RAIN GARDEN

What is a rain garden and why should you plant one?

A rain garden is simply a garden that is designed specifically to capture, store and clean storm water runoff from your roof, driveway, patio or other hard surface. You can also direct storm water from your disconnected downspout or the overflow from a rain barrel you have installed on your property to a rain garden. Planting rain gardens is an excellent way to control storm water runoff on your property, as they are both visually-appealing and effective in decreasing flooding and erosion. Rain gardens are created by digging a shallow depression in your yard, filling it loosely with soil and planting small trees, grasses, shrubs and other vegetation that grow naturally in your climate.

Will a rain garden work on your property?

To determine whether a rain garden will be a good fit on your property, it is important to consider the natural landscape of your yard and the way storm water flows on your property. Keep the following in mind:

- **Always consult city and county ordinances first to ensure your plans meet local requirements.**

- A rain garden should be planted at least 10 feet away from your home and any neighbors' homes.
- It is easier to plant a rain garden in a relatively flat area or in a naturally low-lying spot with good drainage.
- Consider how you plan to direct the flow of storm water to your rain garden. If you will be planting your rain garden a good distance away from your downspout, rain barrel or other storm water source, you may need to utilize an extension hose, a grass swale (a shallow trench) or another method to channel storm water runoff to your rain garden.

  Note: If you are disconnecting your downspout and redirecting the flow of storm water to a rain garden, make sure the downspout discharges water at least six feet from your home's foundation, five feet from a public sidewalk and 20 feet from a roadway. The water discharged from your downspout should not affect your neighbor's property. See the Downspout Disconnection Guide for more information on disconnecting your downspout.

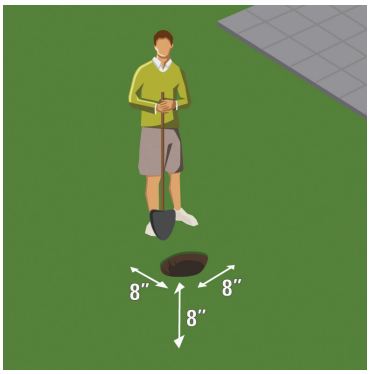
- Consider how storm water will flow into the rain garden and how excess storm water will flow out of the garden if it fills during a heavy storm. Excess storm water should be routed to existing swales or storm drains.
- Certain areas of your yard or property may not represent a good location for your rain garden. Don't plant your rain garden:
  - Over or near buried utility lines, septic systems or water supply sources
  - Directly under a large tree
  - In the grass strip between a sidewalk and a street
  - On a steep slope
  - In an area where water ponds or where the ground becomes soggy, as this indicates the soil in that area does not drain well

How do you determine what the size of your rain garden should be?

A rain garden can be relatively easy to plant, but it is important to choose the right location and size of your garden to ensure the plants establish themselves and have a long and useful life. Your rain garden must be large enough to adequately capture the amount of runoff you are directing to it. Follow the steps below to properly size your rain garden:

- Determine how many square feet of rooftop you have on your house by multiplying the length of your home by the width.
- If you are directing storm water from a downspout to your rain garden, divide the square feet of rooftop by the number of downspouts on your home to get the area of rooftop that drains to each downspout.
- If you plan to direct storm water from a patio, driveway or other paved area to your rain garden in addition to the water from your downspout, add the square footage of these surfaces to the area of rooftop that drains to each downspout to get the total amount of impervious surface that will be draining to your garden.
- Test your soil to see how well it drains and to determine how deep the depression for your garden should be.
    - In the area of your yard where you plan to plant your rain garden, dig a hole that is at least eight inches deep and eight inches wide.
    - Fill the hole with water. Wait at least one hour while the water saturates the soil.
    - Fill the hole with water again.
    - Wait four hours, and then use a ruler to measure the water level in the hole.
    - Multiply how many inches the water level has dropped by six to determine the soil infiltration rate in a 24 hour period, which will give you your suggested rain garden depth. Your rain garden should drain of all water within a 24 hour period.

      Note: Residential rain gardens should be at least 8 inches deep, but no deeper than 12 inches.
    - If your soil infiltration test results in little change in water level, this is a sign of poorly draining soils. Evaluate the soil, and determine whether it is loose or compact. Sandy soil will drain well, will be crumbly and will break apart easily. Clay soil will drain poorly and will stick together in heavy clods. To improve the drainage of your rain garden, consider amending the soil.



