

# The Greenhouse Scout Mobile App

**The Greenhouse Scout mobile application has been designed to help growers manage greenhouse insect pests with:**

1. an easily accessible summary of information on biocontrol of common greenhouse insects,
2. an interactive interface for collecting scouting data and recording product applications, and
3. record keeping with a graphical presentation of scouting data.

Created by the New York State Integrated Pest Management Program at Cornell University and GORGES Custom Software Development, Ithaca NY.

## **Find it at your favorite app store:**

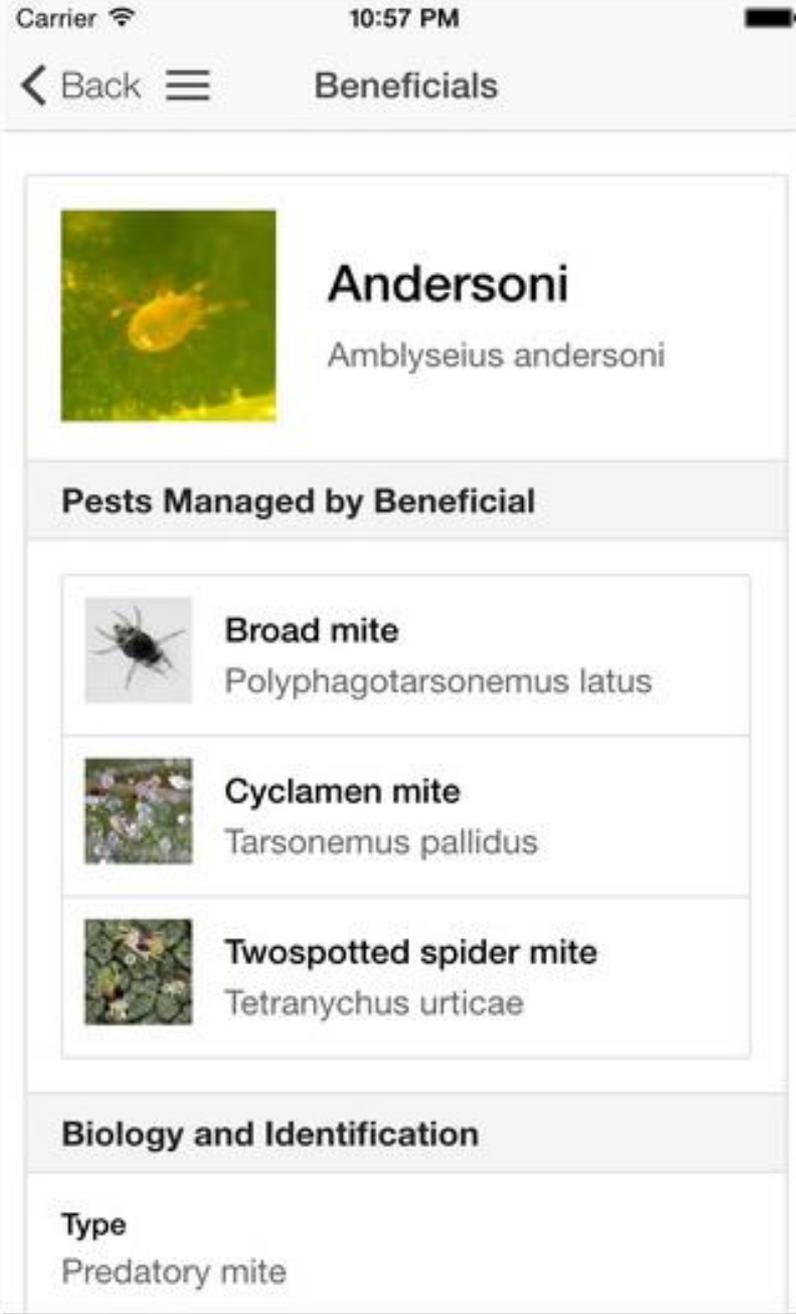
Greenhouse Scout on the App Store on iTunes

[Greenhouse Scout—Android Apps on Google Play](#)

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# Greenhouse Manager's Guide to Integrated Pest Management in Northern New England

– Revised and Expanded –



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**Sanitation:** Use clean pots and pest-free soil. When possible, leave the greenhouse empty for a short time and sanitize it before starting a new crop. Remove heavily infested plants during the season and discard “pet” plants at the end of the season.

**Testing pH and Nutrient Levels:** Test potting mix and water for pH and soluble salts. Adjust levels as needed. Send out samples for analysis if necessary.

**General Maintenance:** Repair greenhouse plastic and leaks in hoses or water pipes. Check heating and cooling systems regularly. Screen vents and doors to prevent entry of insects.



