Project Description

a. Problem, Background and Justification

Problem: Commercial greenhouse production in the Northeast is a large, diverse and valuable industry with critical pest issues and the potential for increased use of IPM. Research, outreach and regulation need to target those aspects of IPM that are most critical to growers in order for the industry to realize the economic, environmental and health benefits of IPM.

Background: Greenhouse production has an overall wholesale value of $600 million for the 1420 growers reporting gross sales ≥ $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.

The more immediate beneficiaries of this project are the stakeholders and the research, regulatory and Extension personnel that participate in developing the PMSP. In a time of decreased funding for both research and outreach, regional cooperation will allow us to maximize the effects of resources to the benefit of growers. Also, stakeholder influenced priority lists are essential for the justification of most grants. Creating a forum for discussion opens communication channels between and among growers and the research, outreach and regulatory worlds. These linkages will allow for exchange of information, speed reaction to new pest issues, and help fill gaps where regional expertise is not available.

This PMSP and the IPM Elements will be useful beyond the NE region because greenhouse production has commonalities throughout the country. Based on the IPM Centers' list of PSMP's, this will be the first to emphasize greenhouse crops.

Literature cited

National Agricultural Statistics Service, 2006, Floriculture Crops, 2005 Summary, http://www.nass.usda.gov/QuickStats/index2.jsp under Floriculture Crops

New England Pest Management Network, 2006 Stakeholder Priorities and Feedback Census, www.pronewengland.org

New York Farm Viability Institute, Green Industry Barriers to Success, April 2005, www.nyfarmviability.org

Surveys

NY survey http://www.nysipm.cornell.edu (2000 only)

ME survey http://www.maine.gov/agriculture/pi/horticulture/IPMSurvey.htm

VT survey http://www.uvm.edu/~entlab/impact.html , http://www.uvm.edu/pss/ipm/ornamental.html

IPM Elements

Massachusetts (poinsettia) http://www.umass.edu/umext/ipm/ipm_projects/greenhouse/ipm_guidelines_pointsettia.html

New York http://www.nysipm.cornell.edu/elements/ghouse.asp

b. Objectives and Anticipated Impacts

Objective: Increase utilization of IPM in commercial greenhouses in the Northeast region by focusing research and outreach on the needs of the end users

1. Develop a Pest Management Strategic Plan for commercial greenhouses in the northeastern US
    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

c. Develop prioritized lists of research, regulatory and outreach needs

d. Develop IPM Elements for growers to evaluate their level of IPM adoption and to encourage them to utilize additional methods.

2. Encourage regional collaboration on IPM for commercial greenhouses

a. Increase access to and exchange of information/tools/expertise

b. Facilitate reaction to emerging issues

Anticipated impacts:

Impacts of PMSP on implementation of IPM in commercial greenhouses (Objective 1)

- Identification of research needs will lead to new tools for pest management in commercial greenhouses
- Identification of outreach needs will lead to development of training modules and other educational materials, including IPM Elements, to expand use of IPM in commercial greenhouses
- Enhanced communication between regulatory agencies and stakeholders will result in the labeling of new low-risk, efficacious pesticides for the pests and constraints of commercial greenhouses

Anticipated impacts that relate to the National IPM Roadmap (Objective 2)

- The necessary dialogue to develop the PMSP will increase communication and efficiency through information exchange between states and among research, regulatory and outreach personnel
- Identifying participants for the PMSP will expand existing, and develop new, collaborative relationships
- Communication with stakeholders will spotlight successful IPM programs

c. Approach and procedures

The "Guidance in Developing a Pest Management Strategic Plan" is a detailed roadmap for the PMSP process. Much of the approach detailed here is taken from it. The project directors and facilitator will be responsible for coordinating the participating states and organizations.

In advance of meeting

- Collect background information on industry for the region
    - Economic impact of industry (NASS)
    - State statistics on industry
- Review available information on pests and control methodologies
    - State/regional surveys
    - State IPM Elements and manuals
    - IR4 materials
    - State pest control guidelines/recommendations

