



Critical Questions to Consider to Help 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?

- a. What crops are infested?
- b. How much of my crop is infested in each tunnel?
- c. What pests are infesting my crop?
- d. How many pests are there per plant?
- e. How long has this been an issue?
- f. Do my employees know how to identify pests?
- g. Do I mark the areas that are infested to monitor over time?

2. Are my production strategies favoring pests?

- a. Do I gradually turnover tunnel crops even though there may be pests present?
- b. Do I remove all plant material then plant clean crops?
- c. Do I fallow tunnels for a certain amount of time?
- d. Do I start my own seeds or buy in transplants that may be infested with pests?

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

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

4. Will I keep records?

- a. What pest problems did I have at what time of year?
- b. What were the pest levels on what crops?
- c. What did I do to manage the pests?
- d. Did my management strategy work?

5. Can I plan ahead?

- a. Did I keep records of what I did last season?
- b. How did the past seasons management strategies work?
- c. If management last season didn't work, what could the reasons be (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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Attracting and Sustaining Aphid Natural Enemies in High Tunnels

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Habitat plants in tomatoes.

Plant-mediated IPM systems (e.g., indicator, banker, and habitat plants) offer innovative, plant-based tools to manage aphids and other pests in high tunnels at low inputs. These plants provide pollen and nectar in the absence of the prey or act as indicator plants for pests and natural enemies. We are determining if these systems support and enhance populations of commercially available and naturally occurring beneficial insects.

We are completing multi-year projects evaluating these IPM systems for high tunnel vegetables across ME, NH, VT and PA. We tested habitat plantings in the summer on tomatoes and in winter on leafy greens. Alyssum, beans, marigolds, borage, calendula, viola and dill were assessed as habitat plants for the summer season and alyssum, beans, marigolds, calendula and viola for the winter. These habitat systems attracted over 2,500 individual natural enemies over the experimental period.

Common visitors were parasitic wasps and their mummies, adult syrphid flies and adult and immature insidious pirate bugs (*Orius*). Other predators were observed, including, lacewings, assassin bugs, spiders and various lady beetle life stages. The greatest abundance and diversity of natural enemies were observed on alyssum, borage, calendula and dill. Alyssum had the greatest tolerance to high heat and cold, flowered throughout most of the growing season, was non-invasive and easy to care for, easy to grow and least attractive to aphids. Borage and calendula, although attractive to natural enemies, were susceptible to aphid infestations. In addition, borage tended to become overbearing and self-seeded turning it into a weed. Calendula took a long time to flower. These results suggest **alyssum** may be a particularly suitable habitat plant for attracting and sustaining natural enemies for year-round high tunnel production. We encourage growers to try growing alyssum this year to attract and support your beneficial insects.

We continue to add new resources to our High Tunnel webpage. Please visit us!
<https://www.uvm.edu/~entlab/High%20Tunnel%20IPM/HighTunnelIPM.html>

We work for **YOU!**

Please tell us what we can do to help you manage pests via SurveyMonkey
<https://www.surveymonkey.com/r/8SD96PQ>



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