



How to Use Landscape IPM in Your Business

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Integrated Pest Management (IPM) is a systematic approach to managing pest problems that improves the quality of plant care delivered to clients while minimizing pesticide use and nontarget effects. This process helps locate potential pest problems early in the season before extensive damage occurs and when better control can be achieved. It also helps to identify problems that are most important to clients. IPM programs can be expensive, because they require visits and inspections of properties at least twice a month during the growing season. This service is usually affordable to only high-end clients, or institutions with a resident staff that maintains the property. Many of the benefits of an IPM program can be obtained through scaled-down programs that meet the budget of less affluent customers. Following is a discussion of the key components of Landscape IPM.

Monitor

Visually inspect all plants in the landscape. Inspect in the dormant season and then every few weeks from spring flush through leaf drop. Regular inspection of plants helps find and treat pests. More importantly, return to the site to monitor again, it allows the opportunity to delay pesticide sprays until they are absolutely necessary.

Improve efficiency by monitoring plants that are likely to have pest problems. This can be determined by knowing when pests are active and which plants are likely to colonize. Tables of pest activity based on degree days (Chapter 11) have been prepared to help guide scouting during the season. In subsequent years summarized monitoring records will help predict where and when pests are likely to be active.

Use readily available sampling tools to determine stage and extent of pest populations.

- *Hand magnifying lens.* Carry a 10–15X hand lens to help identify pests and determine the life stages that are present. High quality glass 10X doublet lenses can be purchased for less than \$10.
- *Sex pheromone traps.* These traps are baited with a scent that attracts only the males of a species. They are critical for timing control. For example, insecticides for most clearwing borers (lilac, ash, dogwood, peachtree, etc.) should be applied 10 days after the first male is caught in a trap. Sex pheromone traps are also available for Nantucket and European pine shoot moths and bark beetles. Place traps near plants that are likely to be attacked by these insects. Two traps would probably be enough to assess populations in the

management area. Japanese beetle traps are not recommended for monitoring beetles. Unlike sex pheromone traps, these traps aggravate pest problems by bringing both males and females into an area.

- *Beating stick, a clip board with white paper.* One can quickly determine what is feeding on many plants by tapping the branches with a stick over a white sheet of paper attached to a clip board. This is especially useful for small pests such as spider mites, scale crawlers, thrips, and some leafhoppers. After pests are identified with a hand lens, estimate the population by counting the number of insects moving on the sheet of paper.

Keep Records

Map the landscape. A map that locates plants can become a reliable guide to where problems have been reported. This can be accomplished with simple paper and pencil or with global positioning system (GPS) devices and geographical information software (GIS) packages, such as ArcView. Several commercial firms can be contracted to produce maps for use with GIS software.

Make a standard IPM observation form. Record information on a standardized form, either on paper or with a hand-held data collection device compatible with data collection software. This will help generate useful summaries of scouting information.

Decide if Treatment Is Needed

Determine if treatment is needed by reviewing both the biology of the pest and the preferences of the client. Pests associated with medium and high risks of plant mortality are most likely to need treatment. Some clients will have low tolerance for injury, whereas others have high tolerance. Some clients may simply be most concerned about the appearance of a few favorite plants. It is important to get a feel for their sensitivity during the preliminary client consultation. As a starting point, however, research has shown that 50% defoliation, distortion or discoloration is enough to cause concern of most clients. Treat plants only when pests are in a vulnerable stage and they threaten plant appearance or health.

Most pests cause problems at definite times of the year. Twospotted spider mites are a good example because they thrive in hot and dry weather. High numbers of spider mites on deciduous trees in July pose a greater threat to your plants than large numbers in September when leaf drop is imminent. Use your scouting records to identify trends of pest activity in your area.



Almost all arthropod pests prefer to colonize hosts only during a short specific time of year. For example, bronze birch borers lay eggs only during a four week period in June and July. This is the only time they can colonize susceptible trees. The tree must be sprayed with pesticides before eggs are hatch. In addition, twospotted spider mites thrive in hot and dry weather. High numbers of spider mites on deciduous trees in July pose a greater threat to plants than large numbers in September when leaf drop is imminent (see chapter 9). Use scouting records to identify trends of pest activity in an area.

Choose a Management Tactic

Once the need for taking action has been determined, select tactics that are appropriate to the scale of the problem. This will help preserve natural enemies that are already present in the landscape feeding on pests (Chapter 10). Consider cultural or mechanical controls such as replacing problem-prone plants with species that are resistant to common pests. When possible, choose biorational pesticides (Chapter 9). If plants are inspected often, there usually is no need to use long-lasting chemicals, because there are many opportunities to intervene before plants are damaged.

Evaluate Records to Refine the Program

Use a spreadsheet or database program to sort pest management records to identify trends over time to help target pest management efforts against the most important problems.

Key Pests. These are the pests that are most common and damaging in the landscapes. Most problems are caused by fewer than 10 pests. These pests are usually the ones clients are most interested in controlling. Identifying key pests can help target future education and management efforts.

- Organize records by pest and count the number of times each pest was the reason for applying a pesticide.

Key Plants. These are plant species most likely to have pest problems. As with key pests, clients will judge performance based on the care of these key plants. In addition

to targeting management and education efforts, this information can be used to steer clients away from planting highly susceptible plants.

- Organize records by plant species, and count the number of times plants need treatment.

Key Clients or Properties. These are the clients or properties that require the most extensive pest management activities. This list will help identify clients or properties with the greatest pest management needs. Similarly, use this information to determine the types of clients that are most profitable for the business.

- Organize records by clients or properties, and count the number of treatments they received.

Key Management Tactics. These are the tactics that most commonly used. This will help project future needs for materials, and specialized training in pest management tactics.

- Organize records by the tactics used, and count the number of times each tactic was implemented.

Determine seasonality of key pests, key plants, key clients, and key management activities to predict next year's sequence of pest problems. Analysis of the most common management activities may help spread out work more evenly over the course of a year.

- Organize problem records by pest, damage, and date of management activity.
- Count the number of times the top 5 key pests were seen in two-week intervals throughout the season.
- Plot these counts over time for each of the top 5 items (e.g., key pests).

An IPM Approach for Clients

Include the following information in a client's record.

- Develop a billing form that records the plant species, the pest species, the date and treatment each client receives.
- Inspect plants and treat only those with pest problems.
- Enter billing records into a database.
- Summarize these records for the client at the end of the season.