

ANATOMY OF AN I.P.M. PROGRAM

With concern over pesticide use, more cities are turning to Integrated Pest Management. IPM controls insects through spot treatments and cultural methods.

by Deborah Smith and Startan Gill



Montgomery Village cut costs by more than 55 percent over two years when they implemented an I.P.M. program.

Professional landscape managers need to be concerned with efficient pest control programs designed to keep the customer happy, provide maximum plant protection, and provide a healthy profit.

For years, cover sprays have been the traditional method of pest control. A blanket spray on all landscape plants is assumed to prevent possible

pest problems. However, preventive sprays may actually produce some detrimental side effects in urban areas; such as increased pest resistance to pesticides, resurgence of target pests following treatment and outbreaks of secondary pests once the target pest has been killed.

An additional problem associated with pesticide use in urban settings is the environmental hazard resulting from drift to non-target treatment areas.

Incidents of pesticide misuse are sensationalized by the media. Insurance rates for pesticide applications

have increased 200 to 300 percent from previous years. Insurance companies are hesitant to insure pesticide applicators because of the problems with liability insurance. Many homeowners are thus questioning the required frequency of pesticide applications around their homes.

In Maryland, for example, environmental groups and concerned citizens have successfully petitioned local government in two counties to enact legislation requiring the posting of signs for each lawn pesticide application. Likewise, Maryland barely voted down a bill requiring such restrictions

Deborah Smith is with the Prince William County Cooperative Extension Service, Manassas, Va. Stanton Gill is with the Montgomery County Extension Service, Gaithersburg, Md.

on commercial application of pesticides on residential lawns and landscapes.

If this trend continues, landscape managers will have to look at ways to modify spray tactics so that the public is convinced that pesticides are being used in the absolute safest manner and only when absolutely necessary.

Customers ironically want complete protection from pest damage but do not wish to have pesticides over-used around their homes. Are there presently any viable substitutes to cover sprays?

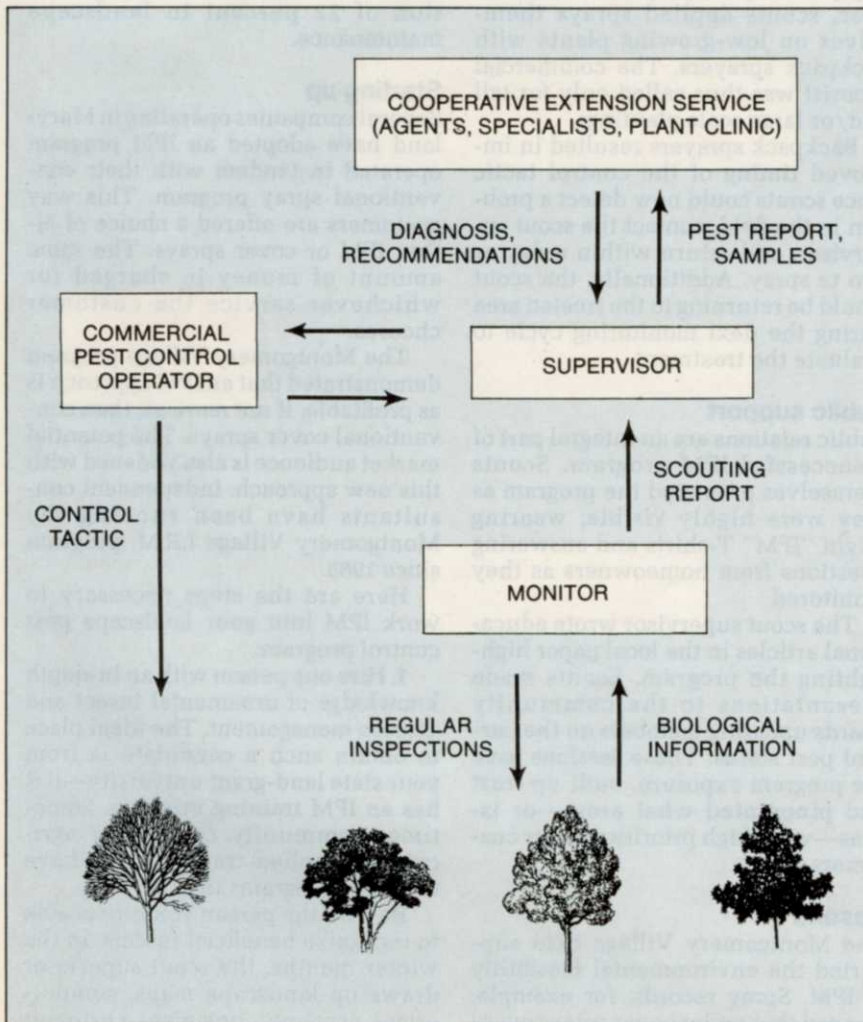
Research has tested a management concept called Integrated Pest Management in urban landscape settings. I.P.M. programs use a monitoring program in which landscapes are regularly inspected for cultural problems, insects and disease pests. Cover sprays are eliminated; instead, individual plants (hot spots) are spot treated with the least toxic pesticide available once the pest is noticed. Control material could be a biorational (such as *Bacillus thuringiensis*, milky spore or insecticidal soap), or a short residual, low toxicity pesticide,

