

Title: Increasing use of biocontrol in NYS greenhouses with a producer-based biocontrol mentoring network

Project Leader(s):

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Abstract:

There is a low adoption of biocontrol for pest management in NYS greenhouses although it has been used successfully elsewhere for years. Because lack of experience is a deterrent for adoption, a project to encourage grower-to-grower training and discussion on biocontrol was initiated, funded by NYFVI. Initial activities included a tour of Canadian greenhouses using biocontrol in 2007 and a series of 6 on-farm grower discussions held around the state in 2008. Based on evaluations from the 2008 programs, 8 additional programs were held in 2009 to give growers hands-on experience with the most common biocontrol organisms used to control common greenhouse insects. Preliminary results indicate that there was an increase in knowledge on the types of beneficials used in greenhouses, which are used to control specific pests, and how to determine if they are viable.

Background and justification:

While biocontrol methods have been used successfully for insect control as a part of Integrated Pest Management (IPM) programs for many years, there is a low adoption of these practices by NYS greenhouse producers. In a 2000 survey of greenhouse growers (Lamboy, IPM Pub. 417), only 13% (65 of 507) reported that they used biological control. Information from growers suggests that the low adoption of biological control as a method of IPM is based on lack of experience with the procedures or unsuccessful previous attempts. Because biocontrol requires a lot of new information and adaptation to each situation, it is a good candidate for farmer-to-farmer mentoring with a grower who has successfully implemented it.

There are several examples of producer to producer interaction being successful in transferring new technologies and procedures, including the Tactical Agriculture (TAg) teams used by NYS IPM in field crops. Small groups of growers discuss pest management problems and compare methodologies that have worked to give everyone the benefits of the group's knowledge. The Ontario greenhouse growers are another example of producer-to producer interaction intended to result in reduced pest losses for all the participants and is one of the reasons that they have successfully adopted biological control.

This project was funded by the New York Farm Viability Institute.

Objectives:

1. Identify and work with a base group of producers to increase their knowledge of biocontrol methods for greenhouse production
 - a. Tour of floriculture greenhouses successfully using biocontrol in Ontario, Canada and Buffalo NY

- b. Greenhouse workshops to foster discussion among growers using biocontrol and those interested in trying it
 - c. Greenhouse workshops with hands-on activities to allow growers to handle the beneficials directly
2. Encourage the formation of a producer to producer teaching/mentoring web for increasing adoption of biocontrol as a pest management method in NYS greenhouses
- a. Grower interaction through tour and informal setting of workshops
 - b. Tour participant involvement in outreach activities
 - c. Contact with growers using biocontrol around the state through greenhouse workshops

Procedures:

This report deals with the project activities held during 2009 (Objectives 1c and 2).

When asked what additional information or training they would like to have to help them start using biological control, most of the participants in the 2008 workshops suggested that hands-on assistance with identification and 'beneficials in action' would be the most useful. Therefore, on-farm hands-on workshops were planned for Fall 2009 to introduce growers to 7 of the most commonly used beneficial insects for controlling the primary greenhouse pest insects. Seven workshops were originally planned and an eighth was requested for the greenhouse growers at Cornell and the Ithaca area. The programs emphasized what the organisms looked like using microscopes and handlenses, how to determine if they are alive when received from the supplier, how to apply them to the crop, and how to determine if they are working. John Sanderson was the primary resource person and introduced the topics. The programs were held in commercial greenhouses and many of the host growers were already using biocontrol so they could also participate as resource people. When possible, application methods were demonstrated over the crops in the greenhouse. Pre and post tests were used to determine the increase in knowledge with several questions added at the end to indicate intent to change practices.

Holding the events in a greenhouse and encouraging an informal structure so that growers would feel comfortable asking questions promoted the informal mentoring network. During the hands-on activities when participants were moving from microscope to microscope, participants also had a chance to talk to each other. In many cases questions were referred to the growers using biocontrol to include a 'real world' aspect to the answers.