    - Pesticide labels
- Draft PMSP from available information and highlight areas of discussion for meeting
    - Create table templates
    - Identify gaps in information and possible sources to fill them
    - Create meeting agenda
- Create web location for meeting information on NYS IPM Website
- Distribute PMSP draft and meeting agenda to participants before meeting
    - Allow sufficient time for review
    - Request any information needed during meeting
- Organize meeting
    - Who
        - Growers and related personnel (10)
            - 8 growers chosen to represent states in the NE region, wholesale/retail growers, size of operation, crops produced (bedding plants, finished plants, greenhouse vegetables, etc.)
            - 1 Grower association rep
            - 1 Crop consultant
        - Land grant research/extension (10)
            - Chosen to represent states in the NE region and expertise (Entomology, Plant Pathology, Greenhouse production, IPM, research, Extension, etc.)
        - Regulatory and organizational (6)
            - Ag and Markets, DEC, EPA, IR 4, Regional IPM, Facilitator
    - Where
        - Ithaca on Cornell campus (ILR Conference Center)
            - Will provide breakfast and lunch
            - Organize dinner for Day 1
            - Supplies and computers
        - Contract for room rate – Best Western/Ramada
    - When
        - mid October, 2008
            - (to avoid Ornamental Conference on Diseases and Pests and New England Greenhouse Conference
        - 1 ½ days for meeting – starting at noon on Day 1

During meeting

- Introduction and meeting guidelines
- Review, augment and add to pest management information in draft PMSP
- Ensure stakeholder input
- Prioritize research, regulatory and outreach needs
- Develop IPM Elements
- Schedule and process for finalizing document

After the meeting

- Finalize and review draft with addition of information from meeting

    - Request comments from those who cannot attend
- Write executive summary
- Identify reviewers
- Format report to meet National IPM Centers specifications
    - Post on website

Task	**Start date**	**Completion**
Identify participants	May 1, 2008	June 1, 2008
Request background information	May 1, 2008	July 1, 2008
Create draft PMSP	June 1, 2008	September 1, 2008
Plan meeting	May 1, 2008	September 1, 2008
Hold meeting (1 ½ days)	October 1, 2008	October 30, 2008
Collate results of meeting with draft PMSP	October 30, 2008	January 1, 2009
Identify reviewers	October 30, 2008	January 1, 2009
Collect reviews	January 1, 2009	February 28, 2009
Finalize PMSP	February 28, 2009	March 31, 2009
Submit PMSP	March 31, 2009	April 15, 2009

d. Evaluation

True impacts on the implementation of IPM in the commercial greenhouse industry, and the resulting economic and health benefits, are beyond the scope of this project to measure. It is our intent that research, regulatory and Extension personnel in the Northeast will utilize the priority lists in developing programs and that greenhouse growers will use the IPM Elements to assess their own level of IPM.

The development of a PMSP and IPM Elements for commercial greenhouses in the NE will demonstrate completion of Objective 1. Participants will fill out a questionnaire to determine their intent to use the information from the PMSP, in particular the prioritized lists, to guide research and Extension. In addition, their intent to initiate or continue regional cooperative projects will be assessed.

Cooperation and Institutional Units Involved

Lead Institution:
Cornell University:

Dr. Elizabeth M. Lamb, New York State Integrated Pest Management Program
Mr. Gary Couch, New York State Integrated Pest Management Program
Mr. Brian Eshenaur, New York State Integrated Pest Management Program

The co-Project Directors will be responsible, with the facilitator, for the following:

- Organizing and coordinating the draft PMSP
- Working with representatives in each state in the region to identify and invite participants
- Planning the meeting
- Providing the draft PMSP, and any other relevant information, to participants

- Conducting the meeting, including recording discussion and decisions
- Finalizing the PMSP, including identifying reviewers and collecting reviews
- Submitting the PMSP for Northeast IPM website

Cooperators:

Potential cooperators in each state in the NE, including growers, Land Grant/Extension personnel, and regulatory/institutional personnel as detailed in the project description, will be identified with the help of contacts in each state. Our intent is that all states in the region will be represented by at least one participant.

Participants will be responsible for:

- Assisting the PD's with identifying sources of information for the draft PMSP
- Evaluating the draft PMSP
- Attending the and participating in the discussions
- Bringing any additional relevant information to the meeting
- Assisting the PDs with reviewing and finalizing the PMSP

Key Personnel

Dr. Elizabeth M. Lamb
Senior Extension Associate
New York State Integrated Pest Management Program – Cornell University
49B Plant Science Building, Cornell University, Ithaca, NY 14853

Role:
Supervise facilitator, coordinate draft PMSP, coordinate participants, assist with meeting planning, assist with conducting meeting, review final PMSP

Mr. Gary Couch
Extension Associate
New York State Integrated Pest Management Program – Cornell University
1 Ashley Avenue, Middletown, NY, 10940

Role:
Work with other co-PD's to develop the draft PMSP, assist with running meeting and gathering information from other participants, review final PMSP

Mr. Brian Eshenaur
Extension Associate
New York State Integrated Pest Management Program – Cornell University
249 Highland Ave, Rochester NY 14620

Role:
Work with other co-PD's to develop the draft PMSP, assist with running meeting and gathering information from other participants, review final PMSP