

LAWNS AND THE CHESAPEAKE BAY

The way you care for your lawn can help prevent pollutants from reaching Maryland's streams and rivers and the Chesapeake Bay.

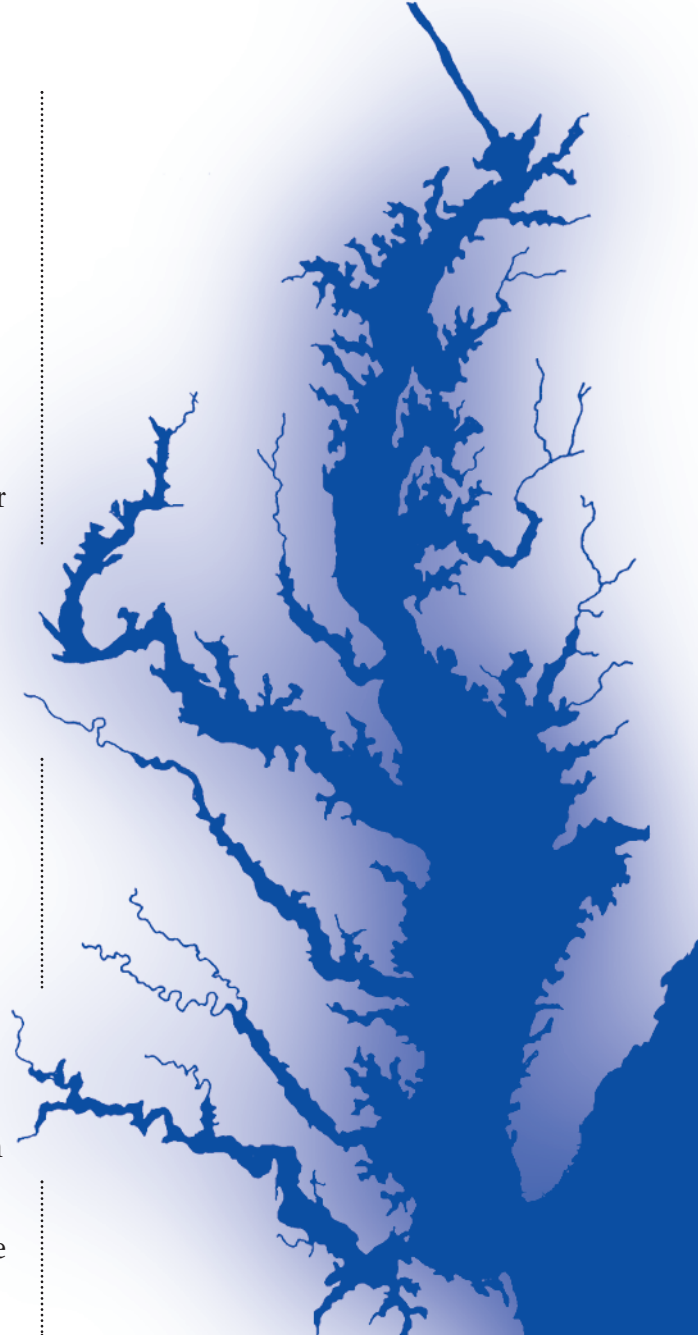
When you grow a healthy, dense stand of grass you do more than just produce an attractive lawn. You also help to keep pollutants out of Maryland's streams and rivers and the Chesapeake Bay. How? A healthy, dense stand of grass slows the flow of water running off the landscape, allowing the water to soak in. Grass roots form a mat, which holds the soil and filters water. This mat also traps sediments and chemicals before they have a chance to pollute the water.

To grow and maintain a lawn that looks good, helps to keep weeds from taking hold and thriving, *and* protects our water, follow these basic steps:

- Plant the right type of grass for your lawn
- Have your soil tested
- Follow a proper feeding program
- Mow grass to the proper height

Lawn Grasses for Maryland

Planting the right type of grass makes lawn care much easier. Two lawn grasses that generally resist damage from insects and diseases are turf-type tall fescue and zoysiagrass. These grasses also can be maintained with lower amounts of fertilizer than most other grasses



can. For a lawn that needs minimal care, or for areas in shade, a fine fescue may be suitable. Many improved varieties of lawn grasses are available. For a list of lawn grasses recommended for Maryland, call the Home and Garden Information Center at 1-800-342-2507. Buy quality seed. Check the weed seed content on the label. Quality seed includes no more than .05 percent weed seed.

