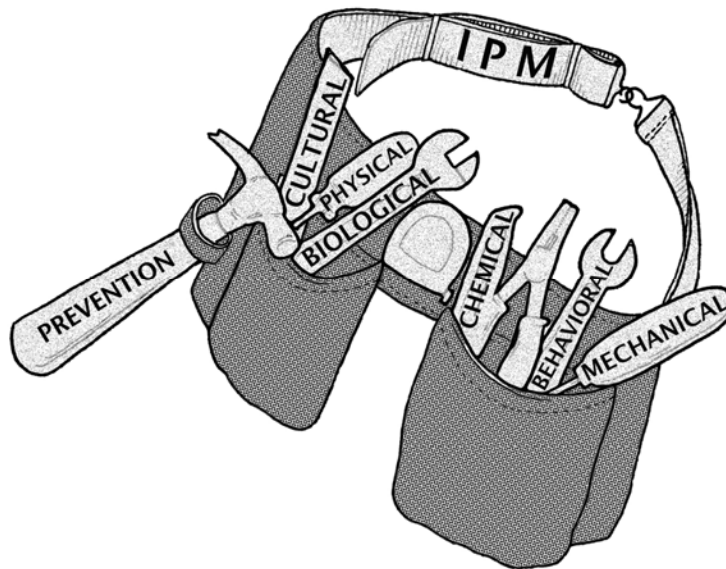


# INTEGRATED PEST MANAGEMENT

Integrated Pest Management (IPM) is a prevention based way to manage pests effectively, economically, and safely. This approach helps reduce the need for chemical pesticides and can cut costs. IPM programs help to protect the environment, human health, and beneficial organisms. An IPM approach in landscape provides long-term answers to pest problems. As a result, pests can be managed, even when pesticides cannot be used.

IPM is a decision-making process. It is based on preventing pest problems. All information and treatment methods are taken into account. Pests are managed effectively, economically, and in an environmentally sound manner. The six elements of an IPM program are:

1. **Prevention:** Organisms are kept from becoming pest problems by planning and properly managing landscape and turf areas.
2. **Identification:** Pests and beneficial species are identified.
3. **Monitoring:** Pests, beneficial species, pest damage, and environmental conditions are monitored regularly.
4. **Injury and Action Decision:** Injury and action thresholds are used to decide when to treat pest problems.
5. **Treatments:** One or more treatment methods are used to control the pest. These include cultural, biological, physical, mechanical, behavioural, or chemical methods. Treatments are chosen that will have the least environmental impact while providing adequate control.
6. **Evaluation:** The effectiveness of the IPM program is regularly evaluated.



**Figure 5-1: IPM programs use a tool box approach in which a variety of treatments are used to control pest problems.**

For more general information on IPM, see Applicator Core Manual Chapter 7: Integrated Pest Management.

Urban lawns and landscape plantings are grown for their pleasing appearance. Other managed turf areas are maintained for a variety of reasons including professional and amateur sports, public recreation and urban green space. Despite this variety of use, the basis of all turf and landscape IPM programs is healthy plants. Keeping plants healthy in an urban environment poses a number of unique challenges. These include people pressures (such as traffic and wear), air pollution, compacted soils, and dry soil.

Most landscapes include a variety of trees, shrubs and other plants. In many cases landscape pest problems can be prevented in the design stage. Landscapers can choose from a number of plants that resist disease, are rarely attacked by pests, or are tolerant of urban growing conditions. In older landscapes, problem plants can be replaced with other species. A mixture of plants in landscapes keeps pest problems from spreading.

People who manage pests in landscape and turf areas must meet the standards required by their clients. These standards can be based on the appearance, use of the site or in some cases safety requirements. Standards vary from site to site. Some areas require very high standards (e.g., high value sports turf ) while others

are less stringent (e.g., roadway medians, playgrounds) These factors are used in setting injury thresholds. The needs of clients and site users can also affect the choice of treatments. Residential clients may not want certain types of pesticides to be used in their yards. Some types of treatment may not be practical or feasible on large turf areas. Municipal bylaws or policies may restrict pesticide use or prohibit the use of certain types of pesticides.

