



## SOIL—WHERE IT ALL BEGINS

Good, healthy soil is the foundation of success in ornamental and vegetable gardens as well as in lawns. In nature, soil is built and enriched biologically when earthworms and numerous other organisms such as mold, bacteria, fungi, beetles, and centipedes breakdown organic matter like dead plants and decaying animals. The nutrient-rich, fertile soil created by these beneficial organisms grows healthy plants. The soil in residential landscapes often suffers from years of compaction by mowing equipment and use of synthetic chemical fertilizers, herbicides, and pesticides. (Beneficial organisms and microbes are often destroyed by these substances or simply relocate because synthetic chemicals do not provide the organic matter they need for food.) In the Piedmont, homeowners are often confronted with red clay, which used to be subsoil, but is what remains in our yards after centuries of topsoil erosion by poor agricultural practices and topsoil-stripping development. By adding the right kinds of organic matter, depleted, compacted earth and red clay can be built up into healthy soil that is good for all types of gardening. Building soil organically offers long-term, sustainable improvement of soil fertility, protects the natural physical and biological processes in the soil, and minimizes environmental disturbance because organic sources of nutrients are less likely to leach or run off and contaminate the water shed. By stopping or minimizing the use of synthetic chemical products and starting to add organic matter to gardens and lawns, homeowners can rebuild the soil.

### Know Your Soil

To begin the process of rebuilding or creating healthy soil for your plants, you need to know the square footage of your garden and lawn spaces so you can accurately calculate additions of organic material and other soil amendments. You also need to understand your current soil's chemical makeup by having it tested. Soil tests are performed by the NC Department of Agriculture & Consumer Services and soil test boxes are available through local county offices of the NCSU Cooperative Extension. To provide the necessary information for determining how to improve your soil, a soil test determines the pH level of your soil (how acidic or alkaline it is); measures nutrient levels including nitrogen, calcium, magnesium, nitrogen, phosphorus, potassium, sodium, sulfur, and trace minerals; and assesses organic content.

#### Resources:

[www.ncagr.gov/agronomi/pdffiles/samhome.pdf](http://www.ncagr.gov/agronomi/pdffiles/samhome.pdf) - Soil Testing "How To"  
<http://www.ncagr.gov/agronomi/pdffiles/Ustr.pdf> - Understanding Your Soil Test Results

### Feed the Soil

To paraphrase Bob Rodale, who was a leader in the organic gardening movement, **feed your soil to feed your plants.** Building soil organic matter can be accomplished in several ways, including growing cover crops/green manures, adding composted organic matter, and amending with organic fertilizers and other soil improvers. In the residential landscape, adding compost and required amendments to your soil are the easiest methods for creating the perfect growing medium for producing vigorous plants that can best resist disease, pests, and drought.

**Compost.** Making compost simply accelerates Nature's principles of biological decomposition of plant matter! The best compost is homemade from food scraps, lawn clippings, and fall leaves. There is a composting technique suitable for situations from apartments to suburban homes to schools. Compost methods include holding units, turning units, heaps, soil incorporation, and worm composting (vermiculture). Of these methods, vermiculture is somewhat unique as it takes place in bins that can be made from almost any container and can be housed indoors! Worm composting requires minimal materials and nominal effort; the worms (*Eisenia foetida*, red wiggler, or *Lumbricus rubella*, brown nose worm) break down kitchen scraps into finely textured, nearly odorless castings, rich in plant nutrients. Feeding your soil with compost not only feeds the plants but also protects against some harmful soil-borne insects, buffers soil pH, fights harmful fungi, and makes soil resistant to compaction and water runoff. Detailed guides to building composting structures are available online. Commercially made compost is available in packaged form at many retail garden centers, but as always, be sure to read the label to understand the compost ingredients. Compost can also be purchased in bulk from various suppliers often including your county solid waste and recycling facilities.

