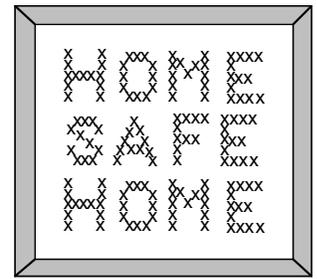


# Alternatives

A Washington Toxics Coalition Fact Sheet

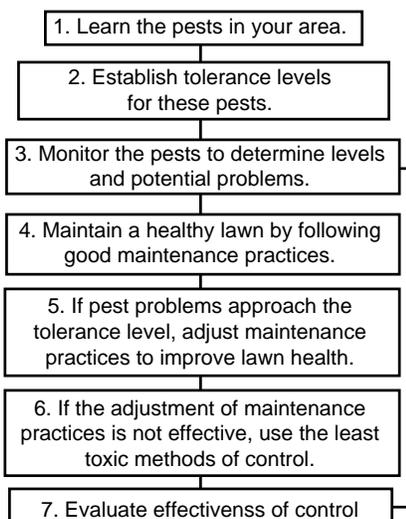


## Lawn Care

by David Johnson



### The IPM Lawn Care Cycle



**T**he lawn surrounding your home can be a source of delight or cause for despair. Our society has traditionally valued the aesthetic standard of a uniform, dense, close-cropped and geometrically edged lawn. Trying to maintain such artificial standards, perhaps more to please the neighbors than ourselves, we can set ourselves up for failure. We also allow ourselves to become easy victims of advertisements promoting a lethal assortment of chemicals guaranteed to solve our lawn care problems. Some lawn service companies which rely heavily on quarterly or bi-monthly pesticide applications leave the consumer with the perception that healthy attractive lawns require frequent applications of assorted chemicals. This perception is continually reinforced because most of the consumers' lawn care information comes from companies that manufacture or sell lawn care products. It is not part of the sales plan to offer information that will reduce pesticide use.

Generally speaking, the lower your tolerance for any deviation from the "perfect" putting-green style lawn, the more likely it is that chemicals will be needed to achieve it. Actually, it turns out that the much touted deep-green lawn is not the healthiest turf. A lighter-green lawn has better fertility, root development, and disease resistance.

Many other landscape options are available, from neatly tended vegetable gardens to meadows of wild flowers. Yard design should be dictated by the intended use patterns. Most home landscapes do have at least some areas of grass because it can be attractive and serves a purpose.

For the lawn owner seeking to minimize chemical usage, the search for information can be difficult. It is tempting to buy a chemical product that offers short term relief rather than to educate ourselves or pay a professional consultant to analyze the problem. This article describes a method by which pesticide use may be reduced or even eliminated.

### What is Integrated Pest Management?

We often turn to pesticides to solve lawn problems after the damage is done. Integrated Pest Management (IPM) is an approach that focuses on prevention by considering the ecosystem as a whole. In the case of lawn care, it begins by selecting the appropriate plant types for the area and applying the correct horticultural practices to maintain health. IPM accepts the presence of "pests" as a natural part of the plant/animal ecosystem and does not seek to eliminate them. As shown on the diagram, a tolerance level for pest presence or damage is set and the area is monitored to determine if pest damage will exceed the defined standard. Treatment strategies are implemented only when monitoring shows that unacceptable damage will occur. Treatment is aimed at preventing pest levels from exceeding the threshold with minimal disruption of non-targeted members of the plant or animal community. The effectiveness of the treatment is evaluated and recorded and the treatment is modified if necessary.

### Lawn Requirements and Planning

An IPM approach to lawn maintenance begins with appropriate design and installation to provide the physical conditions a lawn requires to thrive. Even if we are not starting a new lawn from scratch, it is important to understand what a healthy lawn

needs. In many cases pest problems can be eliminated merely by adjusting one or more of these elementary requirements.

The area the lawn is to occupy must receive adequate light and the soil must absorb water but drain well. Shady areas and steep hillsides are not good bets for grass. The pH (acidity/alkalinity) of the soil should fall within a range of 6.0 to 7.0 (slightly acidic). West of the Cascades soil is usually too acid, while east of the mountains excess alkalinity is often a problem. The soil must be deep enough for healthy roots to grow. Six inches is a minimum, and twelve is better. The soil must contain adequate nutrients. Finally, a source of water is needed to maintain adequate moisture levels.

The selection of proper grass seed or sod is just as important. Kentucky Blue Grass does well east of the mountains, but on the west side it steadily declines in our soggy winters. In Western Washington, a mixture of perennial rye grass and fescues are recommended. If sod is used, purchase it fresh—avoid the stacks sitting in the sun in front of your garden center. Detailed information on variety selection and installation may be found in *Ecologically Sound Lawn Care for the Pacific Northwest* (see the box “For More Information” on the last page of this fact sheet).

## Maintenance

Most of us have a lawn of some description already established. It is crucial that proper maintenance practices be followed consistently to keep the lawn healthy. These practices may be divided into four categories: 1) mowing and cultivation, 2) fertilization, 3) watering, and 4) pest management. The more attention paid to the first three points, the less need there will be for pest management.