Testing Your Soil

If your lawn is not healthy and dense, it may need fertilizer. Use the fertilizer that is most effective and efficient for the type of soil you have. First, therefore, you need to know about the composition of your soil—its pH, nutrient content, and texture.

The pH reading indicates soil acidity or alkalinity. The best pH levels for growing healthy grass range from 5.5 to 7.7 depending on species. Most frequently, soil pH is found to be too low—or too acidic—which means the soil needs an application of limestone. However, continually applying lime without testing the soil can result in a pH that is too high. Lowering the pH back down to the optimal range will then require the addition of sulfur or iron sulfate.

A soil test provides you with information about your soil's composition. Call the Home and Garden Information Center at 1-800-342-2507 to obtain a soil test kit. It arrives by mail, with instructions about how to take a soil sample and how to send it to the soil-testing laboratory. The lab's soil test results tell you if you need to apply nutrients. If so, the lab recommends what minerals you need to add to enable your soil to reach the proper pH level and what type of fertilizer you need to buy.

It's a good idea to have your soil tested every 3 to 5 years.

A Proper Feeding Program

Fertilizer is sold according to its content of the three nutrients most essential to the growth of grass and other plants: nitrogen, phosphate, and potash. Nitrogen promotes a dark green color as well as growth. Phosphate supplies phosphorus, which promotes strong

root growth. Potash supplies potassium, which helps grass withstand stresses such as drought or disease. The chemical symbols for the three nutrients are N for nitrogen, P_2O_5 for phosphate, and K_2O for potash. Fertilizer packages are labeled with three numbers that indicate the percentage by weight of nitrogen, phosphate, and potash in that order.

The addition of phosphorus and potassium may not be necessary every year. Most lawn grasses need to have some nitrogen added annually in order to insure proper growth and resistance to pests.

Too much fertilizer, and/or fertilizer applied at the wrong time, can harm your lawn instead of helping it. Excess fertilizer causes rapid, lush growth, which is susceptible to diseases and attractive to pests.

Nitrogen: Slow Release or Quick Release?

Fertilizer is either water soluble (quick release) or water insoluble (slow release), and using the right type can affect grass growth. The result of using slow-release fertilizer instead of quick release is more uniform plant growth, less chance of injury to grass, and less potential for nitrate leaching.

The difference between the two types of fertilizer is the fertilizer's source of nitrogen. Fertilizer from water-insoluble sources—more accurately termed “controlled-release” sources—provides nitrogen over a longer period than fertilizer from soluble sources.

Slow-release nitrogen comes from these sources:

- Materials made from manure, sewage sludge, or composted plant or animal products; provides very low to around 10 percent nitrogen
- Sulfur-coated urea—4 to 38 percent nitrogen
- Resin-coated urea—24 to 35 percent nitrogen

- IBDU (isobutylidene diurea)—30 to 51 percent nitrogen
- Ureaformaldehyde and methylene ureas—20 to 38 percent nitrogen

Ammonium nitrate, ammonium sulfate, and urea are quick-release forms of nitrogen. These sources produce growth quickly but for a shorter period of time compared to slow-release fertilizers. *Fertilizers with at least 33 percent slow-release nitrogen combined with quick-release nitrogen are recommended for turf.* Ammonium nitrate is not recommended for turf. If you are using straight urea or ammonium sulfate, apply no more than 1 pound of nitrogen per 1,000 square feet in any one application.

Determining the Percentage of Controlled-Release Nitrogen (CRN)

A bag of 20-10-10 fertilizer may supply the following information on its label, under the heading “Guaranteed analysis”:

Total nitrogen	20 percent
Controlled-release nitrogen (often known as water-insoluble nitrogen)	8 percent
Available phosphates	10 percent
Water-soluble potash	10 percent

A soil test is a simple, inexpensive way to take the guesswork out of lawn care.

