

A lush green lawn is as American as apple pie, but usually it comes at a huge environmental and public health cost. It doesn't have to be that way. An attractive lawn can be achieved without excessive fertilizer, water, or labor. If you care about protecting water quality, this brochure will teach you some of the best ways to make small changes in your lawn-care routine to reduce pollution in your local streams and the Chesapeake Bay.

Did you know?
There are 3 million acres of turf in the Chesapeake Bay watershed. Half of all lawns are fertilized, mostly with synthetic chemical fertilizers; half of those lawns are overfertilized.
(Source: Center for Watershed Protection survey)

Steps for Healthy Lawns and a Healthy Bay

1. Test your Soil: Find Out What Your Lawn Needs

Testing is one of the most important lawn care steps, and one of the most frequently ignored. Soil test bags and supplies can be obtained from your local Cooperative Extension office or one of their recommended laboratories (go to cbf.org/landscaping for more information).

- Take soil samples in mid to late spring or in the early fall, if possible.
- Ask for organic recommendations.
- Use natural (animal- or plant-based), slow-release fertilizers instead of synthetic, water-soluble fertilizers, if nitrogen is recommended. (Remember: the maximum amount of nitrogen is: 1 lb. nitrogen per 1,000 square feet in any given application).

Disease
Fungal diseases are encouraged by high nitrogen fertilizers and excess water applied to lawns. They can usually be corrected by following Steps 1-4.

- Apply lime (preferably calcitic limestone) to raise soil pH; apply iron sulfate or sulfur to lower the pH. (The ideal soil acidity range is 5.8-6.5.) Sometimes just adjusting the pH will take care of many lawn problems, such as sparse growth or weeds.

Some frequently used fertilizer terms can be confusing (which is why they may also be intentionally misused by lawn care companies and fertilizer manufacturers):

- Natural — products derived from nature (opposite of synthetic)
- Organic — products made from plant, animal, or mineral sources
- Organic-based — products containing some naturally occurring ingredients
- Synthetic chemicals — man-made products created in the laboratory, often petroleum-based

2. Feed the Soil to Feed the Lawn: Fertilizers and Compost

Healthy soil is teeming with life, and both fertilizer and compost feed the billions of bacteria, fungi, worms, and microscopic organisms that make nitrogen and other nutrients available to feed your grass. By using compost, you are also recycling materials and nutrients that might otherwise end up in landfills or be disposed of improperly.



Compost should be barely visible after it is raked and spread over your lawn.

Grass will take up fertilizer in any form, whether it is natural, organic, slow release, or quick release. What matters is the effect of those fertilizers on the groundwater and the Bay.

Compost tea has beneficial aerobic bacteria and fungi to feed lawn grass and other plants in your garden.

Fill a 5-gallon plastic bucket halfway with high quality compost. Add 2-3 tablespoons of molasses, brown sugar, or corn syrup. Add water or rain water to the top. Stir mixture every day for 1 week (or use an aquarium stone to aerate the mixture). Apply with a siphon attached to a hose, or use a watering can. Apply in spring, late summer to early fall, and in late fall.



BEST: Natural Organic Fertilizers

(examples: chicken manure, composted leaves)

These fertilizers act slowly to feed the grass, won't burn plants, and enrich the soil with organic matter.

Applying Natural Organic Fertilizers

- Top-dress your lawn with 1/8-1/4" layer of sieved compost in the spring and in the late summer. Compost can be either animal manure or plant-based, but make sure it is of high quality. You can purchase it in bags from garden centers or buy it in bulk and have it delivered. Try to find a local source, if possible.
- Apply compost tea (compost steeped in water) every two months during the growing season (March-November). See box, below left, for more information.
- Use soil amendments, such as bonemeal, greensand (a marine mineral), and animal manures. They contain calcium, magnesium, zinc, and other micronutrients needed for healthy soils and plants. See product instructions for recommended application rates.

