



Maine Organic Farmers and Gardeners Association

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MOFGA FACT SHEET # 7

Establishing and Caring for an Organic Lawn

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Revised February 2016

The cool climate of Maine favors healthy lawns. The grass will grow lush and with few problems as long as basic plant needs are met, including proper soil fertility, soil structure, soil organic matter and proper watering and mowing.



No synthetic pesticides or fertilizers are needed for a quality lawn.

No synthetic pesticides or fertilizers are needed for a quality lawn, and such synthetic chemicals can pollute bodies of water and harm wildlife, from beneficial insects to worms, fish, birds and others. Unfortunately, according to the Maine Board of Pesticides Control, more than 6.2 million pounds of yard care pesticides were brought into Maine in 2007 – a seven-fold increase since 1995 that coincided with an equal explosion of yard care companies in Maine. The trend reversed in 2011, when yard care pesticides brought into Maine dropped to 5.7 million pounds. You can help continue this decrease by growing a lawn without using pesticides or by hiring an organic lawn care company.



Pesticide-free lawns benefit all living things.

Establishing a New Lawn

A new lawn can be started in Maine almost anytime between early spring and mid-September.

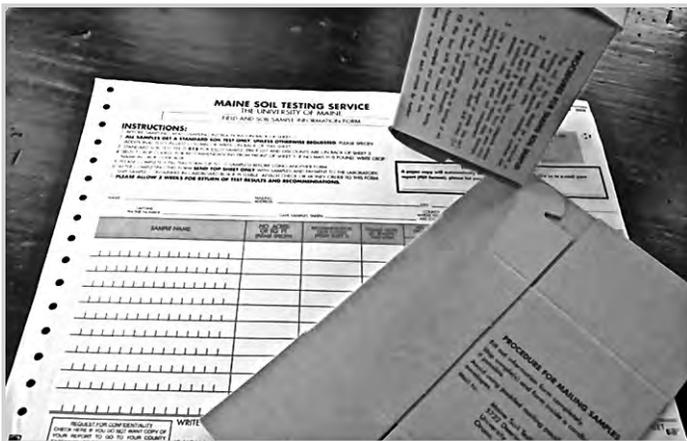
Soil Preparation

Good soil preparation is important for quick establishment of lawn grasses. The soil surface should be smooth, without humps that will be shaved by the mower or dips that will collect water. If the topsoil has been removed, then 6 inches of new topsoil should be added. This equals 372 cubic yards of topsoil per quarter acre (or 34 cubic yards per 1,000 square feet). If the soil is mostly sandy, gravelly or clayey, incorporate organic matter to improve soil structure and, in sandy and gravelly soils, to help hold water and nutrients. For each 1,000 square feet of lawn, add 4 cubic yards of compost, well rotted manure or well rotted leaves. Aim for 5 to 7 percent organic matter.

Liming and Fertilizing

To determine lime and fertilizer needs, have your soil tested. Obtain a soil test kit (a small cardboard box and a paper form) from your county University of Maine Cooperative Extension office (listed at <http://extension.umaine.edu/county-offices/>). Note on the form that you want organic recommendations for a lawn. Test results will come back to you with recommendations for lime and nutrient amendments. MOFGA Fact Sheet #11, Natural Sources of Plant Nutrients, details how to use organic amendments to meet soil needs.

Nitrogen requirements can be met with compost, manure, or seed meals such as soybean meal. Future nitrogen require-



A soil test kit from the University of Maine Cooperative Extension

ments of established lawns are best met by including white clover into the lawn species mix. Phosphorus and potassium needs are most commonly met with rock phosphate and Sul-Po-Mag, respectively. Calcium and magnesium needs are usually met by the limestone applied when adjusting soil pH. (A pH 6.0 to 6.5 is good for most lawns.) Also, many commercial, bagged, mixed organic fertilizers and composts are available at garden centers.



Compost adds nutrients and organic matter to soils.

If you adjust the soil pH and fertility with organic amendments when establishing the lawn, minerals will seldom have to be added later, unless you remove them by removing grass clippings when mowing. Also, raising the soil pH to 6.0 to 6.5 will favor lawn grasses over many weeds.

Tilling

Mix any recommended fertilizer, limestone and organic matter into the top 6 inches of soil by plowing and rototilling, but do not till excessively, as the beating action may destroy soil structure.

After tilling, wait two weeks for weed seeds to germinate, then till again to kill them. Plant after the second tilling unless a heavy crop of weeds has emerged. In this case, wait two more weeks and till again before planting.

Seeding

Choose grass varieties that are adapted to the conditions of sun or shade, amount of foot and vehicle traffic, water and soil type on your site.