How do you determine what the size of your rain garden should be? *(cont.)*

- Divide the amount of impervious area that will drain to your garden by the depth of your garden.

- Determine the dimensions of your rain garden based on your available space. Generally, your rain garden should be about twice as long as it is wide, and you should direct the flow of storm water to the shorter end to allow the water the length of the garden to soak in.

Sample calculation for determining the dimensions of your rain garden:

50 ft. (length of home) x 30 ft. (width of home) = 1,500 sq. ft. of rooftop

1,500 sq. ft. of rooftop ÷ 4 downspouts = 375 sq. ft. draining to each downspout

75 sq. ft. of patio or driveway + 375 sq. ft. of rooftop = 450 sq. ft. of impervious surface

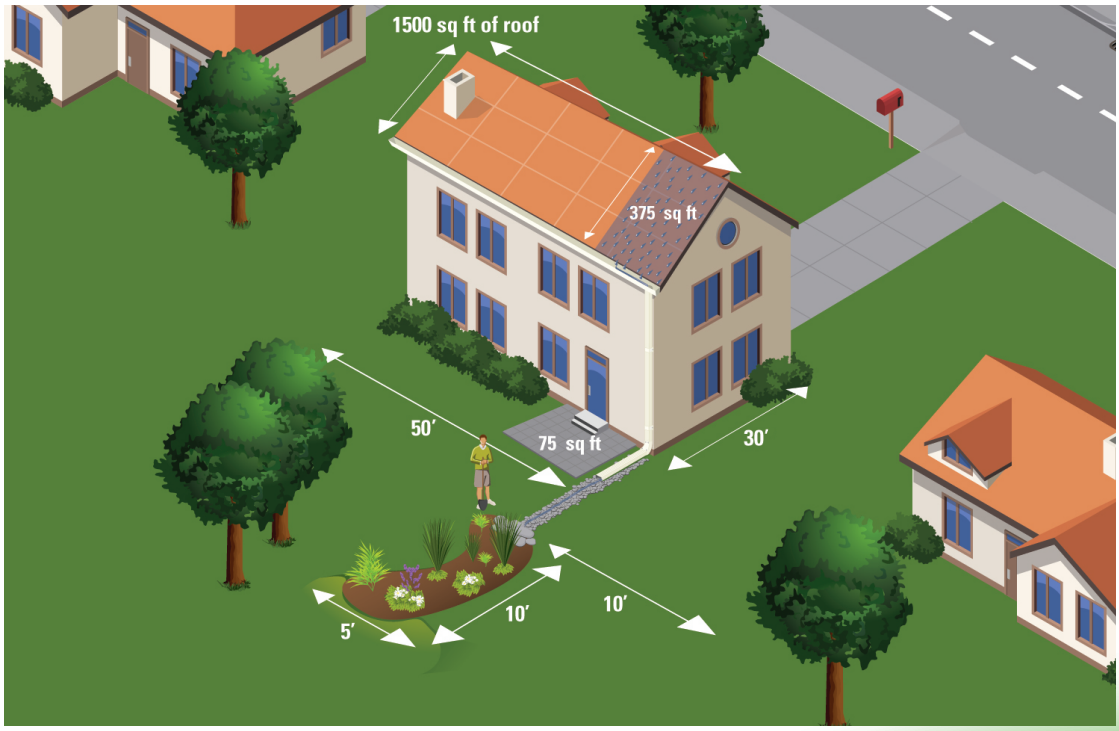
Water level drops 1.5 inches in four hours x 6 = 9 inch rate of infiltration in 24 hours

9 inch rate of infiltration = 9 inch garden depth

450 sq. ft. of impervious area ÷ 9 inch garden depth = 50 sq. ft. of rain garden

50 sq. ft. of rain garden ÷ 10 ft. in length = 5 ft. in width

Remember, these are guidelines, not rules. Each property is different, and if your yard or budget cannot accommodate the recommended rain garden size, consider limiting the amount of rooftop or impervious area directed to the garden or planting multiple, smaller gardens.



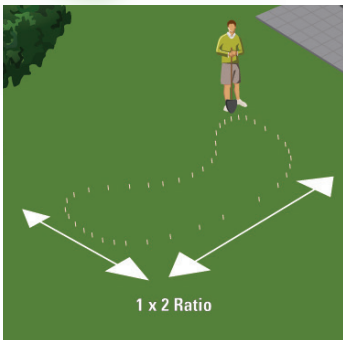
RAIN GARDEN

How do you plant a rain garden?

