

WHAT IS A RAIN GARDEN?

In the summer of 2006, citizens in Toledo and Lucas County sustained heavy flooding from a series of rainstorms. The rainwater from these storms exceeded the capacity of the ditches and storm sewers. In urban areas like Toledo, the volume of storm water is increased due to the enormous amount of impervious surfaces, including parking lots, roads, and buildings. A rain garden is one way to manage this stormwater.



Rep. Kaptur and Girl Scouts at Wildwood Metropark

A rain garden is a low area that catches and slows storm water from downspouts, driveways, parking lots and roads allowing it to infiltrate into the soil with the help of deep-rooted plants, usually native forbs and grasses. The garden is planted in a shallow basin by a home or business and can filter pollutants from the stormwater that it captures and absorbs.



How a Rain garden functions. Illustration by Rusty Schmidt

Rain gardens can be designed in all shapes and sizes for sun, shade, clay or sand. They can be formal or informal. Plants can include native and/or non-native plants, like prairie grasses, daylilies, coneflowers, red-twigged dogwood, and many more. Rain gardens can also include ornamental features including stone culverts and paths.

PLANTS FOR OHIO RAIN GARDENS:

Common Name	Sun range	Moisture range	Color	Ht. (ft)	Bloom period
Flowers					
New England Aster <i>Aster novae-anglia</i>			w et-moist	violet	1-4 Aug-Oct
Cardinal Flow er <i>Lobelia cardinalis</i>			w et-moist	red	2-4 July-Sept
Great Blue Lobelia <i>Lobelia silphilitica</i>			w et-moist	blue	2-4 Aug-Sept
Sw amp Milkw eed <i>Asclepias incarnata</i>			w et-moist	pink	4-5 July-Aug
Butterfly Milkw eed <i>Asclepias tuberosa</i>			moist-dry	orange	1-3 June-Aug
Marsh Blazing Star <i>Liatris spicata</i>			w et-moist	purple	3-6 July-Sept
Ohio Spiderw ort <i>Tradescantia ohioensis</i>			moist-dry	blue	2-4 May-July
Purple Coneflow er <i>Echinacea purpurea</i>			moist-dry	purple	2-4 June-Aug
Wild Geranium <i>Geranium maculatum</i>			moist	pink	1-2 April-May
Wild Columbine <i>Aquilegia canadensis</i>			moist	orange-red	1-2 June-July
Culver's Root <i>Veronicastrum virginicum</i>			moist-average	w hite	3-6 June-Aug
Daylilies (not orange) <i>Hemerocallis sp.</i>			moist-dry	various	1-3 May-Aug
Turtlehead <i>Chelone glabra</i>			average-wet	cream	3-4 July-Sept
Grasses & Sedges					
Fox Sedge <i>Carex vulpinoidea</i>			saturated-wet	green-brown	2-3 May-July
Soft Rush <i>Juncus effusus</i>			saturated-wet	green	2-4 June-Aug
Little Bluestem <i>Schizachyrium scoparium</i>			average-dry	blue-green	2-4 Aug
Prairie Dropseed <i>Sporobolus heterolepis</i>			average-dry	green	1.5-2 Aug-Oct
Shrubs					
Red Tw igned Dogw ood <i>Cornus sericea</i>			w et-dry	w hite-red	6-12 May-June
Blueberries <i>Vaccinium sp.</i>			moist	red fall foliage	4-6 June-Aug
Black Chokeberry <i>Aronia melanocarpa</i>			moist-dry	w hite-red	3-6 May

FOR MORE INFORMATION:



Sofia Quintero Arts & Cultural Center Rain Garden

- ≈ Visit our demonstration Rain Gardens—check our website for current locations as well as other resources: www.raingardeninitiative.org
- ≈ Contact:
 - ≈ information@raingardeninitiative.org
 - ≈ Kathryn Swartz, Conservation Associate
% American Rivers Healthy Waters Campaign
419.936.3759, kswartz@americanrivers.org
- ≈ Gardening advice can be obtained by contacting:
 - ≈ OSU Extension Horticulture Hotline,
419.578.6783 — Mon/Wed/Fri, 10am-1pm



City of Toledo Division of Environmental Services demonstration rain garden

RAIN GARDEN INITIATIVE OF TOLEDO-LUCAS COUNTY



www.raingardeninitiative.org



Cedar Pond Park in Eagan, MN. Photo by Rusty Schmidt

Promoting Natural Stormwater Management and Urban Beautification

BUILDING YOUR RAIN GARDEN

1. Siting your Rain Garden

You should locate your rain garden on a downhill slope ten to twenty feet away from the house, near a downspout (figure 1.) to prevent water from seeping into your foundation. Although it can be placed over a septic leach field it should not be placed directly over a septic tank. Finally, it should not be located in an area which has standing water for long periods of time. Rain gardens can improve poor water infiltration but cannot survive long-term flooding.

2. Sizing your Rain Garden

Although rain garden size is not critical—**any rain garden is a good rain garden!**—its efficiency will depend on several factors: how large and/or deep the garden can be made; what type of soils the garden site has; and the amount of roof and other areas draining into the garden.

First, size your rain garden to fit your landscape.

Sometimes you only have so much space you can devote to the garden or you can only dig so deep into your yard due to utilities, roots, rocks or other obstructions. If you are not limited by space, a good guide may be an 8' X 10' area to drain one downspout from a typical house.

Second, size your rain garden to fit your soils.