The three principal grass varieties used in the Northeast are Kentucky bluegrass, fine fescues and perennial ryegrasses. Perennial ryegrass is not hardy enough to survive Maine winters but is sometimes added to grass mixtures because it starts growing quickly and offers cover to the other varieties before they get established.

In areas receiving full sun, Kentucky bluegrass, which is best adapted to bright sunlight, should make up at least 75 percent of the mix.

Fine-leaved fescues tolerate shade and should make up at least 65 percent of a shade mix.

White clover, a legume, associates with bacteria that “fix” nitrogen from the atmosphere – i.e., they convert the abundant nitrogen gas in the atmosphere into a form plants can use. So adding white clover to a grass mix helps maintain soil fertility. Clover also stays green during moderate droughts and helps the lawn continue to look good then; and clover flowers support bees. Microclovers for lawns are also becoming more available.

A general mix for a partially shaded lawn is

- 50 percent Kentucky bluegrass
- 30 percent red fescue
- 15 percent perennial ryegrass
- 5 percent white clover

Fedco (www.fedcoseeds.com) sells this as “CR Lawn Mix,” an “all-purpose grass seed mixture for the Northeast.”

A quality grass mix should state on the bag that the germination rate is more than 85 percent and that the percentage of weed seeds is near zero. It should contain little or no annual ryegrass, which greens up quickly but doesn’t overwinter and is often included in cheap seed mixes.

Endophyte-inoculated ryegrass or fescue supports a beneficial fungus that produces alkaloids that reduce disease and insect infestations, increase drought resistance, and reduce fertilizer and pesticide needs. But these fungal-enhanced grasses are



Lawns that include clover can be self-sufficient in nitrogen fertility – and can support biodiversity.

toxic to livestock and grazing wildlife, so do not use them where you may keep animals someday.

If an area receives less than four hours of sun, plant a shade-tolerant groundcover rather than grass, or mulch the area.

High traffic areas need extra attention or a different surface.

Spread 1/2 to 1 pound of grass seed mixture per 1,000 square feet, or double this rate if weed seeds are abundant. If seed is sown too thickly, plants will be overcrowded and more prone to disease. If sown too thinly, weeds can invade.

To distribute seed evenly, spread half in one direction, overlapping the spread by half on each pass. Then spread the second half in a direction perpendicular to the first. Be sure the seed has good contact with the soil by raking it in lightly and firming the ground with a light roller.

Spread 1/4 inch of compost or weed-free hay or straw over the seed and water lightly. Water at least daily until plants have taken hold.

A lawn may take a year to become fully established.

Maintaining a Lawn

Spring

Rake the lawn to remove any heavy layers of leaves and other debris.

Seed thin or bare areas, following the seeding directions above.

Successful organic lawn management depends on regular mowing to the correct height. Mow to a height of 2 inches for the first mowing to stimulate growth and to 3 inches or higher after that. Remove no more than one-third of the leaf surface at each mowing, as removing more leads to excess water loss. So, for a 2-inch target height, mow when the grass is 3 inches tall; for a 4-inch target height, mow when the grass is 6 inches tall.

Longer grass blades create deeper roots, which access water and nutrients better, reducing the need for additional water and fertilizer. Longer grass blades also shade out weeds. In a 1-inch-tall lawn, dandelions and crabgrass become established readily, but in a 2- to 2.5-inch-tall lawn, dandelions won't germinate and crabgrass will suffer from competition.

Don't mow so low that the meristems (growing points) of grass plants are removed. Such "scalping" will kill a lawn. Low mowings also weaken or kill most cool season grasses in hot, dry weather.

Try to change the mowing direction each time you mow.

Leave clippings on the lawn. They do not cause thatch, and they do recycle nutrients and organic matter. This recycling, combined with deeper rooting of taller grasses and inclusion of clover, eliminates the need to fertilize lawns. Do not allow the grass to grow too tall, however, since excess clippings can smother a lawn. If you find that you have to mow more than once each week because your grass is growing too tall, you may have applied too much nitrogen fertilizer.

Professionals sharpen blades every 8 hours. Homeowners may find once per season more reasonable. Sharp blades make lawns appear neater and reduce susceptibility to diseases.

While a tall (2-1/2- to 3-inch), thick turf is the best defense against weeds, weeds are still likely to appear here and there. Pull them by hand as they appear and before they go to seed to keep them from spreading. If weeds are extensive or a large area needs to be weeded, consider using a tool such as a Punto Eco-weeder (<http://www.chemfree-weed-control.com/chemical-free-weedcontrol/>), which burns weeds (roots and all), or a long-handled Weed Hound (<http://www.hound-dog.com/products/detail.aspx?ProductId=1392&LineId=171>), which pulls weeds.