To calculate whether fertilizer contains at least one-third slow-release nitrogen—making it a good fertilizer for turf and the bay—divide the percentage of controlled-release nitrogen by the percentage of total nitrogen and multiply by 100. See the formula below. In this case the result is (8 percent ÷ 20 percent x 100) 40 percent. This fertilizer contains 40 percent CRN; therefore, it is considered a slow-release nitrogen source.

$$\frac{\% \text{ CRN or WIN}}{\% \text{ Total Nitrogen}} \times 100 \text{ or } \frac{.08 \times 100}{.20} = .40 \text{ (40 percent)}$$

Fertilizer Timing

Fertilize cool-season grasses (fescues, bluegrass, rye-grass) primarily from September through November. Fertilizing during this period enables grasses to recover from summer stresses. Late summer/early fall applications may reduce runoff and leaching potential because rainfall patterns, temperature, and plant growth rate tend to maximize nitrogen uptake. Fertilize warm-season grasses (zoysia-grass and Bermudagrass) in early summer when they are growing most actively. A basic fertilizer plan appears in Figure 1 on page 4.

Fertilizer and Water Quality

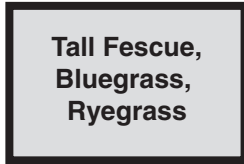
Normally, fertilizer does not threaten groundwater or surface water when applied to a healthy lawn at recommended rates. If your soil is sandy or if you live in an area with a high water table, however, try to use a slow-release nitrogen source and do not apply more than 1 pound of nitrogen per 1,000 square feet in any one application.

The large amount of paved area in cities and suburbs provides a direct route for nutrients and other pollutants to enter streams, rivers, and the Bay. Careful application of fertilizer is one way you can prevent pollution. Follow these tips to make sure the fertilizer you use remains on the lawn and out of the water:

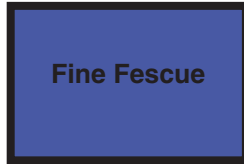
- Try to keep fertilizer off paved surfaces (surfaces that do not absorb water). If granular fertilizer gets onto paved surfaces, collect it for later use or sweep it onto the lawn.
- Use a drop spreader instead of a rotary spreader in restricted spaces, especially when fertilizing near water, driveways, or sidewalks. (Illustrations of drop and rotary spreaders appear on page 6.)
- Calibrate your spreader to make sure you are not overapplying fertilizer.
- Fill and wash spreaders over grassy areas, not on surfaces that do not absorb water.
- Avoid getting fertilizer into natural drainage areas on your property.
- Never apply fertilizer to frozen ground or dormant lawns.
- Do not use fertilizer to melt ice and avoid ice-melting products that contain nitrogen. For more information, refer to

Basic Fertilizer Plan

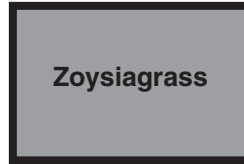
Pounds of Nitrogen per 1,000 sq. ft.



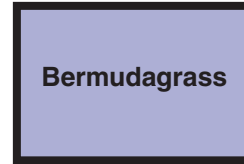
2 lbs. each year -
1 lb. in September
and 1 lb. in
October



