Environmentally friendly rain gardens attract storm water and filter out pollutants

By Kate Hartsel
Home Front writer

Tall prairie grasses and native wildflowers make a natural-looking garden, and when planted in a shallow depression that collects storm water, these plants become an environmentally friendly way of dealing with runoff from rooftops and hard surfaces.

Rain gardens, planted with native plants, are designed to trap and absorb storm water so it doesn't run into the street and ultimately into local streams and lakes. Storm water runoff often carries with it fertilizers, pesticides, lawn clippings and leaves that pollute waterways. Rain gardens improve water quality by filtering out pollutants and allowing the water to soak in and replenish the groundwater supply.

"Rain gardens encourage the natural system of the water cycle and still provide a value to the homeowner by having a garden that's aesthetically pleasing," said Darren Lochner of Eau Claire, a University of Wisconsin-Extension natural resources educator for the Lower Chippewa River Basin. "The native plants used in rain gardens are also beneficial to wildlife and will bring in birds and butterflies, which a lot of people enjoy."

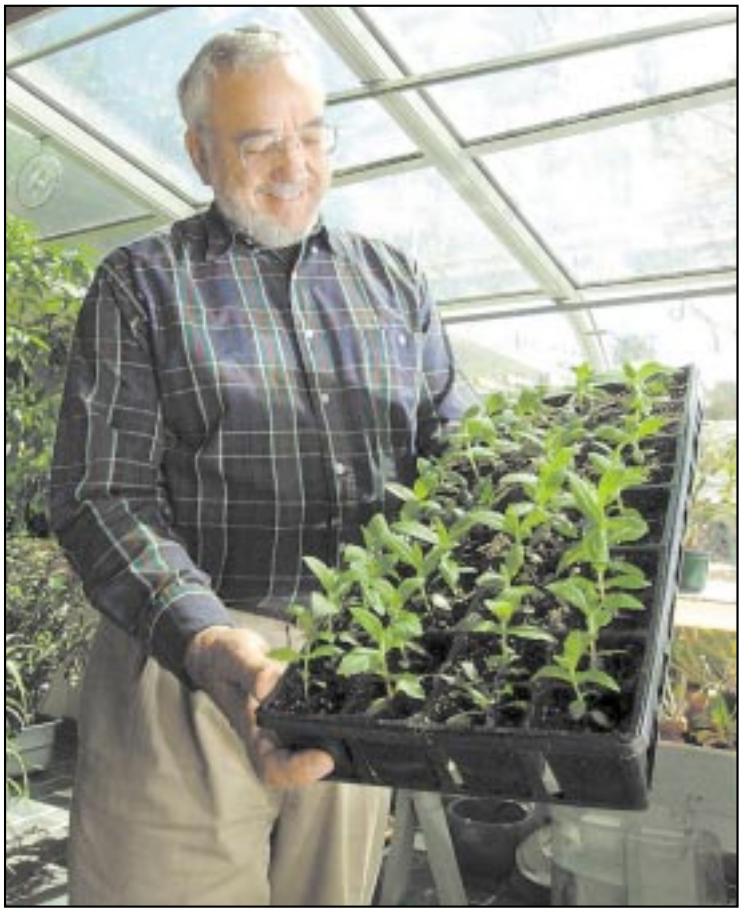
Because they have deep root systems, native plants can tolerate extremely wet and dry conditions, so they work well in rain gardens, noted Bill Hunt of Eau Claire, who is helping Lochner design and install two rain gardens at the Eau Claire County Exposition Center this summer. Hunt is coordinator of the West Central Wisconsin Master Gardener Project.

The rain gardens at the Exposition Center, near the interchange of Interstate 94 and Highway 93, will feature many native plants, and Hunt is growing 400 of them in his basement in preparation for the outdoor project.

"One Expo Center garden will be 125 square feet and will be located near a downspout; a second garden will be 255 square foot and farther from the building," Hunt said.

Like those at the Exposition Center, home rain gardens usually are established in one of two places: near the house to catch roof runoff or farther away to collect water from the lawn and roof.

Rain gardens that catch roof



Staff photo by Shane Opatz

Bill Hunt, a Master Gardener from Eau Claire, is helping to design rain gardens for the Eau Claire County Exposition Center. Here he holds a tray of young New England asters, Latin name Aster novae-angliae, a native perennial that grows 4 to 6 feet tall and whose purple and orange blooms are favorites of butterflies.