The strength of an IPM approach is that it can be applied to any type of site or pest problem. This chapter provides IPM principles that work for many kinds of pest problems. Examples of IPM programs for common pests in the Atlantic region are given. However, this manual does not cover all pest problems that can occur. References given at the end of the chapter will assist readers in finding more information.

### Learning Objectives

Completing this chapter will help you to:

- **Know the unique IPM challenges in urban landscapes.**
- **Know the steps used to create an IPM program for a turf or urban landscape setting.**
- **Know how to group landscape sites by the level of care needed.**

## Putting IPM into Practice

An IPM program should start small and be built up as experience is gained. An approach to planning an IPM program may include the following:

- Start with a small site.
- Select a site that has few pests.
- Focus on one pest (e.g., aphids) in street trees or a group of pests (e.g., broadleaf weeds in turf).

As knowledge is gained, broaden the program can be broadened to other areas.

## Set Realistic Objectives

A pest management service should begin using IPM by working with a few interested clients. Golf course, sports and municipal facility turf and landscape managers should select a small area of their sites or a single pest problem to focus on.

## Categorize Sites

Divide the area to be managed into groups or sites based on the level of care required and the level of damage that can be tolerated (see Figure 5-2). This helps you to know where to focus monitoring and treatment effort. It also allows different injury thresholds to be set for each group or site.

Any type of grouping system that works can be used. Below is an example of a how sites can be grouped into a three-level system. Many turf and landscape managers across Canada use this approach:

**Class A Sites:** Class A sites have high value and are highly visible. These are maintained to the highest standard. Often very little pest damage can be tolerated. These can include:

- Formal display beds
- Lawns in parks and around public buildings
- Front yards

- Botanical gardens
- Hanging baskets
- Golf course greens and tees
- Professional sports fields

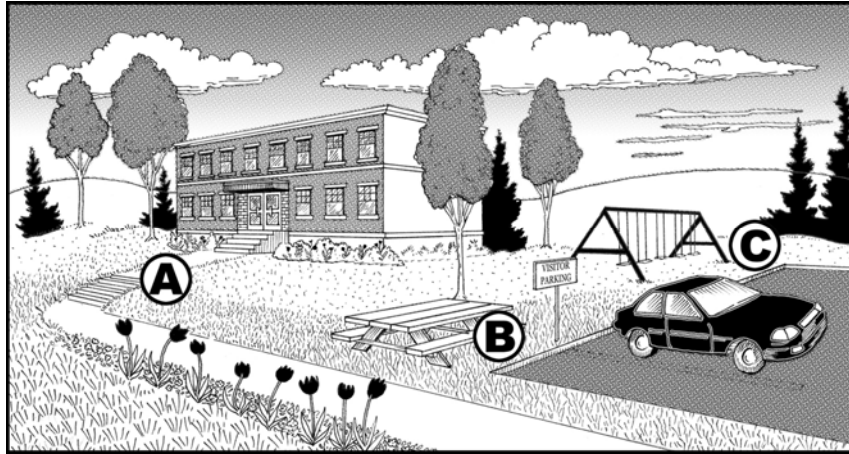
**Class B Sites:** Class B sites have a moderate level of maintenance, value or visibility. A greater level of pest damage may be tolerated. These can include:

- Roadway medians
- Park and playground areas
- Backyards
- Perennial borders in parks
- Golf course fairways

**Class C Sites:** Class C sites are natural, low profile or low visibility sites that require little care. These can include:

- Nature parks
- Playground areas
- Works sites
- Golf course rough areas
- Parking lot beds

A golf course or large park can be grouped into a number of smaller areas. For example, the greens and tees on a golf course might be grouped as Class A sites. The fairways may be Class B sites. The roughs may be Class C sites. Each class of site would have its own injury threshold for each pest. In a large park, ornamental display beds may be Class A. Turf and shrub beds may be Class B. Picnic areas may be Class C.