NEXT BEST: Slow-Release or Controlled-Release Fertilizers

These fertilizers are petroleum-based, but they are coated with sulfur or resins to break down slowly and provide nitrogen to plants over a long period of time. They have less chance of polluting waterways or leaching into groundwater.

LAST RESORT: Synthetic Quick-Release Fertilizers

The problem with synthetic fertilizers:

- Because they are water soluble, much of the material can be washed away if applied before a heavy rain.
- Synthetic chemical fertilizers add no organic matter to support earthworms and soil microorganisms (fungi and bacteria) that contribute to healthy soil.
- Many formulations come with weed killer, pesticides, and other toxic ingredients—so your lawn is doused with these chemicals whether or not your lawn has weed or pest problems.

Before laying down topsoil for a new lawn, have the soil tested and incorporate compost thoroughly into the mix before spreading. Minimum depth of soil should be 6".

3. Mow High and Leave the Grass Clippings on the Lawn

Raise the blade on your mower so that you cut the grass 2 1/2" to 3 1/2" high—this ruler can serve as your guide. Most homeowners stress and damage their lawns by cutting too close to the ground.

Taller grasses:

- shade out weeds and help prevent their germination;
- allow roots to reach deeper, improve water infiltration, reduce runoff; and
- stay green longer during drought.

After mowing, leave the grass clippings on the lawn. These cuttings provide up to half of the nitrogen your lawn needs each year. And it's free!

**Sizing up your lawn:
How tall should
you let your grass grow?**

IDEAL RANGE



If You Use a Lawn Care Company

Here are some questions to ask:

Do they test the soil first? (By law, they must do soil tests in Maryland.)

Will they share the results with you?

What pesticides, herbicides, and fungicides do they routinely use? Or do they use Integrated Pest Management (IPM): Identifying the pest/problem first and then using the safest control methods possible?

(If they won't tell you, hire another lawn care company.)

Will they provide custom treatment based on your site conditions?

Do they have slow-release fertilizer options? Do they apply compost and/or compost tea?

If you are considering hiring a lawn care service, seek out "natural" or "organic" lawn care companies, and ask the same kinds of questions.

Common Errors in Applying Fertilizer

Applying without first getting a soil test

Applying too much fertilizer (at higher than recommended rates)

Applying to a lawn that is not actively growing

Applying at the wrong time of year

Applying just before heavy rain is forecast

Applying to hard surfaces like sidewalks, driveways, and streets

Applying with a rotary spreader (a drop spreader offers better control)



CHESAPEAKE BAY FOUNDATION

Saving a National Treasure

Chesapeake Bay Foundation Maryland

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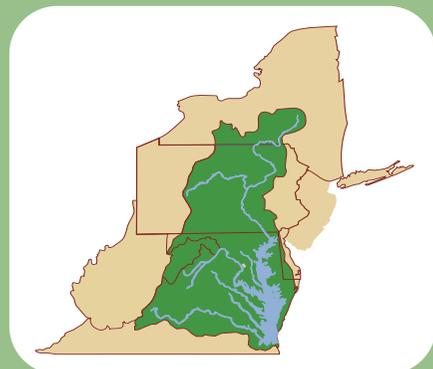
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CHESAPEAKE BAY WATERSHED



The Chesapeake Bay's 64,000-square-mile watershed covers parts of six states and is home to more than 17 million people.

4. Pick the Right Grass Seed

The Chesapeake Bay watershed is in a transition zone between warm season and cool season grasses. Accordingly, most of the seed available commercially is made up of non-native cultivars (species cultivated specifically for drought resistance and other traits).

Recommended Cultivars, Mowing Heights, and Fertilizer

(source: University of Maryland Cooperative Extension)

Type of Grass	Mowing Height (inches)		If Recommended, Apply Slow-Release Fertilizer*
	Spring/Summer	Fall/Winter	
Tall Fescue	2.5-3.5	2.5	Sept/Oct
Fine Fescue	2.5-3.5	2.5	Oct
Perennial Ryegrass	2.5-3	2-2.5	half in May half in Nov
Kentucky Bluegrass	2.5-3	2-2.5	half in May half in Nov
Bermudagrass	0.5-1	0.5-1	June, July
Zoysiagrass	0.5-1	0.5-1.5	June

*In place of slow-release fertilizer, compost may be applied in spring and late summer.

