PHYTOTOXICITY—WHAT TO DO?

Once the damage is done, you have a couple options: 1) throw the material away and move on, or 2) attempt to clean it up and push new growth to get plants retail ready. Consider the following as you decide how to move forward after a phyto incident occurs.

To Dump or Not to Dump?

Will additional labor, bench time, and inputs needed to make plants salable again cost more than your profit margin? The answer to this initial question may not always be cut and dried, but here are a few helpful points to get you moving in the right direction:

- If blooms are the only affected plant parts, recovery should be feasible within about two to three weeks, especially if additional buds are visible.
- If 25% or less of the foliage is dying or necrotic, selective cleanup of damaged leaves and another week or two of growing time should be enough to turn things around.
- If about 50% or more of the foliage is damaged, extensive cleanup and bench time will likely be needed. If plants will need four or five weeks or longer to recover, unfortunately the prospect of turning a profit on the damaged crop is slim.
- If phyto is the result of something applied to the rootzone, recovery time may be uncertain. The decision to wait it out and hope plants push through becomes a roll of the dice and, in my experience, often does not pay off if damage from a drench-applied product is severe.

Cut Back and Clean Up

Damaged foliage doesn't just look unsightly—necrotic leaves and shoots can quickly become food for *Botrytis* or other opportunistic pathogens. It's important to remove damaged material before it can cause more problems, but the goal is to take as little plant material off as possible.

- For spray phyto, if damage is minor (approximately 10% of foliage or less), it may not be necessary to remove affected foliage. Another week or two of grow time might be all plants need to push new growth and cover up the damage.
- If closer to 25% of the canopy has incurred damage, a soft pinch (removal of the top 1/2 inch of shoots) with a handheld electric trimmer or shears may be a quicker and more uniform way to "reset" plants than selective removal of affected leaves and shoots.
- On more heavily damaged crops, trim back to below the most heavily damaged leaves and pick a consistent height to which you'll cut plants back. Avoid removal of more than the top two inches of shoots (if possible) to avoid stalled growth or sporadic axillary shoot emergence

- For fast-growing annuals and trailing crops, "ponytailing" damaged crops to a uniform height (for example, three or four fingers *below* the cut point) and cutting clear across the bundle of shoots is a quick and easy strategy, as well.

IMPORTANT: Be sure to sanitize any tools used to trim back damaged foliage frequently, especially when moving between greenhouses or groups of plants.

- Remove as much shoot and leaf debris as possible from the pot before you put plants back on the bench. A leaf blower running at medium to low power is an efficient and effective way to clear out trimmings and reduce potential disease pressure.
- Treatment with a broad-spectrum fungicide after a trim is advisable, as well, to further protect crops as they try to bounce back.

Optimize Crop Cultural Practices to Encourage Fast Recovery

Injured crops need a little extra TLC if you want them to be retail-ready again quickly. *Don't just put them back on the bench and wait for them to recover, actively encourage strong regrowth.*

Mind your moisture levels. When you remove a significant amount of leaf tissue, you reduce a plant's ability to transpire. This will directly impact water uptake by roots and often causes growing media in recently trimmed crops to dry down more slowly. Make necessary adjustments to your irrigation strategy to ensure plants don't stay waterlogged after a cut-back.

Temporarily increase feed rates to encourage fast canopy fill. Use a fertilizer with a higher proportion of ammoniacal- to nitrate-based nitrogen (N) and moderate levels of phosphorus (such as a 20-10-20) at about 300 ppm N to jumpstart growth.