

IPM STRATEGIES USED BY ARBORISTS¹

by Dan Neely and Gregory R. Smith

Abstract.—Seventeen commercial arborist firms who currently practice IPM were visited at their home locations and the managers and scouts were interviewed. Data and opinions were collected on their marketing practices, information management, technical resources, field operations, staffing needs, and employee qualifications and activities. The findings and conclusions of the interviewers are presented in this paper.

Résumé. Dix-sept firmes d'arboriculteurs commerciaux qui pratiquent couramment la gestion intégrée des insectes et des maladies (IPM) étaient visitées à leur bureau d'affaires et les gestionnaires et les inspecteurs étaient interviewés. Les données et les opinions étaient recueillies sur les pratiques de marketing, la gestion de l'information, les ressources techniques, les opérations sur le terrain, les besoins en ressources humaines et les qualifications et activités du personnel. Les découvertes et les conclusions de ces interviews sont présentés dans cet article.

The Illinois Natural History Survey and the University of Illinois at Urbana-Champaign were contracted by the National Arborist Association and the International Society of Arboriculture to complete a project entitled *Development of a National Campaign to Implement an IPM Strategy for Tree Care*. Its objective is to develop an effective strategy to market and implement Integrated Pest Management (IPM) in the field of arboriculture, thereby enabling arborists to protect the trees and shrubs of urban America while at the same time minimizing the negative environmental impact of some traditional practices. The approach sought is one that will attract and satisfy clients by persuasively promoting new and logical solutions to tree care that emphasize environmental stability and reduce reliance on chemical controls. Arborists will be encouraged to use practical information based on research data to demonstrate that IPM offers a viable alternative to many traditional practices. Ultimately the campaign should create a knowledgeable cadre of tree workers and managers capable of strengthening the profession.

Operationally, the project was divided into related components, one of which was to interview arborists who currently practiced IPM at their home locations. That component is the subject of this paper.

Data Collection. On-site visits provided an opportunity to talk not only with owners but also with salesmen and scouts (monitors), to view the equipment used in the IPM operation, and to obtain copies of promotional literature and operational forms. Twenty commercial firms known to be practicing IPM were selected from various geographic regions of the United States, but interviews were not completed with three firms (Table 1). Contacts within the companies were established and interviews were scheduled during the working season.

The field interviewers, usually Dr. Dan Neely (Illinois Natural History Survey) and Mr. Gregory R. Smith (Department of Horticulture, University of Illinois at Urbana-Champaign), queried practicing arborists about their marketing practices, information management, technical resources, field operations, staffing needs, and employee qualifications and activities. A pre-visit questionnaire indicated to the interviewers the extent to which a firm relied on IPM. In 9 of the 17 firms, separate interviews were conducted with management and scouts; in the remaining 8, scouts and managers were interviewed together. The tape-recorded sessions lasted from 1.5 to 2 hours and the interviews from 2 to 3 hours. After a site visit had been completed, the tape recordings and written notes were reviewed and a written summary of the visit prepared. An integrated summary of all interviews was authored by Neely and Smith, and presented by Neely at the annual conference of the International Society of Arboriculture in Toronto in August of 1990.

A conversational approach was employed to establish a comfortable atmosphere and a spe-

cific set of questions was not prepared in advance. The interviewers did, however, pursue a line of questioning that would obtain information that accurately, honestly, and thoroughly clarified the extent to which IPM was practiced within a given firm. The scouts gave essentially the same information as the company managers. Because leading questions varied, the same information was not always obtained from each firm. Tables, therefore, do not always present data for 17 firms. Needless to say, with firms located from Oregon to Florida and Colorado to Massachusetts, answers often varied and were unique to a given setting.

Defining IPM. One of the first and most confusing issues to surface was the meaning of the acronym IPM. To some interviewees it meant integrated pest management; to others, integrated plant management. Nielsen (1) defines IPM "as a common-sense approach, using environmentally conservative methods to maintain pests below defined economic or aesthetic damage levels. Targeted intervention tactics are

used, based on monitoring plant vitality and abundance of pests and their natural enemies." He concludes "IPM is an informed decision-making process that results in efficient risk reduction." If we accept Nielsen's definition, IPM becomes a subset of tree health care.