Notice: Before getting started, always check city and county ordinances to ensure your plans meet local requirements.

Tools and Materials Needed:

- Tape measure
- Shovel
- Trowel
- Wheelbarrow
- Carpenter's level
- String
- Rototiller
- Protective equipment
- Topsoil
- Mulch
- Plants



Step One – Prepare the site.

Outline the perimeter of your rain garden in the location you have chosen with stakes, flags or a garden hose based on your calculated dimensions.

Step Two – Dig the depression for your garden.

Call Kentucky 811, the "Call Before You Dig Call Center," at 1-800-752-6007 to make sure you don't disturb any underground pipes, lines or cables. Then, dig a depression for your rain garden that is the depth you calculated in your infiltration test. Level the floor of your rain garden so that storm water can infiltrate the garden evenly. However, try not to compress the soil, as this will impact infiltration.

Note: If you are planting your rain garden on a slope, use excavated soil to create a berm, or shelf, to contain the storm water and prevent it from eroding the soil in your garden. However, be sure to build a small spillway into the berm to allow excess water to escape during heavy rainstorms, and make sure that any overflow from the rain garden drains to an area in your yard that can handle additional water. Do not direct overflow from your rain garden toward a house or the street unless there is adequate distance between them.

Step Three – Verify that the soil in your rain garden will drain well.

Add a small amount of water to the depression for your garden, and ensure it drains within 24 hours. If you choose to amend the soil in your rain garden, remove an additional four-to-six inches of soil from the floor of the garden, and replace it with the recommended soil mixture, which includes 50 to 60 percent sand, 30 to 40 percent loamy topsoil and five to 10 percent organic matter. If you plan to leave the existing soil in your rain garden, consider rototilling the area prior to planting your vegetation to promote better infiltration. You can also partially amend the soil by tilling some of the recommended soil mixture into the bottom of your garden.

Step Four – Plant your vegetation.

Fill the depression for your rain garden loosely with the excavated soil, and break apart any large clumps of soil by hand or with a rototiller. To ensure your vegetation is well established, mix in a layer of top soil and organic matter with the existing soil in the garden.

Get creative when choosing the plants and arrangement for your rain garden. It is best to plant grasses, sedges, shrubs and other plants that grow naturally in this climate, as they have long roots that increase water absorption and are more drought-tolerant than non-native counterparts. However, ensure the plants you choose are also suited to wet conditions. Remember also to choose plants that will complement one another aesthetically and that vary in height, color and blooming periods. For visual appeal, place taller plants in the middle or back of your rain garden and medium and short plants in the front or along the sides.

Most plants that are suitable for a rain garden should be placed between 12 and 18 inches apart, as measured from the center of the plant. Based on this recommendation, determine the approximate number of plants you need to fill your rain garden.

For example, a 50 sq. ft. rain garden needs between 33 and 50 plants.

Sample calculation for determining the number of plants needed for your rain garden:

Assuming 12 inches from plant center (one plant for every 1 sq. ft.):

50 sq. ft. ÷ 1 plant per sq. ft. = 50 plants

Assuming 18 inches from plant center (one plant for every 1.5 sq. ft.):

50 sq. ft. ÷ 1.5 plants per sq. ft. = ~33 plants

Note that larger plants, like trees and shrubs, will need more space to grow. Depending upon the expected size of the tree or shrub at maturity, these larger plants should be placed anywhere from three to 20 feet away from other plants in your garden.

Step Five – Direct storm water to your rain garden.

You can direct storm water to your rain garden from your roof by angling a downspout extension piece like a flexible hose toward the front of your garden. If you need to disconnect your downspout from the sewer system, see the Downspout Disconnection Guide. You can also build a rock channel or a shallow grass swale or depression to direct the flow of storm water to your garden from the impervious surfaces on your property. To slow the flow of water and distribute it more evenly to your garden, place a large rock at the front of the garden where the storm water enters it.

Step Six – Observe your property after a rain event.

Check to see if your rain garden is working properly and can handle the storm water being directed to it. Monitor the garden for 12 to 24 hours after a rainstorm, and ensure the water is soaking into the soil. If the water is not soaking into the ground, consider changing the direction of the flow or amending the soil in your garden. See Step 3 for information on amending your soil.