STANDARDS FOR A COMMERCIAL ARBORICULTURAL IPM PROGRAM

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Abstract. Pilot urban landscape integrated pest management (IPM) projects have suggested standards, or guidelines, believed useful to commercial arboricultural firms contemplating offering IPM services. They are (1) acknowledgment that pesticides are not the best solution to every pest problem, (2) retention of a properly trained IPM manager, (3) ability and willingness to develop and maintain IPM-related records, and (4) a communications effort to sell IPM. These pilot projects indicate that a firm offering IPM should be a full-service company, but that every client need not subscribe to the firm's IPM services. The two tactics that distinguish arboricultural IPM programs from traditional spray programs are (1) regular monitoring and (2) spot spraying.

Pesticide-related incidents, although outside of the arboricultural industry, are believed to be an important factor in undermining the public's confidence in chemical pesticides, the firms which manufacture them, and those who apply them. The "fallout" from such incidents portends significant change in the way commercial pesticide applicators will do business in urban areas in the near future. These imminent changes will be brought about by growing public resistance to many pest control practices of today, by legislation, or more likely by a combination of the two. We contend that the arborist who is prepared to anticipate change by offering integrated pest management (IPM) services to his clients stands a greater chance for survival into the 1990s than one who resists change and insists on the status quo.

There seem to be nearly as many definitions and understandings of IPM as there are plant protection specialists. Most agree that in its pure and unadulterated form, IPM is a broadly based approach to managing all pests in a given environment by a series of procedures that are ecologically and economically viable, non-antagonistic to one another, and which are triggered by predictable and carefully measured events. It is questionable whether all of these criteria have been completely met for any agricultural crop IPM system, despite the substantial amount of federal and state resources invested over the past two decades to perfect such systems. Nevertheless, practical, cost-effective IPM programs are in place for several agricultural crops which, through demonstration projects, have converted some — but by no means a majority — of growers of those crops to IPM.

During the past few years several experimental arboricultural IPM projects have been conducted to evaluate the merits of various departures from traditional pest control practices on ornamental trees and shrubs. Some were operated directly under Cooperative Extension Service auspices; others involved commercial arboricultural firms as cooperators (1,2,3,4). They have been demonstrated to reduce pesticide usage and associated problems without sacrificing the appearance and longevity of ornamental vegetation on properties where IPM was practiced. The outcome of these projects suggests certain principal components, or "standards," which we believe must be adopted and adhered to by arboricultural firms choosing to offer IPM services.

Acknowledgment of an IPM Philosophy

For a firm to successfully engage in IPM, we believe it must first acknowledge that pesticides are not the best solution to every pest problem. Cultural or other practices undertaken to ensure, or to return a tree to a state of, good health often prevent problems with many insects and diseases. In specific situations they may be as effective as pesticides and of longer-term benefit.

1. For many years Dutch elm disease management has depended on sanitation measures as its backbone. Pesticides, whether insecticides or fungicides, normally are useful only after bark beetle vector breeding sites have been destroyed.

2. Control of root and crown diseases caused by *Phytophthora* and *Armillaria* is best achieved by use of resistant root stocks, proper soil drainage, water management, and soil amendments. Fungicides may be useful in temporary remission

of disease symptoms, but not in long-term control in the landscape.

3. Physical injury to the trunks of pine and Monterey cypress is known to incite higher levels of infestation by the sequoia pitch moth and cypress bark moth, respectively, in California. Pruning — or otherwise injuring trunks — during the months when adult pitch moths are not active has been shown to negate insect attraction and reduce borer infestation levels. In the eastern U.S., a mulch band around the base of *Prunus* trees serves to reduce trunk wounding by carelessly operated lawn mowers. In turn, this reduces infestation rates by the peachtree borer, which is attracted to damaged bark at groung level.

4. The black scale in California often builds up to high levels on rank vegetation growing in shaded evironments in which light penetration and air circulation are restricted. Thinning such vegetation apparently creates an environment less favorable to the scales, and may better allow parasites and predators to reach them.

These exemplify a few of the many cultural practices that the commercial arborist can perform. Although IPM usually entails reduced pesticide usage, it does not imply reduced participation by the professional arborist. Rather, those who practice IPM are trading reliance on preventative or emergency pesticide sprays for a system utilizing monitoring, spot-spraying, and non-chemical pest management practices aimed at longer-term beneficial effects than most pesticides can provide. An arboricultural firm which does not acknowledge this fact and philosophy will not succeed in IPM.