### ■ Mowing

Mowing should always be done with a sharp blade set at the correct height. Never remove more than one third of the grass blade at one mowing because this will diminish nutrient reserves, causing stress conditions and a decline in lawn health. Mowing height for perennial ryegrass west of the Cascades should generally be between 1-1/2 inches and 2 inches. The taller the grass the deeper the roots penetrate, tapping into a larger volume of moisture and nutrients. However, as the height of grass increases the density of shoots decreases, which can contribute to weed infestation if the mowing height is then lowered. Frequent (i.e. weekly) mowing increases grass shoot density, inhibiting the establishment of weeds. Grasscycling—leaving the clippings on the lawn rather than bagging them—can reduce fertilizer needs by one-third. Specially designed mulching mowers work best, but any mower can be used for grasscycling if mowing is done often and the blades are kept sharp.

### ■ Cultivation

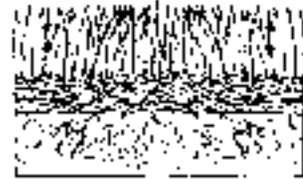
Aeration is the process of removing small cylindrical cores of soil from the lawn, relieving soil compaction and allowing water and air to penetrate. A home lawn may require aeration only once every two to four years depending upon use and soil type.

Thatching removes the mat of old grass rhizomes that develops at the soil surface, preventing the penetration of water and fertilizer. Thatching needs to be done when the thatch layer exceeds about 1/2 inch. (The rate of thatch accumulation differs with grass type.) The job is best done with a special thatching rake or, for large areas, a thatching machine, which is available at rental yards.

### ■ Fertilization

Fertilization is a necessary part of a lawn maintenance program. Selection of the fertilizer to use is important. Avoid the so-called “weed and feed” fertilizers. Application of these products amounts to indiscriminate broadcasting of chemical herbicides over the entire yard, whether or not a pest problem exists. The herbicides in weed and feed products are widespread water pollutants in the Pacific Northwest. (Note: recently available herbicides based on corn gluten meal are less hazardous but work in a different

## Benefit of Aeration



*Upper sketch shows thatch layer as a dark band over the root zone. Thatch prevents water and nutrients from reaching the roots. Lower sketch shows how aeration removes cores of thatch and soil, allowing water to penetrate.*

## Red Thread

Red thread is a fungus that can show up in wet, humid weather, especially late fall, winter, or early spring. It appears as circular yellow patches, 2-24 inches in diameter. If you look closely within these patches, you can see small pinkish hornlike fruiting bodies. Red thread is primarily a cosmetic problem that rarely kills the grass. It tends to be more severe on nutrient-depleted and non-vigorous lawns.

Few fungicides are registered for consumer use on red thread, but chemical control is not usually needed. Some fungicides actually make the problem worse. The best approach is to focus on making your lawn as healthy as possible by following the steps described in this fact sheet. Especially important in combatting red thread are fertilization and watering. Be sure your fertilizer provides adequate, balanced nutrition. Avoid quick-greening fertilizers high in soluble nitrogen. West of the Cascades, a 3-1-2 fertilizer with at least 70% slow-release nutrients is best. Do not exceed recommended application rates. It also helps to avoid drought stress by keeping the lawn watered in the summer.

way. They prevent weed seedlings from growing but do not kill existing weeds.)

Some lawn owners prefer to avoid synthetically derived fertilizers, whose manufacture is highly energy intensive and can be an environmental concern. Fertilizers derived from animal or plant sources are termed “organic.” The advantage of organic fertilizers is that the nutrients break down slowly, benefiting the diverse flora and fauna of the soil. Plant roots cannot differentiate between nutrients derived from “organic” or “manufactured” sources; they absorb nutrients in only one chemical form. What is most important is to choose a fertilizer which has the proper balance of nutrients for your geographic area and which contains at least 70% slow-release elements. Organic or manufactured fertilizers that contain a high percentage of slow release elements do cost more than quick release fertilizers. They are worth the extra cost because they maintain slow, steady growth that is best for the health of your lawn and they help protect against fertilizer runoff that can pollute nearby water.

Whatever the source of fertilizer, it is important that it be applied at the proper time and in appropriate quantities. Fertilizer does not “feed” plants; plant food is manufactured by the plant using the sun’s energy. Fertilizer supplies the nutrients to the soil solution to be absorbed by the plants’ roots. Nutrient deficiencies lead to a decline in plant health. Excess nutrients in the soil solution, besides representing a waste of resources and source of water pollution, can damage plants or cause excessive growth. Application rates vary with the product. For Western Washington, WSU Cooperative Extension recommends a balanced fertilizer with nutrients in a 3-1-2 ratio. Total nitrogen should be roughly 3-4 pounds per 1000 square feet per year. Leaving clippings on the lawn can supply up to one-third of that.

