

## **Summary of Presentations for the Grower-To-Grower Sessions of the Northern New England Tri-state Greenhouse IPM workshops, 2013**

The Tri-state Greenhouse IPM Advisory Group puts on workshops in Maine, New Hampshire and Vermont every January. The grower-to-grower session is one of the most popular segments of the program for the attending growers. It is an hour-long session in which growers from two greenhouse operations in each state are invited to present a meaningful experience they have had relevant to the use of IPM against insect or disease pests. Generally the growers start by describing their operation, including the size of the facilities and types of crops produced. They next focus on a particular problem they have that has been managed with IPM, or challenges that prevent them from reducing their pesticide use. The presenting growers are given a general outline to assist them in preparing for the presentation, but they alone are responsible for selecting the topics they wish to share. Generally this session becomes an open discussion with growers in the audience sharing their experiences, successes and failures, and a free exchange of ideas among the entire group. Below are summaries from the six growers who participated in the grower-to-grower sessions in January 2013.

**Shawn ODonnell, a grower at Olivia's Garden**, New Gloucester, ME presented at the Maine workshop. Olivia's Garden produces greenhouse grown ornamentals and hydroponic vegetables and herbs. He said that Ron Valentine, IPM specialist for BioBest (<http://www.biobest.be/home/>), a commercial producer of natural enemies, has been essential for making biological control a success. Ron is available to ask questions on the phone or replies to emails quickly. He always shares interesting information about natural enemies which helps make the biological control program Shawn follows successful. He didn't get into specifics about what he uses for biological control, but clearly felt it was essential to receive support and guidance from an expert. Ron Valentine is a biological control specialist employed by BioBest to advise growers on establishing and sustaining biological control programs in ornamental greenhouse operations. He was a guest speaker at the Tristate greenhouse workshops in 2011, where many growers were first introduced to him. Following this session several growers initiated biological control programs in their greenhouses for the first time, many supported by Ron's individualized advice. His availability to guide the growers through the process of developing a plan and dealing with challenges and pest outbreaks throughout the growing season is essential to give some growers the confidence to try adopting a biological control strategy. Because of the complexity of the process and their lack of experience, many growers have said for years that they would like "their hands held" to attempt biological control. For these growers, the service that BioBest provides is invaluable to adoption of biological control.

**Nancy and Bruce Steadman of Little River Flower Farm** (<http://littleriverflowerfarm.com>), also presented at the Maine workshop. They are a family-owned diversified certified organic operation on 110 acres where they grow a wide variety of ornamentals, vegetables and small fruits. They offer shares in their CSA during the summer and feature "pick your own" flowers and blueberries. They maintain over 3 acres of perennial and annual flowers for cutting, growing over 8,000 cut flowers every year, which they use to create a wide array of arrangements for all kinds of occasions. They plant 7,000-9,000 annual flowers annually and grow them in one of their three greenhouses and three large field plots. They also have three beds of over 1500 perennials for cutting. In addition they specialize in growing fancy pumpkins, hard shell gourds, small ornamental gourds, fall grasses and flowers, summer and fall sunflowers, and other unusual plants. For the workshop they talked about their experience with releasing lady beetles to manage aphids. Nancy said she purchased them from IPM Labs (<http://www.ipmlabs.com/>), and said she appreciated the personal attention she receives from Carol Glenister, the owner. Growers were introduced to Carol several years ago when she

served as a presenter for the Tri-state IPM workshops. Nancy felt that the lady beetle releases were instrumental in their successful aphid management. She is able to get the lady beetles established in the greenhouses, which is unusual. Other growers indicated that they have difficulties because the beetles fly away and out of the greenhouse without becoming established. Bruce discussed his use of the aphid banker plant system, in which a non-pest aphid species is reared on wheat grass. The aphid parasite is released onto the plants where it reproduces and then disperses throughout the crop to search for pest aphids. He believed this system is a cost effective means of managing aphids because it doesn't require multiple purchases of parasites. He said it didn't take an excessive amount of time to prepare the banker plants regularly throughout the season.

