

Habitat Plantings Harbor Happy Beneficial Bugs

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Growers who produce plants for as ornamentals or for consumption must deal with a variety of insect and mite pests. Chemical pesticides often have been the weapon of choice against these invaders but these compounds are becoming less and less acceptable because of concerns for human health or their negative environmental impacts on non-target organisms, such as beneficial insects. They also are less effective because of pest resistance. Many organic growers either do nothing, or spend a lot of money making frequent purchases of biological control agents such as fungi, bacteria or arthropods that are parasitic or predatory, i.e., “the good bugs”.

Beneficial insects, such as pollinators and natural enemies, provide either pollination or pest management support to growers. Some beneficials can act as pest-fighting pollinators, providing both. An example of a pest fighting pollinator is the syrphid or flower fly.

These flies look like bees or wasps but are really flies and don't sting. As adults, they are important pollinators in many settings feeding on pollen and nectar. As immatures, the larvae (maggots) of many species eat soft-bodied insects, particularly aphids, the #1 pest in our region according to growers of high tunnel vegetables and greenhouse ornamentals.

Providing attractive habitat in plant production areas to attract in these natural enemies can contribute to lowering pest populations thus minimizing the need for chemical pesticides. Plant-mediated IPM systems (e.g., indicator, banker, and habitat plantings) offer innovative, plant-based tools to manage aphids and other pests in high tunnels at low inputs. Over the past several years, we have conducted many projects to evaluate these IPM systems for high tunnel vegetables, greenhouse ornamentals and landscape-nursery setting across the Northeast.

In high tunnels, we tested habitat plantings of alyssum, bush beans, marigolds, borage and dill in tomatoes. These plants provide pollen and nectar to feed the beneficials in the absence of the prey. They also act as indicator plants for early detection of pests and natural enemies. For example, bush beans are very attractive to spider mites and serve as an early warning system of an impending outbreak. Alyssum showed great promise as a habitat plant to support natural enemies in high tunnels and landscape settings. With its tolerance to heat and cold, prolific flowering pattern throughout the growing season, non-invasive nature and ease of care made it a top choice as a habitat plant. It attracted large numbers of parasitic wasps, predatory bugs and



Syrphid fly adult on zinnia.



Alyssum habitat planting in high tunnel tomatoes.



Insidious flower bug searching for prey cosmos.

syrphid flies all season long. In another study, we have established habitat hedges consisting of a variety of annuals, including alyssum, coreopsis, blue cornflower, Indian blanket, cosmos, sunflowers and zinnias. These provide a diversity of floral shapes, sizes and heights throughout the growing season. A wide range of pest-fighting pollinators and other natural enemies were observed visiting these plantings. Some were natural enemies that are often purchased to manage notorious nursery pests such as aphids and thrips. For example, the insidious flower bug (*Orius insidiosus*), also called the minute pirate bug, is a predator of many small, soft-bodied insects. When prey is scarce they consume pollen and nectar. Their small size allows them to search for prey that hide deep within blossoms and best of all, they stopped by to provide free pest management!

Habitat plantings are easy and inexpensive for growers to start themselves and provide a sustainable pest management system that are beautiful to look at as well as effective. If you would like to learn more about how to start using plant-mediated IPM systems, contact Cheryl Frank Sullivan at cfrank@uvm.edu. For more information on these projects and links to related information, please view the following pages from our website:

<https://www.uvm.edu/~entlab/index.html>

<https://www.uvm.edu/~entlab/Greenhouse%20IPM/UVMGreenhouseIPM.html>

<https://www.uvm.edu/~entlab/Landscape%20IPM/LandscapeIPM.html>

<https://www.uvm.edu/~entlab/High%20Tunnel%20IPM/HighTunnelIPM.html>

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