

## Title: Developing a PMSP for Commercial Greenhouses in the Northeastern US

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### Abstract:

Pest Management Strategic Plans provide a picture of the current status of pest management practices in a particular crop or production system. They also result in a ranked list of needs in research, education and regulatory issues. A PMSP can serve as baseline data for the use of IPM with the list of needs suggesting methods by which the level of IPM can be improved or increased. Twenty stakeholders, including growers, industry reps, extension and research personnel, and government reps and representing 9 states, met to evaluate a draft PMSP and to identify needs for those pests as part of the development of a Pest Management Strategic Plan for Commercial Greenhouse Production in the Northeast.

Background: Greenhouse production has an overall wholesale value of \$600 million for the 1420 growers reporting gross sales  $\geq$  \$10,000) in the surveyed Northeastern states (CT, MA, MD, NY, NJ) in 2005 (NASS 2006). This does not take into consideration the huge number of smaller, and often retail, greenhouses throughout the region, as well as greenhouses in those states not surveyed. Pest problems and management options are similar throughout the NE so a regional document should serve all states in the region well.

Diversity in the greenhouse industry is key, particularly in the area of pest management. Most wholesale greenhouses produce a wide variety of species and cultivars, and in retail greenhouses the numbers of crops can be astounding. And new crops are being introduced all the time. Even though the pest species tend to be the same, this can create a problem with pesticide labeling and finding an appropriate product that can be used across all crops. For bedding plant growers, or those selling herbs, the issue is compounded by the mix of food and non-food crops. Another pest management issue related to diversity in the industry is finding techniques that work for both wholesale and retail growers. Use of cultural controls can fall into this gap. Larger growers may more easily group crops by water or nutrient needs to avoid production stress. Small growers may need to lump all crops together because of space constraints.

While the environment of the greenhouse is well suited to the development of insect and disease populations, there can be a zero tolerance for pests on the plants at sale. New pests, such as the Q biotype of the silverleaf whitefly and Chrysanthemum white rust, appear with disturbing frequency. Propagation materials are moved worldwide as well as regionally, opening the potential for the movement of pests. And as all greenhouse crops are considered minor use, the development of pesticides with newer chemistries and less toxic impacts may not keep up.

There are commercial greenhouses in all the states in the NE region. However, there is little concentration in specific regions. This, and the scarcity of Extension personnel with responsibility for greenhouse production, makes it difficult to provide the necessary IPM outreach to all growers.

Justification: Information on pest management alternatives for commercial greenhouse pests has been collected. Tactic surveys have been conducted in several states in the region: NY (2000, 2007), Maine (2007), Vermont (1995, 2005), New Jersey (2003) and Massachusetts (2004). The diversity of, and rapid change in, crops limits the usefulness of crop profiles for commercial greenhouses.

New York has IPM Elements with point values for greenhouse production and Massachusetts has a similar program for greenhouse poinsettias.

Stakeholder input has been collected in several states on needs for research, Extension and regulatory support for IPM in commercial greenhouses:

NY Farm Viability Institute Green Industry Barriers to Success, April 2005

- Potential production system changes that could make a difference
  - #5 - Reduction of chemical use through predators, IPM, new spraying techniques, etc.
- Five year threats to the success of the NY industry
  - #6 - Difficulty in getting pesticides approved

New England Pest Management Network, 2006 Stakeholder Priorities and Feedback Census  
Connecticut

- Need an IPM certified program from the Department of Ag & UConn. Need two components, UConn and regulatory authority.
- Push IPM, need dollars for bodies to work out in the field to help farmers to put together IPM programs.
- We need more people to do work with growers, like helping to scout and do IPM. We need threshold information, what to look for next week, information on what's expected next. Need more funding for staff.

Maine (Mid-Maine Greenhouse Growers)

- Need someone from university or state to give state of the art recommendations on greenhouse control options, what actually works.
- Need more IPM program funding support from federal, state, and region. Can't build programs on competitive funds.
- Never ending need to expand horizons for greenhouse biocontrol, need practical methods for year round greenhouses.

New England Regional Organizations (New England Greenhouse Conference)

For greenhouse operators, finding effective registered pesticides is a priority, registrations change quickly, restricted entry intervals are hard on operations, and pesticide costs are high. It is difficult to find a product that will work on diverse crops in a small space.