Table 1

ENVIRONMENTAL AND ECONOMIC IPM IMPACT

Community	1982		1983		1984		2 Year Average	
	number of plants sprayed	cost of spray \$	number of plants sprayed	cost of spray \$	number of plants sprayed	cost of spray \$		
A	738	2,985	78	784	142	822	83	55
B	914	3,750	66	1,663	136	2,986		
C	195	1,325	107	510	128	401	22	
Total	1,897	7,970	251	2,957	406	4,209		
Labor Cost* \$	0		2505		4209			
Final Cost \$	7,970		5,462		6,988			

* includes salaries of 2 scouts in 1983 and 4 scouts in 1984



such as a synthetic pyrethroid.

Sprays are eliminated or curtailed when natural predator and parasite insect activity is observed controlling the pest.

Urban I.P.M. programs have been tested in residential landscapes, city street trees and institutions. These programs have shown that I.P.M. methods control pests even better than do cover sprays, primarily since monitors (scouts) observe and control pest populations before they reach damaging levels.

Environmentally speaking, the amount of pesticide used is reduced when cover sprays are replaced by spot sprays, which in turn reduces the potential risk of human exposure.

Research has shown that I.P.M. programs not only control more pests, but also have lower pesticide costs than cover spray programs. However, labor costs are higher because of the time scouts spend monitoring landscapes. Considering this, is I.P.M. an economically feasible venture for a commercial company?

To answer this, the University of Maryland Cooperative Extension Service set up a demonstration I.P.M. program in 1982 in Montgomery Village, a planned community in suburban Maryland. People in the community wanted the program for two major reasons:

(1) they felt their present eight-year cover spray program was giving inadequate pest control for the money

they were spending; and

(2) they actively expressed concern over what they perceived as hazardous pesticides being applied unnecessarily.

Our solution was to set up a comprehensive pest management program in their community. Using previous Maryland I.P.M. programs as guidelines, our goal was to eliminate preventive sprays and thus limit treatments only to active, damaging pest infestations. The Montgomery Village program was started in 1983 on 354 acres. In 1984, the success of the program led to an addition of 122 acres, bringing the total land area to 476 acres. The program covered common ground plants, street trees, community centers and parks and recreation sites amidst single family homes and townhouses involving 3850 residents.

Program organization

The program was set up in such a way that all scouting activities were coordinated by a scout supervisor specifically hired to oversee the program. Each community was monitored at two- to three-week intervals.

Undergraduate plant science students from the University of Maryland were hired as scouts; however, experienced gardeners from the area were found to make excellent part-time scouts. Scouts were trained before the onset of the monitoring season (April to September) by cooperative extension agents.

The training topics focused on plant and pest identification, insect and disease problems and plant stress factors. After completion of a plant inventory in each community, a list of the most abundant plants was used as a basis for training. By knowing the most common plants, the pest complex could be predicted and emphasized during training. Supplemental training was supplied at monthly scout meetings by the scout supervisor.

For programs in townhouse communities, which typically had a wide variety of densely-planted plant material, rough landscape maps were sketched and monitoring notes were made directly on these maps by field scouts. For larger communities, these maps were too time-consuming to draw, so street maps provided by the builder were used to pinpoint large scale pest populations for spraying. Scouting notes were then written on printed forms detailing location, condition, and the number of plants affected by the observed problem.

Spray recommendations

The scout supervisor compiled all



Extension agent Deborah Smith checks plant material for insect damage.

scouting information and coordinated control recommendations among communities. During the program's first year, all control recommendations were supplied to the community maintenance director, who contracted with a commercial arborist to apply the spot sprays. The second year, scouts applied sprays themselves on low-growing plants with backpack sprayers. The commercial arborist was thus called only for tall and/or large scale plantings.

Backpack sprayers resulted in improved timing of the control tactic since scouts could now detect a problem in the field, contact the scout supervisor, and return within a day or two to spray. Additionally, the scout would be returning to the treated area during the next monitoring cycle to evaluate the treatment.

