

12:00 to 12:30 Eastern

BIOLOGICAL CONTROL ON HERBS

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- Start with making a list of key herbs that you grow.
- Note which ones had problems in other years with certain insects and mites.
- Decide what your "Problem Children" are and monitor them closely



Spider mite prone herbs:

- Mints
- Sage
- Lemon grass
- Lemon balm
- Hyssop
- Winter Savory



Biological control for mites:
Amblyseius californicus
 released after *Phytoseilus persimilis*
 (5 – 6 per sq ft) of area.



- Low risk chemicals that control spider mites:
- Azadirachtin (Azatin, Econem, Neemix, Orzazin, Neemazod)
- Horticultural oils (PureSpray, SuffOil-X)
- Insecticidal soaps (M-Pede, Concern, DES-X)

- Sweet Bay : Bay psyllids sucker, *Trioza alacris*



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- Best control: Don't bring it into the greenhouse
- Low risk pesticide control:
- Azadirachtin (Azatin, Neemazod, Aza-Direct, Neemix, Ecozin)

- Sweet Bay :
- Pest Bay roller caterpillar, family Tortricidae



- Control options:
- Low risk insecticides: Spinosad (Conserve, Entrust).
- Bacillus thuringiensis (Bt) (Dipel, Caterpillar Attack and many other names)

- Some insects are wide generalist that hit many herbs – insects such as thrips



Thrips prone herbs

- Tarragon
- Lavender
- Rosemary
- Basil

- If you start you own plugs then place piles of *Amblyseius cucumeris*, predacious mite, (200 per flat) on plug flats.
- This establishes predacious mites on plants that are moved into the high tunnels



Thrips control

- Use pepper plants as Banker plants . Plants are inoculated with *Orius insidiosus* (Minute Pirate Bugs) . Continues to provide thrips control through late spring, summer into fall. Best banker pepper plant is 'Purple flash'. Start plants in January



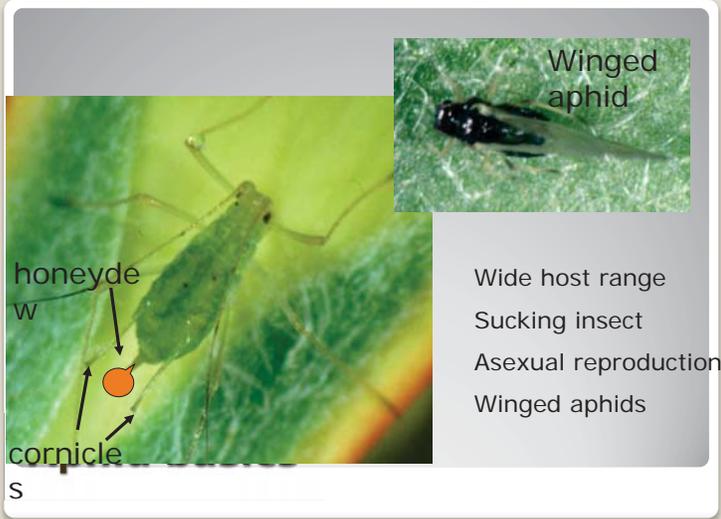
- Starting herbs under mist
- Weekly BotaniGard sprays (3)
 - *S. feltiae* (entomopathogenic)
 - nematodes weekly
 - *N. cucumeris* (predacious mites)
 - broadcast weekly (3x)
- Finishing herb crop use:
 - *Amblyseius cucumeris* mini-sachets
 - *S. feltiae* (entomopathogenic)
 - nematode) weekly



