

## **Insects and Their Control**

# **Greenhouse IPM: The Costs of Managing Pests**

Tina M. Smith and Mark Mazzola, UMass Greenhouse IPM Program, Amherst.

Since the Greenhouse IPM Program began in Massachusetts in 1990, more than 60 growers have participated in the scouting programs for poinsettias and spring crops. From August through November and again from February through May, scouts collected information each week on pest populations, pesticide treatments and costs associated with scouting. This information was tabulated each year for the year-end report submitted to the Integrated Pest Management Review Committee who awarded funding for the program. In this article we would like to share some of the information that has been collected from growers in Massachusetts that participated in the IPM program over the years. It is our hope that you may find some of it not only interesting, but useful for assessing your own pest management decisions.

### **Changes in Treatments**

We tabulated information for pesticide use on poinsettias for the years 1992 and 1994. During 1992, 89% of pesticide treatments were made for whiteflies and 10% were made for fungus gnats. During 1994, 50% of pesticide treatments were made for whiteflies and 29% were made for fungus gnats. The number of pesticide treatments for whitefly dropped by 39% between 1992 and 1994. This change was most likely due to the introduction of Marathon and its effectiveness on whitefly. The insecticide, imidacloprid (Marathon) became available to growers in Massachusetts in August 1994. Based on a sample of seven poinsettia growers during the 1992 and 1993 poinsettia season, whitefly management on poinsettias involved an average of eight pesticide treatments per growing season. Since that time, Marathon has been widely used by growers and has been very effective against whiteflies on poinsettias. Due to Marathon's persistence, fewer treatments are used than other insecticides.

While the number of treatments for whiteflies declined, the number of treatments for fungus gnats increased 19% from 1992 - 1994. This increase may be due to several factors. One reason may be the types of soilless media that

are being used. With the increased use of artificial soil mixes high in organic matter, fungus gnats have become an increasing pest problem in greenhouses. In 1985 Dick Lindquist of Ohio State, showed that fungus gnat problems are most serious in potting mixes amended with composts that were not completely composted. Microbial activity is excessively high in such mixes, and plant growth after planting is often not acceptable. In 1992 Lindquist showed that the highest numbers of fungus gnats were trapped over composted pine bark mix that was highest in microbial activity. In addition to the mixes being used, the types of pesticides being used have also changed. Materials such as aldicarb (Temik) may have kept fungus gnat populations under control in the past.

### **Pesticide Treatments on Poinsettias**

Cost analysis information for pesticide treatments (insecticides and fungicides) on poinsettias were tabulated for six IPM growers during 1994. Based on actual pesticide costs, labor costs, and the number of square feet treated, total pesticide treatments ranged from \$0.05 to \$0.20 per sq. ft. with an average of \$0.12 cost for pesticide treatment per sq. ft.

We did not include the cost of equipment, maintaining a pesticide certification or other costs associated with pesticide treatments. Table I summarizes the information we tabulated and it reflects insecticide treatments made for whiteflies and fungus gnats and fungicide treatments made for root rots.

### **How Much Does It Cost to Scout?**

One question commonly asked by growers is, how much does it cost to scout? To determine the answer to this question we asked the University of Connecticut and the University of Maryland for their scouting information to be added to our data to obtain a broader sample. IPM costs for poinsettias were tabulated from 12 growers in Massachusetts, four growers from Connecticut, and two growers from Maryland. We considered, the number of grower visits, number of

hours scouted, number of sticky cards used and the square footage of area that was scouted. Based on this information, costs for scouting ranged from \$0.01 to \$0.10 per sq. ft. There was no difference between the cost of scouting in Massachusetts, Connecticut and Maryland.

IPM costs for spring crops were tabulated for eight growers in Massachusetts. Again we considered the number of visits, number of hours scouted, number of sticky cards and square footage of the area being scouted. Based on our tabulated information, IPM costs ranged from \$0.01 to \$0.05 per sq. ft. with an average of \$0.03 per sq. ft. Table 2 summarizes the information we tabulated for spring crops.

Many factors influence scouting costs, including the levels of pest infestations and degrees of difficulty it takes to move around the greenhouse to scout. For example, if a greenhouse has very few whiteflies, more plants are monitored to gather adequate information than in a greenhouse with a heavy infestation. If sticky cards are heavily infested, it takes longer to count the insects on the cards. The degree of difficulty it takes to move around a greenhouse varies from site to site and also influences the length of time it takes to scout. Greenhouses that have very narrow walkways are more difficult to move efficiently through and therefore takes more time to scout. The plant mixes in a greenhouse also effects the labor costs. A greenhouse that contains many species of plants may require more time to scout than a greenhouse with one or two species of plants.

