



Attracting and Sustaining Aphid Natural Enemies in High Tunnels

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Habitat plants (alyssum, borage, beans) 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 cost. These plants provide pollen and nectar in the absence of the prey or act as indicator plants for pests and natural enemies. We are assessing the value of these systems to support and enhance populations of commercially-available and naturally-occurring beneficial insects.

We recently completed several multi-year projects evaluating these IPM systems for high tunnel vegetables across Maine, New Hampshire, Vermont and Pennsylvania. We tested habitat plantings in the summer on tomatoes and in winter on leafy greens. Alyssum, green beans, marigolds, borage, calendula, viola and dill were assessed as habitat plants for the summer season and alyssum, green beans, marigolds, calendula and viola for the winter. These habitat systems attracted over 2,500 individual natural enemies over the experimental period.

Common insects observed were parasitic wasps and their mummies, adult syrphid flies and adult and immature insidious pirate bugs (*Orius*). Other predators were also observed, including, lacewings, assassin bugs, spiders and various lady beetle in different 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. It flowered throughout most of the growing season, was non-invasive. It was easy to grow and care for and was the least attractive to aphids among the plants we tested. Borage and calendula, although attractive to natural enemies, were susceptible to aphid infestations. In addition, borage tended to become too large, outcompeting other plants and the crop. It also readily self-seeded, turning it into a weed. Calendula took a long time to flower. Our 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. Images of natural enemies you may commonly observe on habitat plants are shown on the back of this page.



Potato aphids infesting tomato.

