

Build Your Own Rain Garden

Suggested Methods to Size a Rain Garden

This guide recommends building a Rain Garden that will hold 1" of rain water collected from the impervious area and allowing it to soak into the ground within 24 hours. This method will utilize the drainage area, infiltration rate and Rain Garden depth to determine the appropriate size of your Rain Garden.

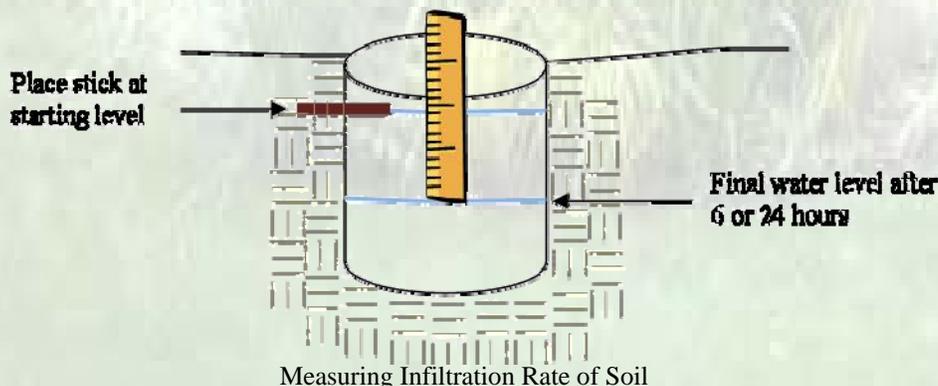
Step #1 is to determine the drainage area. Water collects and runs off areas of your roof, driveway, patio or other hard surface. You will need to evaluate what part of the roof or other surface drains to the proposed Rain Garden. Make sure you are measuring the horizontal area from the ground and not the surface area of the roof. If you are measuring a roof do it from the ground. Measure the number of feet from gutter to the peak of the roof and measure the width of roof that drains to the downspout.



Example: This house has a simple roof. There is a gutter that collects the roof water from the peak and ridge on the front of the house. You would need to measure from gutter to peak which is "W" and from the end of the house to the ridge line which is "L". The drainage area is $W \times L$. Take your measurements in feet to get an answer in square feet.

Step #2 is to measure the infiltration rate of your soil. Dig an 8" circle 8"-10" deep in the location of the proposed Rain Garden. Saturate the soil by running a garden hose several times during a day to fill the hole and saturate the surrounding soil. This is best done in the spring when the rains have naturally moistened the soil. The next day fill the hole nearly to the top. Mark the top of the water with a stick in the side of the hole. After six hours measure the drop of the water by measuring between the stick and the top of water. Take this measurement in inches and multiply by 4. This will be your infiltration rate

for 24 hours. (Inches of drop in 6 hours $\times 4 =$ inches of drop in 24 hours) If the level has changed less than one inch after 6 hours, wait a full 24 hours from the time you initially filled the hole and measure the total drop. This measurement will be the amount of water that can soak into the ground in 24 hours (one day). No multiplication is need.



Measuring Infiltration Rate of Soil



Suggested Methods to Size a Rain Garden (cont.)

Step #3 is to determine the depth of the Rain Garden. It is recommended that the Rain Garden should be free of water after 24 hours. The depth of your pond should not be any deeper than your soil's infiltration rate/day. If the infiltration is 5 inches/day then make the rain garden no more than 5 inches deep. It is generally recommended not to exceed a depth of 8 inches even if your infiltration rate/day exceeds 8 inches/day. A depth of 6" to 8" is generally recommended for most Rain Gardens with soils that have an infiltration rate of 8 inches/day or more.

Step #4 is a simple calculation to determine the area of the Rain Garden.

Drainage Area/Depth of Rain Garden = Area of Rain Garden

Example: Drainage area of the roof = 12 ft. x 15 ft. = 180 sq. ft.
The infiltration rate was measured at 5 inches/day
A depth of 4 inches was selected for the rain garden
180 sq. ft. divided by 4 = 45 sq. ft.

After you have determined the size of the Rain Garden you can decide what shape to build it. A 45 sq. ft. Rain Garden could be a square 7' by 7' or rectangle 5' by 9' or an 8' circle. For odd shapes, graph paper can be handy. Using the graph paper, make each square one foot by one foot. Draw the design on the graph paper and count the squares to determine the area.

Problem Soils

Some soils are so densely compacted or have a persistent high water table that water will not drain out of the test hole. These soils are not suitable for a Rain Garden unless conditions are modified. The homeowner has several choices. He can decide not to build a Rain Garden, try another location or improve the soil drainage. The "What You Need to Know About Your Soil" tip sheet describes the process of amending the soil or adding drain tile for a Rain Garden. Contact the Soil and Water Conservation District in your county to get professional advice on how to improve the soil and add tile drainage.