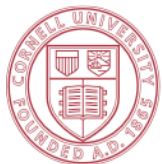


# Get to Know NYS IPM

Elizabeth M. Lamb

NYS Integrated Pest  
Management

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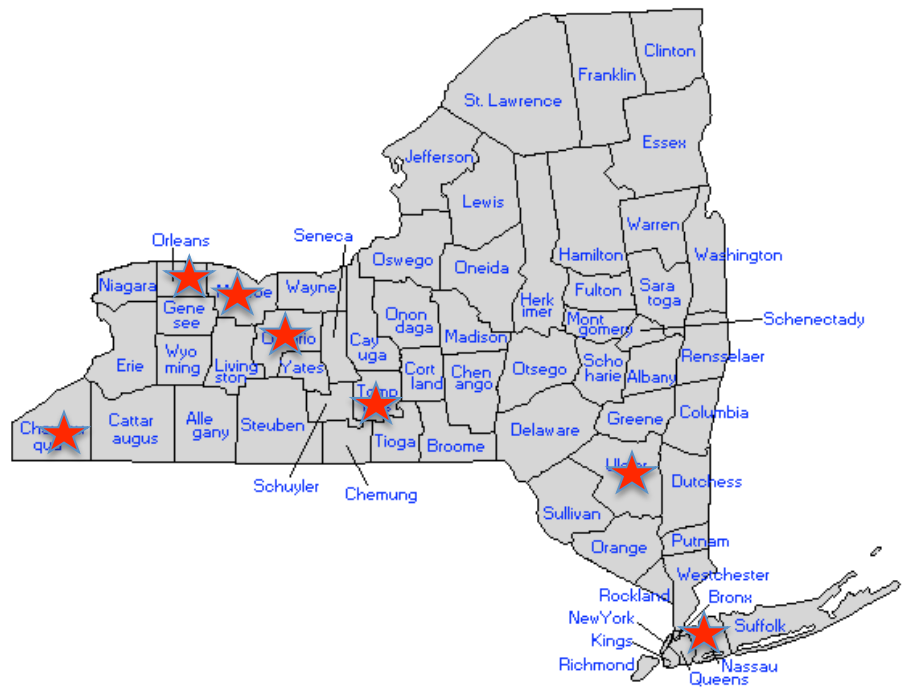


Cornell University  
New York State  
Integrated Pest Management Program



# Where we are and what we do

- Statewide spread
- 5 commodity areas
  - Vegetables
  - Fruit
  - Ornamentals
  - Field crops/livestock
  - Community
- [nysipm@cornell.edu](mailto:nysipm@cornell.edu)



# Vegetable Team

- Abby Seaman
  - Outreach to organic vegetable producers
  - Sweetcorn pheromone trap network
  - Late blight network
- Curt Petzoldt
  - Vegetable IPM systems evaluation
  - IPM labeling
  - Environmental impact quotients
- Betsy Lamb
  - IPM for greenhouse vegetables

# Greenhouse oriented programs

- IPM In depth hands-on workshops
  - 3 modules
    - Insect
    - Disease
    - Production factor related to IPM
  - Diagnostic session
  - Greenhouse tour



# IPM In-depth

- July on campus
- Fall and Spring around the state
  - Feb 14 - Ontario County
  - March 8 - Yates County
  - March 13 - Saratoga County
    - Thrips, botrytis,



# Biocontrol workbook

- Overview for growers getting started with biocontrol
  - Pest information
  - Beneficial information
  - Application information
  - Pesticide side effects on beneficials





*Greenhouse*

*Biocontrol*

*Workbook*

 New York State  
Integrated Pest Management  
Program



Cornell University  
Cooperative Extension

## Who is this workbook meant for—What is it meant to do?

- Beginning users of biological control – but with useful information for those who have already tried biocontrol
- Covers the use of beneficial insects to manage pest insects – there is also biocontrol using microorganisms to manage plant diseases and microorganisms used to control insects but this workbook covers the most commonly used biocontrol of pest insects

## What is biological control?

**Biological control is using one living organism to control another:**

- It can be an insect controlling another insect, or a disease organism controlling an insect or another disease
- It can be repeated introductions of the biocontrol agent or creating an established population in your greenhouse
- It can be coordinated with pesticide applications for the same or other pests

