

Rain Gardens

**What are they?
Why Should They Be Used?**

Presented by

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What is a rain garden? A rain garden is a shallow, constructed depression that is planted with deep-rooted native plants & grasses. It is located in your landscape to receive runoff from hard surfaces such as a roof, a sidewalk and a driveway. Rain gardens slow down the rush of water from these hard surfaces, holds the water for a short period of time and allows it to naturally infiltrate into the ground.

A rain garden can be thought of as a personal water quality system because it filters the runoff from your roof and lawn and recharges the groundwater.

A rain garden also conserves municipal water resources by reducing the need for irrigation.

Homeowners in many part of the country are catching on to rain gardens since they are a beautiful and colorful way for homeowners, businesses and municipalities to help ease stormwater problems. There is a growing trend by municipalities and homeowners to incorporate natural processes to help relieve flooding and pollution

Why are rain gardens important? Rain is natural; stormwater isn't. Government studies have shown that up to 70% of the pollution in our streams, rivers and lakes is carried there by stormwater. Although most people never think about stormwater, about half of the pollution that stormwater carries comes from things we do in our yards and gardens!

As cities and suburbs grow and replace forests and agricultural land, increased stormwater runoff from impervious surfaces becomes a problem. Stormwater runoff from developed areas increases flooding; carries pollutants from streets, parking lots and even lawns into local streams and lakes; and leads to costly municipal improvements in stormwater treatment structures. By reducing stormwater runoff, rain gardens can be a valuable part of changing these trends. While an individual rain garden may seem like a small thing, collectively they produce substantial neighborhood and community environmental benefits.

Rain gardens work for us in several ways:

- Increasing the amount of water that filters into the ground, which recharges local and regional aquifers;
- Helping protect communities from flooding and drainage problems;
- Helping protect streams and lakes from pollutants carried by urban stormwater – lawn fertilizers and pesticides, oil and other fluids that leak from cars, and numerous harmful substances that wash off roofs and paved areas;
- Enhancing the beauty of yards and neighborhoods;
- Providing valuable habitat for birds, butterflies and many beneficial insects.

Benefits of rain gardens:

- Rain gardens are lovely landscaping features.
- Rain gardens can save you money. They don't need to be fertilized or sprayed, only weeded and mulched. They reduce the amount of lawn you have to maintain.
- Rain gardens are low maintenance. Once established, they require no fertilizer, watering, or mowing. A once a year cleanup, addition of shredded hardwood mulch to keep the surface moist and tidy, and removal of weeds and invasive species are all that are required.

- Rain gardens can potentially absorb hundreds of gallons of rain that would otherwise wash pollution down the street and into the nearest river, stream, or lake.

Qualities of rain gardens:

- Rain Gardens have a ponding area, but they are not ponds. They often are planted with wetland plants, but they are not wetlands (although you can design a rain garden that mimics a wetland).
- Many of the plants in the garden are native to the region, and have extensive deep roots that help the garden absorb rain. The native plants do not need special attention once they are established.
- There is a bowl-shaped dip in the garden, which holds the rain while it soaks into the soil.

Where should the rain garden go?

Home rain gardens can be in one of two places – near the house to catch only roof runoff or farther out on the lawn to collect water from the lawn and roof.

To help decide where to put a rain garden, consider these points:

- The rain garden should be at least 10 feet from the house so infiltrating water doesn't seep into the foundation.
- Do not place the rain garden directly over a septic system.
- It may be tempting to put the rain garden in a part of the yard where water already ponds. Don't! The goal of a rain garden is to encourage infiltration, and your yard's wet patches show where infiltration is slow.
- It is better to build the rain garden in full or partial sun, not directly under a big tree.
- Putting the rain garden in a flatter part of the yard will make digging much easier.

What type of soils is on the rain garden site?

After choosing a rain garden location, identify the soil type as - sand, silt, or clay. Sand type soils have the fastest infiltration; clay type soils have the slowest. Since clay type soils take longer to absorb water, rain gardens in this soil type must be larger than rain gardens in sand or silt type soil. If the soil feels very gritty and coarse, you probably have a sand type soil. If your soil is smooth but not sticky, you have a silt type soil. If it is very sticky and clumpy, you probably have a clay type soil.