**Ben Shambaugh of Wayside Farm**, North Sandwich, NH (<http://www.waysidefarm.com/>), presented at the New Hampshire workshop. Wayside Farm is a small farm producing a unique selection of fine quality annuals and hardy perennials. They grow interesting and unusual flowering plants as well as the old favorites. They use a comprehensive and well-researched biological approach to insect control. The greenhouses are all thoroughly cleaned and the concrete floors vacuumed and disinfected at the end of each season to ensure a clean start-up in January. They purchase or raise at least 10 types of beneficial insects to feed on any possible insect pest 'intruders', and begin introducing them as soon as they have plants growing. While they are not organically certified, they do everything they can to ensure a clean and safe growing environment in the greenhouses for the plants, the people who work there, and the gardening guests. He relies heavily on repeat customers so it is critical to the success of his business that he produces particularly high quality plants so his clientele returns. He also grows several small fruits, from which he harvests fruit for sale. He also sells unusual fruits such as serviceberry and honey berry. These are emerging crops that are gaining in appeal. He said he has been attending these workshops since the beginning (17 years ago). He felt he took at least one good idea away every year that he then implemented. As a result of what he has learned in these workshops, he now uses 95% less chemical pesticides than he used in the late 1990s. He uses banker plants to manage aphids. Initially he had problems with hyperparasites on the banker plants that infiltrated from outside. He now uses banker plants in the late winter and early spring. Then he shifts to using *Aphidoletes aphidimyza*, a midge, with a larval stage that feeds on aphids. He found that this strategy worked well for avoiding the hyperparasite problem. This approach was suggested at the workshop last year. It demonstrates the importance of knowing the subtle interactions among the different insects that occur within a greenhouse environment. He said when he started using biological control in his operation, he didn't have great success, and had to supplement them with occasional chemical pesticide sprays. He has now figured out that he wasn't releasing them early enough in the population cycle. Now he develops an action plan for the growing season in December based on what took place last year. He places his order for biological control agents for the entire season in late January. This ensures that he has what he needs in time for them to work effectively. He commented on the fact that he spends quite a lot on his biological control program, and \$1,600 is just for shipping. He would like to find ways to reduce this expense in the future.

**Pooh Sprague of Edgewater Farm** (<http://edgewaterfarm.com/>) in Plainfield, NH, also spoke at the New Hampshire workshop. He owns/operates a retail diversified family farm and CSA covering 160 acres where they produce herbs, annuals and perennials to heirloom pelargoniums, mixed hanging baskets, ornamental grasses, container specimens and standards. In addition to growing a wide array of ornamentals in their 12 greenhouses (60,000 sq ft of poly houses), they also grow strawberries and other small fruit on 10 acres and seasonal vegetables, from arugula to zucchini with everything in between. Their farm stand offers hand-picked strawberries, blueberries, black raspberries or

raspberries. They frequently donate extra produce to local non-profit organizations for distribution to senior homes and food banks. They were one of the first commercial greenhouse operations in New England to pioneer the use of beneficial predatory insects in their greenhouses. Prophylactic releases of predatory wasps, mites, beetles and midges and use of biorational pesticides is expensive but has allowed them to eliminate the use of hard chemical sprays (carbamates, chlorinated hydrocarbons and organophosphates) while enabling them to achieve acceptable levels of pest control. Using biological control (“bios”) for him is a personal issue. He isn’t a certified organic grower, but uses chemical pesticides only when absolutely necessary. He believes that beneficial natural enemies are their only hope in the long run for managing pests given the issue of resistance. He said there is a significant learning curve for growers to make “bios” work. It is complicated because there are several pests and many available natural enemies to combat them. He has found that he now has a better sense of when pests are likely to surface and starts releasing the bios earlier than in the past. This seems to be improving his success with IPM. When asked how he chooses what bio to use, he said he prefers to use distributors that he knows so he feels there is a personal connection and service from the supplier. He prefers suppliers who don’t ask too many questions because time is always limited and he doesn’t always know the answers to the difficult questions they ask him about the pest.