1 lb. in October



1 lb. in June



1 lb. in June
1 lb. in July

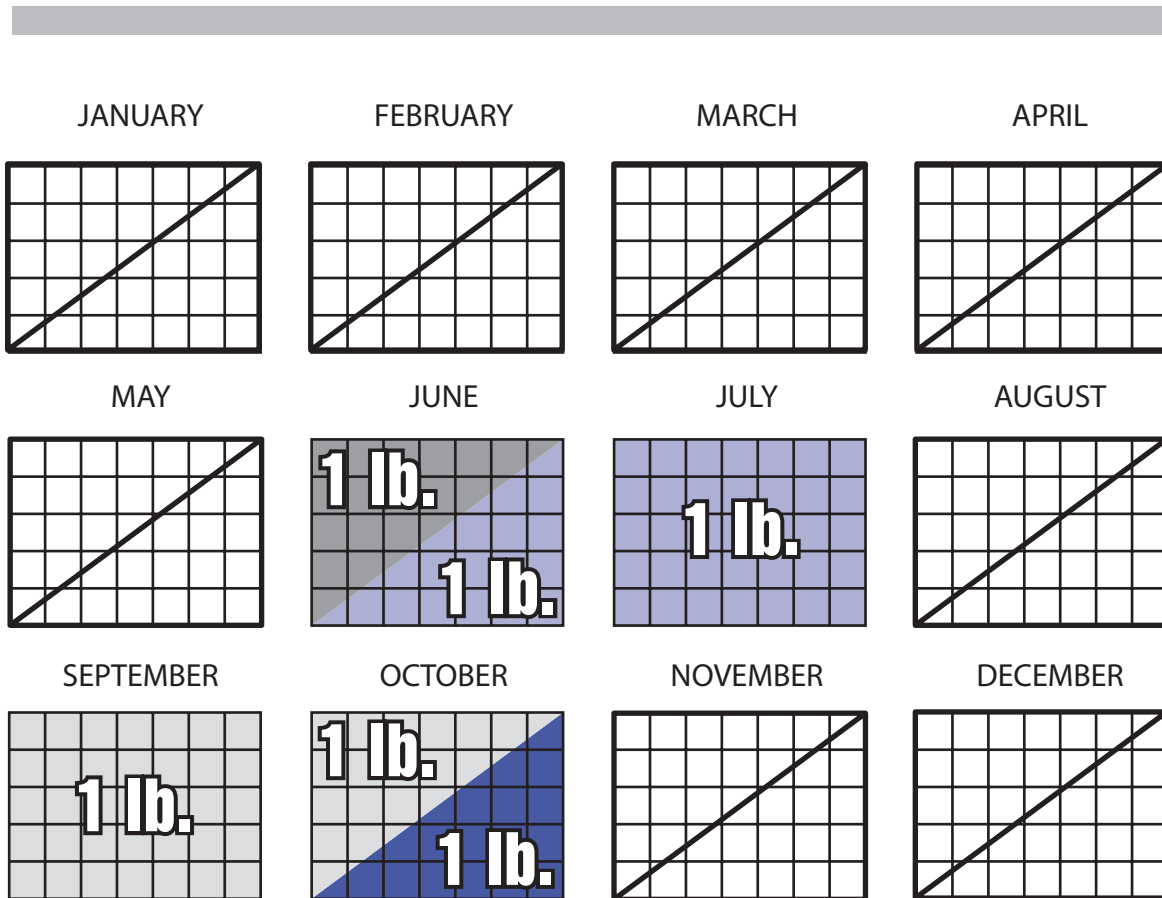


Figure 1.

Optional Additional Applications

Pounds of Nitrogen per 1,000 sq. ft.

<p>Tall Fescue, Fine Fescue</p>	<p>Bluegrass, Ryegrass</p>	<p>Zoysiagrass</p>	<p>Bermudagrass</p>
<p>1/2 lb. to 1 lb. in late April to early May</p>	<p>1/2 lb. to 1 lb. in November and/or 1/2 lb. to 1 lb. in late April to early May</p>	<p>1/2 lb. to 1 lb. in July</p>	<p>1/2 lb. to 1 lb. in August</p>

