

PUBLIC PERCEPTION OF AN INTEGRATED PEST MANAGEMENT PROGRAM¹

by John Ball

Abstract. Many arborists provide cover sprays as part of their tree service. These sprays are applied without regard to tree condition or timed to fit the susceptible stage of any insect. While arborists are aware of the benefits of incorporating integrated pest management (IPM) into their practices, the public has been reluctant to purchase such a service. This is unfortunate since many excellent IPM programs have been developed over the past decade. To examine this reluctance, an analysis of the public perception of IPM was conducted using single-family residences in Mankato, Minnesota. The survey explored three separate areas: the homeowners' gardening experience, their attitude towards the IPM philosophy and what IPM tactics a homeowner would purchase as part of a tree and shrub service. The results of this survey and how they might be used to increase the use of IPM are discussed.

Since the publication of Rachel Carson's book *Silent Spring*, many people have become concerned over the array of pesticides applied in the urban landscape. These chemicals may represent a health hazard (Epstein and Grundy 1974), and utilize non-renewable resources. The absence of a comprehensive approach to tree care also disturbed many professional arborists and their clients. It often appeared that arborists and other landscape specialists were using a cursory approach to pest management, expending resources on pest problems as they occurred.

These are some of the reasons for the current interest in the concepts of integrated pest management (IPM) and tree health care. IPM and tree health care represent an organized and comprehensive approach to landscape maintenance. The focus of attention is changed from the pest to the tree (Nielsen, 1981). Attention to tree vigor by reducing stress becomes a primary concern. By skillfully adjusting water, soil nutrients, and other factors, an arborist can minimize many pest problems (Hermes *et al.* 1985).

If IPM and tree health care are to become common practices in the urban landscape, commercial

tree services must become involved. While homeowners account for the greatest use of pesticides, tree companies do play a significant role in urban pesticide use, particularly in residential areas. Neely, *et al.* (1984) found in a survey of Illinois companies that they receive 40 to 90 percent of their gross income from pest management services, and 80 percent of their work with residential clients. In addition, commercial tree services have the technical and labor resources necessary to operate an effective IPM program. They can also expand the management unit beyond a single homeowner's yard.

Unfortunately, extensive use of preventative or cover sprays still predominate in the industry. This reliance on cover sprays is not due to a lack of interest or knowledge on the part of the arborist. At the end of one session of the Urban and Suburban Trees: Pest Problems, Needs, Prospects and Solutions Conference (Michigan State University, E. Lansing, Michigan, April 1982), an arborist expressed his concerns about IPM. He said that he understood the application and value of IPM but had a difficult time marketing the approach. Many other arborists in the audience agreed. IPM was a good idea, but many customers were reluctant to pay for it.

To understand why the public was reluctant to use an IPM approach to tree and shrub care and how such a service might be marketed, a study was initiated in 1984. The objectives of this study were to: 1) examine the public interest in maintaining home landscapes; 2) examine homeowner attitudes towards IPM; and 3) determine what IPM tactics homeowners would want in a tree service.

Methods

During the fall of 1984 a questionnaire was taken to two hundred single-family residences in

¹This study was made possible by a ISA research trust grant.

the Mankato-North Mankato area. The cities of Mankato and North Mankato are adjacent communities in the south-central area of Minnesota. The two cities have a combined population of 44,900. The metropolitan area is served by several tree care and lawn services.

Survey homes were selected for visits by a single stage cluster sampling technique (Cochran 1977). Twenty clusters were selected within the metropolitan area. The clusters were taken in middle and upper-middle class neighborhoods. Homeowners in these neighborhoods are more likely to employ professional pest managers (Levenson and Frankie 1983). Within each cluster the interviewer was to interview ten homeowners. The interviewer was to begin at the street intersection that marked the cluster and proceed west stopping at every third house. If no one was at home, two call backs were allowed. If no one was present by the second call back, the interviewer was to continue along the same street until that cluster quota was filled. Every effort was made to persuade the homeowner to participate. If a homeowner declined to participate the interviewer was to continue along the street.