**Tobias von Trapp of von Trapp Greenhouses**, (<http://vontrappgreenhouse.com/>) Waitsfield, VT presented at the Vermont workshop. Founded in 1980 the von Trapp Greenhouse is a family-owned business that has produced a variety of greenhouse ornamentals and bedding plants for 30 years. Unlike most garden centers that purchase the majority of their plants as finished product from outside sources, he grows all of the plants they sell from seeds, cuttings or divisions. They offer over 550 cultivars of annuals, over 600 cultivars of perennials, and about 100 cultivars of herbs and vegetable plants. Their operation includes six greenhouses (14,000 sq ft) and a network of coldframes to provide protection for frost tolerant annuals and young perennials. Seed sowing begins in mid-January and continues through May. By March the greenhouses are filled with seedlings. They also maintain a display garden which is open to the public. Their daughter joined the business recently to help with production and sales. She also has an established cut flower business, selling bouquets and creating custom floral design for weddings and special events. He said he has been going to these IPM workshops for 17 years. In the past he tried a few biological control agents but they never seemed to work very well for him. He had always wondered why, and now he believes it is because he never gave them time to work. He then described his experience last year with his attempt to manage spider mite on *Dipladenia* (A.K.A., *Mandevilla sanderi*), a flowering vine that is particularly susceptible to mite infestations and requires up to 9 months to reach the flowering stage, which allows a long time for pest populations to increase. As a result of discussions he had with a presenter at the greenhouse workshop last year, he decided to go “cold turkey” with the use of chemical miticides for his recurrent spider mite problems with this plant. He released three species of predatory mites every 2 weeks on the advice of Carol Glenister of IPM Labs. He checked the plants frequently during the early winter and found large numbers of spider mite and was very concerned. He tried all sorts of other tactics, including dipping them in a solution of Botanigard, a fungal-based pesticide. Though he could see predatory mites on the plants, the spider mites were there too and it didn’t look like the biological controls would work. He spent hours checking the plants in the hope he would see results. Slowly he started noticing that the spider mite population was declining. By the first of May he had the best plants he had ever seen. By the time they were beginning to flower he could find no spider mites on them at all. He mentioned that this particular plant requires a long development time, usually at least 10 months. This is costly because it requires a heated space and continual attention. He noticed that as a result of using biological control instead of miticides the plants appeared to reach maturity and the flowering stage faster. This will save him time and money in terms of on-going care.

They will be ready for sale earlier when miticides are not used. He was asked if he had ever been tempted to revert back to miticides last year when it appeared that the predatory mites weren't working. He emphatically answered "No", adding he decided early that he would not use miticides, no matter what happened. One reason was because he wants the environment in which he, his family, grandchildren, workers and customers inhabit to be healthy, and not contaminated with toxic chemical pesticide residues. He closed by mentioning that the next major pest challenge he faces is foxglove aphid. He has had mixed results with using Botanigard, but he likes that it appears to be compatible with the beneficial mites he uses.

**Jack Manix of Walker Farm**, (<http://www.walkerfarm.com/>), Dummerston, VT also presented at the Vermont workshop. Walker Farm has evolved into a multi-generational family-owned retail operation that prides itself on the quality of premium products they produce. They grow over 1200 annual and perennial flowers in 19 greenhouses. Many are started from seed while others are obtained from propagated plants. They also manage 30 acres of field grown crops, providing a steady supply of certified organic vegetables and small fruit for their seasonal farm stand and CSA. He has never felt confident that he could effectively manage pests on the ornamentals without some chemical pesticides, though he uses them sparingly and is continually trying to reduce his reliance on them. The bottom line for him is that he doesn't like to spray. "What grower likes to get suited up in the protective gear at the end of the day to apply a bad smelling toxic chemical!" He has been coming to these workshops for years, and always learned something. He tried releasing *Amblyseius cucumeris* (a thrips predator). It didn't seem to cure the problem and he felt it was a waste of money. He realized that he didn't really know what he was doing, and felt he didn't have anyone to turn to for advice. He said if you think you can get into using biological control midway through the season, you are bound to fail. You have to start early! He now uses Alison Trout-Kutsman, a private crop consultant in Washington State (Sound Horticulture, <http://soundhorticulture.com/>), who presented at the IPM workshops 3 years ago. He needed someone like her who would not beat around the bush. She is tough and insists that he check his crops regularly for pests, something that he is sometimes a bit lax with. A couple of years ago he started using nematodes to manage his thrips and fungus gnats. He said it has made all the difference. He applies them with a dosatron injector, which is very easy for him. He wishes that there was an organic formulation so he could expand the area included under his organic certification. He uses marigolds to trap thrips out of his vegetable starter plants which he feels is very effective. He releases the predatory mite *Phytoseiulus persimilis*, which he likes because they are red and easy to detect on the plants so you know they are there. It is hard to see the *A. cucumeris* mites. He mentioned that aphids were a particular problem last year. He uses aphid banker plants to manage them, but last year there was a delay in the state permitting process so they were not available for the 3 weeks that were critical for their establishment. This reduced their effectiveness. He tends not to use biological control preventatively because it can be very expensive. He spent around \$6,000 on biological control last year, which worked out to around \$0.14/sq ft. However, he realizes now how important it is to be consistent and stick with a program once you start it. He also stressed the value of knowing the life cycle of the pest, as that will help a grower target the vulnerable life stage. He recommended using crop consultants to help with developing and following through on a biologically-based management strategy.