

Section VI. - IPM Protocol

IPM protocol is a written procedural method used to determine the proper plant and/or pest management tactic for each particular situation.

A. Monitoring

In an IPM program, monitoring is the repeated observation of site conditions. These conditions are a key factor in determining the diagnosis and treatment of pest problems. Site conditions to observe are weather patterns, cultural practices, and site disturbances that occurred in the area; past or present. These site conditions can manipulate plant vitality and pest activity.

Plant knowledge is also important. Understanding the amount of injury from pests a plant can sustain before action is needed. Important plant information includes species, condition, and developmental stage. All plants are unique in their susceptibility to injury, but plants are similar in the fact that their condition and developmental stage can affect how susceptible they are.

Finally, pest information is a crucial part of the monitoring process. When a pest is discovered, several observations should be made. These include pest identification, pest population, life stage of the pest, and potential for natural control. Interpretation of this data will assist in determining the best possible treatment option for controlling the pest.

Monitoring of site conditions, plant and pest information will help determine the best control option to use for current and ongoing maintenance situations. This will also allow staff to detect a potential pest problem prior to its becoming a major problem.

B. Action Threshold

An action threshold will help the staff determine when a pest population, or the injury it causes, exceeds a tolerable level. A high action threshold level means pests will be tolerated longer vs. a low action threshold level where pests will be tolerated for a shorter period of time before action is taken. The threshold level will vary depending upon the location of the site and the amount of use by the public. Determining the appropriate threshold requires knowledge, experience, and foresight and can be revised based on continued observations and experience. Several aspects go into determining the action threshold for a site including aesthetics, purpose and safety of the site, and value of plants.

Aesthetic thresholds are difficult to establish because tolerance will vary among staff and the public, as well as vary from site to site. Aesthetic thresholds will in large be set by the public and their expectations in the appearance of landscaped areas. The public generally has a low acceptance for aesthetic plant injury and as a result, thresholds will be set accordingly.

Plant value will also determine an action threshold. For example, a tree will gain functional and aesthetic attributes through its maturity. These attributes include shade, air quality, water quality, and habitat. The value of these attributes increases over time and can be assessed as a monetary worth. With this in mind, if a pest population reaches a point where the injury level causes the health or structure of a tree to be compromised and pesticides can be applied in order to save the plant, then careful attention to the monetary value of the tree against the risk of pesticide application will be evaluated. If pesticide application is limited in these situations, budget adjustments will be needed to assist in the process of removing and replacing dead or dying plant material.

The purpose and safety of a site will drastically affect the threshold levels. For example, a soccer field needs to be maintained at a high level to reduce injury to users. Therefore it will have a low action threshold (pests will not be tolerated). On the other hand, a wilderness area with a nature trail has a high action threshold. The management and role of these two sites is entirely different. Any pest that creates a degraded or unsafe playing surface will not be tolerated because the public has greater expectations in consideration to athletic fields. In addition to safety on playing surfaces any pest at a site creating a risk to the public, and staff, will be dealt with in an urgent manner. For example, poison ivy in a high-traffic area will have a low action threshold, as this poses health risk.

Finally, these action thresholds will also be based upon what zone the pests are located in at each park. If the pest problem is in a green zone, the tolerance of the pest will have to be higher than if the pest were in a yellow zone. In a yellow zone, the area can be treated with a pesticide at the discretion of the staff in accordance with the IPM policy. When pests are located in a green zone, alternative methods will be exhausted.

Appropriate threshold levels may vary at each location and is subject to staff experience and knowledge. The amount of damage that can take place before pest infested plants become aesthetically intolerable, are a safety issue, take away from the purpose of the site, or become an economic threat will determine the action threshold.

C. Control technique selection

When a pest problem goes beyond its set threshold, staff will choose the appropriate pest control action based on the following guidelines:

- a. least hazardous to the applicator
- b. least hazardous to the public and the environment
- c. cost-effectiveness in the short and long-term
- d. least hazardous to non-target organisms

D. Control tactics

There are three types of pest control used in an IPM strategy: cultural, biological, and chemical controls. IPM implements the use of cultural and biological controls first, with chemical controls as a last resort. Often a combination of these can be the most effective.

1. Cultural controls- Cultural control tactics are physical adjustments made to the landscape to promote plant health and reduce pest activity, reproduction or survival. The adjustments can be made by hand or with mechanical devices.
Cultural control tactics include but are not limited to:
 - Mulching
 - Pruning
 - Removal of pest infected debris in park areas
 - Overseeding
 - Appropriate plant selection
 - Watering practices
 - Mowing frequency
 - Soil considerations

2. Biological controls- Biological control is managing pests by using their natural enemies – predators, parasites, and pathogens. Biological control is often natural and maintains pest populations at a tolerable level. If pests are not naturally maintained the habitat of the landscape may need to be altered to attract the natural enemies. Also, the predators, parasites or pathogens could be physically introduced into the landscape. Other biological control tactics include:
 - Introduction, conservation, and augmentation of natural pest enemies
 - Use of plant materials that are disease and insect resistant
 - Biological/organic products and alternative chemical controls
 - Create and preserve biological diversity using landscape design

3. Chemical controls- managing pests by use of pesticides. Chemical controls are only allowed when cultural or biological controls are ineffective. Chemical controls should be employed as a last resort and should follow these guidelines:
 - Prior to making any application, the location of the pest problem and host should be evaluated and then use the least toxic pest control action.
 - Least toxic compounds, pesticides in the EPA Toxicity Category III & IV, and those that are found on the Allowed Pesticide List will be considered first.
 - Before the application of a pesticide, all labels and warnings should be read and pesticides should be applied in a manner consistent with labeling and applied only to target pest.
 - All pesticide applications will comply with signage and notification procedures as specified in this policy. Accurate records of pesticide applications should be kept and include the target pest, type and quantity of pesticide used, EPA registration number, location of application, date, time, and weather conditions at time of application.