**Other Natural Soil Amendments.** Organic fertilizers are composed of protein-based organic matter that has been minimally processed, leaving nutrients in their natural states, for slow release to plants through microbial activity in the soil. Other soil improvers, such as fish emulsion, Epsom salt, bone meal, kelp meal, and greensand, are also natural sources of nitrogen, phosphorus, and potassium. If your soil is too acidic (often the case in the Piedmont), alkaline material, such as ground limestone, raises the pH. Elemental sulfur can be added to soil that is too alkaline. Before purchasing any soil amendment, check package labels even on products designated as natural or organic to understand exactly what is in the bag and where it comes from before you add it to your soil.

#### Resources:

<http://charmec.org/mecklenburg/county/SolidWaste/homecomposting/Documents/wormbro.pdf> - "How To" Build a Worm Composting Bin  
[www.ces.ncsu.edu/depts/hort/hil/pdf/ag-467.pdf](http://www.ces.ncsu.edu/depts/hort/hil/pdf/ag-467.pdf) or <http://extension.missouri.edu/publications/displaypub.aspx?p=g6957> - "How To" Build Compost Structures  
<http://charmec.org/mecklenburg/county/SolidWaste/Compost-YardWaste/Pages/default.aspx> - Mecklenburg County Compost Sales  
<http://extension.oregonstate.edu/douglas/sites/default/files/documents/lf/orgfertval.pdf> - NPK Values of Organic Fertilizers

For more gardening information, visit [www.mastergardenersmecklenburg.org](http://www.mastergardenersmecklenburg.org) or contact your **Mecklenburg Extension Master Gardeners<sup>sm</sup>** with your questions at [info@mastergardenersmecklenburg.org](mailto:info@mastergardenersmecklenburg.org) or 704.336.4011.

# GREEN YOUR LAWN THE EARTH-FRIENDLY WAY

We Americans love our green lawns, spending billions of dollars and untold hours planting, weeding, watering, fertilizing, treating, and mowing an estimated 40,000,000 acres of lawn. The following eco-friendly tips not only help you create a healthy, green lawn that your family and friends can safely enjoy, but also save money and improve our environment.

**Know Your Lawn.** To best care for your lawn, you need to know your lawn turf grass type, the growth patterns of your specific turf type, and the square footage of your lawn. The Piedmont is in the transition zone for cool-season grasses like fescue and Kentucky bluegrass, which have optimum growth in spring and fall and go dormant in summer, and warm-season grasses like Bermuda, centipede, and zoysia, which have optimum growth between in summer and go dormant in winter. Renovate or start lawns with cool-season grasses in the fall and warm-season grasses in late spring.

**Reduce Lawn Size.** Decrease the size of your lawn to achieve instant reductions in the amount of water, chemicals, labor, and money used for landscape maintenance. Turf can be replaced with mulched natural areas or new or enlarged garden space planted with hardy drought-tolerant plants like many native plants. Create or enlarge natural areas around your trees. On steep slopes or in shady or soggy areas, consider alternatives to grass such as ground covers.

**Feed Your Soil.** The key to a successful lawn is healthy soil, alive with bacteria, fungi, protozoa, and larger creatures like earthworms, all of which benefit grass by creating essential nutrients, preventing nutrient-loss and diseases, regulating pH, and decomposing thatch. For a complete dose of beneficial microbes, add a thin layer (1/3-1/2 in.) of finished compost (a maximum of 1 yd<sup>3</sup> per 1,000 sq. ft. of lawn) to your lawn in the fall and water it in. Get your soil tested to find out exactly what additional nutrients are needed. To replace nutrients, the organic option is to feed your soil microbes with a natural, protein-based fertilizer like corn gluten meal (CGM), alfalfa meal, soy meal, cottonseed meal, or sorghum meal. Fertilize cool-season grasses around Valentine's Day, Labor Day, and Thanksgiving; fertilize warm-season grasses spring and early fall. Apply fertilizer when grass is dry then water lightly. Keep fertilizer off the pavement; fertilizers that run off are a waste of money and contribute to pollution of streams and lakes. When you mow, leave the grass clippings, which contain about 4% nitrogen, 0.5% phosphorus, and 2% potassium on the turf as another natural source for these 3 key nutrients. If needed, add lime to raise pH of soil (most turf grass likes a pH of 6.5-7), but healthy soil microbial action moves the pH toward 7.0. Winter is the best time to apply lime; gentle winter rains minimize runoff and help incorporate lime into the soil.