Six of the 17 firms interviewed used the term to encompass more than pest control. To indicate that their tree-care programs included such additional practices as pruning and fertilization, firms entitled them in broader terms, for example, *Plant Care Plus*, *Monitor*, *Tree Health Care*, *Yardlife*, *Arbor Health*, and *Total Plant Health Care*.

Initiating IPM. The use of IPM is relatively new within the tree care profession. One firm has emphasized these techniques for 6 years and each of four others has had 5 years of experience. All are located in the East Coast states where environmental legislation is more restrictive and consumers may be somewhat more concerned about environmental issues (exception to the above: California). Seven of

Table 1. Twenty firms practicing IPM selected for on-site interviews.

<i>Company</i>	<i>Location</i>	<i>Contact</i>	<i>Date</i>
American Tree Care	Southampton, NY	Robert Kerwin, Jr.	May 23
Antietam Tree & Turf	Hagerstown, MD	Steve Maczuga	May 31
Arbor Care	Hartford, CT	John Moran	May 25
B. D. Wilhelm Co.	Denver, CO	Bill Aitken	May 10
Bartlett Tree Co.	Charlotte, NC	Don Booth	April 30
Bartlett Tree Co.	Osterville, MA	Jim Ingram	June 5
Carpenter-Costin Co.	Swampscott, MA	Paul Marsan	June 7
Collier Arbor Care	Portland, OR	Bruce Nelson	May 7
Davey Tree Expert Co.	Kent, OH	Roger Funk	May 17
Forest City Tree Protection Co.	South Euclid, OH	Tom Mugridge	May 16
Hartney/Greymont Tree Specialists	Needham, MA	Mark Tobin	June 6
Hendricksen The Care of Trees	Wheeling, IL	Rex Bastian	June 13
Integrated Plant Care	Rockville, MD	Paul Wolfe	May 30
Poortenga Tree Service	Grand Rapid, MI	Scott Van Wyk	May 15
Sav-A-Tree**	Bedford, NY	Lou Stubecki	May 24
Stay Green**	Carmichael, CA	Mike Hutnick	May 4
Swingle Tree Co.	Denver, CO	Steven Geist	May 9
Ted Collins Assoc.*	Victor, NY	Ronald Jacques	--
Wonderland	Oyster Bay, NY	Tom Gobin	May 22
Zimmerman Tree Service	Lake Worth, FL	Mike Zimmerman	April 27

*Visit not scheduled

**Visits scheduled but not completed

the interviewed firms had been conducting scheduled inspection visits without scheduled spraying for only the past 2 years. Four of the 17 firms had had active programs for 4 years and one for 3 years.

Growth of IPM programs within the 17 interviewed firms has not been dramatic, and in some firms there was no growth. In most instances potential clients for IPM were customers whose trees were already experiencing two or more problems that were being treated with scheduled sprays. At those sites, IPM could be initiated without increasing the client's annual fee. The procedures and benefits of IPM were discussed with such clients, some of whom were willing to try IPM with the assurance that pest control would be at a level equal to or superior than that of previous years.

For most firms the first 3 years of IPM were learning years. During this period, scouts searched for the presence of pests and determined whether they would cause esthetic or visual damage to key plants; firm managers determined if the time allotted for inspections was adequate, and salesmen watched to be certain that promises made were, in fact, fulfilled. Little or no growth of an IPM program was expected during this initial period of transition to IPM.

Marketing IPM. After IPM goals are defined and techniques established, marketing begins. In nationwide firms growth can occur at a 100 percent annual rate of increase; in local firms increases of 25 to 50 percent are exceptionally good. Expanding beyond the capability of a firm's scouting capability can create serious timing problems and negate the benefits of IPM. Since most of the firms we interviewed were not yet in a phase of rapid growth, owners did not rely on IPM to support their firms. In only 6 of the 13 firms did a gross income from IPM exceed 5 percent; in no firm did it exceed 20 percent.