### TERMS

**Biological control:** biocontrol

**Beneficial(s):** the ‘good’ bugs (and diseases?) you use to control the bad ones

**Compatibility:** in biocontrol, the interaction between beneficial insects and insecticides

**Larvae, nymphs:** immature stages of insects. Different types of insects have different life cycles.

## What is SUCCESSFUL biological control?

- Control of the pest at an acceptable level
- Fewer pesticide applications or pesticide applications to fewer plants
- A later start to pesticide applications
- A higher quality product
- A possible marketing tool

## Is biocontrol for YOU?

The following questions have no right or wrong answers but are worth considering as you begin planning a biocontrol program.

1. Do you currently have a scouting program?
  - a. With biocontrol you need a scouting program to know if the beneficials are working and the only way to do that is to check your plants on a regular basis
  - b. Keeping scouting records makes planning and ordering beneficials for the next year easier
2. What pests are you trying to control?
  - a. Are there pests that are challenging to control with current pest management practices?
  - b. You may start with biocontrol for just one of your pests and then add biocontrol for the others
  - c. Are there effective biocontrols for the pests you want to control?
3. What crops are you growing or what is your production method?
  - a. There are effective biocontrols for most pest and crop combinations, but there are a few that are more difficult
    - i. Plants like *Primula obconica* and Gerbera daisies that have very visible petal scarring from thrips even with small pest populations
    - ii. Aphids on callibrachoa (?)
  - b. Stock plants tend to be in the greenhouse for a longer period of time and have many hiding places so you may need to adjust your biocontrol applications
  - c. Do you frequently move plants from place to place in your greenhouse as you need and use space so that pest populations get moved around, too?
4. Who makes the pest management decisions at your greenhouse?



## Aphids: Green Peach aphid, *Myzus persicae*; Melon aphid, *Aphis gossypii*

Beneficial	Environment Redo temps	Life span in optimum conditions	Stage that feeds	Pest stage eaten	Monitoring effect of the beneficial	Notes
Colemani <i>Aphidius colemani</i>	Range 15-20  Optimum 20	10 days	Adults lay eggs in aphids, larvae eat aphid	Nymphs and adults	Presence of aphid mummies  Adults on sticky cards	Good searching behavior
Aphelinus <i>Aphelinus abdominalis</i>	Optimum 16	30 days	Both larvae as parasite (larger aphids) and adults direct feeding (smaller aphids)	Nymphs and adults	Presence of aphid mummies  Adults on sticky cards	Better at high temperatures than <i>Aphidius</i>
Aphidoletes <i>Aphidoletes aphidimyza</i>	Range 10-30  Optimum > 16  High humidities	Larval feeding period 7 days	Larvae – adults lay eggs on plants with aphids	Nymphs and adults	Pest numbers  Adults on sticky cards	Prefer higher aphid populations  May kill more than they eat  Larvae do not move far
Ladybugs <i>Adalia bipunctata</i> and others		1-3 months	Larvae and adults	Nymphs and adults	Visual inspection  Pest numbers	Prefer higher aphid populations  May leave greenhouse
Green lacewings <i>Chrysoperla carnea</i>	Range 10-35  Optimum 28	Adults 2 weeks  Larvae feed 20 days	Larvae – can move to find prey	Nymphs and adults	Visual inspection  Pest number	Not as effective on plants with hairy leaves  May also feed on other pests and beneficials

## Biology and identification information for the major greenhouse pests

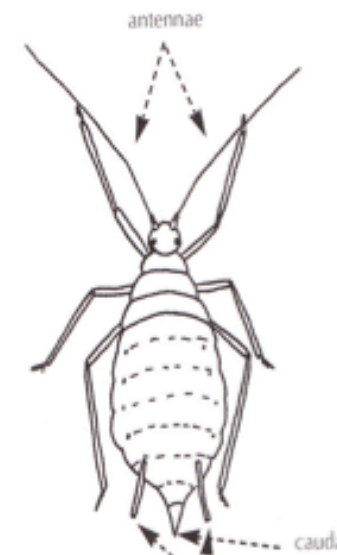
Information from John Sanderson, Department of Entomology, Cornell University