However, information without a subsequent plan of action misses the point. A Pest Management Strategic Plan is one way to move from information to effective change. The major pests and control alternatives are similar in commercial greenhouses throughout the region. Creating a regional PMSP serves to focus research and outreach on those issues of most importance to growers. It also encourages cooperative projects, and the most efficient use of limited personnel, time and funding. The ultimate beneficiary of a PMSP and the prioritization of IPM needs is the commercial greenhouse grower. Research, regulation and outreach focused on the end user will result in more IPM tools and education in using those tools, and therefore greater adoption of IPM methods. This will lead to economic, environmental and health benefits. Therefore the initial step in developing a Pest Management Strategic Plan is to create an overview of the control options for the primary pests and create a forum for discussion of these methods and the research, education, and regulatory needs of the industry.

Objective:

Develop a Pest Management Strategic Plan for commercial greenhouses in the northeastern US in order to increase utilization of IPM by focusing research and outreach on the needs of the end users.

The aspects of that objective described in this report:

- a. Evaluate current pest management practices and how they fit into an IPM program

- b. Facilitate a discussion between stakeholders and Land-grant, Extension, and regulatory personnel, on regulatory, research and outreach needs for pest control

#### Procedures and results/discussion:

1. Create a draft document that details the current knowledge on pest control for the industry
  - a. Determine the 'top 10' pests for the industry and region – Extension and research personnel with responsibility for IPM and/or pest management in greenhouse crops were contacted to create a top 10 list of pests that should be included in the PMSP. Responses were received from 11 of the 12 states in the northeast region. Based on the frequency of responses, the top 10 pests were determined to be:  
Insects: Aphids, fungus gnats and shoreflies, mites, western flower thrips, and whitefly  
Diseases: Botrytis, powdery mildew, pythium, rhizoctonia
  - b. Review the existing information on control of those pests – Based on the Cornell Guide for the Integrated Management of Greenhouse Floral Crops and other pest management guidelines from the region, an overview of control for each pest was created. Gary Couch prepared the insect section and Brian Eshenaur created the disease section. Each overview included sections on Damage and Importance, Identification, Biology, and Management – including IPM, Cultural/mechanical, Biological and Chemical control. In addition to a table of chemicals labeled for control, a table of IPM procedures, including diagnosis/ID, detection, monitoring, thresholds, and records, was created for each pest.
2. Organize and hold a face to face meeting to discuss the research, education, and regulatory needs for pest control in greenhouse production in the Northeast
  - a. Identify stakeholders to participate in the discussion and needs identification – The same list of personnel who were contacted for 'top 10' information were asked for suggestions on stakeholders to invite. For this meeting, stakeholders included Extension and research personnel as well as growers. Nine states were represented at the meeting, with 3 growers, 4 industry reps, 9 Extension personnel, 1 research scientist, 1 Department of Agriculture rep, 1 IR4 rep, and 1 NE-IPM rep. Participating stakeholders were provided with the draft PMSP before the meeting so they could have a chance to review the information.
  - b. Organize and hold the meeting – The meeting was held in Ithaca, October 22-23, 2008.
  - c. Facilitate discussion, changes to draft, and identification of needs – Karen Dean Hall acted as facilitator. While we were initially concerned that discussion might be hard to encourage, it was rapidly evident that that was not a problem. Gary Couch and Brian Eshenaur led the discussions on insect and disease pests, respectively. The primary emphases of the meeting were to add or correct information in the draft sections and to identify needs in research, education and regulation. While the discussion centered on the Top 10 pests, other pests that were also of importance to the industry were included.

#### Future plans:

The list of needs is currently being sent to a broader range of stakeholders for prioritization. State growers organizations are included as well as those who were interested but could not attend and the complete list of stakeholders included in the initial request for information. With the comments from the meeting, the draft will be finalized and reviewed before being submitted to NE-IPM.

#### Implications:

The prioritized list of needs and the final PMSP document are of primary interest to funding agencies and as a source of stakeholder information for research/extension personnel applying for grants. While it is much more difficult to measure, the interaction of growers, research and extension personnel, government reps and industry reps all discussing the same topic face-to-face is also of value. We hope that the PMSP meeting will lead to further cooperation in the northeast region on pest management for commercial greenhouse production.

#### Project location:

The area which the PMSP will cover is the 12 states included in the Northeast IPM Program. The meeting itself, and most of the activities leading to the final PMSP, are located in New York State. Meeting representatives from New York were from the following counties.

Growers:

Erie County

Orange County

Industry:

Erie

Cayuga

Onondaga

Extension/Government:

Tompkins

Ontario

Suffolk

Monroe

Orange