Understanding the life cycle of a weed will help with its control.

- Crabgrass is an annual that develops from seeds each year. Some of the seeds may stay in the soil for many years, waiting for an opening or thinning in the stand. Crabgrass will not tolerate shade. A sufficiently dense turf cut no shorter than 2 inches retards crabgrass growth. If seed production is prevented for two years, the supply of viable seeds in the soil will diminish dramatically.
- Chickweed may act as a winter annual, germinating in late summer, growing for a while and then becoming dormant for the winter. In spring it resumes growth and produces seeds. Chickweed may also act as a typical summer annual. Sufficiently thick, tall grass and clover may smother it. Hand pull as soon as it appears in your lawn and before it goes to seed.
- Dandelion, a broadleaf perennial, is one of the most common weeds in North America. It is difficult to control because of its deep taproot, any part of which may sprout new leaves if left in the ground. Tall, sufficiently thick turf discourages dandelions. When pulling, use a tool to dig out the root. For a typical lawn, do not let dandelions go to seed. Note, however, that dandelions can bring diversity to a lawn, providing pollen and nectar for bees, and greens for the kitchen.



Dandelions add diversity to a lawn, supporting pollinators and providing greens.

Avoid fertilizing lawns in spring, as spring fertilization promotes shoot growth at the expense of roots and promotes weed seed germination. In fact, a green lawn may be achieved without adding fertilizers or lime (and certainly without toxic synthetic pesticides); the plant composition adjusts to nutrient availability. If properly mowed, such a lawn looks acceptable to most from a distance. Lawns exist that are decades old and have never been fertilized and don't seem to suffer from chlorosis (yellowing) if the root depth, soil structure (and lack of compaction) and soil moisture are within acceptable ranges.

Summer

Mow as infrequently as possible (but often enough to remove only one-third of the growth) and with the blade set as high as possible.

Lawns rarely need to be watered in Maine, and MOFGA supports water conservation. When the top 2 inches of soil is dry, let the lawn go dormant (it will green up again in fall) or water deeply – once per week with 1 inch of water, or enough water to wet the top 6 inches of soil. During or just after a light rain is a good time to irrigate, and watering in the morning is best so that foliage dries during the day. Evening or night watering promotes disease because the lawn stays damp all night. You can measure the amount of irrigation water applied by putting a shallow container under the sprinkler to see when an inch of water has accumulated in the container. Infrequent but heavy watering promotes deeper rooting (which leads to less need for watering) and fewer disease problems than frequent, shallow watering. Frequent, shallow watering leads to weak turf that weeds will out-compete and may cause fungus problems.

Note that new lawns should be watered whenever they become dry, until they are well established.

If you think your lawn needs more nitrogen, do not apply it now; midsummer applications of N promote crabgrass.

Late August to Early September

Check the soil pH if you haven't done so in the past five years and add lime if necessary.

Aeration can double the rooting depth of lawns. Many garden centers rent aerators, which pull small plugs of soil from lawns. Aerate every one to three years on residential lawns, especially if they are in poor condition or get a lot of foot traffic. Aerate in the fall, when lawns are less susceptible to weeds. Intensively managed turf, such as that used for athletic fields, should be aerated several times each year. Soil should not be too wet or dry when aerated. Water dry soils well the night before aerating. Holes should be about 6 inches deep, about 50 to 100 per square yard. Organic lawns that aren't used heavily will eventually be aerated by earthworms.

Reseed any bare or thin spots. Topdress if necessary – for example, if the lawn is less than 10 years old or if a soil test indicates nutrient deficiencies.

Fertilize low-maintenance lawns once each year, in late August or in September (or not at all; see below). Typical fertilizer recommendation can be met organically:

Nitrogen (N) Typical recommendation: 2 pounds/1,000 square feet – Meet by leaving clippings in place and topdressing with 1/4 inch of compost (100 pounds or 3/4 yard per 1,000 square feet) and 11 pounds/1,000 square feet of soybean meal.

Phosphorus (P) Typical recommendation: 3/4 pound/1,000 square feet – Compost and soybean meal applied for N (above) will meet this P recommendation.

Potassium (K) Typical recommendation: 1/3 pound/1,000 square feet – Compost and soybean meal applied for N (above) plus 4 pounds/1,000 square feet of Sul-Po-Mag will meet K recommendations.

Once lawns are established, additional P and K are seldom needed.