5. Watering your Lawn

Summer droughts matched with high temperatures are not uncommon in the Bay watershed, so *consider letting your lawn go dormant in the summer.* (Dormant grass will begin to brown at the top, but will retain healthy roots.) Once the rain and cooler temperatures return in the fall, your lawn will regain its green luster.

If you do choose to water:

- water only as needed (dig 6" down and check moisture levels in the soil);
- water in the morning to reduce evaporation and the spread of disease;
- water slowly and deeply; and
- if you use automatic sprinkler irrigation, make sure it has sensors to turn off automatically when moisture levels are adequate.

Beneficial Pollinators

With concern about dwindling honeybee and insect-pollinator populations comes the opportunity for every landowner to help these insects and the Bay: Reduce lawn area by planting native flowering plants and shrubs that provide both nectar and habitat.



6. Deal Safely with Common Lawn Problems

Weeds

Whether native or non-native, beneficial or invasive, sparse or plentiful, weeds are plants that are growing in the wrong place. They can also be a sign that your soil has low fertility, has a low or high pH, is compacted or is stressed in other ways. By adding compost and soil amendments, you can change the conditions of the soil to improve grass growth and inhibit weeds. Non-toxic weed-control methods:

- Remove weeds with a shovel or hand tools.
- Spray with 10%-strength vinegar solution or "acetic acid." (Regular household vinegar may also be used but it is not as strong and repeat sprayings may be needed). Vinegar solutions can kill all plants so be careful where you spray.
- Burn weeds with a propane torch.
- Spread corn gluten on established lawns to prevent weed seeds from germinating in early spring. Corn gluten contains nitrogen, so take this into account when determining fertilizer needs.

Is This Really a Weed?

White clover is a legume that naturally adds nitrogen to the soil.

Moss is a beautiful ground-cover that grows well in shady, moist environments where grass doesn't thrive (and you don't have to mow it very often).



Insects and Animal Pests

Moles eat Japanese beetle grubs and other subterranean insects that can damage your lawn. They also aerate the soil with their tunnels, so think twice about eradicating them with traps or poisons. If you see tunnels, tamp them down with a hoe or by walking on them.

Voles are another small rodent that make tunnels, but they feed on the roots of all kinds of plants, not lawn grasses. You can reduce their habitat by cutting very tall grasses and using thin layers of mulch.

ABOUT THE COVER:
Tall, healthy grass provides a scenic setting at CBF's Holly Beach Farm in Annapolis. A swallowtail butterfly gathers nectar from a flowering Ironweed.
© Marcy Damon/CBF Staff

PHOTO CREDITS:
Inside front cover: Getty Images
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7. Minimize Pollution from Lawn Equipment



A non-motorized push mower protects the environment, maintains your lawn, and provides a healthy workout.



On this slope, mulch and fallen leaves protect the soil and serve as natural groundcover so that you can mow less.

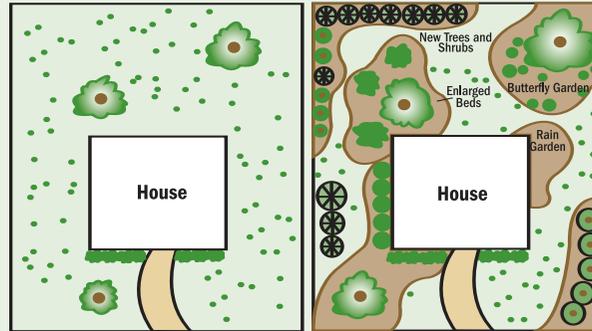
Gas-engine lawn mowers, trimmers, edgers, and weed whackers are often overlooked as sources of air pollution in the Bay watershed. A push-mower used for one hour produces as much air pollution as 10 cars driven for the same amount of time. Hundreds of thousands of gallons of fuel are also spilled each year when mowers are refilled.

