

Inside Grundy County
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Rain Gardens

According to an Iowan county soil and water conservation district organization, Urban Resources and Borderland Alliance (URBAN), rain gardens are shallow depression areas planted with native wetland or prairie wildflowers and grasses. Rain gardens are sunken gardens built to receive runoff from one or more impervious structures. Rain gardens make use of rainwater runoff, are low maintenance, and provide landscape beauty.

Why the interest in building rain gardens? Rain gardens are believed to help increase local groundwater recharge, improve groundwater recharge to wetlands, lakes and streams, remove potential pollutants such as nutrients and reduce peak flow loads.

For example, a hydrology model shows that when urban development occurs, we increase the short time, high volume discharge as stream flow compared to pre-urban development. The primary causes of this increased runoff are the construction of impervious structures such as roads, roofs, and parking lots. In addition to the runoff quantity, the quality of runoff is a concern. Pollutants such as oil, nutrients from lawns and pets, and heavy metals impact the runoff quality.

In 1990, stormwater specialists from Maryland developed the concept of rain gardens. Since then, the concept has gained momentum but the research, although lagging, has indicated some benefits from rain gardens. Researchers are looking at design aspects, duration of ponding, plant species, recharge and nutrient and pollutant removal.

The research papers I reviewed clearly indicate that rain gardens, when properly designed, are very effective at reducing runoff. A University of Connecticut study on rain gardens showed they stopped 99% of roof runoff. The water was lost to infiltration and evaporation. There was a reduction of some nutrients but not conclusive as to the removal of heavy metals. There was not a large decline in total phosphorous and ammonia-N actually increased.

A Minnesota model showed rain gardens removed 95% of suspended solids, 77% of total nitrogen and 80% of the phosphorous, and 63% of flow. The reason for discrepancies is differences in how the rain gardens were designed and measured.

A University of Wisconsin study looked at the type of plant material used in rain gardens. The researchers concluded that plant material was not nearly as important as sizing and other construction parameters such as depth. Plant density was also important.

If someone wanted to build a rain garden, where would they begin? Dr. Ken Polter, University of Wisconsin department of civil and environmental engineering, conducted research looking at water runoff control. Part of that research resulted in the creation of a rain garden manual. In general, there are a few rules of thumb regarding the construction of a rain garden. It should be located at least 10 ft. away from a building foundation.

The rain garden should be part of the landscape and look good because it is a garden. Incorporate flowers because this is after all, a garden. Native perennial plants are suggested. Slopes should be slope gently. The rain garden should be built on slopes less than 10%. Do not build over a septic system.

Soil types are crucial. The faster the water percolates away, the better. Dig a 6 inch hole and fill with water. If it takes more than 24 hours to drain, it indicates this is not a good location or soil to build a rain garden. The tighter a soil, the larger the rain garden will have to be. Sizing will depend on the runoff area you're trying to capture. The manual does a nice job of providing step by step directions to calculate depth and surface area of the rain garden.

The UW rain garden manual can be found at: <http://clean-water.uwex.edu/pubs/pdf/home.rgmanual.pdf> Information on Iowa plant species to select for rain gardens can be found in the ISU Extension publication, " Rain Gardens, Filtering and Recycling Rainwater" at: <http://www.extension.iastate.edu/Publications/RG605.pdf>