The native (existing) soils will naturally infiltrate a certain amount of water. Although most rain gardens are 4 to 8 inches deep, you should determine your infiltration rate so that the garden drains within 24 hours, which is less time than mosquito larvae need to mature. To conduct a simple soil percolation test, dig a hole in the garden area, 8" X 8", fill it with water and let it drain once. After filling it a second time, measure how far it drains in 4 hours and

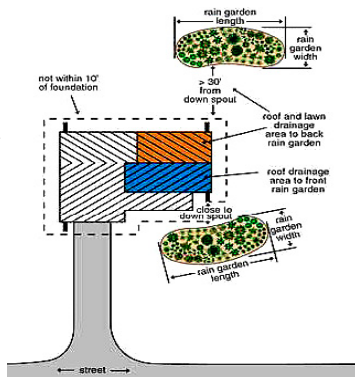


fig. 1. location & proper sizing for runoff

multiply that number by 6 to get your 24-hour drain time and depth. Example:

(hole drains 1-1/2 inches in 4 hours) X 6 = 9 inches:
→ your garden can be up to 9 inches deep



Burnsville, MN: Photo by: Rusty Schmidt

Third, size your rain garden to fit your runoff.

Most of the water in the rain garden will come from your roof through your downspouts. First, determine the amount of roof area draining to your rain garden by taking the square footage of your home and multiplying it by the fraction of the roof that goes into that downspout. This is the roof drainage area or RDA. Add in any adjacent impervious areas that will directly run into the garden (sidewalk, parking lot, etc.) A good guide is that the ratio of roof drainage area to rain garden area (RGA) should be 5:1. Example:

home 20' wide x 50' long = 1000 sq. ft.

1 of 4 downspouts drain to garden = 250 sq. ft. RDA
→ your garden should be 1/5 x 250 RDA = 50 sq. ft.

See the Geauga Soil & Water Conservation District's "Rain Garden Manual for Homeowners" for more installation information, including plans for clay & sandy soils, slopes, etc. It is available on our website: www.raingardeninitiative.org.

3. Building your Rain Garden

Mark the boundary of the garden with string. Then put stakes along the uphill and downhill sides, five feet apart, so that each uphill stake lines up with a downhill stake. If the lawn is almost flat, you will be digging at the same depth throughout

the garden and using the soil for the berm. If the lawn is sloped, the high end will need to be dug out more and its soil will be used at the downhill berm to make it higher. The key is to ensure that the bottom of the garden remains level so that infiltration is evenly distributed and maximized (figure 2.)

Starting at one end of the rain garden, tie a string from the uphill stake and connect it to its downhill stake while keeping the string level. Start digging at the uphill side of the string. Measure down from the string and dig until you reach the depth you want the garden should be: if you want a garden 4 inches deep, dig four inches down from the string.

Hand dig, double dig, or use a rototiller to create the basin of the rain garden; dig deeper to loosen clay soils. An ideal soil mix would be a mix of 50-60% sand, 30-40% loamy topsoil and 5-10% organic matter from yard waste or compost. If soil structure is poor (heavy clay or high sand content), amend with compost or peat. In the worst circumstances of impermeable clay soils, complete soil replacement with an engineered mix may be required, including additional underdrain construction to provide an outflow for large storm events. After digging the basin and doing any amending, re-test the soil's infiltration of water to make sure that the basin still drains in 24 hours or less.

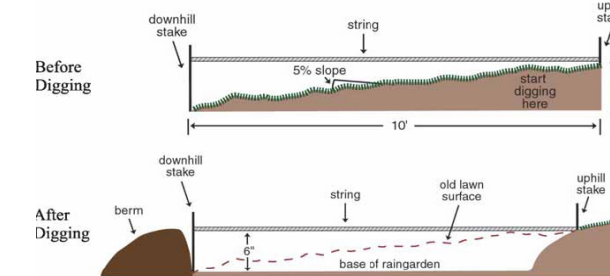


fig. 2. digging out the rain garden; creating the berm

4. Planting your Rain Garden

When choosing plants for the garden, it is important to remember that this is a garden for YOU: pick attractive plants that you like. Consider the height, shape, texture, bloom time and color of plants (see our plant list) to ensure a long flowering season and a good color palette.

Deep-rooted plants are the essential component of the rain garden, as they penetrate and break up the soil. This improves soil structure and increases water infiltration. Native plants tend to have much deeper root systems and are adapted to local soil types, improving their chance of survival

and reproduction. Most of the plants in our zone's rain garden list prefer sun to partial shade and average to moist soil conditions.



Maplewood, MN: Photo by: Rusty Schmidt

Planting guidelines:

- ≈ Select plants with well-established root systems. Plugs are economical 2" potted plants with established root systems. Seeds can be less expensive but take more time to establish; larger plants fill out the garden faster but cost more.
- ≈ Draw a plan for where each plant will go in the garden.
- ≈ Dig each hole twice as wide as the plant and deep enough so the plant sits on the bottom of the hole with the tops of its roots level with the surface. Fill the hole and tamp firmly to remove air pockets in the soil.
- ≈ Apply heavy, coarse mulch evenly over the bed about two inches thick. Do not bury the crowns of the plants.
- ≈ Label plants or plant groups to aid in identifying weeds in the garden.
- ≈ Water plants immediately after planting and continue to water twice a week — unless it rains — until the plants are established.

5. Maintaining your Rain Garden

Your rain garden will most likely require watering for the first month until the plants are well-established. Weeding will be needed for the first two years until the plants fill out to the desired density, assuming it is mulched annually. Remove weeds and their roots promptly. Maintenance time will decrease over the years as the native plants out-compete the weeds. After each growing season, the plant stems and seed heads can be trimmed back or left for winter interest, wildlife cover, and animal food. Once spring arrives, cut back the old growth.