

# Build Your Own Rain Garden

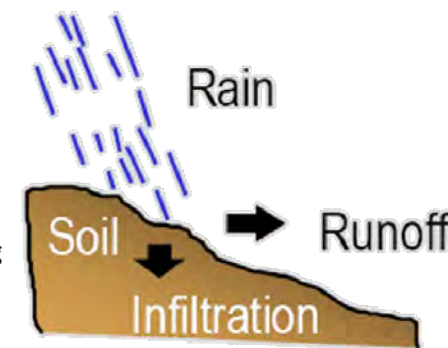
## What You Need to Know About Your Soil

A rain garden is a shallow depression that collects rain water from roofs, driveways, sidewalks or lawns, cleans it by dissipating the water through soil and plants, and allows it to soak into the ground rather than run off.

### Learn About Soils in Your Area

Rain gardens work by allowing storm water to infiltrate into the ground, instead of allowing all of the water to runoff your site. Infiltration is the process by which water on the ground surface soaks into the soil. The rate of infiltration depends largely on the site's soil structure. You will need to find out what soil types are on your property in order to design and build a properly functioning rain garden.

Begin by locating a soil map and soil descriptions for your property. This can be done by contacting your county's Soil and Water Conservation District (SWCD) or USDA Natural Resources Conservation Service (NRCS) office. Or, if you have access to the internet, you can quickly get information from the Web Soil Survey (WSS) <http://websoilsurvey.nrcs.usda.gov/app>. Enter your address and use the AOI map tool to select an "area of interest." After you have selected an area of interest, there are options to click on near the top of the page to show soil properties, suitability and limitations, capabilities, and more for your property.



### Examine Soils at your Rain Garden Site

Understanding how your soils work is a key element to proper rain garden construction and the best way to do that is to examine them and perform a simple test. This step is very important because some areas of Indiana have high water tables and poor drainage which will affect the proper functioning of your rain garden.

First, get your hands dirty. If you have natural undisturbed soils in your yard, the topsoil layer will contain a deep (6 to 12 inches), fairly loose root zone. You will need to examine your existing soil and consider whether it is loose or compacted. Sandy or loamy soils are usually well-drained – the soil will tend to be crumbly and break apart easily in your hand. Clayey soils are poorly drained – the soil will stick together in heavy dense clods when you dig it up and press it in your hand.

Second, do a "percolation" test to see you how well water soaks into the soil at your site. Dig a hole the size of a coffee can and saturate the soil with water. Fill the hole with water and measure the depth. Return in 4 hours and measure again. The difference in the water depth after 4 hours should be equal to or exceed 1 inch. If the difference is less than 1 inch, you will want to seek professional assistance before building your rain garden. The best time to complete this activity is late winter to early spring. Make sure that two days before doing any digging or excavation, you call "811" to have your underground utility lines properly identified and marked.

### Where to Go for Assistance:

- The Soil and Water Conservation District or Natural Resources Conservation Service office in your county will be able to help provide soils information. Some SWCDs may also be willing to provide an on-site visit.
- Your county's Extension Service office can provide information and answer questions on many subjects related to rain gardens.
- A qualified professional contractor or landscape service can also be hired to help you evaluate your site and/or build your rain garden.

Remember... Rain gardens should not be installed less than 10 feet from a building, in areas with steep slopes, or areas that are shallow to bedrock.



## What You Need to Know About Your Soils (cont.)

### Potential Soil Conditions You May Encounter

Professional assistance may be needed to help you evaluate and recommend solutions to overcome drainage and soil conditions.

#### Areas That Do Not Drain Well After a Rain

Do not put a rain garden in areas that do not drain well, especially where water tends to pond for several days after a rain. The ponding is evidence that you may have soils that have a seasonal high water table, high clay content or are compacted, and therefore a very slow infiltration rate (less than 4 inches per day). Unless the area can be gravity drained with a tile drain to a proper outlet, the site is not considered a good site for a rain garden and could be a breeding spot for mosquitoes. The soils map and soil description information will help you identify the potential for these types of soils on your property.

