

Guidelines & Tips for Scouting High Tunnel Crops & Habitat Plantings

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A common theme we hear from growers is that their pest management plans were not as successful as anticipated. The reasons for poor performance are often traced back to a crack in the foundation of their pest management program, namely in monitoring of the problems. Successful pest management starts with timely detection of these issues. It's critical that issues be found early through scouting so management strategies can be effectively utilized. After problems are found, the proper management strategy (natural enemies or insecticide applications) need to be selected. After applications of the former methods, it's tempting to think the problem has been solved, but that's not usually the case! Scouting needs to continue to be sure the chosen management strategy was effective. The following are some tips on how to scout high tunnel crops for pests and determine if management strategies were effective.

Know friend vs foe: It's essential to know who are the key players in the pest management game. For some pests like aphids, identification of the species is necessary if using biological control because some natural enemies, like parasitic wasps, attack only certain species of aphids, whereas others attack a broad range of pests.

Inspect plants upon receipt: Plants often arrive infested with pests. If you bring in new plants, be sure to inspect them first. Take the new plants to an area away from the production area and tap them over a white surface (laminated paper, foam board, white table). Check under the undersides of leaves, especially the older ones at random locations over the entire plant. Aphids, thrips, whitefly and spider mite adults and immatures are often found in crevices or on the undersides of leaves. Tapping dislodges adults, but immature stages can remain attached.

Inspect residual plants before transplanting new ones in tunnels: Pests are often carried over season to season on plants or weeds that have been left behind from the previous cropping cycle. Fallowing the tunnel helps reduce these pest populations. If fallowing is not a part of the production plan, it is essential to know what pests are in the tunnel so they can be managed to avoid infesting the new crop.

Inspect plants regularly: Designate one staff person to be the scout and incorporate this task into their schedule. Plants should be looked at as often as possible, esp. early in the season. Ideally scouting should be done weekly, but every 2 weeks is a good compromise. For summer crops, inspecting 5 plants per 100 ft of row (1 per 20ft interval) is a good start. For greens, 10 plants per 100ft of row (2 per 20ft interval) is best. Alternatively, you can scout a 10x10in square per interval. Visually divide the plant (sample unit) into 3 stratum (lower, middle, high vs. outer, middle, and center). In each stratum, randomly select 3 leaves to visually inspect. This allows for a representative inspection of the whole plant.

Record observations: This is one of the most important tasks for success! Some of the most critical information includes: (1) What pests are infesting the crop at what time of year?; (2) How many plants are infested 'what % of the crop?'; (3) What is the infestation level per plant? (a number estimate per plant is ideal). *Why is this information important?* If biocontrol is used, the proper release rate depends on this information. Often, biocontrol fails because the release rate was too low for the pest population. This information is also useful for anticipating what issues may occur and when in future years. This will allow you to release biocontrol agents preventatively.

Train personnel on pest and natural enemy id: Employees are usually the ones handling and harvesting plants most often. They should know what to look for and have a procedure in place for who to report their observations to when they find something. For example, they could be provided with flags or flagging to mark questionable areas.

Try Sticky Traps: Sticky trap cards and tape are available in yellow and blue to catch adult flying pests. These can be particularly effective early in the season to detect thrips and other pests. These should never be used as a substitute for checking plants because many pests are often wingless and will escape detection on sticky cards. An infestation may be lurking within the crop that does not show up on the traps.

This coming season, give some of these strategies a try! Also, be sure to contact a University Extension agent for help with pest identification and to discuss management options.

Critical Questions to Help You Manage Persistent Pest Problems

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Do you constantly struggle to manage pests in your high tunnel and wonder why? Are you unsure what natural enemy to use or what information you should give to a biocontrol supplier or Extension agent? Below is a list of critical questions you should think about to help you successfully manage your persistent pest issues.

1. Do I scout for pests and beneficials?

- What crops are infested?
- How much of my crop is infested in each tunnel?
- What pests are infesting my crop?
- How many pests are there per plant?
- How long has this been an issue?
- Are there any signs of parasites or predators in the crop?
- Do my employees know how to identify pests?
- Do I mark the areas that are infested to monitor over time?

2. Do my production strategies favor pests?

- Do I gradually till crops under even though there are pests on them?
- Do I remove all plant material (including weeds) before planting new crops?
- Do I fallow tunnels for a period of time?
- Do I start my own seeds or buy in transplants that may be infested with pests?
- Do I check incoming plants for pests before I plant them?

3. Should I use natural enemies or spray chemical pesticides?

- Are pest levels too high for biocontrol to handle or does it need knockdown with a pesticide?
- Am I using the right products for the pests present?
- Are they being used during the right life stage of the pest's life cycle?
- If I use natural enemies, am I using them at the right time of year?
- Am I using the right rates for the level of pests per plant and amount of plants infested?
- Will I consistently follow-up on the management action to determine if worked (scout)?

4. Will I keep records?

- What pest problems did I have at this time in past years?
- What were the pest levels on what crops?
- What did I do to manage the pests last time?
- Did my management strategy work?

5. Can I plan ahead?

- Did I keep records of what I did last season?
- How did the past season management strategies work?
- If management last season didn't work, why? (Were pest numbers too high and I used biocontrol; Did I treat at the wrong life stage; Did I not apply the proper rate)?

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