To calculate how much fertilizer to apply, divide the total nitrogen you want to put on the lawn by the percent nitrogen in the fertilizer. For example, to apply one pound of nitrogen per 1000 sq. ft. using a 27-9-18 fertilizer, you would divide 1 by 0.27 to get 3.7 pounds of fertilizer per 1000 sq. ft.

With a slow-release fertilizer, you can fertilize just twice a year, in mid- to late May and in early September. If you only want to fertilize once, do it in the fall.

### ■ Watering

The third essential lawn practice is supplying adequate moisture to the root zone. Infrequent, long irrigation cycles allow moisture to penetrate, encouraging deep roots which are capable of withstanding the stresses of drought. Frequent, short cycles encourage shallow rooting which is easily stressed. If the lawn is growing in a fine-textured soil which does not readily accept water, the application of a wetting agent may help. Often during drought conditions the lawn dries up, but the deeper rooted weeds thrive and spread. By maintaining even soil moisture to a depth of 10 inches throughout the growing season, the lawn’s health is assured and weed growth can be inhibited.

### **Pest Management: Applying the IPM Method**

We have already learned that a basic tenet of IPM is to prevent pest problems by using appropriate, adapted plant varieties; providing the necessary nutrients and moisture; and following through with good maintenance practices to assure lawn health. However, problems may still arise. An important part of IPM is defining what constitutes a problem. We must determine what level of weeds or insect damage we are willing to accept. This standard will set the threshold at which treatment is called for. It is worth noting here that purely aesthetic standards tend to call for treatment at much lower pest levels than do standards based upon plant health. Setting our pest tolerance too low results in unnecessary treatments and possible environmental damage.

Monitoring a pest problem consists of identifying the pest and learning about its life cycle. Once this knowledge is obtained a projection of the pest’s potential as a problem can be determined. Often natural predators may keep pest populations manageable over the long term, despite brief fluctuations at certain times of the year.

**When considering a treatment, the goal is not to eradicate the pest, but to use**

**the least toxic treatment that will drop the pest level below the tolerance level.**

For example, increasing nutrient levels through fertilization might be an appropriate treatment to allow the lawn to successfully compete against a weed or insect. Handweeding can be an appropriate response in some situations. For more information on weed control in lawns and gardens, see our companion fact sheet on weed management.

The most important part of any treatment is evaluation. All treatments need to be evaluated from time to time to determine effectiveness. The evaluation may indicate that the treatment be repeated or changed. Often it is necessary to combine a series of treatments to achieve a reduction of pest levels.

Applying the IPM method to home lawn care is not difficult. With a little determination to learn about pest life cycles and horticultural practices, you can make informed decisions that will minimize chemical use and still have a beautiful lawn. ■

**The Washington Toxics Coalition is a non-profit organization dedicated to protecting public health and the environment by preventing pollution. Please write or phone for information: WTC, 4649 Sunnyside Ave N, Suite 540, Seattle, WA 98103. Phone: 206-632-1545. Visit our Internet Web site at [www.watoxics.org](http://www.watoxics.org).**

## For More Information

1. See the chapters that follow on weed control, fertilizers, crane flies, and removing a lawn.
2. Dickey, Philip. *Grow Smart, Grow Safe: A Consumer Guide to Lawn and Garden Products*. Available by mail from Washington Toxics Coalition, 4649 Sunnyside Ave N, Suite 540, Seattle, WA 98103. \$7.75, postpaid.
3. *Natural Yard Care: Five steps to make your piece of the planet a healthier place to live*. Developed by Seattle Public Utilities, King County, and the Saving Water Partnership.  
<http://www.govlink.org/hazwaste/house/yard/> or  
[http://www.ci.seattle.wa.us/util/Services/Yard/Natural\\_Lawn\\_&\\_Garden\\_Care/Natural\\_Yard\\_Care/index.asp](http://www.ci.seattle.wa.us/util/Services/Yard/Natural_Lawn_&_Garden_Care/Natural_Yard_Care/index.asp).
4. McDonald, David. *Ecologically Sound Lawn Care for the Pacific Northwest*. Seattle Public Utilities. 1999. [http://www.ci.seattle.wa.us/util/stellent/groups/public/@spu/@rmb/@csd/@rescons/documents/spu\\_informative/ecological\\_200312021255394.pdf](http://www.ci.seattle.wa.us/util/stellent/groups/public/@spu/@rmb/@csd/@rescons/documents/spu_informative/ecological_200312021255394.pdf)

## Disposal of Pesticides

Lawn insecticides, herbicides, and weed and feed products are all pesticides. Unwanted products should not go down the drain or into the trash. In Washington state, and in many areas of the country, household hazardous waste programs accept household pesticides for disposal. To find the program near you, the Internet is a great tool. You can search on "household hazardous waste" plus the name of your city or county to find the site for your town. Or you can go to the Earth911 website ([www.earth911.org](http://www.earth911.org)) and type in your zip code for local information. Many communities have telephone hotlines for information on hazardous wastes. In Seattle/King County, call the Hazards Line at 206-296-4692. Statewide in Washington, call 800-RECYCLE.