Training in IPM

A great variety of biotic and abiotic agents act alone or in concert to cause poor plant performance. The arboricultural firm contemplating IPM needs to have on its staff an individual specially trained in the theory and practice of plant protection, as well as in related horticultural disciplines. Individuals with the B.S. or M.S. degree in urban pest management now are being trained at some land grant universities. Firms interested in hiring such persons can learn of their availability through an inquiry directed to departments of entomology, plant pathology, or plant science at nearby state universities.

Retention of a qualified IPM manager is probably the most important step toward assuring competence in diagnosing plant problems. This employee performs or supervises pest monitoring, and participates fully in all decision-making relating to the prevention or treatment of plant problems. We believe that the future of arboricultural pest management resides with this new generation of plant protection specialists, for they have the training and commitment to make IPM work.

Monitoring and Record Keeping

A critical component of arboricultural IPM is the regular monitoring of vegetation on client properties, to determine pest and natural enemy numbers and for evidence of emerging cultural disorders. A landscape map of the managed site may facilitate this process. This map shows the location and proper identification of each plant or group of similar plants. Monitoring notes are best recorded directly on a copy of the map during each visit.

From our experience in several pilot projects, we feel that monitoring every two weeks during the growing season is adequate, followed by occasional visits during the dormant season. On that schedule, no pests likely to develop to damaging levels will escape detection by alert monitoring personnel. It is not necessary that every plant on the property be examined at each visit. Local records developed over time, provided they are regularly summarized and are retrievable, soon point up the pest-prone plants and their important pests. These records also facilitate prediction of the approximate date of occurrence of important pests. Records therefore help prevent "surprises" from occurring and allow deployment of equipment and personnel in an orderly fashion.

Communications and Marketing

To succeed in IPM, one of the more difficult obstacles a commercial firm must first overcome is that of convincing current or potential clients that the IPM approach will cost as much or perhaps more than a conventional program. Time expended in monitoring pests, spot-spraying small and emerging pest infestations, and handling certain pests by correction of cultural deficiencies, is a viable alternative to routine, insurance-

type cover sprays or crisis treatments. In overcoming this obstacle, however, the firm may find support from an unlikely source — the often sensationalized reports of pesticide incidents which the public is exposed to through the popular media. These reports are in fact contributing to creation of a public receptive to IPM. Through a public relations effort, the firm contemplating IPM must carefully exploit this "new" public awareness, pointing out the benefits of IPM as contrasted to the routine cover spray and crisis application approaches. In doing this, the use of scare tactics can never be condoned — and may in fact be counterproductive — for the use of pesticides is and will continue to be an important tactic in landscape pest management programs. As a part of reaching the "new" public, the firm must stress the desirability of a long-term relationship between itself and the client. Regular monitoring, spot spraying of vegetation for pests, as well as certain pest management actions optimally taken during the dormant season, are essential to IPM and therefore are in the client's best interests.

Discussion

Experiences in experimental landscape IPM programs have served to elucidate or corroborate these standards. They also indicate that a commercial arboricultural firm offerring IPM should be a full service company. That is, in addition to providing consultative and monitoring services, the firm should be prepared to provide all required pest treatment services. All clients need not subscribe to IPM services. Several firms we are acquainted with have their traditional accounts separate from their IPM accounts; both branches of these companies are operated independently by their respective managers. When heavy spray equipment is needed on an IPM property, it is scheduled from the traditional branch which receives payment for same. Referrals for recommended cosmetic pruning, tree shaping, removals, and other non-pest related services needed on IPM properties are directed to the traditional unit. Economies and new business opportunities therefore are inherent in such arrangements.

Arborists with whom we have consulted about these standards frequently bring up the case of clients who insist on a spray treatment whenever the arborist is called on a suspected pest control matter. We know of no way to convert such a client to IPM receptivity, and we sense that this posture is more common among clients who are unaware of or uninterested in environmental concerns or matters, and who are generally unreceptive to progressive ideas. It is our belief that well-educated clients who comprise the vast majority or property owners in suburban communities of larger cities are most likely to have heard of, and be receptive to, IPM approaches to landscape management.

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