

Explainer: Fighting Root Rot with Engineered Wood Substrates

1. Why is this important?

- **The Big Picture:** With peat prices climbing and supply chains remaining shaky, many of you are looking at wood-based alternatives—but the fear is that "raw" wood might invite more seedling rot (damping-off) into your range.
- **The Discovery:** New research proves that blending processed pine wood into your peat mix actually **suppresses Rhizoctonia damping-off** better than the standard peat-perlite recipe.
- **The Bottom Line:** Switching to wood-fiber blends can protect your crop from sudden losses while potentially cutting your dependence on expensive peat and perlite.

2. Practical Takeaways

- **Swap the Perlite:** You can successfully replace perlite with processed wood components like hammer-milled pine tree substrate (PTS) or disc-refined wood fiber at a **30% inclusion rate** by volume.
- **Dosing Your Mix:** When blending on-site, target a **pH of 5.8** using roughly **6 lbs/yard of dolomitic lime** and a wetting agent at approximately **2.6 oz/yard**.
- **Pick Your Process:** If your priority is disease suppression, **hammer-milled or disc-refined pine** outperformed screw-extruded fibers in several trials.
- **Watch the Air:** Wood fiber can provide up to **40% air space**, which is much higher than peat; this extra "breathing room" for the roots is likely what helps keep the rot at bay.

3. The Visual Evidence

The most telling evidence isn't a graph—it's the pots themselves. In side-by-side trials with heavy *Rhizoctonia* pressure, the **standard 70:30 peat-perlite pots were almost completely wiped out**, showing bare, diseased patches. Meanwhile, the pots containing **30% hammer-milled pine (PTS)** or **Forest Gold (FG)** were lush and full of healthy radish seedlings, proving that the wood creates a "shield" the pathogen struggles to penetrate.

4. Key Data Highlights

- **Disease Survival:** In infested trials, plants grown in hammer-milled and disc-refined wood blends had **significantly lower disease severity** compared to those in the peat-perlite control.
- **Growth Boost:** Under disease pressure, plants in wood blends produced **higher aboveground weight** than those in peat-perlite—basically, the plants didn't just survive; they stayed productive.
- **The Winning Ratios:** For most wood types, the protection increased as you added more wood; a **30% wood blend** generally provided the best defense against root rot.

5. Economic Impact & Considerations

- **Labor & Chemicals:** Because these wood blends are naturally "disease-suppressive," you may find yourself reaching for the fungicide sprayer less often, saving on both chemical costs and the labor to apply them.
- **Crop Quality:** The study showed that wood-fiber plants often had better germination and higher "fresh weight" than the standard mix, meaning more high-quality flats out the door.
- **The Trade-off:** Be aware of **nitrogen drawdown**. While wood fights disease, it also "eats" nitrogen faster than peat (NDI of 0.01 to 0.05), so you'll need to adjust your fertigation to keep up with the demand.

6. Going Forward

If you're ready to move away from perlite, don't flip the whole range at once. **Start with a small-batch trial**—perhaps one bench of your most rot-prone crop—using a 20% to 30% wood fiber blend. Monitor your **initial pH** (wood starts higher, often around 5.8 to 6.0) and keep a close eye on your leaf color to ensure your nitrogen levels are staying ahead of the wood's appetite. If you see the same "shield effect" we saw in the lab, you've got a built-in IPM tool that pays for itself.