

# Evaluate the Soil

Soils vary greatly in fertility, drainage, and “pH” rating. It is best if you understand what kind of soils you are working with, and put in a garden suitable to the conditions you already have.

## **Drainage is important**

Your rain garden needs to be able to absorb the water coming off your roof and driveway. In West Michigan, soils tend to be predominantly sand or clay. Sandy soils drain well, while clay soils may become waterlogged. If your soil is sandy, you may be able to simply loosen the soil and improve it with some compost to prepare your rain garden for planting. If your soil is clay, you will have more work to do. Even light clay soils may create very soggy problems if a lot of rain is directed to the rain garden. Soil removal and replacement are often needed if your soil is clay. The recommended soil replacement mix is 50-60% sand, 20-30% topsoil, and 20-30% compost. *Be sure no clay is in your replacement soil.*

## **Test your drainage!**

You can test your soil’s infiltration rate by digging a hole 8 inches wide and 8 inches deep. Pour a bucket of water into it and see how long it takes to sink in. The water needs to go down an inch per hour. If it takes longer than that, you will need to do additional site preparation to improve infiltration.

## **Design the Pond Area**

When you prepare the garden for planting, you must create a dip in the middle where water will collect as it sinks into the soil. There are various zones in a rain garden (very wet, wet to dry, and dry) and different kinds of plants will thrive at different zones.

You may also adjust the depth of the depression to the infiltration rate. The standard depth for the ponding area is six inches. If you have very poor drainage in your existing soils, and your garden preparations still leave you with slow absorption rates, make your depression shallower to reduce the water that gets trapped there. If your soil sucks up water, make your garden deeper to increase its storage capacity. It’s generally best to keep the bottom of your rain garden’s depression flat; saucer-shaped rather than bowl shaped. That way, the rainwater will always spread out as much as possible.

To be certain that your rain garden will function properly, simply replace the soil with the recommended rain garden mix: 50-60% sand, 20-30% topsoil (no clay), and 20-30% compost. This mix allows water to soak in and supports the growth of healthy plants.

## **Drain Systems**

If the soil is very heavy and/or a lot of water will need to be infiltrated, an under-drain system of gravel and perforated pipe (French drain) may be helpful. This will enable the garden to absorb more rain. Sometimes a rain garden is constructed to absorb and filter a certain amount of rain, and the filtered water is then piped to another location through the underdrain system.

## **Compacted Soils**

Soils on developed land have been compacted by heavy construction equipment. Packing soil down is actually part of the construction site plan, to avoid the formation of sinkholes and to stabilize building foundations. Even sandy soils are often much reduced in their capacity to absorb rain after trucks and bulldozers have run over them. To make a properly functioning rain garden, these soils will need to be dug up and loosened to a depth of two feet, not only to prepare for planting the garden but so rain can soak in. If you have extra soil left over after this loosening process, use it in another part of your yard.

### **pH and Other Qualities**

Uncertain about kind of soil you have? To know how to prepare your rain garden and which plants will work best in your situation, you should have your soil tested.

**For local soil testing, contact Iowa State University Soil Testing Laboratory at 515-294-3076. They can perform simple and affordable soil test to determine pH, lime, phosphorus, potassium, organic matter, and zinc.**

Information from: [http://www.raingardens.org/Evaluate\\_the\\_Soil.php](http://www.raingardens.org/Evaluate_the_Soil.php)