The acronym IPM is not yet recognized by the general public and arborists often do not use it in yellow-page or other advertising. Many arborists find that personal contacts with landscape architects, landscape contractors, or condominium managers are a useful method of establishing their capabilities to work within IPM

strategies. Pest control opens the client's door, but other practices important to tree health can be sold.

Scouting in IPM. In most firms, tree spraying was a major source of income, and legislation or regulation curtailing or eliminating spraying would require major changes in company activities. Six of 14 firms volunteered the information that they continue to perform cover sprays; seven, however, no longer offered a cover spray option. All but one of the 17 firms performed target sprays, and the 17th no longer applied EPA-registered materials to trees. Ten of 12 firms had a specific contract that included fertilizing, pruning, and sprays when necessary.

Scouting to identify present and potential problems is an essential IPM activity. Scouts must be able to identify the trees and shrubs present in landscaped properties in the region and must know the major insect pests and disease problems that warrant management and those that can be managed with practices available to the arborist. In addition, scouts must be comfortable talking with clients and sufficiently organized to record observations and activities.

Most of the scouts interviewed had 2- or 4-year college degrees. Most owners, however, felt that an individual with a high school education, some botanical background, a desire to learn, and a strong work ethic could be taught the pest control procedures practiced by the firm and become a scout. Nine of 16 firms employed full-time scouts. In 7 firms scouts also performed non-IPM functions during the summer months. Eleven of the 16 firms had a single scout at the time of the interviews.

The number of visits scheduled for spraying and inspection varied greatly among the firms and among the IPM programs offered by them. The owners of two firms believed that inspections every 2 weeks were essential to a workable IPM program, eight argued for eight or ten inspections during the year, and seven others felt comfortable with fewer than eight visits a year. Scouts employed by 5 firms did not spray during the inspection visit. In 8 firms, scouts inspected and then sprayed when necessary. In 4 firms, the pruning of smaller limbs was a part of the in-

spection visit. Depending on the equipment (especially the truck) used, 10 of 11 firms charged from \$75 to \$120 per hour for the services provided by the scout.

Fourteen of the firms had purchased or constructed a spray truck especially designed for the IPM scout. Based on the comments of many interviewees, clients still expect the scout to "do something." Spraying foundation plants and smaller trees has been the answer to date. Trucks often had two to four tanks, a capacity of 200 to 400 gallons and could spray trees to a height of 35 feet. Larger trees require larger spray rigs, and 5 firms used trucks with capacities of 600 gallons or more. The inefficient use of expensive trucks is one of economic threats to the growth of IPM

Scouts must make careful observations and control decisions. They should, for example, have at hand a list of area pests and diseases, a list of key plants, written recommendations for each manageable problem, and a list of IPM tactics. They should also be familiar with established sampling methods. Most firms at present do not provide many or all of these aids (Table 2). Fact sheets that describe a particular problem and its control, IPM concept brochures, and company newsletters describing company philosophy are extremely useful in scout-client interactions.

Table 2. Written material related to IPM made available to scouts employed by the firms selected for on-site visits.

Material	Number of firms	
	Available	Not available
List of area pests/diseases	11	6
List of key pests/diseases	7	9
List of IPM tactics	9	7
Written recommendations	13	4
Alternate controls described	7	8
Sampling methods described	3	14
Fact sheets for pests/diseases	9	8
Concept brochures	8	8
Newsletters	10	3

Other aids can help scouts make diagnoses and prognoses. Degree-day information and knowledge of phenological relationships, for example, help to determine the timing of action. Door hangers can assist in client communication and computer-assisted codes can (or may not) make the recording of data more efficient. The use of these techniques is still in an early stage (Table 3).

Pesticides and IPM. Reduction in the amount of petrochemical pesticides applied and the use of microbial insecticides and biological or physical controls are major goals of IPM. At present, the incorporation of many of the recom-

Table 3. Additional aids that assist scouts employed by the firms selected for on-site visits.