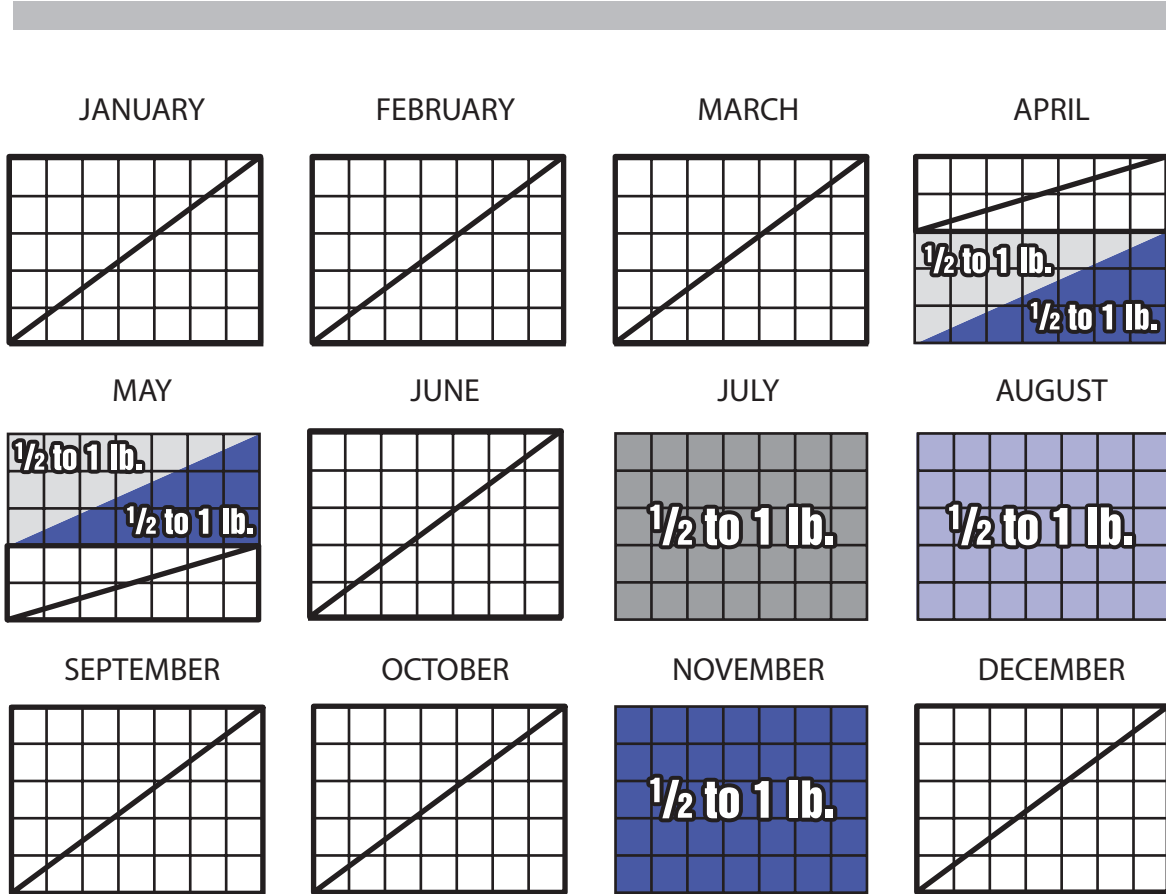


Figure 2.

the Home and Garden Information Center's Fact Sheet 707 on ice melting products.

Optional Applications of Fertilizer

The fertilizer plans listed in Figure 1 are generally the minimal amounts of fertilizer needed for maintaining mature lawns in Maryland. To maintain density and resist pest problems, tall fescue and particularly Kentucky bluegrass may need moderate additional applications of fertilizer. The optional applications in Figure 2 may help your lawn if:

- clippings are removed (see below);
- a severe crabgrass problem exists;
- the lawn is heavily used;
- pest or other damage is present;
- the lawn is new (3 years old or less).

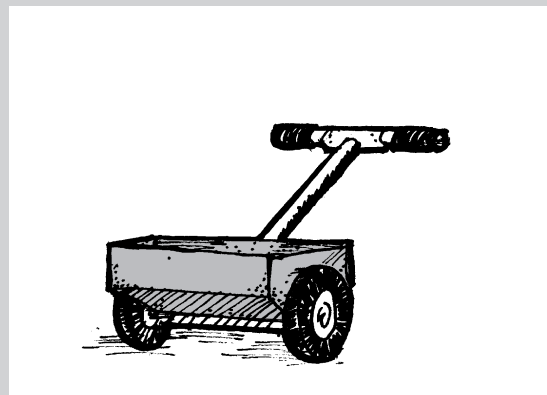
Don't forget that practices that keep lawns healthy, like proper mowing, can also reduce the need for fertilizer. If you apply fertilizer in November or late spring, consider using a slow-release fertilizer.