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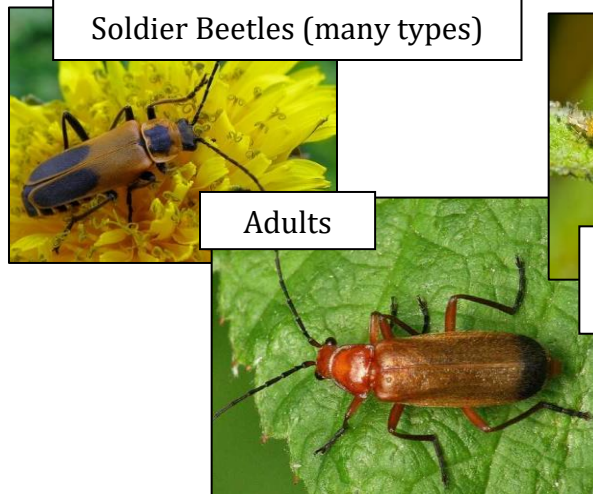
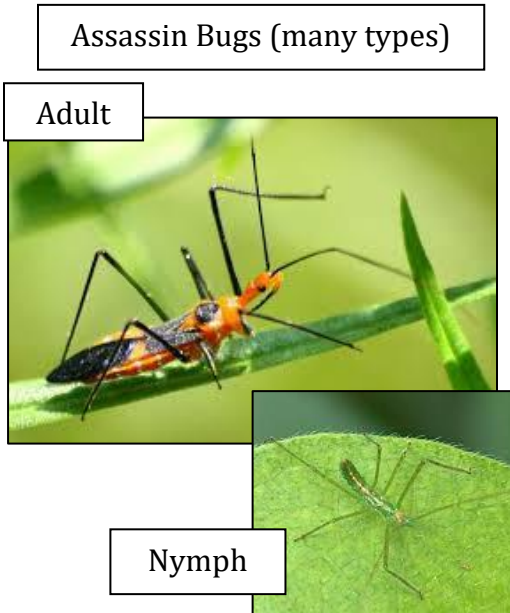
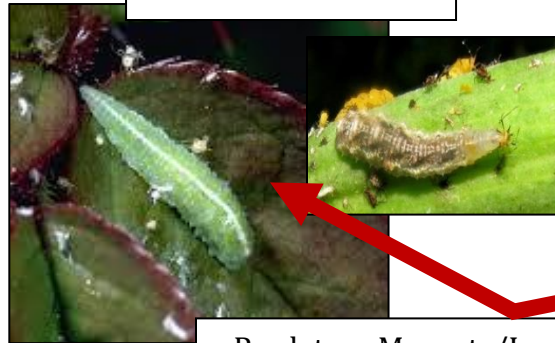
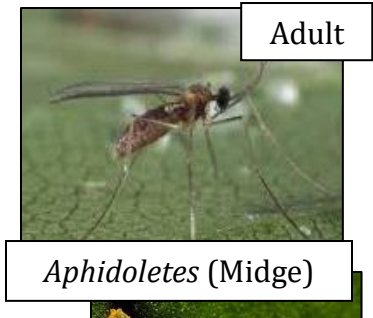
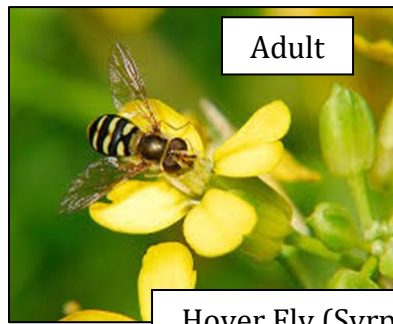
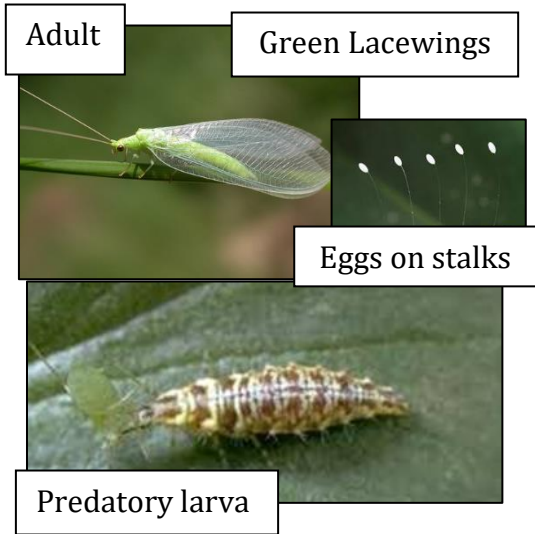
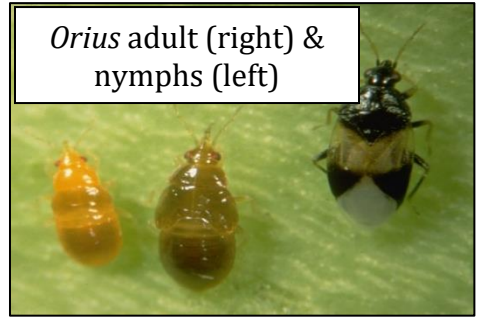
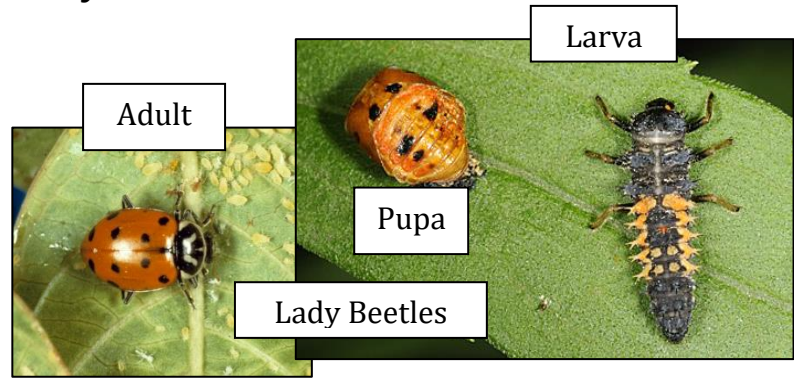
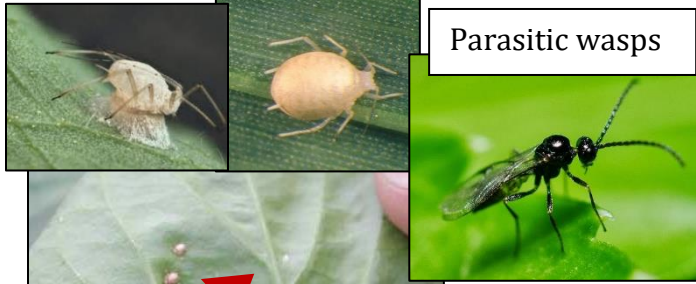
Information presented herein was supported by the Northeast Sustainable Agric. Research & Education Program (#LNE15-343); National Institute of Food & Agric., US Dept. of Agric., Crop Protection & Pest Management Competitive Grants Program (#2014-70006-22516, CRIS# 1004273) and the Univ. of Vermont Extension System and National Institute of Food & Agric., US Dept. of Agric., Extension IPM Program (#2014-70006-22577, CRIS# 1004998). Any opinions, findings, conclusions, or recommendations expressed herein are those of the authors and do not necessarily reflect the view of the US Dept. of Agriculture.

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United States Department of Agriculture
National Institute of Food and Agriculture

Aphid Natural Enemies Commonly Found on Habitat Plants



To Know them is to LOVE them!