



Plant-Mediated IPM Systems for Pest Aphids of High Tunnel Vegetable Production

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What's The Big Deal?

Aphids!!!

- Cause significant crop and revenue loss
 - Distortion, stunting, sooty mold
- Conventional growers spray chemical pesticides
 - Threatens human health and the environment
- Organic growers do nothing or invest in frequent releases natural enemies
 - Costly



Project Overview

Develop effective IPM tactics for high tunnel vegetable production suitable for the Northeast and Mid-Atlantic and encourage adoption through a collaborative, multidisciplinary, regional research and outreach initiative ME, PA & VT.

Obj. 1: Develop strategies to sustain aphid nat. enemies in organic high tunnels

Obj. 2: Establish a High-Tunnels Steering Committee

Obj. 3: Conduct 3-state (ME, PA & VT) hands-on educational programs



Our Cooperators

VT: A. Hazelrigg, Univ. of VT
ME: M. Hutton & J. Lilley, UMaine
PA: E. Sanchez & K. Ayers, Penn State
NY: C. Glenister, IPM Labs



Research Objective

Test two plant-mediated IPM systems that support biological control of aphids to determine their suitability and effectiveness for two vegetable crop types and two cropping seasons in high tunnels in the Northeast

Cool Season Crops
Leafy Greens: Winter



Banker Plant System

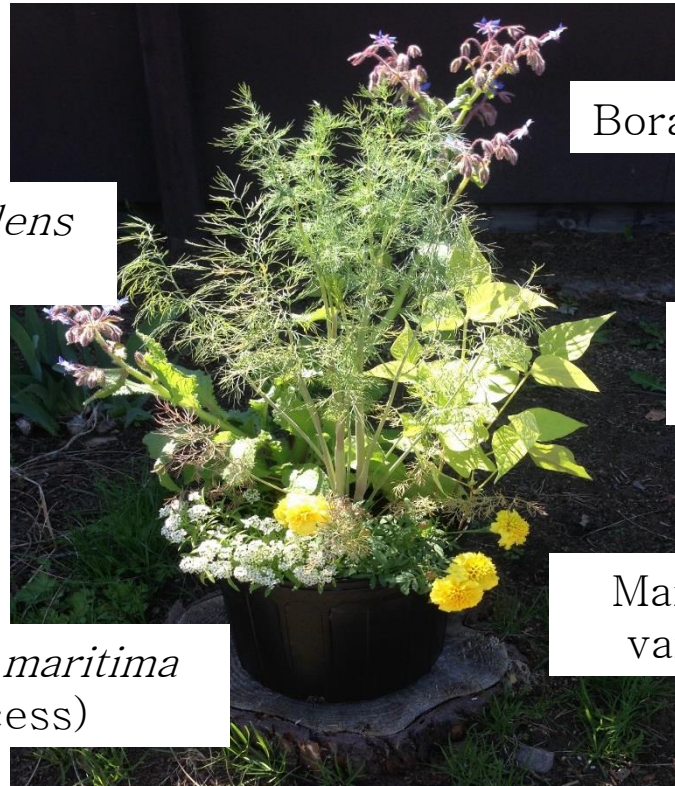
Warm Season Crops
Tomatoes, Peppers, Cucumbers: Summer



Habitat Plant Systems

Habitat Plant Systems

Summer



Dill (*Anethum graveolens*
var. Bouquet)

Borage (*Borago officinalis*)

Bush Bean (*Phaseolus*
vulgaris var. Provider)

Alyssum (*Lobularia maritima*
var. Snow Princess)

Marigold (*Tagetes patula*
var. Little Hero Yellow)

Hard Red Spring Wheat Aphid Banker

Habitat Plant Systems

Winter



Dwarf Calendula
(*Calendula officinalis*
var. Yellow Gem)



Viola
(*Viola tricolor* var.
Helen Mount)

Alyssum (*Lobularia maritima*
var. Snow Princess)



Majority Cold Tolerant
Max. Height under 18in

Marigold (*Tagetes patula*
var. Little Hero Yellow)

Bush Bean (*Phaseolus*
vulgaris var. Provider)

Hard Red Winter Wheat Aphid Banker

Methods

In A Nutshell:

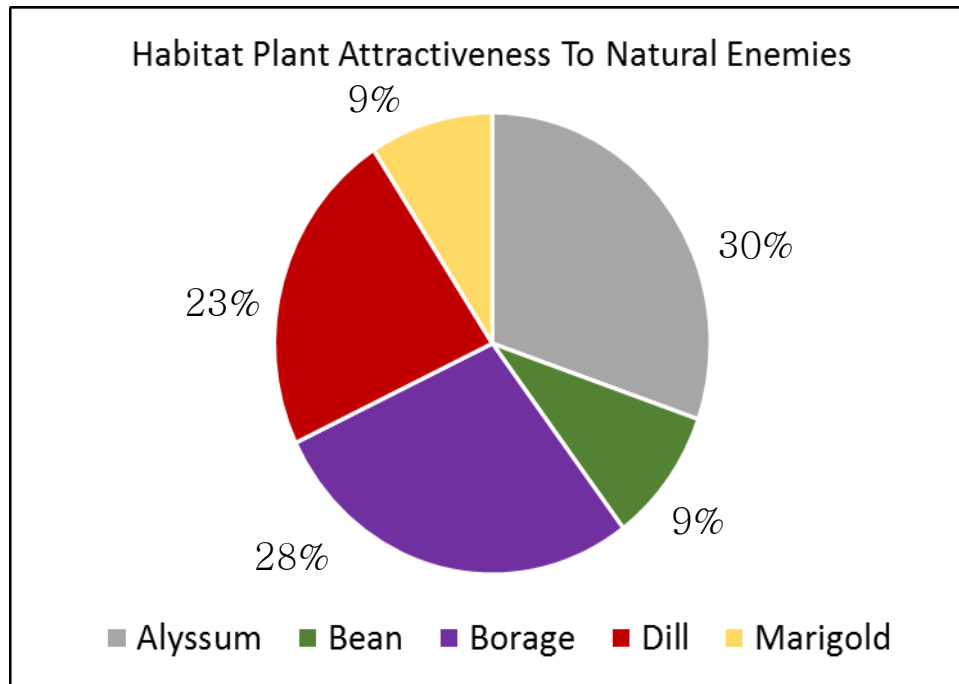
- ✓ Aphid species & numbers
- ✓ Natural enemy types attracted
- ✓ Hyperparasitism
- ✓ Habitat/banker plant performance
- ✓ Costs



Preliminary Results

Over 700 individual natural enemies encountered

Alyssum, Borage, Dill most attractive

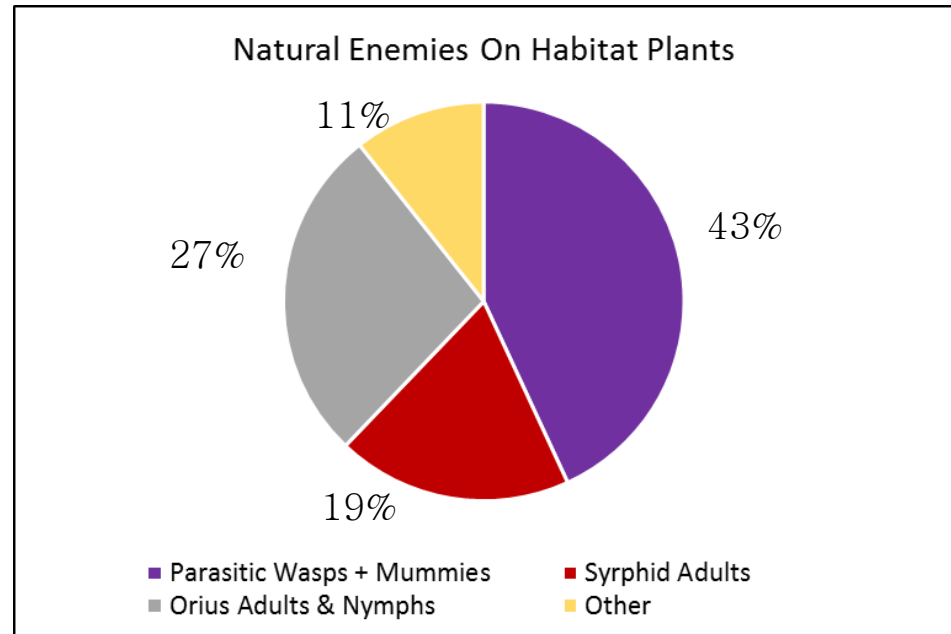


Preliminary Results

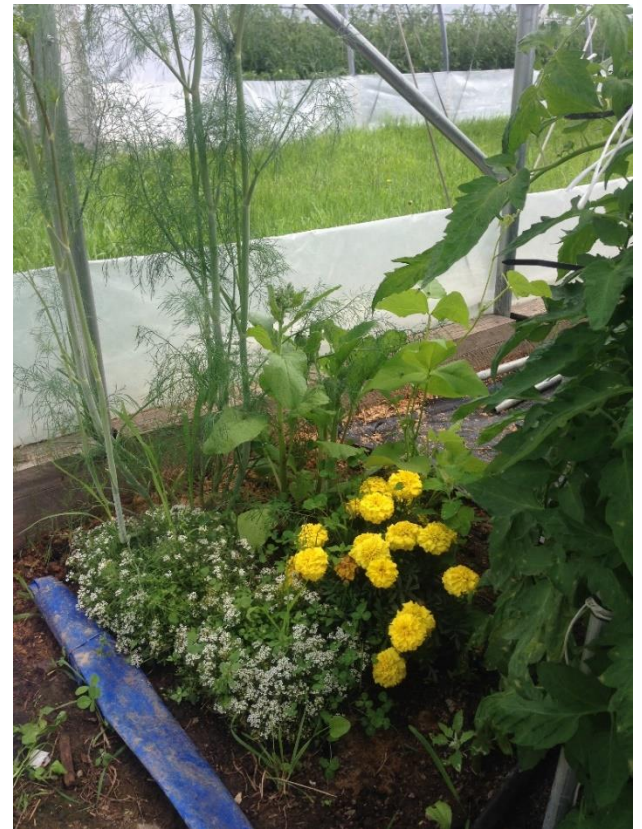
Majority were **parasitic wasps & mummies**, *Orius* adults & nymphs & **syrphid adults**

Others include various lady beetle life stages, predatory maggots, assassin bugs, lacewing eggs and larvae, etc.

6 species aphids collected from primarily borage



Summer Habitat Plantings



Winter Greens



Questions?



Thank You!

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