

“Final Project Report to the NYS IPM Program Agriculture IPM 2003-2004”

Title: Where do Fungus Gnats come from when a greenhouse starts up for spring production after being closed for winter?

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Type of Grant: Monitoring, forecasting, and economic thresholds.

Project location(s): Ulster County. This information could be used throughout the Northeast.

Abstract: Fungus gnats (*Bradysia corophila* and *Bradysia impatiens*) are of great importance to greenhouse growers. Larvae may feed on roots or root hairs of young plants. This can lead to stunting or even death in young plants. It can also create a means by which pathogens can enter the plant. Adult Fungus gnats can possibly carry plant pathogens and possibly infect older plants. Potato wedges were used in an attempt to detect the early presence of Fungus Gnats in the greenhouses.

Background and Justification: Fungus gnats are a problem for nearly every commercial Greenhouse grower in our IPM program. It would be very useful to try to answer the question: “Where do Fungus Gnats come from when a greenhouse starts up for the spring production.” The possible sources of fungus gnats are: the greenhouse floor (near a spot where water had been leaking/standing?), small piles of refuse or mix spilled on/under benches, unopened bags of growing mix, and unsold hanging baskets that have not been discarded. Potato wedges were utilized in order to gain a better understanding of where Fungus gnats originate. It would also give us a better understanding if, and how they over winter in a closed greenhouse. It has been thought that larvae and eggs can be present in unopened bags of growing media. Soil samples were taken to test if any eggs were present in the soil.

Objectives:

1. To help growers understand the origins of early season fungus gnats come from.
2. Try to identify potential problem areas.

Procedures:

1. Two growers were recruited through the IPM program, and the regional Bedding Plant School that were interested in having research done in their greenhouses. Initial greenhouse visits included the placement of yellow sticky traps to indicate if there were any fungus gnats currently in the houses. Potential problem sites were also noted in this initial visit.
2. During the second visit (one week later) the sticky cards were examined.

3. Potato wedges were then placed around the greenhouse in the locations that were previously identified as potential problem areas. These locations were then flagged for future reference. Locations included wet spots, under benches, bags of growing medias as they were opened up, and areas around the heating systems. Samples of growing media were taken and incubated to determine presence of larvae.
4. Weekly scouting was performed. The weekly scouting consisted of: yellow sticky card counts, checking the bags of media for fungus gnat larvae, and checking of the potato wedges for larvae.

Results and Discussion:

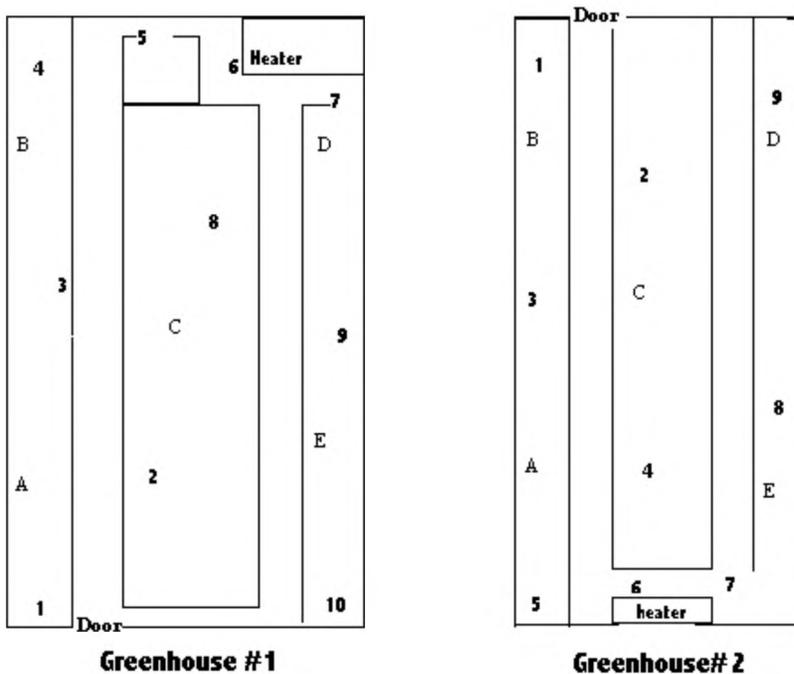


Figure 1

Letters represent yellow sticky card traps.

Numbers represent places where potato wedges were placed.

Greenhouse #1

The heat was turned on in late January. Initial yellow sticky cards were set out on Feb. 6. A week later on Feb. 13 the cards were checked. No adults were detected at this time. The cards were replaced and the potato wedges were placed out. Samples from the growing media were also taken. Feb. 20 there were no larvae and no adults detected. Feb. 27 larvae were detected on the floor near the heater at location 7. At this time larval monitoring ended. No adults were detected at this time. March 6 the greenhouse was scouted no adults were detected. Larvae were detected in the growing media. March 13. Two weeks after the initial finding of the larvae. The first adults were caught on the sticky cards.

Greenhouse #2

In late January the heat was turned on. The initial yellow cards were put out on Feb. 6.

The following week Feb. 13 there were no adults found. The yellow cards were replaced and the potato wedges were placed out. A sample of the growing media was also taken. The following two weeks Feb. 20 and Feb. 27 there were no adults or larvae detected. On March 6 the first larvae was detected at location 4 near the heater. At this point larval checking was stopped. There were no adults detected. The week of March 13 there were no adults. March 20 the first adults were found on the yellow sticky cards. The soil media remained negative.

Discussion

The results of this project suggest that the Fungus gnats overwintered in the soil floor of the greenhouses. The larvae being present prior to the adults support this. It is also possible that the larvae overwintered in the growing media. The growing media was probably infected in the fall when the media was dumped from its original container into the opened bulk storage container. The eggs were probably laid and then they overwintered and hatched as it got warmer. The results of this study indicate that early season management of the area around heat sources and soil media are critical. The release of predatory mites around problem areas and in soil media could be of significance importance. Early season management of Fungus Gnats could lead to reduced numbers of adults in later season growing.