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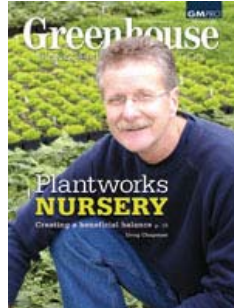
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Considering biologicals? Just do it.

2/24/2010

Doug Chapman, owner of Plantworks Nursery, says if you are considering using biological controls don't delay, just start using them.

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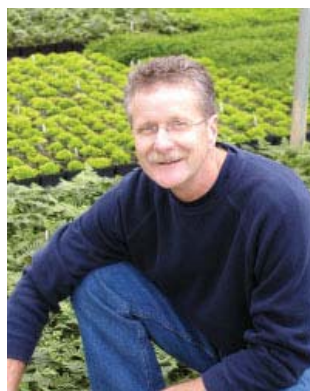
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Doug Chapman

Plantworks Nursery in Rougemont, N.C., is entering its second year of using biological controls. Even though the company still considers itself a novice when it comes to using biologicals, owner Doug Chapman had been interested in incorporating them into the company's pest control program for many years. Plantworks Nursery operates nearly 200 greenhouses of varying sizes and produces a variety of groundcovers, perennials and annuals.

"More than 15 years ago I asked a pest and disease specialist with a Maryland parks and recreation department to come down to North Carolina to speak about beneficial insects and the whole concept of integrated pest management," Chapman said. "The information that she presented had been sitting dormant in my head and I had been considering using beneficials ever since then."

What finally pushed Chapman to incorporate beneficials was his inability to find employees willing to apply chemical controls.

"We began to have a hard time hiring young people who were willing to spray the chemicals," he said. "Some of them had even been trained in horticulture, but they had no interest in putting on a Tyvek suit and a mask, especially during hot weather, and doing the spraying. I started to think that we were going to have to change this."

Better understanding

beneficials

Chapman had known Suzanne Wainright-Evans of Buglady Consulting for several years and had shared information with her about using beneficials in his nursery. Chapman contacted Wainright-Evans in 2007 and asked her to visit the operation to discuss incorporating beneficials. She worked with Chapman, one of his section growers and the person in charge of the spray program providing them with training. His employees picked up more information on beneficials during some hands-on seminars that Wainright-Evans conducted during the 2008 Green and Growin' Trade Show in Greensboro, N.C.

Satisfied with the information that had been collected, Chapman made the decision in the fall of 2008 to stop applying those chemicals, including malathion and synthetic pyrethroids, that can adversely affect beneficials.

"We started in our heated houses last winter," Chapman said. "We weaned ourselves off the more traditional control products and started using insecticidal soap, horticultural oil and products that are easier on beneficials, including Endeavor, Naturalis, Dipel, BotaniGard, Enstar, Ovation and Talus."

Chapman also developed a spreadsheet chart that is used by his section growers. The growers inspect their growing sections once a week.

"The spreadsheet lists all of the insects they are looking for," Chapman said. "They mark down the intensity of the infestations, what plants the pests are on, the location, etc. All of the information comes back to a central point and then one person decides what product is going to be sprayed or what beneficial is going to be released."



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Plantworks Nursery Inc.

Founded: In 1978 by Doug Chapman.

Location: Rougemont, N.C.

Production space: Wholesale production of ground covers (40 percent), perennials (30 percent), hardy ferns (20 percent) and annuals (10 percent). 20 acres of production, including 100,000 square feet of greenhouses.

Market: Ship within a 350-mile radius mainly along the I-85, I-95 corridor between central New Jersey and Greenville, S.C. Customer base consists primarily of independent garden centers (60 percent), landscapers (30 percent) and other nurseries (10 percent).

Employees: 32 full time and 10

The four major pests that Plantworks deals with are aphids, mites (mostly two-spotted spider mite), whitefly and thrips.

Aphids

Plantworks initially began using beneficials to control aphids because that was the first pest that emerged once the decision had been made. Initially, lace wing larvae were released to control the aphids. Chapman said even though they got very good control with the larvae they decided to switch to lace wing eggs.

"There are advantages to using the eggs," Chapman said. The eggs transport very easily, they come on cards which are easy to distribute in the greenhouses where aphid flare ups may occur and they are less expensive than the larvae.

Initially the lacewing cards were put out once a week, but during the summer releases were cut back to one every two to three weeks. Chapman said aphid pressure is not as severe during the summer, but the releases were increased during the fall when aphid populations increased. When small aphid flare-ups occur, Chapman said control can be achieved with targeted applications of insecticidal soap or Endeavor. Lacewing egg releases are then made a week later.