Mowing and Grasscycling

Cutting grass to a low height and infrequent mowing are major causes of lawn deterioration. It is best to remove no more than one-third of the length of the grass blade each time you mow. For example, to maintain a 3-inch height, do not let the grass get much taller than 4 inches. Mowing to the proper height can reduce weed problems by as much as 50 to 80 percent. See Table 1 to find the proper height for grasses grown in Maryland.

Table 1. Guide to Mowing Grass to the Proper Height.

Type of Grass	Height in Spring & Summer	Height in Fall & Winter
Tall Fescue	2½–3½ in.	2½ in.
Perennial Ryegrass	2½–3 in.	2–2½ in.
Kentucky Bluegrass	2½–3 in.	2–2½ in.
Fine Fescue	2½–3½ in.	2½ in.
Bermudagrass	½–1 in.	½–1 in.
Zoysiagrass	½–1 in.	½–1½ in.



Fertilize medium to small areas of lawn with a **drop spreader**. It distributes fertilizer precisely between its wheels. It takes longer to apply fertilizer with a drop spreader than with a rotary spreader. The advantage of accuracy, however, should far outweigh the advantage of time.



Fertilize large areas of lawn with a **rotary spreader**. It distributes fertilizer in a swath several feet wide. This enables you to cover an area in fewer passes than if you used a drop spreader. However, you don't have as much control over placing fertilizer within specific boundaries as you do with a drop spreader.

Leave grass clippings on the lawn; this recycles nutrients, conserves water, and saves you time. If you grasscycle for 2 years or longer, you may be able to lower the amount of nitrogen fertilizer you use by 25 percent or more. Try to keep grass clippings and other

Unless you have bluegrass, it is safe to let an established lawn go dormant during dry periods. Dormancy is a survival mechanism and your lawn will usually recover when rainfall returns. Dormant lawns continue to protect water quality by holding soil and potential pollutants.

lawn debris out of street gutters. If washed away with storm water, the debris can add nutrients to surface water.

Watering

Once you have an established lawn, water only when needed rather than according to a schedule. Water if the grass develops a blue-gray color or when walking on the grass leaves footprints. Water slowly, preferably in the early morning. Wet the soil to a 4- to 6-inch depth. You can check the depth with a screwdriver. Shallow and infrequent watering or watering in the evening can damage your lawn. Do not allow water from a sprinkler or hose to run onto paved surfaces.

References

- Virginia Cooperative Extension. 1994. "Easy Reference of Sustainable Landscape Management and Water Quality Protection."
- McCarty, L.B., and J.B. Sartain. 1995. "How to Calibrate Your Fertilizer Spreader. Florida Lawn Handbook. University of Florida, Institute of Food and Agricultural Sciences.
- Turner, T. 2001. AM 77-Turfgrass Cultivar Recommendations for Certified Sod and Professional Seed Mixtures in Maryland. University of Maryland Cooperative Extension.
- University of Wisconsin-Extension. 1993. "Yard Care and the Environment Series."

**Contact the
Home and Garden Information Center
by phone at 1-800-342-2507
or on the Web at www.hgic.umd.edu.**

LAWNS AND THE CHESAPEAKE BAY

by
Thomas R. Turner
Turfgrass Specialist
Department of Natural Resources and Landscape Architecture
University of Maryland
and
Peter J. Ricciuti
Faculty Extension Assistant
Home and Garden Information Center

Revised by
Wanda MacLachlan
Extension Educator
Environmental Management

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, University of Maryland, College Park, and local governments. Thomas A. Fretz, Director of Maryland Cooperative Extension, University of Maryland.

The University of Maryland is equal opportunity. The University's policies, programs, and activities are in conformance with pertinent Federal and State laws and regulations on nondiscrimination regarding race, color, religion, age, national origin, gender, sexual orientation, marital or parental status, or disability. Inquiries regarding compliance with Title VI of the Civil Rights Act of 1964, as amended; Title IX of the Educational Amendments; Section 504 of the Rehabilitation Act of 1973; and the Americans With Disabilities Act of 1990; or related legal requirements should be directed to the Director of Human Resources Management, Office of the Dean, College of Agriculture and Natural Resources, Symons Hall, College Park, MD 20742.

The Chesapeake Bay Trust provided total funding for this publication.

V2003