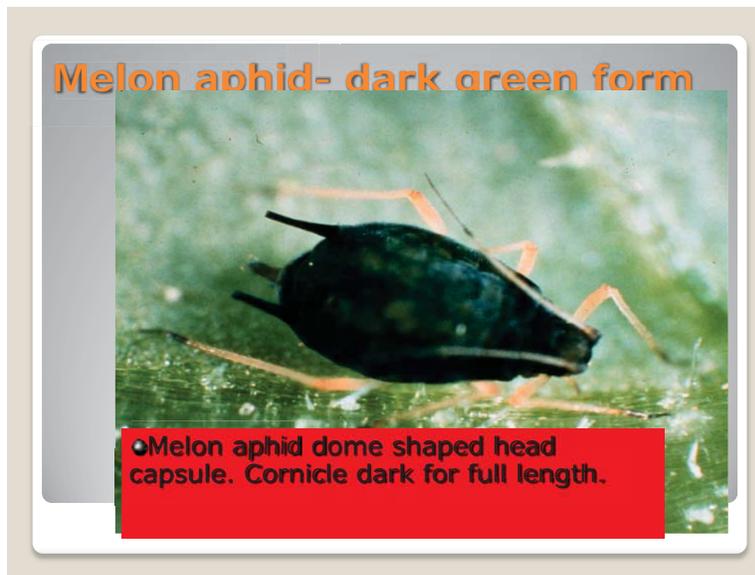
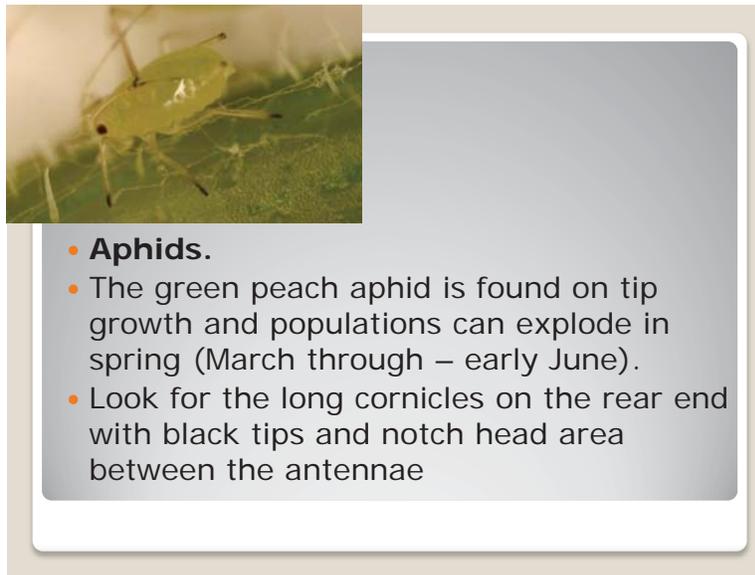
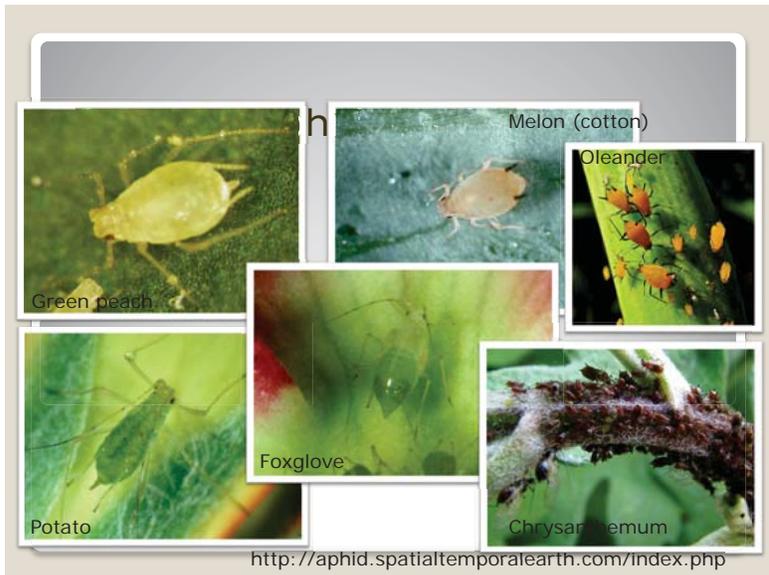
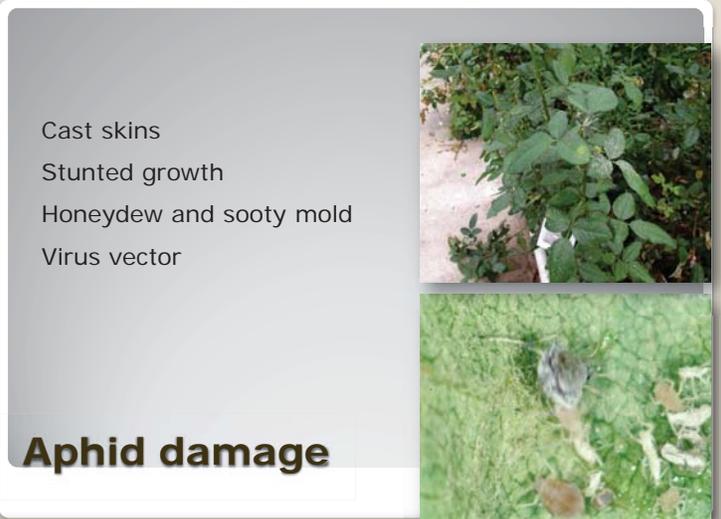
Thrips control: Misting to finishing

Aphid prone herb plants

- Lemon Verbena
- Oregano
- Basil
- Sage



Wide host range
Sucking insect
Asexual reproduction
Winged aphids





Melon aphid mottled green form

Aphid control

Good searchers



Aphidius colemani- good on green peach and melon aphids

Aphidius colemani wasp that parasitizes aphid causing aphid mummies (golden-brown and leather-like)

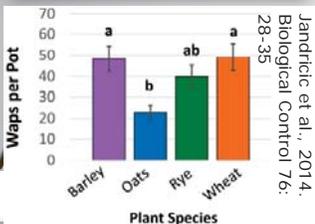


Aphidius ervi

Aphidius ervi- good for potato aphid and other species



- If you are thinking of trying biological control of aphids, plan to start your **either barley, rye or oats** plants in January or February to get the bird cherry oat aphid population established early. It is important to get the parasitic wasp established early in the season before aphids can become established in the greenhouse. - See more at: http://extension.umd.edu/IPM_learn/using-banker-plants-aphid-control-greenhouses



The aphid parasitoid, *Aphidius colemani*, is released at the rate of 50 *Aphidius* wasps per 6inch pot of barley plants.



Bird cherry oat aphid

Univ. of MD - IPMnet

To control ants – Denise put vaseline put on lip of pot



Bird cherry – oat aphid – *Rhopalosiphum padi*- obtain these from Biological Supply house

Question and Answer Time

syngenta®

BioControl in the Greenhouse



Coming Up Next:
12:30 to 12:55 Eastern
Lunch Break

Time	Topic
12:55 to 1:00	Welcome Back/Questions
1:00 to 1:25	Proactive Approach with a Biological Control Strategy
1:30 to 1:55	Grower Experience with Banker Plants for Aphid Control
2:00 to 2:25	Pesticides- Are They Ever Compatible with a Biocontrol Program?
2:30 to 2:55	The Fundamentals of Biocontrol of Fungal and Bacterial Diseases
3:00 to 3:25	Case Studies of Using Biocontrol for Disease Control in Greenhouse Crops
3:30 to 3:45	Wrap-up/ Questions