Biological Insect Control of Herbaceous Perennial Plants
project # FNE97-162
Final Report

Monday, June 01, 1998

One of goals of this project was to find an environmentally friendly product(s) and / or methods to be used in greenhouses growing perennial plants. The targeted pests were fungus gnat and western flower thrips. The fungus gnat larvae are a serious pest because they feed on the roots of tender plants and can cause damage or even death of the plant. As for western flower thrips because they difficult to control, because of their fast multiplying rate, a better method, that is more earth friendly was the goal of this project.

Our information at the beginning of the project hasn't changed. We still have an IPM program in place and have two full time growers. We grow annual bedding plants, geraniums and perennials in 1gal to 3 gal. sizes as well as a small number of deciduous shrubs.

Collaborators included, Leanne Pundt from the UConn extension service, where she is the Commercial Horticulture, Greenhouse IPM Coordinator. She helped with gathering information on the products and beneficial insects requirements, as well as bi-weekly visits to see the project in progress and to see that the methods were being instrumented properly. Another collaborator is a local Agri- Tech high school teacher, Mr George Lyman. He brought some of his classes to tour the whole facility, and including, the biological components of this project. His part in this project was to make ~~aware~~ probable future growers aware of different options for

insect controls. As well as possibly opening their eyes of a new field of study after high school.

The project began early this year. In January, the two greenhouses were cleaned up well; using an algaecide and pulling of any weeds by hand that might have been growing over the winter. When the plants came in most were still dormant. When foliage began to appear, yellow and blue sticky cards were placed at a rate of four per thousand square feet. This higher than average numberof sticky cards was used because of a high variety of plants grown in one area, we wanted to catch any hot spots of insects fast. Potato slices, in a size of 1" x 1"were placed on the top of 10 random pots, to scout for fungus gnat larvae and record the population levels. Because of temperature and light limitations in March we were unable to use the beneficial mites and nematodes until later in the season. So as a "hot spot area" (an area of increased insect counts or damage) developed it was spot treated with Azatin, an African tree sap that attacks the larval stages of insects. This was used at the recommended label rate and direction. Also Botani-Gard, a naturally occurring fungus that was used to attack adult western flower thrips and fungus gnats that were present. It was tank mixed in some cases with Azatin, to form a very useful combination. When the temperature in the soil and air warmed to 60-65 degrees, beneficial mites were purchased and dispersed. For fungus gnat control we used Hypoaspis miles at a rate of 3 liters per 1,000 sq.ft. a teaspoon to tablespoon was used depending on the size of the container. For the fungus gnat larvae, we used a product called Nemasys, a beneficial nematode; Steinerneina feltiae. These added to the mites work in lowering and holding down of the fungus gnat counts.

As for the western flower thrips, we used Neoseiulus cucumeris, another type of beneficial mite, which was in bags of 300. 50 of the bags per 1,000 sq.ft. were placed just above the leaf canopy, concentrating more on the thrips prone plants, such as lupine.

Some findings of the project, one you must start with low insect levels in order for the beneficials to work to their full potential. Two, it worked well combining these different products and mites to make up a eviromentally friendly greenhouse, which was free of long REI's for workers and strong chemical odors. We had a control house as well as the test house and both produced a salable product. An added and unexpected benefit was that this "natural" approach, could be used as a marketing device to retail and wholesale customers who were concerned about some of the pesticides used in the greenhouse production.

Economically, there is no doubt that this approach is more expensive and labor intensive compared to a more conventional method, especially at the start of the project. Mites and biorational chemicals aren't inexpensive, and then there's the task of applying the materials the first few weeks. Afterwards, my only labor and time was for scouting and spraying of hot spots. This is especially beneficial at the end of the season, in May when, I don't have time to spray, but yet I know the beneficials are still working. In comparison, with a traditional chemical appoarch which would detail spraying evry three to five days for one month or more during my busy season. In the future years I'll be using earth friendly products and methods. I think that after a while more people will also be looking for a safer approach to controlling insects. With all the new chemical regulations in the works this sounds like a more logical choice. Like anything it's never perfect, it will

take a few years until I get it to run smoother, by this I mean, find ways to cut on initial labor for applying beneficials.

As part of the outreach plan, the local Agri- tech high school freshman classes toured the greenhouses and were shown sticky cards, hand lens etc. everything a scout would use. I explained how the biological house was like no other house here. When they saw potato slices on top of the soil in the pots, it caught their eyes and asked " what is this here for". For the most part, I think they found it interesting. More information will be sent to the UConn extension service where a copy of the results will be available for anyone interested. Later this season, an article will be written and sent to "Plugged In" a grower association news letter co- authored by Leanne Pundt and Mike Berecz. Also not mentioned, was that every time a landscaper or grower comes in the biological greenhouse and sees all the white mite bags up, I give them a brief explanation to what is going on in there, all gave positive feed back about the plant quality. (pictures will arrive latter to you) Thank you.