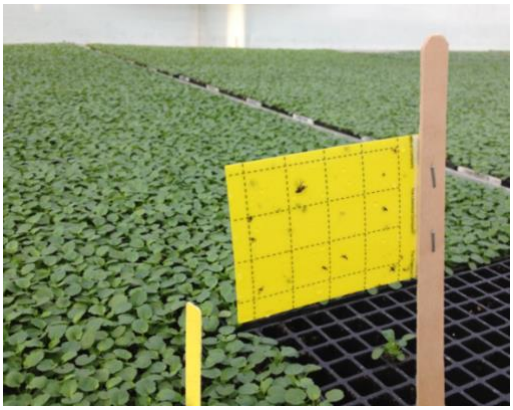
LAST-MINUTE SPRING CROP IPM

Without fail this time of year, pest and disease pressure often jumps right before plants head to retail. It makes sense, though! Warm temperatures, high relative humidity, tightly packed benches, and chunky, well-fed plants all over your greenhouse; what pest or disease wouldn't love a greenhouse like this?



It's critical to prioritize scouting for pests and diseases all season long, but we get it—sometimes things get hectic and scouting takes a back seat to other critical operations and crisis management. That said, if you notice increasing pest or disease pressure in spring crops shortly before they are supposed to hit a retail bench, assess the severity of the outbreak and act quickly.

Identify the Hot-Spot

It can be difficult to see the epicenter of a pest outbreak on a bench full of mature plants. However, if you see a sudden uptick of pests on your sticky traps or spot a plant that's just crawling with critters, there's likely more where that came from.

- If scouting has gotten away from you until now, you must make the time commitment now to root-out the outbreak. Otherwise, you may end up with severely damaged plants on your retail benches or, worse, plants crawling with pests going out your door.
- When your sticky traps show a jump in pest presence, check your crops in high-traffic areas first, including near doors, vents, exhaust fans, roll-up doors, and breezeways between greenhouses. This is often where pests that come in from the field will end up first.
- Disease outbreaks are slightly different because they will show up on susceptible hosts first—not just the first plant they inoculate. In that sense, incidences might not correlate to a high-traffic area in your greenhouse the same way they would with a sudden pest outbreak. Keep

your eyes peeled for abnormal foliage coloration and physical symptoms like wilting as a quick indicator that there might be a problem.

- If you see a few plants that appear to have fungal- or bacterial leaf spots along the edge of a production block, dig deeper. If disease pressure is high enough to work its way to the edge of the bench, symptoms may be worse toward the middle.
- Be sure to survey several plants in a line moving away from the first plant you spot that has symptoms. Do this in multiple directions to make sure you don't miss anything.

Rogue Out the Worst of It

While we don't like to tell growers to throw away plants, the quickest way to reduce pest and disease pressure is to toss heavily infested crops. If you only have a couple of weeks to get things cleaned up, it's unwise to treat with insecticide/miticide or fungicide and try to nurse infested or infected plants back to health. Get the worst of the problem out of your greenhouse ASAP!

- Insecticides, miticides, and fungicides take time to control the problem. Physical removal of the pest or disease "reservoir" that can cause spread to other healthy plants, however, takes mere seconds.
- For example, if you find three plants that are thick with two-spotted spider mite (TSSM) webbing, throw those plants out without hesitation. Bag them where they sit and take them directly to the dumpster. Remove them from your growing space via the closest door to the outside and keep the number of other greenhouses you need to move through with infested plants to a minimum.

Give 'Em the 1-2 Punch

When you're battling a sudden spike in pest pressure, your best bet is going to be a two-pronged attack once heavily-infested plants are rogued out.

- Start with an insecticide/miticide that will offer quick knock-down of your target pest. For TSSM, it would be wise to use a miticide that affects all life stages (eggs, immatures, and adults) or tank-mix with a product with ovicidal activity if you plan to use a product that otherwise only affects immatures and adults.
- Follow up with a systemic product that will offer longer-term protection and continue to work over the next few weeks, in case your initial spray misses some of your target pests. This will help curb the outbreak and set your wholesale/retail customers up for success
- If you use a translaminar (locally systemic) pesticide for knock-down, you may be able to avoid the need for a rootzone-applied systemic. That said, good coverage is critical even with a translaminar product on mature plants with dense canopies.
- Rootzone-applied products may take a few days to start "working" but they will provide solid downstream control for several weeks after application.
- *Be aware of potential risks to pollinators when you treat plants with open- or soon-to-be-open blooms.* While it's critical to control pest outbreaks in plants that are going out the door soon, it's equally important to consider the impact your choices may have on the environment.

Follow all label guidance with respect to application when plants are in bloom.

Whenever possible, select products that have lower toxicity to pollinators.

Where diseases are concerned, be sure you apply the best-in-class active ingredient at your disposal to suppress disease. There are many products that are labeled to control different pathogens, but some are better than others.

Look to recently published trade articles of efficacy trials for quick guidance and/or consult your supplier or favorite technical expert if you're unsure what to use.

If you want to dig a little deeper, the IR-4 Grower Resources page has links to LOADS of data and research summaries on which active ingredients are most effective. Keep in mind, the research reports here are very data-heavy, so you might want to think of this as a "advanced applicators" resource.

Lastly, be mindful of phytotoxicity risks and the potential for discoloring blooms whenever you apply insecticides, miticides, and fungicides to crops showing color.

- Fungicide active ingredients like chlorothalonil are known to discolor flower petals, as are many active ingredients in the strobilurin (FRAC 11) class.
- Suspension concentrate (SC) and emulsifiable concentrate (EC) formulations also tend to have higher phyto risks than water dispersible/soluble granules (WDG/WSG, respectively) or wettable powder (WP) products. Keep this in mind when you select which pesticide to apply shortly before crops are supposed to leave your greenhouse.
- Alternatively, WP formulations tend to leave more visible residue on foliage and flowers after they are applied. While these do rinse off eventually, residues may be a cause for concern among consumers, so be mindful of this if you use WP products late in the crop cycle.