Two-spotted spider mites

Plantworks encountered a problem with two-spotted spider mites on pachysandra. The predatory *Phytoseiulus persimilis* mite was initially released in hot spots and the control was effective for about two weeks before the spider mites showed up again. After consulting with Wainright-Evans, a spray application of insecticidal soap and Ovation was made to get knock down. A rotation of predatory mites was started using *Persimilis* with a second release two weeks later. Two weeks later a release was made of the predatory mite, *Neoseiulus californicus*.

Chapman said the *Neoseiulus* mite is more active than *Persimilis* in hot weather. The predatory mites controlled the spider mites except for an occasional flare up that required a spray application of insecticidal soap in small areas that could be treated with a backpack sprayer.

Thrips

Thrips were particularly difficult to control on dahlia, crocosmia and a variety of perennials. Wainright-Evans recommended the release of the *Orius* beetle every two weeks.

Prior to using this predatory beetle, Conserve was applied for thrips control. After releasing *Orius* Chapman said they didn't have a problem with thrips. Following the release of *Orius*, Chapman said only two applications of Conserve were made for the rest of the year.

Whiteflies

At Plantworks whiteflies have been the biggest problem for years on perennials, primarily veronica, verbena and salvia. The control program was started with an initial knockdown using either insecticidal soap or horticultural oil depending on plant phytotoxicity. Since it was difficult to distinguish if greenhouse whitefly or silverleaf whitefly were the major problem, a combination of predatory mites was released. Eretmix, (*Eretmocerus eremicus* and *Encarsia formosa*) was rotated every two weeks during the summer with Mundus Mix (*Eretmocerus mundus* and *Eretmocerus eremicus*).

Chapman said that an occasional outbreak of whitefly would occur so a spray application of insecticidal soap would be made before the predatory mites would be re-released.

Lepidoptera worms can also be a problem during the summer. Chapman said those can be treated with Dipel as they flare up or on a scheduled basis.

Learning curve

Before incorporating beneficials into his company's pest control program, Chapman said the growers didn't really scout the plants. There was one person in charge of all of the scouting, which he said was an imposing task.

"We were scouting, but we were actually looking for hot spots," he said. "We were on a rotation where we would come in every week and spray. Incorporating the beneficials and having a program in place, the section growers are now on a scouting schedule. There is a consistency that wasn't there before. Also, the growers are now down in the plants a lot more looking for problems. It is the attention to detail where we really saw an increase."

Chapman said there was also a learning curve every time a new biological was introduced. He said there were little learning curves throughout the year. He said the suppliers were very helpful with initial pest information.

"I tend to be a real hands-on person so it was easy for me to be out there with the growers explaining what was going on and showing them what to look for. A key is to get at least one person on your staff excited about the program so that they can take the lead."



Chapman, who said he's a real hands-on person, found it easy to be out in the greenhouse with the growers explaining what was going on with the biological controls and showing them what to look for.

Getting started

Chapman said growers who are seriously considering incorporating biologicals should work with a consultant. He said Wainright-Evans was the catalyst and was very willing to share information in order for the program to be successful.

"Suzanne warned us that there would be peaks and valleys," Chapman said. "I went in fully expecting to not be fully successful. She said we'd have some major outbreaks, but then we would have good control."

"The most important thing is to get on a schedule. It's not a hit-or-miss thing. You can't expect to go in and make a release in a hot spot and then just walk away. You have to build up the populations of the beneficials. Many of the beneficials will become established if there are pollen-producing plants in the area. You can rely on plants in the surrounding landscape or you can introduce plants that bloom throughout the summer such as ornamental peppers."

Wainright-Evans made recommendations on which biologicals to use and from which suppliers to purchase them. Plantworks works with different suppliers, including Syngenta Bioline, Beneficial Insectary, Sterling Insectary and Biobest. Biobest, provided Chapman with an Excel spread sheet that he adapted that tracks releases on a weekly basis and enables him to set up a schedule based on what was done previously.

Another resource that Chapman has found valuable is the "Natural Enemies Handbook: The Illustrated Guide to Biological Pest Control." Available from [University of California IPM Online](http://www.uct.ac.za/~ipm/), Chapman bought multiple copies, which he distributed to employees involved in the control program.

"It has helped to know when a pest is going to emerge so that we are able to be proactive," Chapman said. "A traditional spray program is reactive. I don't think using beneficials will work for every grower. But for someone who is really hands on and if you have a staff that can implement it, I think it is a no brainer."

For more: Plantworks Nursery Inc., (919) 732-6594; www.plantworks-nursery.com.