

## March Is for Making Dirt

Gaye Mara, Fairfax County Master Gardener

Soil is the Rodney Dangerfield of the home garden – it gets no respect. That’s probably because it’s plain-looking, plants cover it up, and we can’t see the important things going on under the surface.

But good soil is the single most important key to gardening success. And March is a good time to start making it.

### Soil Science 101

Soil has three major characteristics that the home gardener needs to pay attention to:

**1. Texture.** The ideal garden soil is 50% solid matter and 50% open pores that contain roughly equal amounts of water and air. For plants to grow and thrive, their roots need both water and air; roots also need open spaces to grow into. Unamended clay soil, which is what we often have to start with in Fairfax County, is a dense mass that blocks out water, air, and plant roots. (The good news about clay is that, unlike sandy soil, it is rich in nutrients.)

**2. Chemistry.** Correct levels of acidity and elemental nutrients are also essential to plant health.

- *Acidity* is expressed as pH (“potential of Hydrogen”) on a scale from 0 to 14. The middle point, 7, is neutral; a pH below 7 is acid and above 7 is alkaline. A slightly acid pH between 6.0 and 7.0 is good for most garden beds, though some acid-lovers like camellias and rhododendrons are happier at 5.5. When pH is too high or too low, plants can’t take up essential nutrients.
- Sixteen elements are essential plant *nutrients*. The big three, called “macronutrients” because plants need a lot of them, are nitrogen (promotes foliage), phosphorus (promotes root growth and flowering), and potassium (promotes overall plant vigor). In that order, they are the three elements represented on fertilizer bags that say, for example, 10-10-10. The remaining 13 essential nutrients include calcium, magnesium, sulfur, and iron. Here more is *not* better – too much of a nutrient can be toxic, or can cause deficiencies of other nutrients.

If you send a soil sample to Virginia Cooperative Extension, their analysis will tell you what your soil acidity level and nutrient balance are and what corrections you need to make. Soil test kits with complete instructions are available from any County Library and from the Master Gardener plant clinics at various County farmers’ markets in May through September.

**3. Micro-organisms.** Lots of little critters, good guys and bad, live in soil. In soil with good texture and chemistry, the good guys thrive and keep plants healthy. For example, nitrogen is an essential plant nutrient and is abundant in the air (including

the air in soil), but plants can't use it directly. Nitrogen-fixing bacteria in the soil, however, convert it to usable form.

### **How to Get Good Soil**

The simplest way to get good garden soil is to dig an 8" layer of quality top soil and a 4" layer of humus (decomposed organic matter like composted leaves, manure, or peat) into the clay, to a depth of 16" or more. You can do this by hand with a good garden spade or fork, or with a roto-tiller rented from a garden center. Turn the soil over several times to mix it well. This breaks up the clay and incorporates air. Humus also helps the soil absorb and hold water and contains a balanced combination of plant nutrients and good-guy microorganisms. (If your soil has already been improved, just keep adding another 3-4" of humus each year to keep it rich and fluffy.)

Most other soil additives change the acidity and/or nutrient balance, which can be good or bad depending on what it is now. Two especially good additives that also loosen clay are gypsum (adds calcium) and greensand (adds potassium).

When you are done mixing and turning, the soil should be soft enough to dig easily with your bare hands. That's soil anyone can respect!

### **Recommended Resources**

Free downloadable publications on how to analyze and improve your garden soil are on the Virginia Cooperative Extension web site (<http://www.ext.vt.edu>; click on "Resources," "Home Gardening," "Soils & Soil Testing Laboratory").