### Aphids

- Damage
  - Suck plant sap from phloem
  - Presence reduces quality
  - Honeydew promotes growth of sooty mold
  - May prefer certain species or varieties
- Biology
  - In greenhouse, all aphids are female – no need to mate
  - Give birth to nymphs – no egg stage
  - Rapid population development
    - Nymph to adult laying eggs in less than a week at 70-75 F
  - Dispersal
    - 120 sq ft/day from infested plant possible
    - With high populations, get winged form
- Monitoring
  - Visual scouting of foliage
  - Presence of cast skins or honeydew or ants
  - Yellow sticky traps will only catch winged forms
    - Coming in from outside
    - High population in greenhouse
- Identification
  - Typical characteristics for ID
    - Head shape
    - Cornicles (tailpipes)
    - Color – may vary
  - Nymphs and adults look alike
- Green peach aphid *Mycus persicae*



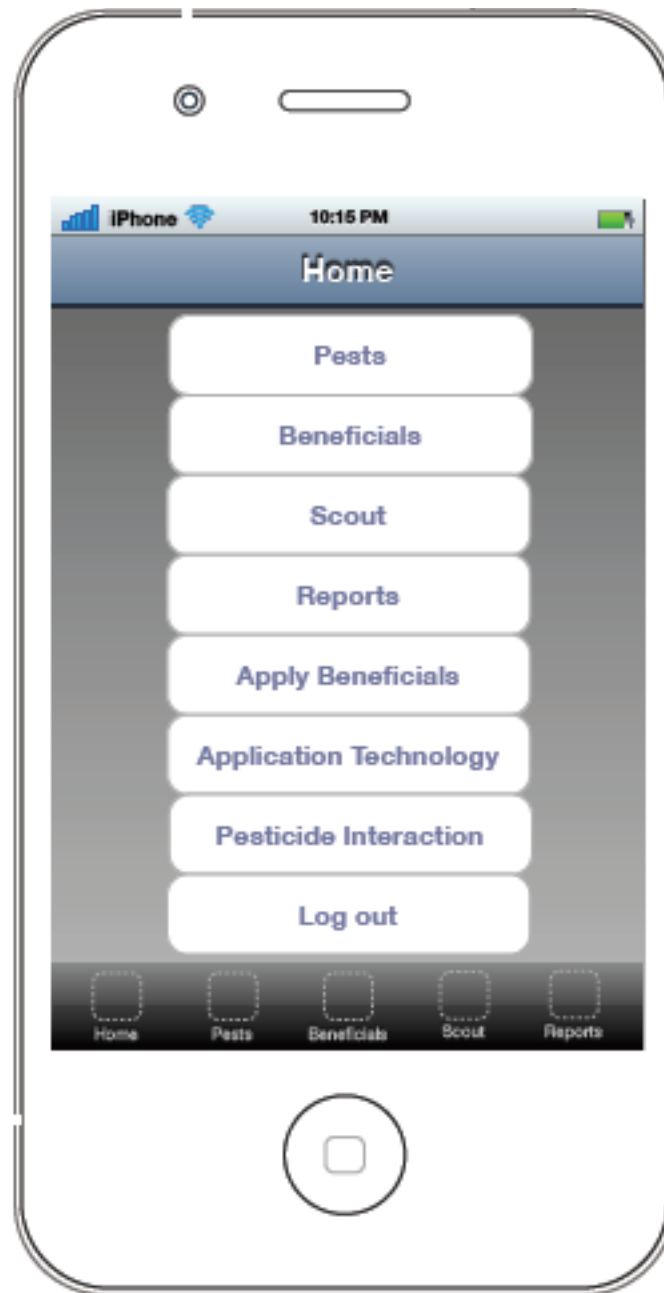
Green peach aphid (Photo: J.K. Clark, UCIPM)



