

# GRASSROOTS HEALTHY LAWN PROGRAM

## *Six Steps for a Perfect Organic Lawn*

### **Step One: March/April Soil Test**

A soil test tells you what condition the soil is in and what kinds of amendments it might need. Using a clean sampling tube, take samples from various locations on the property (more samples for larger properties) at a 4 to 5 inch depth. Remove debris (roots, thatch) from the top of the sample, air dry overnight, mix the samples thoroughly and send a one cup of the mixture to the lab. Request a standard test which usually includes soil pH, calcium, magnesium and potassium levels, phosphorus levels and Cation Exchange Capacity. You should also request percent of organic matter.

Basic soil testing is available from the Cornell Cooperative Extension (instructions and fee schedules are posted on the website) and other providers. More complex microbiology tests are offered by the Soil Foodweb (631) 474-8848. Basic tests range from \$15 to \$40 and biology tests range from \$85 to \$225.

### **Aeration**

Compaction is the number one enemy of turfgrass, and is the most common problem faced by turf managers of playing fields with heavy traffic. Compacted soil prevents turf roots from penetrating deep into the soil profile (turf roots grow in the air spaces between soil particles). If the soil is compacted (to the point where a penetrometer reads more than 200 pounds per square inch in the top 3 inches of soil, aeration is required, using either a core or slice aerator. Aeration is stressful for turf and should only be undertaken when the grass is actively growing, but can be performed as often as every two to four weeks when necessary. Aerate in a criss-cross pattern until 15%-20% of the soil surface has been exposed.

### **Compost Top Dress**

Ideally, the organic matter percentage, or “OM,” should be at or above 5%. If it’s not, aerate and topdress with a good quality compost. If the property has been chemically maintained, a 1/4 inch to 1/2 inch layer of compost should be spread over the top of the entire lawn. Compost can be spread with a compost spreader, an air blower, or on small areas by broadcasting with shovels. It will take about a yard of compost to cover 1000 sq ft with 1/2 inch of compost; one acre of turf will require approximately 40 yards.

### **First Mowing**

Using sharp mower blades, cut the grass at 2 inches and remove and dispose of all clippings. This will help reduce the threat of lawn disease. This is the only time clippings should be removed.

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### **Step Two: March/April**

#### **Pre Emergence Weed Control with Corn Gluten**

**Corn gluten** is an all natural 100% organic pre-emergence weed control and fertilizer (it adds a 10% charge of nitrogen). Corn gluten prevents weed seeds from germinating, so it needs to be used at the right time; in the northeast, blooming forsythia is a good signal to use. Remember that corn gluten prevents grass seed as well as weed seeds from germinating, so you won't be able to over-seed for a few weeks after the corn gluten has been applied.

#### **pH Balance with Lime**

The ideal pH for turf grass is between 6.5 and 7.0. The soil test will reveal the pH of the soil, and in many cases, give you the recommended amounts of lime to add to the lawn. Keep in mind that you should never apply more than fifty pounds of lime per 1,000 sq ft (if you need more lime, it will have to be in two applications). Also remember that lime can take up to three months to become fully integrated into the soil. Use calcitic lime if calcium level is low; dolomitic lime if magnesium levels are low.

#### **Feed the Soil with Compost Tea**

An application of compost tea (see step four for recipes and application rates) fortified with bacterial foods (feather meal, seed meals) and fungal foods (insoluble humic acid and kelp meal), will help slow the normally accelerated spring growth rate by tying up some nutrients. These will be cycled back to the plants later in the season. Apply higher rates of tea if foliar disease is present. You can also mix in milky spore bacteria to continue building their population in the soil.

#### **Soil Detoxification and Inoculation Using Other Amendments**

Marine products such as **kelp** and **seaweed** contain minerals and add organic matter to the soil. They promote deep root growth which helps keep lawns green even during times of drought.

The minerals and nutrients found in **rockdust** are particularly useful in re-energizing soil that has been compromised by chemical use. It is also a natural source of potassium (K).

#### **Mowing**

Grass should now be cut at 2.5 to 3 inches. Grass clippings should always be left on the lawn. If necessary, rake up clumps and re-broadcast. Remember never to cut more than the top 1/3 of the grass blade at any one time.

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### **Step Three: April to June**

#### **Organic Fertilizer Application**

The choice and application of the proper natural organic fertilizer is one of the most important aspects of natural lawn care. Unlike synthetic fertilizers which are water soluble, natural organic fertilizers are water insoluble; they break down by the action of microbes which exist in the soil. In effect, you are feeding those microbes, which in turn make nutrients available to the plants.

Natural organic fertilizers will generally not produce the sudden, dramatic greening effect common to many commercial synthetic fertilizers with high nitrogen levels. Look for lower nitrogen numbers (natural products always have N numbers of 10 or less) rather than higher. Fifty pounds will cover approximately 2,000 sq ft.

Fertilizers containing added phosphorus should generally be avoided unless a specific problem needs to be corrected. Increasing microbial life (bacteria and fungi) can help release phosphorus which is tied up in the soil. In many areas, excess phosphorus run off into streams and municipal water systems is a source of serious environmental problems.

As the level of organic matter is raised through the application of compost (the organic level should ideally be between 5% and 8%) the need for fertilizer is reduced.

