



Cornell University  
Cooperative Extension

## Elements of Greenhouse IPM in New York State

This set of basic elements, or components, of Integrated Pest Management (IPM) should assist growers and crop consultants in implementing an IPM approach for greenhouse crops grown in New York. Not all growers will use all elements as managing pests is a dynamic process influenced by weather, markets, new knowledge, and other information. Point values are based on the relative importance of the activity in encouraging an IPM approach to pest control.

The Elements for Greenhouse IPM in New York State are designed as a self-evaluation tool for growers already implementing IPM or as an educational tool for growers new to the concepts of IPM.

### MAJOR PESTS

Insects	Risk	Diseases	Risk	Weeds	Risk
Thrips	+++	Powdery Mildew	+++	Annual Broadleaved	+++
Whiteflies	+++	Root Rots	+++	Algae	+++
Mites	++	INSV	++	Perennial Weeds	++
Aphids	++	Rust	++	Annual Grasses	+
Fungus Gnats	+	Bacterial Disease	++		
Shoreflies	+	Botrytis	+		
		Leafspot	+		

+ occasionally significant ++ potentially significant +++ frequently significant, a priority for scouting; - not expected	Risks are compared within type of pest rather than across all pest types, i.e. thrips to whiteflies, rather than algae to aphids.
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### EDUCATIONAL IPM CONSIDERATIONS

Activity	Points
Have a current year's copy of Guidelines for the Integrated Management of Greenhouse Floral Crops	10
Have a current copy of Integrated Pest Management for Bedding Plants: A Scouting and Pest Management Guide	10
Attend one or more CCE bedding plant schools or workshops	10
Attend industry conferences	5
Regularly visit the New York State Integrated Pest Management Program (IPM) website and the Cornell Greenhouse website	5
Train employees in IPM practices	10

## PRE-SEASON IPM CONSIDERATIONS

Activity	Points
Maintain a crop-free, weed-free period between seasons (1 month preferred)	10
Disinfect structure – all surfaces, including floors	10
Use new growing medium, containers and flats	5
Steam sterilize old medium and containers, if used	5
Disinfect and repair irrigation systems	5
Calibrate pesticide application equipment	10
Inspect and clean pesticide storage and mixing areas	5
Inventory pesticides	10
Ensure all personal protective equipment is clean and stored properly	10

## IN SEASON CROP MANAGEMENT

Activity	Points
Keep complete records of maintenance procedures, EC readings, fertilizer frequency, dates of growth stages, and maximum/minimum temperatures	5
Use EC meter to formulate and test nutrient solutions	10
Test water source for presence of carbonates and other minerals that can interfere with maintaining proper pH	5
Use EC readings or the “pour through” method to monitor salt levels in the soil	5
Use tools, such as foliage or soil analysis, to determine an appropriate nutrient program	5

## IN SEASON GENERAL PEST MANAGEMENT

Activity	Points
Scout weekly for insect, weed, and disease problems, using a designated employee	10
Identify unknown insect and disease problems	10
Maintain scouting and pest control records in order to predict pest problems	5
Maintain weed free zone outside greenhouse	5
Use appropriate methods for weed control	5
Inspect plants upon arrival and quarantine those with signs of infection or insect infestation.	10

## IN-SEASON INSECT MANAGEMENT

Activity	Points
Screen openings whenever possible	5
Monitor insects with sticky cards, check cards weekly and change when needed	10
Begin releases of appropriate natural enemies at recommended rates and intervals	10
Use insecticides only against those pests for which effective natural enemies are not available	10

## IN SEASON DISEASE MANAGEMENT

Activity	Points
Maintain adequate spacing for air circulation	5
Ventilate to minimize condensation and encourage air exchange, at sunset if possible	10
Remove any diseased foliage or plants from greenhouse promptly and dispose in sealed container	10
Wash hands and disinfect tools before entering or moving between greenhouses	5
Apply fungicide only if disease, or conditions conducive to disease, are present	10

Total Points Available: 225

80% 180

Total Points Earned: \_\_\_\_\_

### REFERENCES:

**Additional information to assist you in using IPM can be found in the following publications and online resources:**

2006 Guide for the Integrated Management of Greenhouse Floral Crops

<http://www.hort.cornell.edu/greenhouse/pestsdis/FloristGuidelines06.html>

Integrated Pest Management for Bedding Plants, A Scouting and Pest Management Guide

<http://nysipm.cornell.edu/publications/bpguide99>

Ball Identification Guide to Greenhouse Pests and Beneficials

<http://www.ballpublishing.com>

Ball Field Guide to Diseases of Greenhouse Ornamentals

<http://www.ballpublishing.com>

### Websites

New York State Integrated Pest Management Program

<http://nysipm.cornell.edu>

Cornell University Greenhouse Horticulture

<http://www.hort.cornell.edu/greenhouse>