You can test your soil's infiltration rate by digging a hole 8 inches wide and 8 inches deep. Pour a bucket of water into it and see how long it takes to sink in. The water needs to go down an inch per hour. If it takes longer than that, you will need to do additional site preparation to improve infiltration.

Sandy soils drain well, while clay soils may become waterlogged. If your soil is sandy, you may be able to simply loosen the soil and improve it with some compost to prepare your rain garden for planting. If your soil is clay, you will have more work to do. Even light clay soils may create very soggy problems if a lot of rain is directed to the rain garden. Soil removal and replacement are often needed if your soil is clay. The recommended soil replacement mix is 50-60% sand, 20-30% topsoil, and 20-30% compost. ***Be sure no clay is in your replacement soil.***

Soils on developed land have been compacted by heavy construction equipment. Packing soil down is actually part of the construction site plan, to avoid the formation of sinkholes and to stabilize building foundations. Even sandy soils are often much reduced in their capacity to absorb rain after trucks and bulldozers have run over them. To make a properly functioning rain garden, these soils will need to be dug up and loosened to a depth of two feet, not only to prepare for planting the garden but so rain can soak in. If you have extra soil left over after this loosening process, use it in another part of your yard.

How big should the rain garden be?

The surface area of the rain garden can be almost any size, but time and cost will always be important considerations in sizing decisions. Any reasonably sized rain garden will provide some stormwater runoff control. A typical residential rain garden ranges from 100 to 300 square feet. Rain gardens can be smaller than 100 square feet, but very small gardens have little plant variety. If a rain garden is larger than 300 square feet it takes a lot more time to dig, is more difficult to make level, and could be hard on your budget.

The size of the rain garden will depend on

- how deep the garden will be,
- what type of soils the garden will be planted in, and
- how much roof and/or lawn will drain to the garden.

You can't have a rain garden that is too large. However, any size garden will make a difference, even a small one. The ideal situation is to create a garden that will absorb all the rain that would otherwise flow away from your yard. To calculate the most useful size of a smaller garden, here's how:

- Figure out what kind of soil you have.
- Estimate the area from which your garden will get rain. Multiply width times length of your rooftop, to get square feet. Add the square feet of paved areas. Remember, though, that different parts of your roof drain to different downspouts—you want to estimate only the square footage that will drain into your rain garden. Don't forget roof overhangs.
- For sandy soil, your rain garden should be 20-30% of the drain area. For example, if your roof and driveway measures 1200 square feet and all the rain from them will be used, your rain garden should be 20 to 30% of that, or 240-360 square feet.
- For clay soil, your rain garden should be about 60% of the drain area. Clay absorbs water very poorly; the varieties of rain garden plants that do well in clay take at least three years to get established. Soil replacement may be the best choice in clay soils.
- If you improve your soil drainage and replace your soil with rain garden mix (50-60% sand, 20-30% topsoil, 20-30% compost), your rain garden should generally be about 20-30% of the square footage of your drain area.

Rain gardens for single-family homes will typically range from 150 to 400 square feet. But remember; any size rain garden, even a small one, will contribute to solving local water pollution problems. It will also be a lovely addition to your landscape.

What types of plants go in a rain garden?

Native plants are recommended for your rain garden for several unique benefits.

Native plants can tough it out. Plants that are native to our area are uniquely adapted to thriving in the local weather, soils, and ecosystems. They live through droughts and downpours, and survive the winters without special care. Fertilizer will make them grow bigger, but they grow beautifully without it. Pests munch on them and the plants bounce right back without chemical pesticide sprays.

Native plants also have relationships with local butterflies, insects, birds, animals and other plants that they have developed by living together over thousands of years. Planting natives in your landscape helps provide habitat for local wildlife. How long has it been since your yard was decorated by butterflies and birds?

Native plants have deep roots which increase the ability of soil to hold water. For example, Blue False Indigo, *Baptisia australis*, grows only 3-5 feet tall, but the roots may go down 25 feet! These fantastic roots create deep channels in the soil for rain to soak into. Some of the roots die each year, and new roots grow. The decomposing roots enrich soil, making it more fertile and absorbent. The root systems also hold soil together and help prevent erosion.

For more information on design and how-to-build your rain garden visit Rain Gardens of West Michigan at www.raingardens.org.