**Figure 5-2: Divide the area to be managed into groups or sites based on the level of care required and the level of damage that can be tolerated.**

## Assemble Background Information

Before starting an IPM program, background information on the site must be collected and analyzed. This includes:

- Records of past pest problems or treatments at the site
- Provincial or municipal laws that apply
- Resources (e.g. local publications and pest management experts) that can be used in the IPM program
- Turf and/or landscape problems that are common in your area
- A listing of all treatments that can be used

An initial site assessment can provide background information. Inspect and record:

- Features of the landscape (e.g., drainage, soil quality, amount of shade)
- Plants on site (trees, shrubs, lawns, herbaceous plants, etc.)
- Use patterns (Who uses the site? When? What areas are most used? Are any areas damaged by over-use?)
- Environmental concerns or sites nearby that can affect the choice of treatments (e.g. sensitive plants, bird/animal breeding areas, water courses)

## Analyze Assembled Information

To make sense of information:

- **Look for key plants or areas** in the landscape such as specimen trees, display borders, problem or high use turf areas. These can serve as a focus for pest management efforts.
- **Check past pest records** or question clients on problem plants or areas. Plants may need to be moved or replaced. Turf areas may need to be renovated or over-seeded. This can be done at once, or part of a long-term plan.
- **Look for ways to make changes** and improve long-term results. For example, people crossing a turf area may cause wear and bare patches. One solution is to install a path, or keep traffic from crossing the area by planting thorny shrubs or placing other barriers.

## Draft an IPM Program

Use background information and analysis to draft an IPM plan. Address prevention, identification, monitoring, injury and action levels, treatments, and evaluation. For some elements, a great deal of information may be available. For others, there may be gaps that require research. Check reference books, talk to local experts, and gain experience.

Below are tips for creating a generic landscape or turf IPM program:

- **Prevention:** Prevention is often more effective than using a control treatment. Improved fertilizing, liming, and mowing helps turf resist weeds and chinch bug damage. A program of pruning, removal of plant debris and mulching can help landscape beds resist pest problems.
- **Identification:** All pests must be identified before action is taken. Become familiar with the common pests in your area and their look-alikes. Keep an identification collection or reference photos to help you diagnose problems. Use insect specimens (pinned or in alcohol), pressed weeds, and pictures of plant damage and disease.
- **Monitoring:** Choose simple monitoring methods. Have a standardized record keeping system that is easy to use. Set up a simple file system.

Information on each site should be on file so it is easy to find and use. Store maps, records, injury thresholds, treatment information, and other material for easy access.

- **Action Decisions:** Set temporary thresholds if there are no established injury and action thresholds. These can be based on past experience, or references. Thresholds can be refined with experience and monitoring data.
- **Treatments:** Put guidelines in place for when and how potential treatments will be made. Make sure all involved are well informed. If new products or tools are required, make sure they are ordered in advance. Check with suppliers to make sure items will be available when needed.
- **Evaluation:** Set a schedule to evaluate treatment effectiveness. At the end of the season, review the whole IPM program. All participants (e.g., clients, staff and crews) should be involved.

## IPM Program Revisions

An IPM program evaluation is a rich source of information. It can be used to plan for the next season. Look at the IPM plan yearly to make improvements based on the results of evaluations, and to keep up on new products and tools that support IPM.



## Summary

**IPM programs take all information and treatment methods into account. These are used to manage pests in a cost effective and environmentally sound manner. An IPM approach in landscapes improves long-term pest management and can cut down on pesticide use.**

**To develop an IPM program:**

- **Become familiar with the pests common to your area. Make sure that the landscape manager and key staff can identify the common problems they may encounter.**
- **Collect background information about the site, pest problems, and treatments that can be used.**
- **Set realistic goals.**
- **Start small and expand to other areas or pest types with experience. Group areas or sites by the level of required care.**
- **Draft a plan that includes all parts of IPM: prevention, identification, monitoring, injury and action thresholds, treatments and evaluation.**
- **Target effort and resources to where they are most needed.**
- **Review the IPM plan yearly and improve it with the experience that is gained.**

## Self-test Questions

*Answers are located in Appendix A of this manual.*

Self test questions for chapters 5, 6, 7, and 8 can be found at the end of chapter 8 of this manual.