

## Training Scouts for Integrated Pest Management Programs

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The focus of this discussion is the training of personnel to implement integrated pest management (IPM) programs. The steps and procedures recommended here are based on experiences gained through implementing IPM programs for managed landscape plants and turf at homes, city forests, institutions, and nurseries and by conducting IPM training through a formal degree program, through intensive shortcourses and workshops for members of the green industry, and through conferences. Before considering the training of IPM scouts, it is important to consider the initial selection of the individual who will be the scout. Scouts can be selected in one of two ways. They can be people that have already received IPM training elsewhere or they can be personnel already employed by the firm. In selecting a scout certain attributes should be considered. First, the individual must be committed to the IPM philosophy. If the person has been involved with traditional control programs that involve the use of cover sprays, crises treatments, or other approaches that rely heavily on pesticides, it will require a sincere commitment to redirect interests into activities such as monitoring and using alternative controls. Second, the scout must be openminded. IPM is a dynamic approach. New technologies are constantly being developed and incorporated into IPM programs. The IPM scout must be willing to accept change and adopt new ideas. The IPM scout must be observant in the field and have a genuine curiosity about biological systems. Many pest and cultural problems of plants will only be revealed through careful observation. The IPM scout must have the willingness to learn. No amount of time or money spent on educational programs will be of value unless the scout is eager to learn and put new ideas into action.

IPM programs have several components. To implement these components requires knowledge in several disciplines such as horticulture, botany, entomology, plant pathology, weed science, agronomy, and forestry. This knowledge may come through formal coursework, training sessions, or practical experience in the field.

The foundation of all plant management programs is an understanding of plants. This includes fundamental information such as plant identification and basic plant biology including physiology. The scout should understand proper installation and maintenance requirements including soil conditions, watering and fertilization regimes, and proper techniques of pruning and mowing. It is virtually impossible to develop a successful IPM if the scout does not know the plants in the management system and how to care for them.

The second fundamental body of knowledge for an IPM scout concerns the pests found in the management system. This will include the identification of insects, diseases, weeds, and cultural problems that adversely affect plant growth and appearance. This knowledge must also include an understanding of basic pest biology and how control tactics such as pesticides disrupt the normal function of pests. One frequently neglected aspect of scout training is the identification of beneficial organisms in the management system.

Once a foundation of knowledge on plants and pests has been laid, greater levels of sophistication can be added by focusing on key pests and key plants found in the geographic region and management system. Key pests are those that perennially cause management problems in a system and key plants are those that are the most pest prone and hence require the greatest attention. Lists of key plants and key pests have been generated for several regions of the country and management systems such as street trees, shrubs, and turf (Raupp et al. 1985, Ball 1987, Kielbaso and Kennedy 1983, Nielsen et al. 1985, Tashiro 1987). Diagnostic skills can be improved

by attending training sessions and employing approaches that focus problem solving skills such as symptomatology (Koehler 1987).

One of the most important activities of any IPM program is monitoring. Monitoring provides the biological information upon which control decisions are made. Monitoring is the regular inspection of the managed landscape for insects, diseases, weeds, and cultural problems that affect plant vigor and beauty (Raupp 1985). IPM scouts should receive training in a variety of monitoring methods and should be competent to perform visual inspections, use a variety of trapping devices including pheromone traps, and should be able to interpret or even develop environmental monitoring approaches such as those that utilize degree day accumulations (Raupp 1985). While the theory of monitoring and knowledge of monitoring approaches can be learned in the classroom, there is no substitute for first hand experience gained in the landscape. Scouts must be confident that they can correctly identify plants and pests and correctly diagnose problems before they can be effective.

Once the scout has been trained to monitor effectively, he or she must be able to use the biological information gathered to make sound management decisions. Scouts should have a thorough understanding of the principles underlying decision-making such as economic and aesthetic injury levels and thresholds (Raupp et al. 1987, Nielsen 1989). This will require an understanding of the damage potential of pests, how factors such as beneficial organisms can mitigate the damage, the cost and efficacy of various control tactics, the clients expectations for quality of the resource (shrubs, greens, etc.), and the corporate policies concerning the methods of control employed. The scout should be aware that eradication of pests is usually an unattainable, unrealistic, and unwanted objective of a management program. The goal in IPM is to reduce pest populations to a tolerable level (Bottrell 1979).

In some businesses the job of the scout ends with monitoring and decision-making. However, because the scout is at the site when a problem is detected, the costs of control activities can sometimes be reduced if the scout has the ability to intervene immediately for problems require immediate treatment. To do this the scout must have good decision-making skills and he or she must be familiar with and competent in a variety of control procedures. This will include the safe use of pesticides and application equipment. Many, and in some instances most, control activities will not involve the use of chemicals and the scout may be implementing procedures such as fertilizing, pruning, removing pests by hand, and releasing or manipulating beneficial organisms. The scout should have knowledge of all available control tactics. Because he or she is intimately familiar with the specific conditions at each management site, the scout should be consulted on tactics such as amendments of soil, fertilization and watering regimes, design changes and the replacement of pest prone plants, and cultural practices such as mulching or mowing.

A final component IPM that a scout must have receive training in is accurate record keeping. Much of this must be conducted on the job because different management operations will have different types of information that they collect and evaluate. However, the scout must be able to keep accurate records of pest activity, the types of controls that were attempted, and the biological results of the management activities. This information will allow managers to evaluate efficacy of specific control tactics and the cost effectiveness of the management program. This in turn will provide information for making adjustments to activities such as the frequency of scouting or the use of certain materials such as pesticides. It also provides a critical data base for predicting what pests will be found in a specific location and when these pests are most susceptible to control activities.

In summary, training an effective IPM scout will begin with the selection of the correct individual for the position. This person may already be employed by you or you may hire someone with some degree of training. Many colleges and universities now train students in the fundamental disciplines of plant protection and award degrees at the associates or bachelors level. A smaller number of institutions provide advanced training in IPM at the graduate level. IPM has become the focus of many shortcourses, workshops, and conferences and there are increasing opportunities for employees to receive training in IPM. In these times of strong societal concern over the use of

pesticides and other chemicals in the environment, many firms believe that the acquisition of knowledge may be their most cost effective way to stay competitive and remain in business.

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