Evaluate the size of your lawn and adjust your equipment and usage to fit your needs.

- Consider using a manual mower or rechargeable electric mower. Do you really need a lawn tractor when a small push mower will do the job?
- Think about buying a new mower. 4-stroke engines are more efficient and pollute less than 2-stroke engines.
- Keep the mower blades sharp to reduce stress on grass blades. Sick grass makes the lawn susceptible to insects and diseases.
- Evaluate your equipment and don't forget simple tools that work well and don't pollute: A shovel is ideal for edging and bamboo rakes are perfectly designed for gathering up leaves.

8. Reduce your Lawn

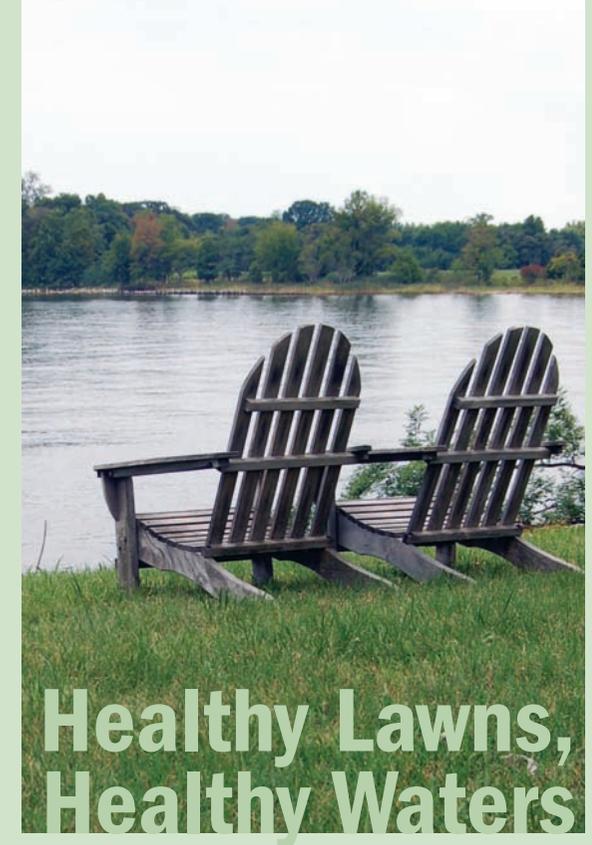
Vast expanses of lawn often become the default for landscaping when homeowners don't know what else to do with their property. But how much of the lawn do you actually use? Are there better ways to beautify your yard?



Reduce your lawn and increase native plant and wildlife diversity by following these steps:

- Enlarge flower and shrub beds using the “lasagna approach:” mow the lawn at the lowest setting and lay 5-6 sheets of newspaper down, cover with 2” of mulch, cut holes in the newspaper, and plant flowers and shrubs through the newspaper.
- Extend mulched areas around trees to create tree “islands,” and mix in a few native shrubs to add variety.
- Don't grow grass under trees (it competes with the trees for moisture and nutrients); lay down mulch or chopped leaves instead.
- On slopes, plant shrubs or clumping, no-mow native grasses such as switchgrass; their deep roots will hold soil and reduce runoff. Mowing on steep slopes can also be dangerous.
- In wet areas and near downspouts, create a rain garden or small wetland garden by planting native species of wetland plants and shrubs.
- Plant grass substitutes and native groundcovers like Allegheny pachysandra, Pennsylvania sedge, or purple lovegrass, that require little or no mowing.

For more resources and information, go to cbf.org/landscaping.



Healthy Lawns, Healthy Waters

A GUIDE TO EFFECTIVE LAWN CARE
FOR THE CHESAPEAKE BAY WATERSHED



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Saving a National Treasure