#### **Irrigation**

Automatic sprinkler systems can be a great time saver, but they can also be the source of trouble. Over-watering is a primary cause of turf fungal problems, and can un-do much of the work you are doing. The system should be calibrated to deliver no more than 1.5 inches of water per week, and less if a rain event occurs. (Placing an empty tuna can on the lawn, running the system and seeing how long it takes to fill the can will help you determine proper settings.)

#### **Spot Weed Control**

Products containing combinations of vinegar and natural plant oils (e.g., “Burn Out”) are a good choice as non-selective weed killers in driveways, patios and paths. They can be found at professional lawn care distributors. In most cases the property must be flagged.

#### **Mowing**

Grass should now be cut at 3 inches

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### **Step Four: June/July**

#### **Compost Tea**

The application of high quality compost tea can be an effective way to continue to build soil quality, increase resistance to diseases and help with drought. Compost tea is made by steeping top quality compost in water while circulating water and adding nutrients. Commercial tea brewers in sizes from 5 to 500 gallons are available from many manufacturers. You can spray tea from a backpack sprayer or a traditional spray rig. Remember that you are spraying live organisms, so allow the spray to fall gently on surfaces rather than coming to an abrupt stop.

#### **Basic Compost Tea Recipe:**

20 gallons of chlorine-free water  
1 lb highest quality compost  
4 oz. molasses  
1 oz. humic acid

Generally speaking, a tea brewed with a high bacterial content is preferable for turf; tea with a higher fungal content is recommended for foliar spray on trees and shrubs.

Tea should be mixed with water in sufficient dilution to achieve a rate of 15-20 gallons per acre. A typical mix is 20 gallons of tea to 100 gallons of water. Problem areas can be treated with a higher concentration of tea.

**There appears to be some correlation between the application of compost tea and reduction of pest problems, but in most states it is illegal to make any claims or statements regarding the beneficial effect of compost tea on pests.**

#### **Over-Seeding**

The best defense against weeds is a strong and healthy turf. Give the opportunity, grass plants will out-compete most weeds. Over-seeding, which is simply adding new grass plants to an existing lawn or field, rejuvenates the lawn with new life, fills in bare spots and keeps weeds from growing. Use a high quality seed or seed mix, appropriate for your climate, and with a minimum of noxious weeds (check the label for weed content).

When over-seeding, you will want to reduce the height of the lawn in steps, eventually bringing it down to about two inches to give the new seed a chance to get sunlight and germinate. Once the seed has sprouted you can begin bringing the lawn back up to 3 inches.

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### **Step Five: July/August**

#### **Natural Pest and Disease Control**

A healthy, well maintained natural lawn will be resistant to most pests and disease. However, lack of organic matter, poor cultural practices, too much water and other stresses can reduce turf's ability to fend off pests and disease. When pests present themselves, here are some natural solutions:

**Beneficial nematodes** have proven to be very effective at dealing with grubs. These are microscopic worms which feed on grub larvae. Nematodes need aquatic animals, and need moisture and grubs to survive. Apply with water and keep the soil moist for a few days after application (see package for details.) You can purchase nematodes from an insectary or nursery that carries beneficials.

**Milky Spore** is actually a disease which can be an effective biological control for Japanese beetles. The best time to apply is mid-to late summer when the new brood have hatched and are beginning to feed.

Here are some typical turf problems and recommended solutions:

<b>Symptom</b>	<b>Possible Cause</b>	<b>Solution</b>
Dandelions	Lack of calcium, low pH	Apply calcium, keep pH high.
Moss	Low pH, too much moisture	Add lime, improve drainage
Red Thread	Lack of nitrogen	Fertilize with organic fertilizer; check potassium and raise if necessary.
Dollar Spot	Lack of nitrogen, excess thatch, drought stress	Fertilize with organic fertilizer, apply compost top dress, irrigate.
Crabgrass	Turf cut too close, excess nitrogen, low pH	Raise cutting height, over-seed, use organic (low N) fertilizer, apply lime to raise pH, apply corn gluten in spring.
Thatch	Excess irrigation, improper mowing, too much fertilizer	Apply compost top dress, raise mower blades, leave lawn clippings on the lawn, adjust irrigation
Patches of dead grass	Grubs	Apply beneficial nematodes,
Compaction	Sports, high traffic, machinery	Apply compost top dress, over-seed, apply organic fertilizer, mechanical aeration if necessary.

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### **Step Six: October/November**

#### **Root Growth Enhancement**

In the fall, turf roots continue to grow long after the grass has stopped. Feeding the roots with natural growth stimulators such as seaweed extract will prepare the plants for a boost of new growth in the spring.

#### **Lime/Compost Application**

Fall is the another window of opportunity for the application of lime (if needed) and compost. A good shot of compost now will help prevent germination of weed seeds in spring and give the turf a good supply of nutrients to begin a new season in the spring.

#### **New Construction**

There is no question that fall is the best time to construct a new lawn. Remove all old growth and roots but do not roto-till. Add whatever amendments may be indicated by a soil test (this is also the best time to fix texture or composition problems, if any), then add 1/2 inch of compost. Broadcast good quality, climate-appropriate seed and roll or tamp to ensure good soil-to-seed contact. Keep moist but not wet.

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Edited and compiled by Doug Wood. Contributors include Chip Osborne (Osborne Organics), Jeff Frank (The Nature Lyceum), James Sottilo (Ecological Landscape Management, NY), Doug Wood (Grassroots Environmental Education) and Paul Sachs, through his excellent book, *The Handbook of Successful Ecological Lawn Care*. Thanks to all of those who contributed.

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