Find out more from these sources

To find out more about rain gardens and rain garden plants, try these sources:

- Internet sites http://clean-water.uwex.edu/pubs/raingarden and http://dnr.wi.gov (click on "search" and type in "rain garden").
- Darren Lochner, UW-Extension natural resources educator, 836-5513.
- County UW-Extension offices. In Eau Claire County, call the office at 839-4712.

Black-eyed Susans like this one, Rudbeckia hirta, bloom summer through fall. The plants shown here are among 400 growing at Bill Hunt's Eau Claire home and awaiting transplant to a rain garden.

This bergamot, Monarda fistulosa, is a hardy perennial that tolerates drought and attains heights of 2 to 3 feet. It has white flowers that bloom from June to September.

Boneset, or Eupatorium perfoliatum, has white flowers that attract butterflies and blooms July through October. The plant grows to 2 to 4 feet.

Staff photos by Shane Opatz

This young yellow coneflower, Ratibida pinnata, is expected to grow 1 to 4 feet tall and bloom June through August.

runoff should be at least 10 feet from the foundation so water doesn't seep into the basement. Such gardens also should not be placed directly over a septic system or directly under a big tree.

Ideally the garden should be in a sunny, flatter part of the yard to make digging and preparation easier.

A typical residential rain garden measures 100 to 300 square feet. The size depends on how deep the garden will be, what type of soil the garden will be planted in, and how large of an area will drain to the garden from the roof and/or lawn.

All of these factors and much more can be determined by using the information and charts in a UW-Extension publication called "Rain Gardens: A How-To Manual for Homeowners." This booklet, Extension publication GWQ037, is available from county UW-Extension offices, from Cooperative Extension Publications at (877) 947-7827, or on the Internet at http://clean-water.uwex.edu/pubs/raingarden.

"In determining the size of the rain garden, you're going to want to do a soil test," Lochner said. "If you have sandy soils, it's going to be able to incorporate a lot more water than if you have clay soils."

Usually, a rain garden is between 4 and 8 inches deep.

The slope of the lawn will determine the depth of the rain garden. The slope should be less than 12 percent or a different location should be chosen.

To figure out the slope, first pound in one stake at the uphill end of the site and a second stake at the downhill end. The stakes should be approximately 15 feet apart.

Run a string between the stakes, with the uphill end tied at ground level. With a carpenter's level make the string horizontally level between the stakes and tie the string tight. Measure the width in inches between the two stakes. Next measure the height in inches between the ground and string on the downhill stake. Then divide the height by the width and multiply the result by 100 to determine the percent of slope.

If the slope is less then 4 percent, the rain garden should be 3 to 5 inches deep. If the slope is between 5 and 7 percent, the garden should be 6 to 7 inches deep, and if the slope is 8 to 12 percent, the garden should be about 8 inches deep.

When you begin digging the garden to the correct depth you should heap the soil around three edges of the garden to form a low wall or berm to hold the water inside the garden. Use a rope to outline the shape of the garden. As you dig, put the soil on the outside of the rope. The berm should be highest on the downhill side of the

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Plants for rain gardens

Here are some plants that grow well in rain gardens. Some attract butterflies and birds. Each Latin name is followed by its common name.

Butterfly favorites

- Allium cernuum, nodding wild onion.
- Amorpha canescens, leadplant.
- Apocynum androsaemifolium, dogbane.
- Aquilegia canadense, columbine.
- Aster novae-angliae, New England aster.
- Chelone glabra, turtlehead.
- Echinacea purpurea, purple coneflower.
- Eupatorium perfoliatum, boneset.
- Liatris pycnostachya, prairie blazing star.
- Monarda fistulosa, bergamot.
- Rudbeckia hirta, black-eyed Susan
- Tradescantia ohiensis, spiderwort.

Bird favorites

- Campanula rotundifolia, harebell.
- Geum triblorum, prairie smoke.
- Heliopsis helianthoides, false sunflower.
- Ratibida pinnata, yellow coneflower

Grasses

- Andropogon scoparius, little bluestem.
- Andropogon gerardi, big bluestem.
- Panicum virgatum, switch grass.
- Sporobolus heterolepis, prairie dropseed.

Rain

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garden, tapering as it reaches the uphill side. The garden also should having sloping sides to slow erosion of the berm.

"The soil in the garden should consist of topsoil and compost in a 50-50 mix," Lochner said. "No fertilizer should be added."

