

Soils Information

Soil Infiltration Test

An infiltration test can be used to check the drainage of the soil in a potential rain garden site. This is helpful in determining what, if any, soil amendments are needed for your rain garden.

The steps are as follows:

1. Dig a hole 12" deep by 6" in diameter
2. Fill hole with water and let stand until all the water has drained into the ground.
3. Refill the empty hole with water again. Measure the depth of the water with a ruler.
4. Check the depth of water with a ruler every hour for at least 4 hours.
5. Calculate how many inches of water drained per hour.

About 1.5 inches of water draining per hour is an indication of good drainage rate for a rain garden. If the drainage rate is less than 1.5 inches per hour, or the water does not drain within 24 hours, the site needs soil amendments, such as coarse sand, topsoil, and/or compost.

Sometimes an infiltration test gives you a false reading of the soil conditions of a site. For example, if an infiltration test is done during drought conditions, the water in the soil may drain very quickly. A rainy season may later reveal that the soil is very clayey and that the water will not percolate through. This situation can be corrected by auguring holes in the garden and filling the holes with coarse sand to help with infiltration.

Soil Testing

A soil test is helpful in determining the pH, nutrient levels, and soil texture of the potential rain garden site. Many land grant universities offer soil testing services for a fee. Private laboratories also offer these services.

Sample the soil as directed on the soil testing kit and send it to the soil laboratory for pH and nutrient analysis and fertilization recommendations. A soil texture analysis is helpful for determining the amount of coarse sand or organic material you may need to add to the site.

Ribbon Test

Another way to test the soil is by conducting a ribbon test. The ribbon test involves rolling the soil into a ball and observing how it forms. If it is a hard ball, it is typically an indication of clay/ silt soil. If it is a soft ball, it is typically an indication of loamy soil. If there is no ball, it is an indication of sandy soil.

Loamy soil is the best soil for your rain garden, in that they are able to hold water for the native plants to absorb as well as infiltrate the water into the groundwater supply. Other soil types are okay for a rain garden, but you will need to amend the soil with either coarse sand (to increase pore space and infiltration) or an organic material, such as compost (to increase porosity over time).

Clay Soils

Clay soils can be a challenge to work with. To improve drainage in areas where there is a high percentage of clay, increase the surface area of your rain garden and decrease the depth. This technique will allow the water entering the rain garden to spread over a larger shallower area, providing more exposure to sunlight for evaporation. The larger surface area requires more mulch and plants. The mulch provides absorption of the water. Established plants uptake water and their roots create more space for the water to infiltrate to groundwater.