The data collected for Table 2 were taken from university scouting programs and did not include travel costs. This is an important factor to consider. While this information gives you a general idea as to the costs of scouting, keep in mind that our IPM research program collects more detailed information than is needed by the grower. A greenhouse employee or private scout may be able to provide adequate scouting information in less time.

It is important to add costs of scouting to your total production budget. It may take only one crop saved to return your investment. There were many instances over these past five years when scouting saved growers thousands of dollars. It may have been by reducing the number of pesticide treatments on a crop, containing a problem such as impatiens necrotic

spot virus or botrytis, or by being able to increase profits from a crop of higher quality due to fewer pests. Some growers have stated that information from scouting provides them with "peace of mind", knowing what the problems are in their greenhouses and whether or not a pesticide treatment is working.

#### Future Directions

In December 1995, the Floriculture Team was awarded \$41,000 by the IPM Review Committee to continue a joint grower/state-funded Greenhouse IPM Project with spring crops and poinsettias for 1996. We will be making changes in the program as we have done over the past five years in hopes of involving more growers. The components to our IPM program this year are:

1. Impatiens necrotic spot virus survey. This spring, crops in commercial greenhouses across the state are being surveyed for Impatiens Necrotic Spot Virus. This is helping us all to learn to recognize symptoms on various plants, to learn more about the virus, and to help growers manage thrips.
2. Laboratory work will be conducted to test various rates of Gnatrol and parasitic nematodes on fungus gnats and to test parasitic nematodes on shoreflies.
3. Biological control of silverleaf whiteflies on poinsettias will be demonstrated at four commercial greenhouses using information learned in 1995.
4. Several release rate schedules will be tested using the parasite *Eretmocerus* to control silverleaf whitefly on poinsettia. This project will be conducted in cooperation with a poinsettia grower.

### Wesley B. Taylor, ChFC, CLU, CFS CIGNA Financial Advisors

- Business Succession
- Estate Planning
- Retirement Planning
- Insurance & Investments



"Planning that meets your growing needs"

(770) 424-7212  
1800 Parkway Place, Suite 900  
Marietta, GA 30067-8295

**Table 2.** Cost of IPM scouting at some local commercial greenhouses.

Grower	No. of visits	Hours scouting	Cards used	Sq. ft. scouted	Total cost	Cost per sq.ft. <sup>2</sup>
1	15	15	300	30,000	\$225.00	\$0.01
2	15	30	195	40,000	\$348.75	\$0.01
3	15	45	270	15,000	\$517.50	\$0.03
4	15	45	241	16,000	\$510.25	\$0.03
5	13	16.25	55	4,000	\$176.25	\$0.04
6	11	13.75	114	3,300	\$166.00	\$0.05
7	15	30	270	27,000	\$367.50	\$0.01
8	15	30	330	30,000	\$382.50	\$0.01

<sup>2</sup>Cost/sq.ft. = (Hours scouting x \$10.00/hr) x no. of visits) + cards used x \$0.25) ÷ sq.ft. scouted

**CONDOR Computing, Inc.**  
The Nurseryman's Friend



Your  
Nursery Inventory Specialists  
• NURSERIES • BROKERS • GREENHOUSES

*Specializing in Software for Growers Since 1982*  
P.O. BOX 17267 (205) 852-4490  
Huntsville, AL 35801 (205) 837-8714 FAX

**Table 1.** Cost of insecticide and fungicide treatments in local greenhouses.

Grower	Total spray time (hr)	Labor (\$10/hr)	Pesticide costs	No. of sq. ft.	Cost per sq. ft.
1	33.8	\$337.50	\$3,624.67	20,000	\$0.20
2	13.4	\$134.10	\$473.39	5,000	\$0.12
3	8.3	\$84.33	\$247.84	3,000	\$0.11
4	15.5	\$155.00	\$152.97	2,744	\$0.11
5	18.7	\$186.67	\$403.93	3,500	\$0.17
6	30.0	\$300.00	\$4,708.24	175,000	\$0.03
<b>Average</b>					<b>\$0.12</b>


People...Products...Knowledge...



TURF & ORNAMENTAL

- Pesticides & Fertilizers
- iem Pots

For more information call your Helena representative

1-800-582-4321