Public support

Public relations are an integral part of a successful IPM program. Scouts themselves promoted the program as they were highly visible; wearing bright "IPM" T-shirts and answering questions from homeowners as they monitored.

The scout supervisor wrote educational articles in the local paper highlighting the program. Scouts made presentations to the community boards updating members on the current pest status. These sessions gave the program exposure, built up trust and pinpointed what areas—or issues—were high priorities to our customers.

Results

The Montgomery Village data supported the environmental feasibility of IPM. Spray records, for example, showed that under cover sprays every

evergreen (totalling 567 trees) in the program area was sprayed twice a year for bagworms—regardless of whether they were infested or not.

IPM monitoring showed that only 19 trees had a high enough bagworm population in 1983 and 1984 to warrant a spray. All in all, only 657 plants were sprayed over the two-year IPM program—an 83 percent reduction in the number of plants sprayed as compared to one year of cover sprays.

The majority of these sprays were for mid-to-late season pests, such as orange-striped oakworm, which were never targeted by early season cover sprays.

In 1982, the year preceding the program, \$7970 was spent on three pesticide cover sprays plus two citizen request sprays. IPM spray costs averaged \$3583 a year, yielding a 55 percent cost reduction over two years. This demonstration was quite labor intensive due to regular monitoring.

Scout salaries in three communities averaged \$2426 per year. When salaries are included in program costs, the entire IPM program averaged \$6009 per year—but even this represents an average annual cost reduction of 22 percent in landscape maintenance.

Starting up

Several companies operating in Maryland have adopted an IPM program operated in tandem with their conventional spray program. This way customers are offered a choice of either IPM or cover sprays. The same amount of money is charged for whichever service the customer chooses.

The Montgomery Village program demonstrated that an IPM approach is as profitable, if not more so, than conventional cover sprays. The potential market audience is also widened with this new approach. Independent consultants have been running the Montgomery Village I.P.M. program since 1985.

Here are the steps necessary to work IPM into your landscape pest control program:

1. Hire one person with an in-depth knowledge of ornamental insect and disease management. The ideal place to obtain such a candidate is from your state land-grant university—if it has an IPM training program. Sometimes community colleges or agriculture/applied trade schools have two-year programs in IPM.

Be sure the person you hire is able to recognize beneficial insects. In the winter months, the scout supervisor draws up landscape maps, computerizes accounts, organizes customer

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records and drums up business. Prior to the onset of the growing season, he or she trains a few regular employees in landscape plant identification, pest identification and control, and plant environmental (stress) problems.

This initial training covers the most prevalent pests ("key pests") and past problems recorded in customer accounts, as determined by spray records. When a list of the most abundant plants scouted in the property is used as a basis for training, the pest complex of these can be predicted and emphasized during training.

One precaution: companies that have tried to use an employee who has been using cover spray methods for years as a program manager have met with failure. It is difficult to change attitudes of people ingrained with cover spray concepts.

It is preferable to hire someone who has been trained in the methodology of IPM if the program is to work for your company. The manager must be familiar with beneficial insects, cultural and mechanical controls, biorational pesticides, and pesticides.

2. Define the type of customer you wish to work with. Will you take on

residential home landscapes, community common ground landscapes, or commercial building landscapes? Each of these different landscape situations requires different time commitments for a monitoring program.

The average ½-acre residential landscape takes 30 to 40 minutes for a thorough inspection in the spring, and 15 to 20 minutes by midsummer when fewer pests are active.

3. Decide on how many customers you can handle. One good scout supervisor should be able to handle 40-50 half-acre residential homes per season. Once the program is established, future expansion can be planned based on how many field personnel the scout supervisor can train to perform the monitoring.

4. Contact your local extension service for help. Extension agents in urban agriculture are experts in plant diagnosis.

5. Decide on a price for your service. Most companies presently using IPM are charging the same amount charged for cover sprays. We suggest determining how often during the season the location will be monitored, how much time is required for personnel to be on location, then add

your profit margin.

Disregarding periodic insect outbreaks, your contracts should become easier to maintain over the years once pest populations are pinpointed and managed under regular monitoring.

6. Advertise your IPM program and let customers know of its advantages. An article in a local paper is a great way to get your message out to the public. Don't forget your regular customers; let them know they have a choice of programs. It is most likely that new customers are the ones who will be most interested in this approach of pest control.

7. Print up a brochure advertising your IPM approach with a simple explanation of what the program entails. Be sure to emphasize the objectives of the program; including reduced pest damage, use of natural controls and resistant plant material, selectivity and timing of pesticides, and a reduction in the number of plants being sprayed.

8. Become familiar with IPM research. Get copies of past research programs, and talk to those involved. True IPM programs are very similar in methodology, yet actual organization may differ. **LM**

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