Additional aids	Number of firms		
	Used	Seldom used	Not Used
Written job description	3	--	14
Use of degree days	4	--	11
Use of phenology	6	2	8
Door hanger	5	--	3
Computer assisted	5	--	12
Authorization to sell	5	--	11

Table 4. Intervention tactics used by scouts employed by the firms selected for on-site visits.

Intervention tactic	Number of firms		
	Used	Seldom used	Not used
Petrochemicals	8	4	2
Summer oils	4	4	8
Soap	4	5	8
Bt	7	4	6
Pyrethrum	1	3	6
Parasites and predators	1	2	12
Pheromone traps	2	7	8
Injection	3	11	3
Physical removal	3	--	--
Inventory maps	3	6	8
Soil tests	11	--	5

mended IPM tactics was incomplete in the firms interviewed. Efficacy continued to receive top priority in pest control and most arborists retained confidence in petrochemicals (Table 4). To date governmental regulations and client preferences have not been the major factors in decisions to apply non-petrochemical sprays. Instead, most arborists evaluate closely the efficacy and phytotoxicity of soaps, oils, *Bacillus thuringiensis*, pyrethroids, and parasite and predator releases. Injection techniques are used in locations where sprays are inappropriate (swimming pools, pet areas). Pheromone traps are primarily used to determine timing for borer sprays. Soil tests to establish pH, nutrient levels, and organic matter content are common.

The Interviewers' Conclusions. After completing the on-site visits with 17 commercial arborists, we concluded that:

- Profits to the firm using IPM do not come from spraying but from the increased sales of the related tree care practices of pruning, fertilization, and re-landscaping.
 - Contact with a client is usually in response to a need for crisis management, but IPM can be marketed afterwards and is likely to proceed through several stages, from cover spray to targeted spray to IPM on one host to full IPM on several key plants (with monitoring) to full health care for all trees. Arborists should proceed gradually through these stages. (Hopefully legislation and regulations will not rush you through them.)
 - Firms electing IPM should begin by acquiring a knowledgeable, trained and enthusiastic scout, and an educational library. IPM can be sold only when the scout is able to explain IPM strategies and benefits fully.
 - In establishing an IPM program, the cost to the client should be no more or not dramatically more, than it was during the last year. The efficacy of treatment must be maintained at the same or at a higher level than was maintained the previous year. (Proper timing and the selection of appropriate pesticides will enable you to maintain this level even if materials are not as persistent.)
- A choice of chemicals or control measures must be available to the client and scout. A customized program should be built around the unique key plants or key problems found on a given property. Carefully developed marketing approaches may be necessary because IPM procedures are often too complex to explain in pictures and simple text. Selling IPM requires a personal touch between the salesman (or scout) and the client.
 - IPM principles succeed because frequent scouting requires numerous visits to the property, thereby permitting the more careful assessment and diagnosis of tree and shrub problems. Careful monitoring reveals the numerous problems that are often present on large or varied landscaped properties. Because many or most major problems are abiotic, tree care practices other than pest control can be recommended.
 - If IPM is to prove profitable, integration of the entire business operation is required, including employees, equipment, training, literature, and logistics. Arborists who elect to practice IPM are selling knowledge and treatments, not sprays.
 - Customer education may or may not be an important part of marketing IPM. Some customers need to understand only that urban (amenity) trees growing under stressful conditions need help. Fact sheets may not be essential. When clients know that you and the scout are fully knowledgeable about the causes of and solutions to a multitude of tree problems, trust is created. They will buy the program and depend on your expertise to obtain the desired results.
 - Health care programs for trees are not for every client. Much of the operation of a firm will probably be given over to specific tree and shrub problems, not the integrated maintenance of the full landscape. Scouts and salespersons must know the comfort level of the client and work within it.

Literature Cited

1. Nielsen, David. 1990. *Landscape integrated pest management*. J. Arboric. 16: 253-259.