water).
- Ensure the cut end is 1–2 cm deep, with leaves above the medium.

🌡️ Cloning Environment

- Place in a cloning tray with a humidity dome under 18/6 light (100–200 µmol/m²/s, fluorescent or low-intensity LED).
- Maintain 70–90% humidity, 22–25°C.
- Mist leaves lightly with distilled water if wilting occurs.
- Ventilate dome daily to prevent mold.

📝 Notes

Microbial Risk

- Even without powdery mildew, other pathogens (e.g., Botrytis, Alternaria) or pests may persist, especially in outdoor cuttings; maintain UV-C, optional H_2O_2, and IPA treatments.

Mildew Risk

- Systemic mildew may persist; discard cuttings showing symptoms post-treatment.

Safety

- Use UV-C safety goggles (e.g., Tool Klean), gloves, and ventilation for IPA.
- Sunglasses or regular safety glasses are unsafe for UV-C.

Viability

- Clone within 2–4 hours of cutting for best results; for outdoor cuttings, aim for 1–2 hours to maximize viability due to potential environmental stress.

⚙️ Adjustments
- Test UV-C time/distance, optional H_2O_2 dip, and initial pest rinse (for outdoor cuttings) on 1–2 cuttings to ensure no adverse effects (e.g., leaf burn or wilting).
- Start with 0.05% Dawn dish soap (0.5 mL/quart) for sensitive cultivars.
- For rockwool, pre-soak in pH 5.5–6.0 water.
- Avoid overwatering to prevent rot.

🧪 Mixing
- Use a 1 mL pipette for surfactant precision (~1.2 mL/quart) and a scale for $KHCO_3$ (5 g/L) and Dawn dish soap (0.5–1 mL/quart) for precision.
- Prepare H_2O_2, Dawn dish soap, and other solutions in a ventilated area.
- Use Dawn Ultra Original; avoid scented or antibacterial variants.
- Ensure thorough rinsing after H_2O_2 and pest rinse to avoid interference with rooting hormone or IPA treatments.
- Prepare solutions in a ventilated area.

📜 Regulations
- Verify that treatments (e.g., H_2O_2, Dawn dish soap) comply with local cannabis cultivation laws.

🌿 Outdoor Cuttings
- Outdoor cuttings may carry pests (e.g., spider mites, aphids) or environmental contaminants.
- Use the initial pest rinse and inspect thoroughly.
- Consider taking 20–30% more cuttings to account for potential losses due to stress or pests.
- If mother plants were treated with pesticides, ensure residues are safe for cloning and rinse thoroughly.