



When heavy rains fall on paved surfaces, stormwater can gush through streets and yards, carrying pollutants into local streams, rivers, and lakes. Gardeners can help reduce this problem by planting rain gardens, setting up barrels to capture rainwater for irrigation, installing downspout planters, and laying permeable pavers that allow water to soak into the ground. **These strategies not only help protect the environment, they can add beauty to your garden, too.**

BED FOR STORMWATER

A rain garden is a depression built into the landscape to catch excess water, allowing it to slowly seep into the soil, where microbes help to clean it of impurities, and then to flow gradually to nearby groundwater reservoirs. Rain gardens also have plants that thrive in wet and dry conditions, including perennials, ornamental grasses, wildflowers, ferns, shrubs, and small trees. Setting up rain gardens takes a little work and a few simple steps, but once established they are relatively care-free.

Pick a location. This could be a spot where you can direct a downspout from your roof, an area at the base of a slope, or any place where stormwater collects. Just be sure the garden is at least 10 feet away from the foundation of your house and avoid siting a rain garden in a septic leach field area or close to a well.

Check the drainage. Dig a hole 18 inches deep and fill it with water. The hole should be empty within 24 hours. If not, the site drains too slowly to serve the function. If you can dig more than 12 inches deep in a slow-draining spot, you could add a base layer of stone through which the water can flow.

Determine the size and layout. Here's a handy rule of thumb about the right size for a rain garden: it should be 30 to 50 percent of the size of the impervious surface area it will serve. For example, say you want to capture water that runs off a roof surface that's approximately 20 feet by 50 feet (1,000 square feet). The rain garden will need to be about 300 to 500 square feet. As you mark the boundaries of your garden, remember that it needs to function as a bowl that can fill up with water.

Strip and dig. If the area is lawn, it's best to strip off the sod before you dig, so the lawn grass won't come back as weedy growth in the garden. Then dig up the garden, loosening the soil at least 12 inches deep. The outside rim of the garden should have sloped walls so that it forms a bowl.

Channel the water. There are different ways to direct the excess water into your rain garden. You can extend gutter pipe across the surface of the ground to reach the garden bed, install underground piping or make a swale in the landscape to direct water. Whatever

technique you use, set up a stone catchment area where the water first enters the garden to prevent erosion.

Prepare for overflow. A rain garden needs to include an escape route for overflow when the garden fills up. Use 1- to 3-inch diameter pipe, positioned a few inches below the soil on the low end of the garden.

Choose plants. Select plants that can thrive in alternating conditions of very wet and dry. Native species often have deeper, stronger roots that can help them get through dry periods. (See suggestions below.)

Plant the garden. Start in the center and work your way out to the edges. Put the plants that are the most moisture-loving at the low point of the garden, and more drought-tolerant plants higher up the sloping sides.

Fill up to test. For the initial filling, unless a downpour is imminent, use your garden hose on low pressure and direct it to the catchment area of the garden so that all of the plants settle in.

Add mulch. Hardwood mulch or pine bark chips are best for rain gardens because shredded leaves and other lightweight mulches are prone to floating away when the rain garden fills up. Check the overflow pipe periodically to ensure it is not clogged with debris.



RAIN GARDENING continued

PLANT CHOICES

While almost any plant with the right moisture requirements will do fine in a rain garden, native grasses, wildflowers and shrubs generally have very deep root systems, sometimes extending down 10 feet or more, where they can almost always find moisture and nutrients. And native plants are well-adapted to your conditions, so they don't need attention to thrive.

The center of the rain garden (the wettest area) should be stocked with plants that like standing water for long periods of time. Plants that work well in these conditions include:

Black chokeberry (*Aronia melanocarpa*)
 Buttonbush (*Cephalanthus occidentalis*)
 Elderberry (*Sambucus canadensis*)
 Ninebark (*Physocarpus opulifolius*)
 Cardinal flower (*Lobelia cardinalis*)
 Lady fern (*Athyrium filix-femina*)
 Switchgrass (*Panicum virgatum*)
 Tussock sedge (*Carex stricta*)
 White turtlehead (*Chelone glabra*)

In the middle zone, you want plants that can tolerate occasional standing water, such as:

Snowberries (*Symphoricarpos albus*)
 American beautyberry (*Callicarpa americana*)
 Broad-leaved meadowsweet (*Spiraea latifolia*)
 Inkberry (*Ilex glabra*)
 Blue false indigo (*Baptisia australis*)
 Blue star (*Amsonia tabernaemontana*)
 Bottlebrush grass (*Hystrix patula*)
 Broomsedge (*Andropogon virginicus*)

Plants around the outer rings of rain gardens need to tolerate periods of drought after the stormwater drains away. You have lots of choices for that space, including:

American cranberry bush (*Viburnum trilobum*)
 Bush cinquefoil (*Potentilla fruticosa*)
 Fragrant sumac (*Rhus aromatica*)
 Sweet pepperbush (*Clethra alnifolia*)
 Anise hyssop (*Agastache foeniculum*)
 Butterfly weed (*Asclepias tuberosa*)
 Evening primrose (*Oenothera speciosa*)
 Mistflower (*Eupatorium coelestinum*)
 Threadleaf coreopsis (*Coreopsis verticillata*)

BARRELS, PLANTERS AND PAVERS

With rain barrels and downspout planters, you can help manage stormwater and preserve a valuable resource no matter how big your yard is.

Rain barrels collect stormwater from gutter downspouts and store it for when you need to irrigate your garden. If you are purchasing a rain barrel, be sure it is made with food-grade material, so you don't introduce contaminants into your garden, and check that it has an overflow valve to release excess water. It should also have a secure lid to keep our curious children and wildlife. You can find rain barrels as small as 33 gallons and as large as 300 gallons or more.

Downspout planters are decorative counters that are designed to capture and filter stormwater. They typically are filled with a base layer of gravel to allow for drainage, a loose soil mix, and plants that can tolerate wet conditions. Galvanized metal is a common material for downspout planters, which may hold more than 75 gallons of water. They can be set up to drain directly back into sewer pipe, into a nearby area drain, or into a permeable surface area down slope of the planter, such as a lawn or garden.

Permeable paving systems are porous, allowing water to infiltrate the pavement and drain into the ground or a rock base underneath. These paving systems are just as strong and durable as traditional paving materials such as concrete, asphalt, or compacted gravel. Pavers may be made from concrete, brick, or plastic.

PHS manages the Philadelphia Water Department's Rain Check program, which includes workshops on the why and how of stormwater management for gardeners and offers those who participate a choice of a free rain barrel, or financial help with the costs of downspout planters, permeable pavers, and rain gardens. For details and to sign up, go to phsonline.org/programs/stormwater-solutions