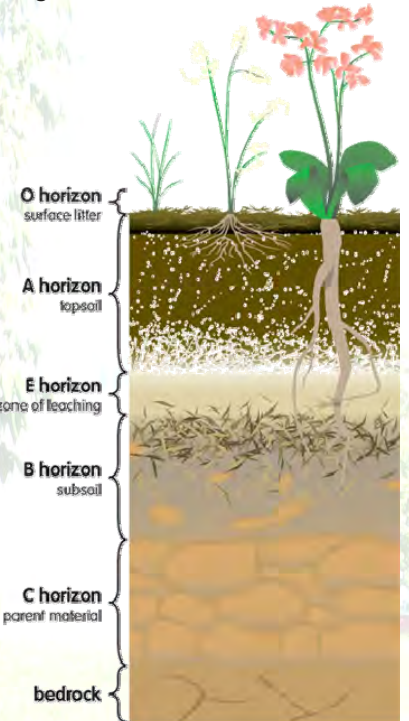
#### Areas That Drain Very Fast After a Rain

In this case, the site is usually very sandy and may not hold enough moisture for plants to grow well. If the source of water for the rain garden has many pollutants, there may also be a concern for ground water contamination. You may need to seek assistance to evaluate if you can improve the water holding capabilities of the soils. Adding compost or top soil will add organic content and improve the water holding capacity of the soil. The plant selection for the rain garden should be modified by replacing the water loving plants in the bottom to plants that like drier conditions.

#### Sites That Have Had Major Earth Moving and Alteration Prior to Residential Construction

In many residential yards, the natural topsoil was stripped away when the lot was graded for construction, leaving compacted subsoil with little organic matter. If your yard was graded and

disturbed at any time during the building process, you will probably see a very shallow root zone with a sharp color transition to a dense subsoil layer when you examine your soils. Digging a test hole in these compacted soils can be quite difficult. Depending on the altered conditions, water flow through the soil may be very slow. Your soil may also have a pH level unsuitable for rain garden plants. An amendment such as iron sulfide, lime, or compost may be needed. Digging deeper inspection holes (a post hole digger is a good tool) and examining your soil can provide additional insight to the soil conditions. Your county's Extension Service office has information about where soil tests are available at nominal costs and simple pH test kits are available at most garden stores. Removing the existing soil and replacing with better soil and installing a drain tile may be required to have a rain garden on this type of site.



### Fertilizer

If your soil drained well when you ran your infiltration test (more than 8 inches per day), and the garden contains some topsoil, you probably don't need to add much in the way of soil amendments. Most native plants do not need soil amendments or fertilizer. This is especially true for many of our Midwest prairie species. When planting natives, fertilizing the garden can actually encourage the growth of weeds that compete with the native species. However, some native species, and many horticultural varieties, do have more particular soil or nutrient requirements. For example, many woodland plants tend to like highly organic soil. In those cases, adding organic matter such as compost will be beneficial. But before adding any fertilizer for specific plant selections, sample your soil by doing a soil test. Based on the results of the soil test, you

may need to add lime or sulfur to moderate your soil pH for the rain garden plants. Organic matter left on the surface will also encourage earthworm activity and improve drainage.

### After You Excavate, Check Infiltration One More Time

After preparing the rain garden bed, and prior to planting, it is a good idea to re-check the infiltration rate in the garden. If a significant amount of soil was removed from the site there may have been changes in the soil make up that can affect drainage. To do this, use your garden hose to fill the garden with water. Let it drain once, and then fill it up a second time. Watch it to make sure it drains in 24 to 48 hours. If the garden does not drain fast enough, it is much easier to rework the soil and fix things before the garden is planted. If the garden drains properly, go ahead and plant before the soil dries out. That will be better for the plants and help keep their roots moist. If the garden does not drain properly you need to consider additional actions such as drainage, soil amendments, or seeking professional help.