Soil tests do not measure nitrogen. Lawns that include clover and that have clippings returned often need no additional nitrogen. If your lawn is very dark green, you probably applied more N than necessary. Excess N can lead to excess mowing, increased incidence of disease and risk of polluting bodies of water. A light green to yellow color indicates insufficient nitrogen, which can lead to sparse growth and bare spots.

If necessary, apply beneficial nematodes in mid- to late August to control grubs, after identifying the type of grubs present. *Heterorhabditis bacteriophora* (Hb) are the nematodes that are most effective against Japanese beetles, European chafers and other lawn pest grubs. These nematodes are sensitive to sunlight, so apply them on a cloudy or rainy day or at dusk. They also prefer a moist environment, so if the soil is dry, add 1/2 inch of water before applying nematodes. A second application may be necessary.

Fall

In areas where leaves accumulate in deep layers, collect and chop them after they fall from trees (e.g., with a rotary mower with a leaf catcher), or rake them for mulch or compost.



A light layer of leaves will not harm a lawn and can even help feed it. Heavier layers of leaves can be removed from lawns with rotary mowers that collect grass clippings and mowed leaves. Collected material makes a good garden mulch.

For the last mowing, set the blades at 2 inches to leave the grass low enough over winter to help prevent disease. Longer grass can mat, especially under snow. A 2-inch final fall mowing can also help in spring, if grass begins growing while the soil is too wet for mowing.

Winter

Run the mower until it is out of gas before storing it for winter. Over the winter, remove the spark plug and blades, scrape grass from the blades, sharpen them and spray them with WD-40. Change the oil. Replace the spark plug and blades.

Managing Pests

Many insects live in or on lawns, but only a few damage lawns enough to require control measures. Insects may feed on roots, stunt the grass, or cause dieback, browning or bleaching of leaves. If you see symptoms, identify the pest before trying to control it. Having diverse, healthy plants in the lawn and landscape will discourage pests and will attract birds (which prey on insects) and other animals; this should be your first line of defense against pest insects.

Grubs are the major insect problem in Maine, but seldom are populations high enough to visibly damage turf. They are the larval stage of June beetles, Japanese beetles, Asiatic garden beetles or European chafers. A healthy, properly watered lawn can tolerate about 10 grubs or up to 30 chinch bugs (another potential lawn pest) per square foot. Beneficial nematodes are effective against grubs but must be applied according to directions in order to work. They may not survive in colder parts of Maine. Milky spore disease targets Japanese beetle grubs but is not very effective in Maine. If you see Japanese beetles with eggs growing from their thorax, do not kill them. These beetles have been parasitized by tachinid flies. Each egg will develop into a new fly, which will parasitize more beetles, and so on.



A pesticide-free lawn is safe for birds, which can, in turn, help control pests.

Turf diseases are seldom serious problems in Maine. Occasionally leaf spot, brown patch or a pythium disease appears, but seldom do these justify chemical treatment. Most often, by the time the disease is identified, the weather has changed and the disease has stopped spreading. Compost can confer resistance to dollar spot, brown patch, pythium and other diseases in turf.

Resources

Friends of Casco Bay – This nonprofit organization monitors water quality in Casco Bay and offers landowners tips for growing “green yards” that do not pollute bodies of water with pesticides or fertilizer nutrients. www.friendsofcasco-bay.org/bayscaping

“Handbook of Successful Ecological Lawn Care,” by Paul D. Sachs, Edaphic Press, 1996

“Introduction to Organic Lawns and Yards, Plus a Checklist for an Ecofriendly Property,” by Sarah Little, Ph.D., Northeast Organic Farming Association, Organic Land Care Program. Free download at www.organiclandcare.net/sites/default/files/upload/2011_nofa_booklet_online_final.pdf

Organic Lawn Care Accreditation Course – The Northeast Organic Farming Association (NOFA) offers an online accreditation course in organic lawn care and an organic lawn care certificate course. <http://organiclandcare.net/>

“The Organic Lawn Care Manual,” by Paul Tukey, Storey Publishing, 2007.

Scythe Supply – Gas-powered lawnmowers and weed whackers are noisy and polluting. Scythe Supply sells modern scythes that are fitted to the user and easy to use. www.scythesupply.com

Using Beneficial Nematodes for Grub Control, Maine Board of Pesticides Control. Lists suppliers of beneficial nematodes. <https://www1.maine.gov/dacf/php/gotpests/bugs/documents/nematodes-for-grub-control-maine.pdf>

Yardscaping – Maine Board of Pesticides Control. Tips for healthy landscapes that feature beautiful plantings and less lawn – all grown without excessive use of pesticides, fertilizers and water. <http://www.maine.gov/dacf/php/pesticides/yardscaping/index.htm>