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The Myth of Soil Amendments, Part III
“Healthy soil has high organic content”

The Myth

One of the newer catch phrases making the rounds in print and on gardening websites is “Building Healthy Soil.” The starting premise is that residential soil is inherently unhealthy and in need of amendment. Without fail these media sources recommend incorporation of large volumes of compost as a means of improving soil structure, adding nutrients, improving drainage and aeration, and increasing water holding capacity. Websites recommend adding anywhere from 1 to 4 inches of compost; one site suggests “1 part compost to 2 parts dirt.” In general, the message is that unamended soil is unacceptable and the only way to make it healthy is by adding large quantities of compost.

The Reality

The dubious practice of amending soil areas destined for permanent landscape installations has been discussed in this column on other occasions. To summarize briefly, the problem with this practice is that within 10 years (conservatively) the organic amendment will have decomposed; one is then left with the original soil, which will have subsided and compacted during this time. You can see evidence of this practice by looking at older residential lawns; the lawns slope away from sidewalks and driveways and are inches below grade of surrounding surfaces. There is no way to incorporate additional amendment into permanent landscapes without damaging root systems. Instead, it is easier, cheaper, and more natural to add organic material by topdressing landscapes that are not planted and harvested on an annual basis. (My fondness for wood chip mulches has been expressed in this column before!)

What about landscapes that are planted and harvested on an annual basis – including vegetable gardens and flower beds? These landscapes are more logically managed by agricultural models – adding organic matter (OM) to replace nutrients removed from the soil by flowers and vegetables. The annual incorporation of compost makes sense here. However, one needs to have an idea of what the soil already contains before more material is added.

During home construction, topsoil is removed from the site and eventually replaced by “designed soil.” It is almost impossible to purchase native topsoil in urban areas; it is too precious a commodity. Commercially available topsoil is usually a mixture of native topsoil and a variety of inorganic and organic materials including sand, perlite, compost, peat moss, bark, sawdust, and manure. These designed soils usually contain 15% OM by weight (equivalent to 30% compost by volume). By comparison, native topsoils contain about 5% OM by weight (or 10% OM by volume); this level of OM is considered to be optimal in terms of nutrient content. Obviously, new residential landscapes contain high levels of OM, well above what is considered ideal.

If you don’t know what your soil already contains in terms of nutrients, how can you possibly determine how much OM to add? It is simple and cheap to have your soil tested for OM content and nutrient levels and this should be done at least once to determine baseline values. This information can help you determine if you need to add more organic material, and which nutrients in particular are at minimal levels. It wastes resources, both financial and natural, to add excessive amounts of OM without these baseline values.

Last fall we collected soil samples from a local organic demonstration garden and sent them out for nutrient analysis; this garden had recently experienced some soil and plant health problems. Every single one of the sites that was tested came back with nutrient readings off the scale. In large capital letters the report warned “DO NOT FERTILIZE THIS SOIL.” The excessive addition of nutrient-rich compost to this landscape contributed not only to plant health problems but to nutrient loading of adjacent natural waters.

The Bottom Line

- Ideal soils, from a fertility standpoint, are generally defined as containing no more than 5% OM by weight or 10% by volume
- Before you add organic amendments to your garden, have your soil tested to determine its OM content and nutrient levels
- Be conservative with organic amendments; add only what is necessary to correct deficiencies and maintain OM at ideal levels
- Do not incorporate organic amendments into landscapes destined for permanent installations; topdress with mulch instead
- Abnormally high levels of nutrients can have negative effects on plant and soil health
- Any nutrients not immediately utilized by microbes or plants contribute to non-point source pollution

For more information, please visit Dr. Chalker-Scott’s web page at <http://www.theinformedgardener.com>.