Any adult in the house could answer the questions. The interviews were conducted during week evening hours and the day on Saturday. The interviewers consisted of myself and several undergraduates. Students were selected on their interviewing ability and their knowledge of ornamental plants. This horticulture background was useful, as many homeowners would ask several questions on the care of their plants. The interviewers were given instructions on how to begin and end the questions from the sheet and how to record the responses. Each of the interviewers was provided with a letter written on college stationery to use for identification. The letter also included a phone number the homeowner could call for more information.

The questionnaire was designed to explore several important areas. The format began with a series of background questions. These questions surveyed the extent of the homeowners' gardening experience. We asked how often they performed routine tasks such as pruning and fertilizing. We also determined their ability to identify the woody plants in their yard. The second series of

questions focused on the homeowners' attitudes toward the use of certain IPM tactics, specifically if they would be willing to have these tactics performed by a commercial tree service. The questions covered topics such as the value of monitoring and the use of spot application of pesticide. The third series of questions covered the homeowners' knowledge of pest management. Questions concerning the identification of beneficial insects were covered in this section. The interview required about 15 minutes to complete.

The purpose of the different sections of questioning was to see if the homeowners' attitudes about pests and tree care was different from how they might act. For example, some might believe that insects do not have to be eliminated from the landscape but when the insects invade their own yards, elimination by pesticides is acceptable. This type of behavior is not unusual. Behavioral changes often lag behind information changes (Kretch *et al.* 1962).

Results

The majority of homeowners surveyed provided some yard care. More than 75 percent of those questioned fertilized or pruned their woody plants on at least an occasional basis. Application of pesticides was also prevalent: 72 percent used, or had someone apply pesticides in their yard. Very few people were dissatisfied with the results obtained with pesticides. The most common pests were borers, aphids, and caterpillars. While many homeowners felt they could care for their own yards, 15 percent had hired a tree or lawn service to spray, fertilize, or prune their woody plants.

All homeowners were asked where they obtain their pest information. Most contacted garden centers, but books and friends were also common information sources. Tree services, libraries, and the Minnesota Cooperative Extension Service were rarely consulted about pest problems (Table 1).

About 40 percent of the respondents said pests should be completely eliminated from a yard. Several homeowners expressed the opinion that while this was probably not feasible, it was still highly desired. Forty percent were not aware of any beneficial animals or insects. Those

homeowners who were aware of such animals frequently named lady bugs and dragonflies.

Most people associated healthy trees with fewer pest problems. Over 75 percent of the homeowners surveyed believed healthy trees were more resistant to insects and diseases. Almost everyone interviewed thought pruning and fertilizing would improve the trees' health.

The response to questions relating to an IPM tree service was very positive. While only 15 percent of the respondents had previous contact with a commercial tree or lawn service, 58 percent expressed interest in at least some aspect of such a program. These individuals could be separated from the others in a number of ways. The homeowners willing to utilize an IPM program were also more involved with their yards, pruning or fertilizing on at least an occasional basis (Tables 2 and 3). These individuals were more apt to use pesticides (Table 4).

The respondents interested in an IPM program had similar needs in the area of monitoring. Almost everyone selected monitoring as a desired service. However, very few saw any value to scouting. The majority (78 percent) preferred pheromone traps as a monitoring technique. Regardless of the desired monitoring approach over 90 percent of the homeowners surveyed wanted to be informed of the situation before any management decisions were made. A slightly lower percentage requested a summary at the end of the year. The summary should contain what problems occurred, how they were managed, and maintenance tasks that should be performed next year.

Most of the homeowners interested in an IPM tree service were also united in what tactics they wanted employed (Table 5). The majority preferred a service that provided tree health care practices such as fertilizing and pruning in addition to managing pests. The homeowners also wanted a service that targeted only infested plants for pesticides rather than using cover sprays. They were not very interested in a service that based its management philosophy on the exclusion of pesticides.

The most common reason cited for hiring an IPM tree service was a desire to keep plants healthy (Table 6). Many individuals also mentioned

their lack of knowledge as a reason for employing a service. Very few of the homeowners surveyed thought eliminating insects would be their primary reason for hiring a service.

Table 1. Sources the 200 respondents used for information on pest management.

