

## Elements of IPM for Greenhouse Tomatoes in New York State

Major Insect Pests	Major Disease Pests	Weed Pests
Whiteflies	Powdery Mildew	Annual broadleaves
Spider mites	Botrytis	Annual grasses
Thrips		Perennials
Aphids		
Potential Insect Pests	Potential Disease Pests	
Tomato hornworm	Bacterial diseases (canker, spot, and speck)	
	Viruses (ToMV, TSWV),	
	Late blight	
	Early blight	
	Fusarium and Verticillium wilts	
	Cladosporium leaf mold	
	Cladosporium leaf spot	
	Sclerotinia white mold	
	Pythium	

<b>The following will disqualify an operation from use of the Cornell IPM logo:</b>	
<b>Any off-label use of pesticides</b>	
<b>Lack of documentation of practices</b>	
<b>A. Pre-season:</b>	<b>Points</b>
1) Maintain a 1 month crop-free, weed free period.	10
2) Disinfect structure (all surfaces).	10
3) Discard or steam sterilize growing medium used for crop production.	10
4) Disinfect irrigation system.	5
<b>B. Transplant Production:</b>	
1) Purchase hot water treated seed.	10
2) Use new or steam sterilized growing medium for transplant production.	10
3) Where market allows choose most disease resistant variety(ies).	5
4) Grow transplants in separate greenhouse from other crops.	10

<b>C. Crop Production:</b>	
1) Keep daily records of maintenance procedures: fertilizer frequency, date of growth stages, and max. and min, temperatures.	5
2) Test water for presence of carbonates and other minerals that can interfere with maintaining appropriate pH and solubility of fertilizer salts.	3
3) Determine pH of water before adding fertilizer to determine whether fertilizer components will remain in solution, and test pH of final drip solution regularly..	3
4) Conduct monthly foliage analysis to determine proper nutrition program.	10
5) Base nutrient program on foliage analysis reports.	5
6) Use EC meter to formulate and test nutrient solutions.	3
<b>D. General Pest Management:</b>	
1) Grow no other crop in production greenhouse.	10
2) Maintain weed free greenhouse.	10
3) Scout weekly for insects and diseases.	10
4) Maintain scouting and spray records.	10
5) Maintain plant free zone around greenhouse.	5
<b>E. Disease Management:</b>	
1) Maintain adequate plant spacing for air circulation (minimum of 4 sq. ft./plant)	10
2) Ventilate when to minimize condensation and exchange with outside air daily (one full air exchange/day).	10
3) After fruit set, remove senescing leaves below fruit* and remove from greenhouse area.	10
*snap off at natural abscission zone	
4) Remove any diseased foliage or fruit and remove from greenhouse area.	10
5) Remove flowers from bottom of fruit to minimize disease spread.	5
6) No smoking by anyone touching foliage or greenhouse structure.	3
9) Anyone touching plants should wash hands and disinfect tools before entering and between houses.	10
10) Apply fungicides only if disease is present.	10
<b>F. Insect Management:</b>	
1) Screen openings whenever possible.	5
2) Monitor insects with yellow sticky cards. Check weekly. Change when needed.	10
3) Begin releases of appropriate natural enemies at recommended rates and intervals at the first sign of insect pests.	10
4) Use insecticides only against those pests for which effective natural enemies are not available.	10

Total points available: 247

Points needed to quality (80%) 198

#### TO LEARN MORE...

Blancard, D. 1994. A Colour Atlas of Tomato Diseases. Observation, Identification, and Control. John Wiley & Sons, Great Britain.

Jarvis, W. R. 1992. Managing Diseases in Greenhouse Crops. APS Press.

Jones, J. B., J. P Jones, R.E Stall,. and T.A Zitter. Compendium of Tomato Diseases. APS Press.

Costello, R.A., D. P. Elliot, and D. R. Gillespie. 1992. Integrated Control of Greenhouse Pests. Extension Systems Branch, B.C. Ministry of Agriculture. ph.: (604) 387-3498.

Hunter, C. D. 1994. Suppliers of Beneficial Organisms in North America. California Department of Pesticide Regulation, Environmental Monitoring and Pest Management Branch. ph.: (916) 324-4100.

Snyder, R. G. 1996. Greenhouse Tomato Handbook. Cooperative Extension Service, Mississippi State University. Publication 1828, Department of Information Services, Division of Agriculture, Forestry, and Veterinary Medicine. Crystal Springs, MS 39059

The following reference material can be obtained from county Cornell Cooperative Extension offices or by contacting The Resource Center, Cornell University, PO Box 3884, Ithaca, NY 14852-3884, 607-255-2080; email [resctr@cornell.edu](mailto:resctr@cornell.edu)

[Integrated Crop and Pest Management Guidelines for Commercial Vegetable Production.](#)

[A Method to Measure the Environmental Impact of Pesticides.](#) 1992. New York Food and Life Sciences Bulletin Number 139.