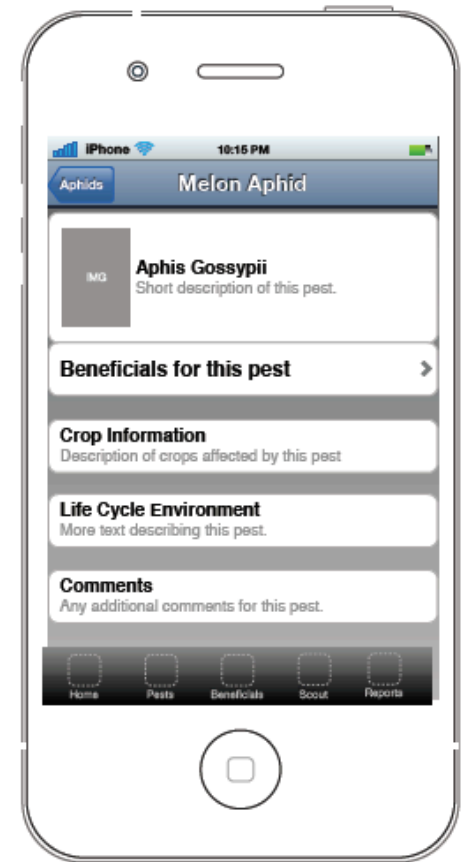
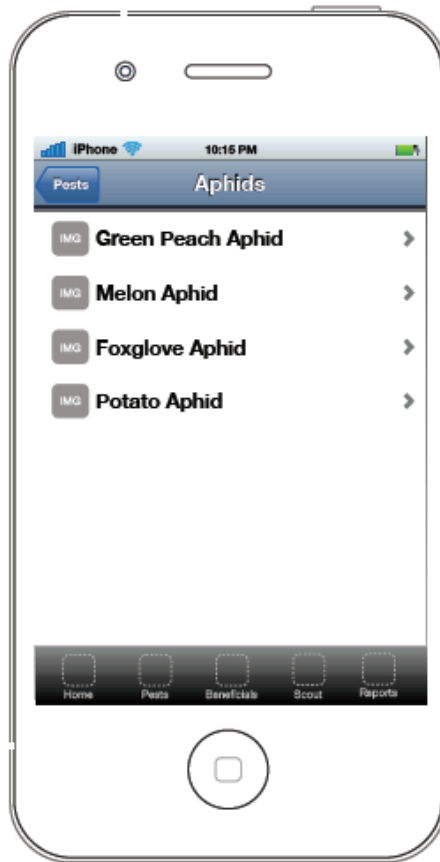
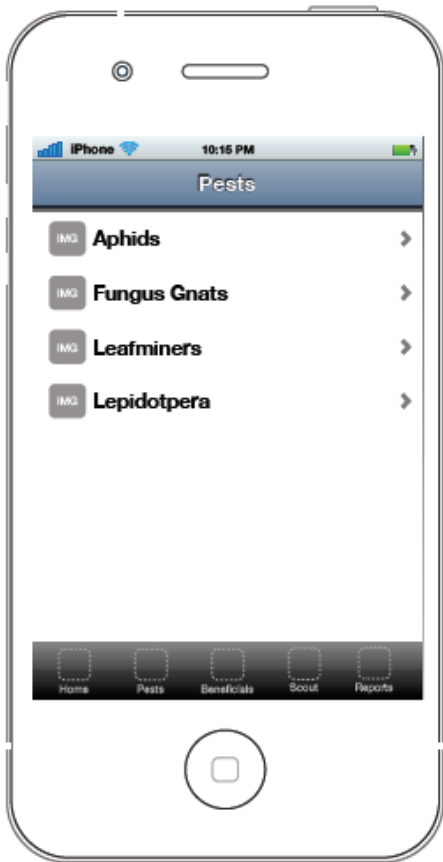
# Mobile application for biocontrol information

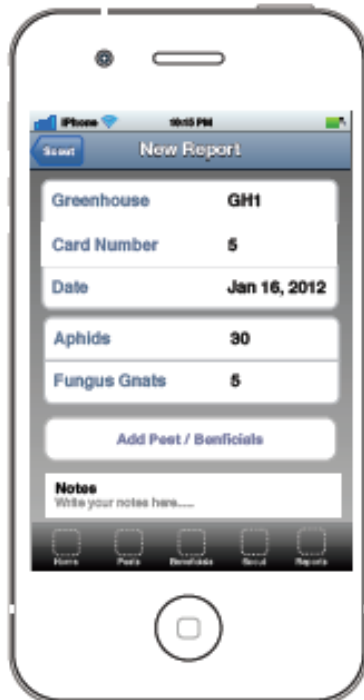
- Same information as workbook but in less detail
- Scouting and application record keeping











Thanks for the opportunity!

