



Turf Tips

For the Homeowner

Integrated Pest Management for Home Lawns

G.T. Lyman

Department of Crop and Soil Sciences, Michigan State University



Integrated pest management (IPM) is a system of managing pests by using a variety of control methods. For turfgrass management, the system is designed to optimize conditions for healthy plant growth because a healthy and vigorously growing lawn can tolerate a higher degree of pest pressure. In general, the techniques used to control pests in an IPM system include the use of pest-resistant turf varieties; cultural techniques such as proper mowing, fertilization, irrigation and cultivation practices; and the judicious use of pesticides. An integrated pest management system does not exclude the use of pesticides. Instead, the use of a variety of cultural controls reduces the need for pesticide products and makes their use more efficient.

There are five general steps involved in an IPM system:

1. Scouting for pest activity

Simply walking through your lawn with some regularity and looking for irregularities will help you spot pest problems early. This activity is routine for people who mow their own lawns because they have the opportunity to notice problem areas in a timely fashion. Identifying "hot spots" in the lawn where damage repeatedly occurs is useful in recognizing when pests are becoming active.

2. Pest identification

Correctly identifying the cause of a turfgrass problem area is one of the foundations of proper pest management. There are numerous causes of "brown turf," and many of them can be attributed to site conditions and weather patterns rather than a specific pest. Successful identification of the cause of a problem ensures that appropriate control measures are used.

3. Determine threshold for pest damage

Determining acceptable thresholds for pest damage is a crucial step in the IPM process. The threshold is the point where a pest population exceeds tolerable levels and unacceptable damage will occur if no action is

taken. Damage to lawn turf includes the physical damage caused by insect and disease organisms and intrusion by weed

plants into the lawn. Damage reduces the quality of the lawn, but the level of quality is determined by the homeowners based on their use or desires for the lawn.

People who desire a formal appearance for their lawns are likely to have different quality standards than those who use their lawns for soccer fields. It is important to match the quality standards with your site conditions so reasonable pest management strategies can be identified.

From a biological perspective, the population levels that cause turf damage vary with the pests involved. For instance, the presence of a few white grubs, some disease activity or a few weeds may not mean unacceptable levels of damage will occur. Furthermore, trying to eliminate all pests from your lawn is extremely difficult, short-lived and not an environmentally responsible goal. Site conditions, time of year, use of the lawn and the desired quality all need to be considered when making a pest control decision.

4. Choosing a control

When a turf pest problem has been identified, choose a control that will promote the long-term goals of the site. Several cultural controls are discussed in the next section. If weed, insect or disease problems are present because of soil compaction, poor drainage, improper mowing, poor irrigation or improper turf species planted at the site, correcting these problems will ultimately lead to long-term satisfaction.

5. Evaluating results

This step is intended to measure the effectiveness of the pest management treatment chosen. For instance, if you adjust your watering schedule to relieve the damage of necrotic ring spot, the turf should be monitored to determine if the treatment is providing satisfactory results.

Pest Control Techniques — Choosing the Proper Grass Species

Four major turfgrass species are appropriate for use in Michigan: Kentucky bluegrass, perennial ryegrass, tall fescue and the fine fescues (red, slender, chewings and hard fescue). Many varieties are available within each of these species. Each species differs in its ability to adapt and thrive in the site conditions and in its tolerance of disease and insect pressure. Refer to your local MSU Extension office or lawn care professionals for varieties that are best adapted to your conditions. Certain varieties are known to tolerate specific diseases and others have been enhanced with an endophyte (fungus) that allows the plant to resist insect feeding. Generally, planting a blend of three varieties of a turf species will provide better results than planting only one variety.

Cultural Control Techniques — Fertilization

Proper fertilization has a direct influence on the ability of a lawn to tolerate pest pressure. A lawn that is limited in nutrition will be more susceptible to weed invasion and insect damage than a lawn with adequate fertility. The most important nutrients for turf are nitrogen, phosphorus and potassium (potash). Nitrogen should be applied in the range of 1 to 5 pounds per 1,000 square feet per year, depending on the species, desired quality level and site conditions. (Refer to Turf Tips E05TURF, "Fertilizing Home Lawns" for more directions.) Phosphorus and potassium levels of your soil can be determined through a soil test. The soil test report offers recommendations for phosphorus and potassium additions to your lawn.

Cultural Control Techniques — Mowing

Short mowing scalps the turf and causes significant damage. Mowing height recommendations have steadily moved upward in recent years. Kentucky bluegrass can tolerate lower mowing, but a general mowing height of between 2.5 and 3.5 inches is recommended. Grass will be better able to compete with weeds and tolerate drought stress at a higher mowing height. In addition, try not to remove more than one-third of the leaf surface at any one mowing. Accomplish this by using higher mowing heights and regular mowing

cycles. Leave the clippings on the lawn. Clippings degrade quickly and will recycle their nutrients to the soil. This decreases the overall fertilizer requirements. Keep the mower blades sharp. A dull blade will tear the grass leaves, leaving wounds that provide sites for disease infection. (See Turf Tips E13TURF, "Mowing Lawn Turf" for more guidance.)

Cultural Control Techniques — Watering

Lawns that do not have irrigation go dormant by ceasing growth and turning brown during summer drought periods. The dormancy response is a natural process in cool-season turfgrasses, and growth will resume when conditions are more appropriate. Irrigation during drought periods can prevent dormancy and, when done correctly, alleviate certain disease and insect damage. Research indicates that light, frequent applications of water allow the turf to tolerate more pressure from necrotic ring spot and root-feeding grubs. In general, lawn turf will require 1 inch of water per week. This amount needs to be adjusted up or down depending on weather conditions. Rather than applying this amount once per week, apply the water in smaller amounts more frequently during the week. Avoid watering during nighttime hours. Disease activity is promoted when the leaves are wet for extended periods. Apply water in the morning or afternoon during the heat of the day.

Pesticide Application Tips

Pesticide use can be reduced by following appropriate cultural techniques, but it may be necessary from time to time to meet the quality objective you set for your lawn. These products are quite effective when pest levels are excessive. When using a pesticide, always read the label and carefully follow the instructions. Be prudent when mixing the product in your sprayer or spreader — this is when you are most likely to be exposed. Spot treat when possible. Blanket treatments should be used only when the pest occurs throughout the lawn. For instance, treating the whole lawn for grubs may be unnecessary if they are damaging only one area of the lawn, and using a weed-and-feed product is unnecessary if the lawn is relatively weed free. Keep pesticides and fertilizers on the turf and away from hard surfaces such as driveways and sidewalks, where they are free to move with flowing water.



MSU is an affirmative-action equal-opportunity institution. Michigan State University Extension programs and materials are open to all without regard to race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, marital status, or family status. ■ Issued in furtherance of Extension work in agriculture and home economics, acts of May 8 and June 20, 1914, in cooperation with the U.S. Department of Agriculture. Margaret A. Bethel, Extension director, Michigan State University, E. Lansing, MI 48824. ■ This information is for educational purposes only. Reference to commercial products or trade names does not imply endorsement by MSU Extension or bias against those not mentioned. This bulletin becomes public property upon publication and may be printed verbatim with credit to MSU. Reprinting cannot be used to endorse or advertise a commercial product or company.