*Parasitic wasp laying an egg in an aphid.*



*Soil and pH Sampling tools: Meter, distilled water and test plant.*



*Natural enemy: lady beetle adult.*

# Powdery Mildew

## SYMPTOMS AND SIGNS

Powdery mildew is one of the most easily recognized plant diseases in greenhouse crops. Fungi that cause powdery mildew usually produce a whitish fungal growth on the upper surface of leaves, and on stems and flowers.

## HOST PLANTS

Powdery mildew fungi are relatively host specific, although plants in the same family may be susceptible to the same species of powdery mildew. Most floral and foliage plants grown in the greenhouse are susceptible to one or more species of powdery mildew fungi.



*Phlox seedling damaged by powdery mildew.*

## DISEASE CHARACTERISTICS

The whitish fungal growth on plant surfaces consists of fungal spores and mycelium. The fungus only infects the outer few layers of plant cells. Powdery mildew spores are dispersed short distances via air currents and water splash. The severity of powdery mildew infections depends primarily on environmental factors, particularly relative humidity.

# Most Common Problems Associated with Vegetative Material

PLANT	INSECT	DISEASE
Angelonia	wf, wft	bot, st, rot, r. rot
Argyranthemum	aph, wf	bot, r. rot
Bacopa	aph, wft	r. rot
Begonia	aph, wft	bot, r. rot
Calibrachoa	aph, wft	r. rot
Chrysanthemum	aph, wf, wft	
Coleus	aph, wf, wft	r. rot
Dahlia	aph, wft	bot
Diascia	aph, wf, wft	r. rot
Easter Lilies	fg, aph	b. rot
Fuchsia	aph, wf, sm	bot, r. rot, st. rot
Geranium, ivy	fg, wf, sm	bot, r. rot
Geranium, zonal	fg, wf, sm	bot, r. rot
Hydrangea	aph, wf	pm

PLANT	INSECT	DISEASE
Heliotrope	aph, wf, sm	r. rot
Impatiens <sup>1</sup>	fg, wft	bot, r. rot, insv
Impatiens <sup>2</sup>	aph, wf, bm	bot, r. rot, insv
Impomea	aph, wf	
Ivy Geranium	fg, wf, wft	bb
Lobelia	sm, wft	bot, st. rot, insv
Lantana	aph, wf, wft	r. rot
Osteospermum	aph, wf, wft	bot, st. rot, r. rot
Penta	aph, wf	bot, st. rot, r. rot
Petunias	aph, wf, wft	bot, viruses
Scaevola	wf, wft	r. rot
Verbena	aph, wf, wft	pm
Vinca	wf, wft	f. r. rot

<sup>1</sup> Double Impatiens, <sup>2</sup> New Guinea Impatiens

## KEY:

wf = whitefly, aph = aphids, wft = western flower thrips, fg = fungus gnats, sm = spider mites, bm = broad mites, bot = botrytis, pm = powdery mildew, st. rot = stem rot, c. rot = crown rot, r. rot = root rot, f. r. rot = fungal root rot, m = mealy, dm = downy mildew, b. rot = bulb rot, bb = bacterial blight, insv = impatiens necrotic wilt virus

# Pesticides & Pollinators

## Biggest risks to bees from insecticides used on ornamental plants:

- Spraying open flowers during the last few weeks before shipping (with any insecticide).
- Soil drenches in greenhouses with imidacloprid, primarily used in hanging baskets
- Soil drenches of flowering trees (*Tilia*) in nurseries or in yards for Japanese beetle, etc.



From Smitley, D. Michigan State Univ

# How Soon After Treatment Can Plants Safely be Shipped?

- Research to determine the last time that foliar sprays can be applied to open flowers (flowers , and still be safe for bees
- Flowers were sprayed with imidacloprid at 4, 2 and 1 week before shipping.
- Flowers were sampled 1 week after the shipping date



D. Smitley, Michigan State  
Univ 2014



Weeks Before Shipping	Plant Type	Olefin (ppb)	Imidacloprid (ppb)
1	Portulaca	70	110*
1	Verbena	0	70
1	Salvia	20	200
1	Marigold	0	0.6
2	Portulaca	0	0
2	Verbena	30	430
2	Salvia	30	0
2	Marigold	0	0
4	Portulaca	0	0
4	Verbena	0	0
4	Salvia	0	0
4	Marigold	0	0

>25 ppb imidacloprid in nectar is toxic to honeybees. Bumblebees are affected at even lower concentrations.

\*means of 10 replications

# Recommendation

- Avoid spraying the flowers of plants highly attractive to bees. This usually means do not spray within 2 – 3 weeks of shipping, in the spring.
- Don't apply a neonic drench in the winter or spring on plants highly attractive to bees. (The top 20 annual bedding plant flowers are not attractive to bees, but many perennials, especially herbs, are. Also many trees and shrubs are.)

