

# Massachusetts Master Gardener Association

## FACT SHEET

**Have gardening questions?** Contact the **Master Gardener Help Line.**

At Mass Hort, Wellesley: [mghelpline@masshort.org](mailto:mghelpline@masshort.org), 617-933-4929

At Tower Hill Botanic Garden, Boylston: [hortline@towerhillbg.org](mailto:hortline@towerhillbg.org), 608-869-6111 x104

Please visit our website for Help Line hours: <http://massmastergardeners.org/what-i-do/>



### SOIL

Good soil is 25% air, 25% water and 50% solid material. The solid parts of the soil are made up of mineral bits -- sand, silt and clay as well as organic material. Adding compost, manure, peat moss, leaves and other green and brown materials is beneficial to the soil. In sandy soils, the addition of organic matter acts like a sponge, holding water and nutrients for the roots. In clay soils, it helps water, air and nutrients move through the soil more easily. Good soil also needs billions of bacteria, fungi, nematodes and worms toiling happily underground. These tiny organisms turn the organic matter into nutrients available to the roots of your plants. This process is vital to the life of plant material.

Keeping your plants happy also means keeping track of the soil acidity. New England soil began as the granite of our mountains so it is naturally acidic. We suffer from acid rain, and most fertilizers are acidic. This can result in soil too acidic for plants. When the pH (that's the measure of soil acidity) is too low, it affects the solubility of the nutrients in the soil. Whether you are an organic or inorganic gardener, a soil test is an easy and inexpensive way to make certain that your soil is compatible to the plants you are growing. UMass Amherst offers a cost effective and accurate assessment of the soil's nutrients, pH, and organic matter customized to a particular area in your garden. They recommend proper amounts of lime and fertilizer to apply for the soil's pH, nutrient and micronutrient level, organic matter content and heavy metal content. The Massachusetts Master Gardeners do soil pH testing at various locations throughout the year. Check our website for more information.

Even plants in good soil need additional food. Every package of fertilizer lists three letters and numbers: N for nitrogen, necessary for stem and leaf growth and dark green foliage; P for phosphorus, needed for root growth, flower production and fruit development; and K for potassium, vital for plant metabolism and food manufacturing. Some fertilizers include minute amounts of trace elements critical to plant growth.

Organic fertilizers are made from animal or vegetable byproducts including fish emulsions, blood meal, cottonseed meal, sewage sludge and animal manures. They generally provide much lower amounts of nutrient per pound, and are more bulky and expensive. Research has shown that plants do not recognize a difference between properly applied organic or inorganic fertilizer. But the soil does. All that vital microscopic life underground will not thrive on a diet of inorganic fertilizer alone. Therefore, it is important to be certain that your soil has a good base of organic material whichever fertilizer you use.

How do you build good soil? Begin with a test so you know what's lacking. Adding fertilizer, compost or any other supplement only makes sense if it is needed. Then start turning the soil adding organic material. Compost is best, but chopped leaves, peat, aged manure, even saw dust or wood chips will all begin improving the structure of the soil. Lawn clippings will decompose improving the soil and adding nitrogen. You will improve your garden soil while protecting the environment from the runoff of excess nutrients.

*The Massachusetts Master Gardener Association is a non-profit organization whose mission is to share knowledge and experience with the public through outreach programs in education, horticulture and gardening; to provide the Master Gardener Training Program to interested members of the public; and to provide graduates of the Master Gardener Training Program with educational and practical opportunities to extend their knowledge and interests in gardening and related topics.*

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