After the soil is ready, you can select plants (see list accompanying this story). Try mixing sedges, rushes and grasses with flowering plants that thrive in this environment. This mixture of plants will allow a normal growth pattern and create a thick root system so there will be fewer weeds as the plants mature.

When choosing plants consider height, bloom time, color and texture. Try to select different heights and textures and plants that bloom in a cycle from early spring to fall so you have color all season. Don't forget to plant grass or a dry-tolerant species such as prairie smoke on the berm to control erosion.

Finally, add mulch such as shredded bark to hold the soil and reduce weed growth.

Care of the garden will include weeding in the first year or two. After three years the mature native plants should choke out most weeds. At the end of each season you do not need to cut back plants. Instead, leave them to create winter interest in the landscape. In spring wait until new plants are about 4 to 6 inches high and then trim back last year's growth.

If you do your own work, the cost of a rain garden is not exorbitant. According to the Wisconsin Department of Natural Resources, the cost of a rain garden put in by hand is about $3 to $5 per square foot. Done by a landscaper the price rises to about $10 to $12 per square foot.

According to Lochner the payoff is ethical and aesthetical.

"Rain gardens are really a two-fold benefit both for the environment and the homeowner," he said. "They have a positive impact on water resources and add an attractive garden to the home landscape."

Kate Hartsel is an Eau Claire freelance writer and Master Gardener.

Knight Ridder photo

Jeff Markley looks over the rain garden he created in the center of his paved, circular driveway at his home in Bainbridge Township, Ohio.

Puddle area becomes pretty plot

By Mary Beth Breckenridge
Knight Ridder Newspapers

Ted Flacksbarth used to regard the low-lying area in his back yard in Maplewood, Minn., as a headache. Now it's a source of satisfaction and an asset that beautifies his yard while it benefits the environment.

Flacksbarth and his wife, Lori, turned the flood-prone area into a rain garden, a landscaped feature cleverly designed to collect storm runoff and hold the water just long enough so it can percolate into the ground. The soil and plants in the rain garden remove pollutants naturally, so the water is cleaned as it filters through the earth.

Rain gardens are simply shallow depressions underlaid with permeable materials and filled with native plants chosen for their ability to stand up to a good soaking and to thrive without fertilizers, pesticides or a lot of fuss. The gardens work best where the soil drains well.

A rain garden can be whatever style the homeowner prefers – natural-looking or carefully manicured, filled with flowers, shrubs, trees, grasses, ground covers or ferns. It can be suited to sunshine or shade, and some are designed to attract birds and butterflies.

For the Flacksbarths, a rain garden was the answer to a wet spot that wasn't just annoying, but dangerous. The wet spot would fill with 12 inches or more of water in spring, Ted Flacksbarth said, an amount he couldn't empty without the use of a commercial pump.

"I was always concerned about neighboring children drowning in it," he said.

Now the spot is planted in tall bushes and other plants, thanks to a program in their city that encourages the creation of rain gardens for water-management purposes. A rock layer beneath the soil holds the water while it's draining, and Flacksbarth said he has to resort to a small sump pump only after a torrential rain or a sudden, heavy snow melt. The couple has a second rain garden in the front yard, planted in ferns and flowers.

"It's worth a shot if you don't want mosquitoes hanging around, standing water, the possibility of children getting hurt, things like that," he said.

Jeff Markley, a landscape architect who owns LANDesign in Geauga County's Bainbridge Township, Ohio, has used the concept in a couple municipal applications as well as in his own yard.

Markley created a rain garden in the center of his circular driveway when he paved it so the garden would collect the water that runs off the pavement. Although he didn't have a water problem in the area, he was afraid that without a collection area, the runoff from the impervious driveway surface would wash out the gravel driveway below. He filled the garden with a mix of plants including maples, daylilies and vinca ground cover – all plants that are water-tolerant.

For all their problem-solving potential, rain gardens serve a purpose with still wider effect: They keep pollution-laden storm runoff out of lakes and streams and encourage the water-cleansing process that nature intended.

Rain-garden advocates stress the use of native plants, because they're so well adapted to the natural conditions. They don't need fertilizers and pesticides to thrive, so homeowners won't compound the pollution problem by growing them.

Mary Beth Breckenridge writes for the Akron Beacon Journal in Akron, Ohio. This story is distributed by Knight Ridder/Tribune Information Services.