The Entomology Research Laboratory

Attracting and Sustaining Aphid Natural Enemies in High Tunnels
Update

University of Vermont Entomology Research Laboratory
Prepared by Cheryl Frank Sullivan & Margaret Skinner


Potato aphids infesting tomato.

Aphids are the #1 pest of vegetables in Northeastern high tunnels. They stunt plant growth, secrete sticky honeydew, transmit virus diseases and cost growers considerable time and resources to manage. To combat aphids, some growers spray chemical insecticides, which pose a threat to human health and the environment. Organic growers either do nothing, or spend a lot of money on frequent releases of natural enemies.

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. We have multi-year projects to evaluate these IPM systems for high tunnel vegetables across ME, NH, VT and PA. We are testing habitat plantings in the summer on tomatoes and in winter on leafy greens. Alyssum, beans, marigolds, borage, calendula, viola and dill are being tested as habitat plants for the summer season and alyssum, beans, marigolds, calendula and viola for the winter season. 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.


Habitat plants in tomatoes.

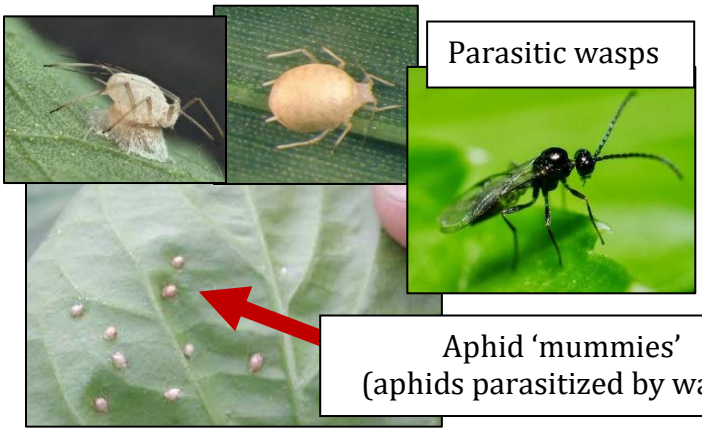
Over 2,500 natural enemy individuals were encountered on habitat plantings. An average of 4 (summer) and 6 (winter) natural enemies were observed on habitat plantings over the experiment duration. Common visitors were parasitic wasps and their mummies *Orius* adults and nymphs and syrphid adults. Lacewings, assassin bugs, spiders and various lady beetle life stages were also observed (see back page for commonly encountered natural enemies). The greatest abundance and diversity of natural enemies were 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 volunteered after removal and calendula took a long time to flower. These results suggest alyssum may be a beneficial habitat plant for attracting and sustaining natural enemies for year round high tunnel production.

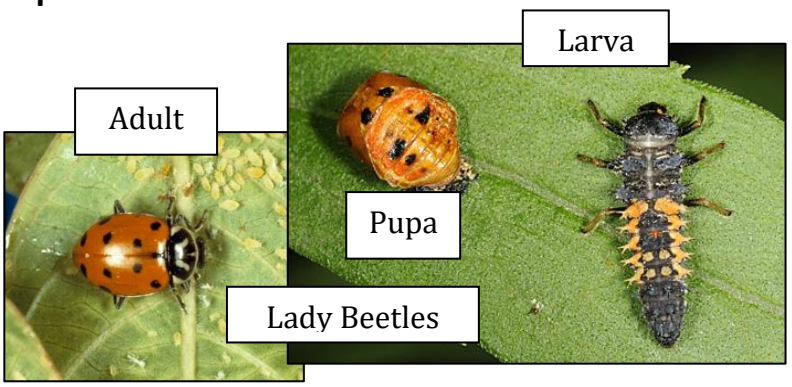
We continue to add new resources to our High Tunnel webpage. Please visit us!
https://www.uvm.edu/~entlab/High%20Tunnel%20IPM/HighTunnelIPM.html

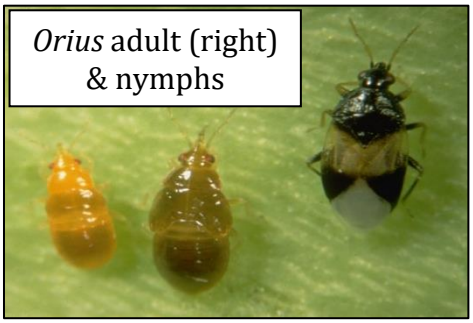
USDA
United States Department of Agriculture
National Institute of Food and Agriculture

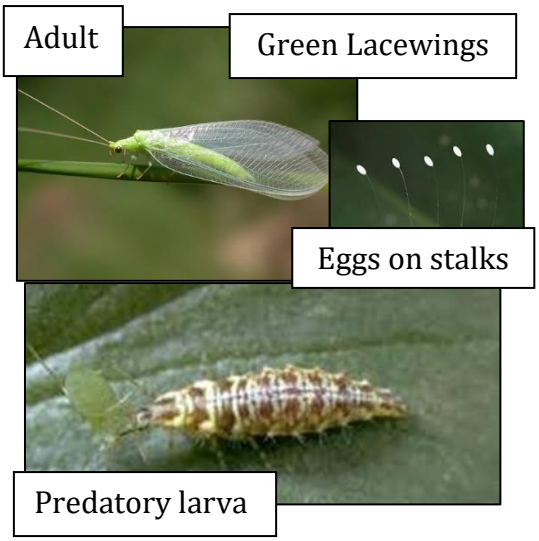
Information presented herein was supported by the Northeast Sustainable Agric. Research & Education Program (#LNE15-343); National Institute of Food & Agric., US Dept. of Agric., Crop Protection & Pest Management Competitive Grants Program (#2014-70006-22516, CRIS# 1004273) and the Univ. of Vermont Extension 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.

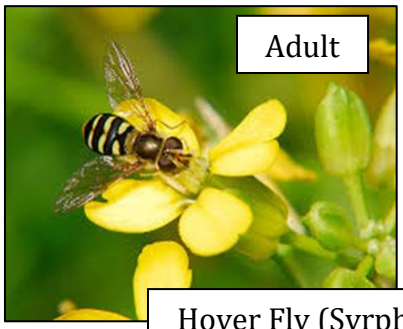
Commonly Encountered Aphid Natural Enemies

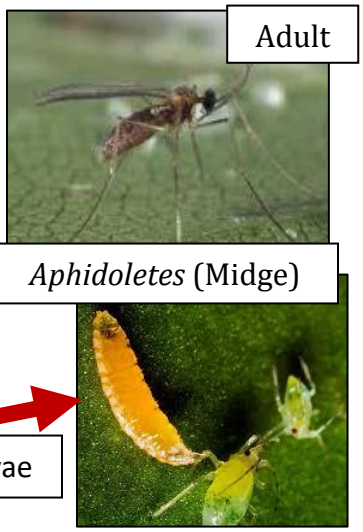


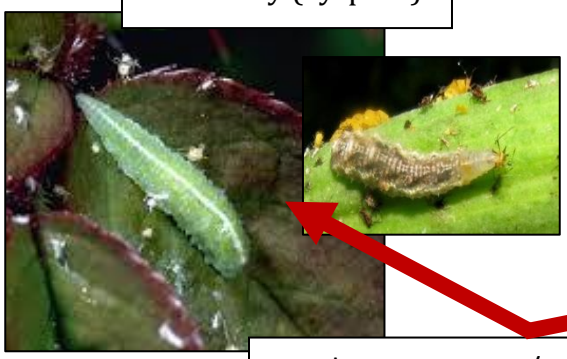












Assassin Bugs (many types)