<i>Where information obtained</i>	<i>Percent</i>
Books	14
Commercial Service	3
Cooperative Extension Service	8
Friends	11
Garden Center	43
Library	8

Table 2. Comparison to expected values of homeowner respondents' frequency of pruning their trees and shrubs to their interest in a commercial IPM program.

<i>Frequency of pruning</i>	<i>Interest in an IPM program</i>		χ^2
	<i>yes</i>	<i>no</i>	
Annually (expected)	53 (41.2)	18 (29.8)	41.02*
Occasionally (expected)	61 (57.4)	38 (41.6)	
Rarely or never (expected)	2 (17.4)	28 (12.6)	

*Significant at 0.01 level

Table 3. Comparison to expected values of homeowner respondents' frequency of fertilizing their trees and shrubs to their interest in a commercial IPM program.

<i>Frequency of fertilizing</i>	<i>Interest in an IPM program</i>		χ^2
	<i>yes</i>	<i>no</i>	
Annually or biennially (expected)	42 (30.7)	11 (22.3)	42.23*
Occasionally (expected)	67 (60.3)	37 (43.7)	
Rarely or never (expected)	7 (24.9)	36 (18.1)	

*Significant at 0.01 level

Discussion

The homeowners surveyed showed an interest in caring for their yard and had little hesitation to use pesticides. This was similar to the results obtained by a pest management survey performed in Michigan (Lambur *et al.* 1982). They found that the majority of homeowners used pesticides and were satisfied with the results. In both studies over 40 percent of the respondents state that pests should be completely eliminated. Apparently, despite the amount of information about the damaging effects of pesticides, most people do not object to their use around the house.

This reliance on pesticides and the insistence of following a strategy of following a strategy of eradication may be based, at least in part, on the source of homeowners' pest information. People acquire their pest and pesticide information primarily from garden centers. Many garden center personnel are not trained as entomologists or pathologists. Generally, their information is based on personal observations, Cooperative Extension Service bulletins, books, and information from pesticide companies. Some of this information, which is heavily dependent on chemical solutions to pest problems, is a major barrier to the spread of IPM (Olkowski *et al.* 1978). It appears that this pesticide dependence is not completely based on entomophobia, since few people selected reducing the number of insects in their yard as a primary reason for contacting a service. The major reason is a desire by the homeowner to improve the health and appearance of their plants. This is encouraging since the adoption of an IPM strategy requires the acceptance of a pest population density that may cause some aesthetic damage.

Several researchers have developed urban IPM programs over the last decade. Some involved only scouting with recommendation made to the homeowners (Hellman *et al.* 1982; Raupp and Noland 1984), while others were part of a commercial tree service and provided scouting, recommendations, and management (Holmes and Davidson 1984). Surveys at the conclusions of these one-year programs have shown that most of the homeowner clients were satisfied with their programs and felt a little more knowledgeable about their landscapes. As demonstrated by

these other programs, monitoring is an essential part of an IPM service. While the aforementioned programs made an extensive use of scouts, this was not the preferred choice of the Mankato-North Mankato respondents. Many felt that biweekly checks were too frequent. Homeowners are generally not aware of the purpose of monitoring: the regular observation and recording of

Table 4. Comparison to expected values of homeowner respondents' use of pesticides to their interest in a commercial IPM program.

Use pesticides in yard	Interest in an IPM program		χ^2
	yes	no	
Yes (expected)	98 (82.4)	44 (59.6)	42.23*
No (expected)	18 (33.6)	40 (24.6)	

*Significant at 0.01 level

Table 5. Percent of 116 homeowner respondents who expressed a preference for each tactic.

Tactic	Percent
Employ only alternatives	33
Only reduced aesthetic damage	40
Apply pesticides only as a remedy	62
Provide a tree health care program	67

Table 6. Percent of 116 homeowner respondents who selected a reason as priority as to why they would hire a commercial IPM program.

Major reason	Percent
Healthier trees and shrubs	42
Lack of personal information on plant care	30
Fewer insects in yard	18
Lack of time	14

pests, their natural enemies, and the plants, so that appropriate management decisions can be made. Any IPM service that intends to use scouts should provide an explanation about the purpose of the frequent visits.