Results and discussion:

Approximately 190 people attended the workshops held in fall 2009. While all the pre and post-tests have not yet been compiled, the results from the Long Island workshop will be used here (40 pretest respondents, 35 posttest respondents). Because there are more wholesale and large retail greenhouse operations on Long Island, the results may be skewed towards greater previous knowledge of biocontrol. Of the 7 beneficials used, most attendees had heard of at least some – the most well known was beneficial nematodes (90%) and the least well known was *Atheta* (25%). This follows well with information we have seen in trade journals and from other programs. *Encarsia*, for whitefly control, and nematodes are most commonly used (30 and 28% respectively) and *Atheta* the least commonly used (8%). From the pretest, knowledge of which

beneficials to use for pest management was greatest for thrips and whitefly (53%) and many knew how to apply nematodes (53%) and Encarsia (40%), used for their control. Few knew how to determine if the beneficials were alive.

After the program at least 86% knew the beneficials used to control thrips, aphids, fungus gnats and whitefly and at least 86% knew how to apply nematodes and Encarsia. At least 54% knew how to apply the beneficials after the application demonstration. The number planning to use biocontrol next season (51%) was lower than reported in 2008 (68%) although the number marking ‘maybe’ was higher (43% compared to 14%). The number already using biocontrol was approximately the same (2008- 36%, 2009 – 40%). Interviews of specific growers are planned to gather information on practice change and changes in pesticide use/yield/quality that are a result of this program.

While the mentoring aspect of the project is very informal, growers have told us that they are contacting other growers for information, and have found the mentoring growers to be an invaluable resource. Also, Walt Nelson of the Monroe County CCE, held a program with growers that had participated in the tour to describe their experiences using biocontrol. In each case they mentioned mentoring – both giving and asking for advice – as being a major means of support in their use of biocontrol.

Implications:

There continues to be growing interest in the use of biocontrol, particularly in retail greenhouses in NY, but also a continuing need for information and support. Grower-to-grower mentoring can be successful but will need encouragement for a broadly functioning network to develop.

Project location:

On-farm workshops

9/17/09	Using Biological Control in the Greenhouse: On-Farm Workshop on Identification and Application	Plattsburgh NY – Clinton County (Cook and Gardener Greenhouse)	Greenhouse growers, CCE and industry reps	10
10/1/09	Using Biological Control in the Greenhouse: On-Farm Workshop on Identification and Application	Cicero, NY - Onondaga County (Barone’s Gardens)	Greenhouse growers, CCE and industry reps	18
10/22/09	Using Biological Control in the Greenhouse: On-Farm Workshop on Identification and Application	Jamesport, NY- Suffolk County (Van de Wetering Greenhouse)	Greenhouse growers, CCE and industry reps	48
10/23/09	Using Biological Control in the Greenhouse: On-Farm Workshop on Identification and Application	Walden, NY –Ulster County (Silverleaf Greenhouses)	Greenhouse growers, CCE and industry reps	23
10/29/09	Using Biological Control in the Greenhouse: On-Farm Workshop on Identification	Latham, NY- Albany County (George’s Market and Nursery)	Greenhouse growers, CCE and industry reps	12

	and Application			
10/30/09	Using Biological Control in the Greenhouse: On-Farm Workshop on Identification and Application	Cooperstown, NY- Otsego County (The Clark Foundation)	Greenhouse growers, CCE and industry reps	18
11/6/09	Using Biological Control in the Greenhouse: On-Farm Workshop on Identification and Application	Hamburg, NY- Erie County (Lockwood's Greenhouse)	Greenhouse growers, CCE and industry reps	40
12/4/09	Using Biological Control in the Greenhouse: On-Farm Workshop on Identification and Application	Ithaca NY – Tompkins County	Greenhouse growers and University greenhouse personnel	20

Pictures:

Sent to Karen