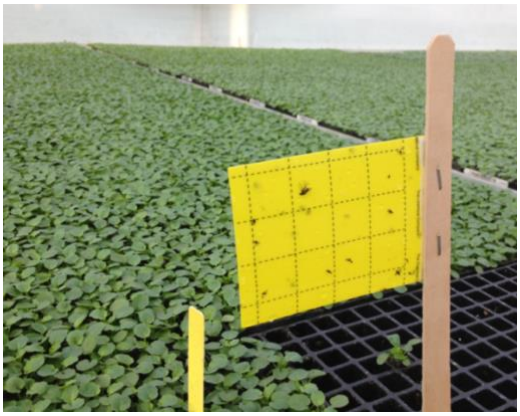
BALLTECH ON DEMAND™

IPM TOOLBOX: PREVENTATIVE CONTROLS

While the name may seem self-explanatory, how do you know when to deploy preventative IPM measures? What controls do you even need to deploy? Answer these questions with data collected from your monitoring efforts and thresholds that have been set for pest and disease tolerances.



Deploying Preventatives

Let's use aphids as an example:

Under ideal environmental conditions, many aphid species commonly found in North American greenhouses can develop from first instar to adult in about a week.

- Your IPM records indicate that aphid detection starts around week 9 each year and tier-1, reactive controls (such as application of an insecticidal soap) are then deployed. However, populations in the greenhouse always exceed the tier-2 threshold around week 10.
- Based on this, it's likely that aphids actually show up in the greenhouse closer to week 7, remain undetected, complete a couple of reproductive cycles by week 10, and reach a critical mass that is easier to detect.
- Knowing this—and rather than waiting to deploy tier-1, reactive controls in week 9—deploy preventative controls for aphids in week 7 or 8 and increase early-season scouting efforts.

It's difficult to get application timing right for preventatives if you don't have much (*or any*) scouting data or history. If you *don't* have data to work from, understand the basic biology of common pests and diseases in your greenhouse and the general time of year when they become problems. While this may result in earlier-than-necessary control implementation, this still provides a better target for when to apply preventatives, rather than falling back on reactive control strategies.

Prevention Using Chemical Controls

For a long time, North American growers used "calendar" spray programs to manage pest and diseases risks. Sprays were done either upon first detection and continued until the crop was finished or because there was a known risk but the pest or disease in question was not yet present. Due to environmental, worker safety and pesticide resistance concerns, most growers have left this approach behind for preventative IPM. There are many pesticides available in the North American IPM toolbox, so take the following into consideration when building or revising your chemical program.

1. **Diversify your toolbox.** Minimize the risk of pests and diseases in your greenhouse developing resistance to the IPM products you use. Fungicide- and Insecticide Resistance Action Committee (FRAC and IRAC, respectively) codes are printed on most pesticide labels to make selection of products easier and help ensure that the same class of pesticide is not used repeatedly to manage the same pest population. Rotate between no less than two different FRAC/IRAC codes between applications, but three or four (or more) per rotation should be everyone's goal. The more modes of action (ways that your IPM products affect pests and pathogens) you can introduce before repeating use of a given code, the better.

   Note: Despite having different trade names, many products can be in the same chemical classes as one another. Scrutinize the label before purchasing IPM products and ensure that you aren't buying and applying multiple products in the same class, consecutively.

2. **Timing is critical.** Apply systemics well ahead of a major pest or disease outbreak. The active ingredients in these products need to be taken-up and distributed throughout the plant to be effective, and many are minimally effective at major outbreak management when applied retroactively. For contact-pesticides, apply ASAP when you reach a management threshold and resist the inclination to wait until "spray day". Failing to act quickly can be the difference between nipping an issue in the bud and a protracted battle against pests or disease.

3. **Be critical of pesticide efficacy.** Many products are labeled to control a broad range of pests or diseases, but not all products are created equal. For example, some insecticides labeled to control 10 different pests and are highly effective against thrips, but only marginally against aphids and mites. Labels rarely (if ever) state this, so it is important to review efficacy studies conducted by industry experts and university researchers. Many articles containing this sort of info can be found in past issues of *GrowerTalks* and university extension newsletters.

Prevention Using Biologicals

There is so much to be said about biological IPM, so I am going to cover this in VERY broad strokes. Ultimately, biological IPM is the future of greenhouse pest and disease management, so I challenge each of you to pivot to this approach and develop a strong program that fits your needs in the coming years. The switch often feels daunting, so I hope the bits of wisdom that I've gleaned from my own experiences with biological IPM can help give you a nudge forward.

You don’t have to drop everything you know about IPM and fling yourself into the unknown—you can start by using “easy” biological control agents (BCAs) to build familiarity. Nematodes to help manage fungus gnats, for example, are a great first step into the realm of BCAs. They’re compatible with most other IPM products and can be applied using the same equipment you’d typically use for a normal insecticide drench. Removal of screens or filters and use of lower water pressure is needed, but these are otherwise an easy BCA to deploy.

Biological IPM is a totally different approach that balances environment and cultural management strategies to maximize both crop and BCA health. This adds moving parts to your daily operations, so it can be hard to adjust to this new approach. But don’t be discouraged—once you adjust to the learning curve, implementing a biological IPM program becomes second nature.

While a well-developed bio-IPM program can be highly effective, this doesn’t mean that chemical IPM tools no longer have a place in the toolbox. In situations where bios are not enough to curb a major outbreak, use of conventional pesticides may be the only path forward to save a crop. This is not an idea situation to be in, but it’s a reality that everyone who implements biological IPM should be prepared for.