The preferred monitoring method in this survey was traps. Pheromone traps have been developed for a number of ornamental plant pests (Nielsen 1978). The activity of many insects cannot be monitored by these traps, nor can diseases. The placement of pheromone traps at every site is not feasible. Only a few are needed for monitoring flight activity. While we did not explore the reasons why traps were so highly preferred, many respondents expressed an interest in seeing the insect that was damaging their plants. Hock (1984) believes that pheromone traps might be useful means of involving the clients in the care of their yards. He suggested that they could be an excellent educational tool to customers. This may be a major reason why homeowners selected the traps. People willing to use an IPM service are involved with their landscapes. Any IPM service should capitalize on this interest and make monitoring and decision-making a cooperative effort with the client. If a service employer scouts, the scouts should interact with the client.

Since many people have very little information on pest management and maintaining healthy plants, a summary of the year's activities would be an excellent educational tool for clients. For example, they could be shown that certain plants had a light infestation of a pest that did not result in appreciable aesthetic injury. Clients treated in this manner might be less apt to call and expect a maintenance person to come out and spray every time they see an insect. The summary could also explain when tree care practices, such as mulching, are performed and the benefits of such practices.

An IPM service would be best advertised as a tree health care plan—a health maintenance organization for the landscape. Homeowners are not interested in IPM primarily to reduce the amount of pesticides used in their yard. They are looking for a comprehensive program for their landscape. They want all aspects of plant care placed under a common umbrella. This attitude

can be an excellent opportunity to an arborist. By relating the value of fertilizing, pruning, mulching, and other plant care practices to healthy plants and fewer pest problems, the arborist can increase demand for these often neglected services.

Conclusion

IPM can be a means to increase an arborist's business. While cover sprays provide a limited opportunity for expansion, IPM programs present an array of possibilities. An arborist can offer a tree health care approach, offering tree inspection, diagnostic expertise, fertilizing, and pruning, along with other services.

The people most likely to purchase an IPM service are those who are involved with their landscape. They prune and fertilize their trees and shrubs, at least on an occasional basis. These homeowners use pesticides around the yard, and are generally satisfied with the results.

To maintain the health of their plants, they are willing to hire a service. However, they want to be involved in the decision-making process of IPM. Homeowners should have the opportunity to preview any management plan. The central theme of the program should be health maintenance; any means towards this end, including use of pesticides, are acceptable. Cover sprays are not appropriate; pesticides should be limited to only those plants that require it. A service that provides a comprehensive program of plant care should find ample opportunity in the residential landscape market.

Future Studies

While homeowners appear enthusiastic about an IPM service, the question remains, what would they be willing to pay, and what profits are possible? Several studies have conducted seasonal scouting and recommendation services for as low as \$30 (Hellman *et al.* 1982), others have performed a similar function for \$50 (Raupp and Noland 1984). A study conducted with the cooperation of a commercial tree service, while successful, gave no cost information (Holmes and Davidson 1984).

The second phase of this study will be a test of the IPM program recommendation by a commer-

cial tree service. The IPM program will be advertised as part of their trade. At the end of the season, the arborist and randomly selected customers will be interviewed to determine the merits of the procedures. A cost analysis of the program will also be performed.

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Assistant Professor
Horticultural Technology Department
University of Minnesota Technical College
Waseca, MN 56093

Abstract

SANDFORT, S. and E. C. BUTCHER. 1985. **How to hire a tree-care pro.** *Am. Forests* 10(10):12-16.

How do you select a professional tree service? That can be a difficult job. A general rule of thumb is that good, reputable tree-service companies do not need to solicit business door-to-door. They stay busy with repeat customers or recommendations from satisfied clients. Call a tree service recommended by several of your friends or neighbors. If no one can recommend a company, look in your Yellow Pages under Trees. Some cities have a local arborists' association that you can call for recommendations. Usually only the best companies are members. The best companies are also members of one or two professional organizations. The National Arborist Association allows membership only to tree-service companies whose work is of such high quality and ethical standards that it has passed the scrutiny of fellow, member companies. Membership in the International Society of Arboriculture is open to individuals practicing tree work or working in a closely related field—forestry, research, teaching, or managing tree-covered cemeteries, campuses, or arboreta. Member companies of either of these organizations are usually up-to-date on theory, methods, and safety practices.