**Mow Smart.** Mow at appropriate height for your type grass; for example: 3½-4 in. for fescue and bluegrass; 1 in. for hybrid Bermuda; ¾ in. for zoysia. Mow as frequently as necessary to insure that no more than 1/3 of the blade needs to be removed. Cut when grass is dry to allow better distribution of clippings; early evening is best time. A well-maintained mower is more fuel-efficient and emits less air pollutants. Better yet, consider switching to a 4-stroke gas mower, an electric mower, or even a manual reel mower and burn some calories while enjoying the outdoors. According to the EPA, gas-powered lawn care equipment contributes to 10% of nation's air pollution.

**Water Less and Better.** Lawns need a maximum of 1 in. of water per week including rain during the growing season. Watering is most effective in the very early morning (3-8am) to minimize evaporation; during warm weather, evening watering can contribute to development of mold and fungal diseases. You can also simply let your cool-season grass go dormant in summer; then you only need to water every 3 weeks. Make sure your sprinklers are watering the yard, not the street, driveways, or sidewalk; water your lawn separately from other plantings. Careful, efficient lawn watering protects our water supplies for more critical uses, lessens the effects of drought, minimizes run-off and leaching, and saves money.

**Just Say No to Lawn Chemical Abuse.** A healthy, lush lawn is not a favorable environment for weeds and diseases; most insects are beneficial and nature often rids itself of the bad ones. The safest alternative to synthetic chemical herbicides, pesticides, and fungicides is to use nothing, recognizing that past use of toxic chemicals has destroyed or diminished your soil's beneficial microorganisms and that it may take at least a season for the soil to begin to recover even with the addition of organic matter. In general, be willing to accept a few weeds or a little damage in your lawn and give nature a chance to work. But if you encounter a potential problem, verify and identify your weed, pest, or disease to determine the best treatment, if any. Investigate organic solutions like using CGM, not only as a fertilizer, but also as natural annual weed seed germination preventer when applied at 20lbs/1000 sq. ft. of turf at the right time of year. Chronic problems are often a sign that your lawn is not getting what it needs to stay healthy and the underlying problem needs to be corrected.

## Resources:

[www.turffiles.ncsu.edu/](http://www.turffiles.ncsu.edu/) - NCSU Extension Turf Care  
[www.extension.iastate.edu/news/2005/mar/mar0522.htm](http://www.extension.iastate.edu/news/2005/mar/mar0522.htm) - Iowa State University on CGM for Lawns  
[www.epa.gov/oppfead1/Publications/catalog/greenscaping.pdf](http://www.epa.gov/oppfead1/Publications/catalog/greenscaping.pdf) - EPA on "Greenscaping"  
[www.gardening.cornell.edu/homegardening/scene1799.html](http://www.gardening.cornell.edu/homegardening/scene1799.html) - Cornell Lawn Care How-to Videos  
<http://edis.ifas.ufl.edu/LH026> - Florida Extension Calibrating Sprinklers

**For answers to all your garden and lawn care questions, visit the Mecklenburg Extension Master Gardener<sup>sm</sup> website – your one-stop resource for gardening in the Southern Piedmont of North Carolina:**

**[www.mastergardenersmecklenburg.org](http://www.mastergardenersmecklenburg.org)**

**To contact the Mecklenburg Extension Master Gardener<sup>sm</sup>:**

**Phone: Master Gardener Hotline - 704.336.4011** 📞 **E-mail: [info@mastergardenersmecklenburg.org](mailto:info@mastergardenersmecklenburg.org)** 📧 **Online: Visit us on Facebook** 🌐