

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

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Abstract:

Pest Management Strategic Plan documents 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. For this project 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 now moved internationally 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 are:

- a. Create a list of research, education and regulatory needs based on the discussion between stakeholders and Land-Grant, Extension and regulatory personnel ranked as to importance to the industry
- b. Finalize the PMSP document including information on production statistics, production practices and worker activities, general information on pest management in greenhouses, including IPM adoption and organic/sustainable production, and overviews of each pest and the current state of its management.

Results/discussion:

1. Create a list of research, education and regulatory needs based on the discussion between stakeholders and Land Grant, Extension and regulatory personnel ranked as to importance to the industry.

There were 164 items on the list of needs compiled from the face-to-face meeting. While it would have been helpful to rank them immediately at the meeting, it was not possible given the time constraints. Therefore, the total list was organized by type of need (research, education or regulatory) and sent to the workshop participants, the advisory group, grower and industry organizations in the region and Cooperative Extension educators working with the greenhouse industry to be ranked of high, medium or low importance. Sixteen responses were received. Those needs with at least 9 of 17 respondents ranking them of high importance (53%) were included in the list of priority issues in the PMSP. The final document includes both the priority list and the complete list of needs with the number of people ranking each of high importance.

2. Finalize the PMSP document including information on production statistics, production practices and worker activities, general information on pest management in greenhouses, including IPM adoption and organic/sustainable production, and overviews of each pest and the current state of its management.

This PMSP document is intended to outline the current state of pest management for greenhouse ornamental production at the Northeast regional level. In order to define the system the document covers, it begins with information on the commercial greenhouse production industry in the northeastern US, including production statistics and general production practices. While the majority of greenhouse production in the region is for ornamental crops, there is a significant production of vegetable crops so a descriptive section on greenhouse vegetable production is included.

The PMSP includes a pest-by-pest discussion of current management practices, in addition to an overview of pest management issues such as adoption levels of IPM, use of biological control, and the increasing interest in organic/sustainable greenhouse production. For each of the pests identified as important, there is a section of the report that includes damage and importance, identification, biology, spread or dispersal, methods of management including environmental, cultural, mechanical, and biological control as well as currently registered pesticides. IPM aspects of management are included in tables of diagnosis/ID, detection/monitoring, and action triggers/thresholds where available. Pesticide class information is included in order to evaluate the potential for resistance development using chemical control. There is a table of fungicides and of insecticides that includes comments on use. New pests and those of increasing importance are listed, as are pesticides in the process of registration. As biological control is an important management tool for greenhouse ornamentals, a table of toxicity of pesticides to the major types of biological control organisms is included. There is additional information on the control of weeds, algae, and mammals, and on the use of plant growth regulators.

The complete PMSP is available at http://www.ipmcenters.org/pmsp/pmsp_form.cfm?usdaregion=National%20Site under Greenhouses.

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. The ultimate outcome should be an increase in research and education on topics of most use to growers, resulting in a greater adoption of integrated pest management. 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.

