

Water Conservation

Yard by Yard Practices

- Xeriscaping with drought/heat tolerant native plants
- Use of efficient irrigation systems
- Rain Barrels
- Rain gardens or bioswales

The Importance of Water Conservation

Yard by Yard recommended practices are designed to address two aspects of water conservation: **improving water quality** and **increasing water quantity** available to plants, animals, and people. Urban, suburban, and residential areas are characterized by high levels of impermeable surfaces, or materials that cannot absorb water. The places we live may be anywhere from 20% to 100% impermeable surfaces. This creates several problems for urbanized areas. Since rainwater can't penetrate these surfaces it never gets into the soil. This means much of the rainfall an urban area gets is never available for plants and doesn't sink into the groundwater reservoirs below the surface. But that rainwater has to go somewhere, which leads to the other main problem: runoff, flooding, and water pollution. Stormwater runoff from paved areas (and unhealthy lawns) flows downhill until it ends up in a river or lake, and along the way it picks up trash and other pollutants (herbicides, lawn fertilizers, motor oil, etc.) and washes it into our waterways.

The practices discussed below address these problems by reducing the amount of water we use, increasing the amount of rainwater we retain, and reducing the amount of polluted runoff leaving our yards and flooding our communities.

Putting the Practices into Action

Xeriscaping

The goal of xeriscaping (from the Greek "xeri-" meaning "dry", plus "landscaping") is a process of landscaping that reduces or eliminates the need for added water. This can mean the use of plants that need little or no added water or replacing water-intensive landscapes (such as lawns) with non-living alternatives, such as decorative stone. You can also combine both elements at the same time.

Choosing the right plants is key for a successful xeriscaping project. Cacti and succulents are obvious choices and should require almost no added water. Just be sure that any varieties you select for Oklahoma are also freeze-hardy. Trees, shrubs, wildflowers, and cacti from desert locations are often good options for this type of landscaping. But don't forget that many of Oklahoma's native plants are also excellent choices for xeriscaping! These plants are naturally adapted to Oklahoma's soils and rainfall patterns, so many of them will thrive without added water. You can find a list of Oklahoma native plants suitable for landscaping [here](#) and a list of other recommended plants (including non-natives) from the OSU Extension [xeriscaping fact-sheet](#).

Also remember that xeriscapes don't have to be open, sunny areas. The areas underneath trees are often dry and shady, making it difficult to grow many traditional landscape plants here. Consider Oklahoma native plants such as purple coneflower, blue mistleflower, beard tongue, yarrow, golden ragwort, wild strawberry, and Virginia creeper for these plantings.

In addition to choosing the right plants, you can improve the success of your xeriscape by improving the soil and using mulch. Adding compost to the soil before planting will improve your soil's ability to hold onto the rainfall it receives. Using a layer of mulch several inches thick will also reduce evaporation, ensuring that the water your garden receives stays where your plants can use it.

Finally, you may choose to go plant-less with your xeriscape designs. You can create beautiful garden designs using gravel, sand, driftwood, boulders, fossils, sculptures, and other non-living elements. If you go this route, there are several things to keep in mind. Remember that bare rock will absorb heat and can greatly increase the temperature of the surrounding areas, so this type of landscaping may be best reserved for underneath tree canopies and other shady areas. To get the most water benefits out of these designs be sure that rainwater can soak into the ground: don't place plastic sheets or other impervious surfaces underneath the gravel, and even consider improving the soil with compost before laying down rock. Finally, you can increase the function of these designs by incorporating rock/brush piles or other forms of shelter for wildlife.

Use of Efficient Irrigation Equipment and Controllers

Vegetable gardens, appropriately-sized lawns, fruit trees, and other landscape plants will need more water than most native plants. Using efficient irrigation systems is a great way to reduce your water use for these plants.

Drip irrigation systems are an excellent choice for vegetable gardens and landscape plants. These systems can be modular tube systems where you can choose where to place the drippers, or drip tape with regularly-spaced emitters (usually every 6", 8", or 12"). These systems work by placing water precisely at the location of your plants, emitting it one drop at a time. This ensures that water isn't wasted on areas with no plants. The slow release rate ensures that the water goes down into the soil instead of being lost as runoff.

For trees, shrubs, and other plantings that do need large amounts of water, soaker hoses and bubbler attachments for hoses are good options. Both work by slowing the rate of water application while still allowing you to add a large volume of water.

Sprinklers are generally an inefficient way to irrigate your land. You lose a high proportion of the water to evaporation and runoff before your plants can ever use it. If you do have to use a sprinkler, make sure it is oriented so that you don't lose water to streets or other impervious surfaces.

No matter what irrigation system you choose, there are some other principles to follow:

- It is better to do infrequent deep watering instead of frequent shallow watering. This encourages your plants to grow deep roots that can access more water and discourages weed seeds from germinating.

- Don't water when your plants don't need it! It's best to avoid a watering schedule and instead water based on your plants' needs. Check the soil to see if it appears dry several inches below the surface; keep an eye on your plants' condition to see when they begin wilting; avoid watering after rainstorms and reduce watering during the times of year when your plants are less active.

Rain Barrels

Rain barrels let you take advantage of the fact that your roof doesn't absorb rainwater so that you can collect the water and use it when and where you need it most. You can connect rain barrels to the downspouts of your gutters to collect water that would otherwise become runoff and cause flooding and pollution problems.

You may first think of the typical blue plastic drums that are commonly used as rain barrels, but there are a wide variety of options available. Ornamental terra cotta and metal rain barrels can be beautiful additions to your outdoor landscaping. You can make your own from recycled materials or purchase a fancy pre-made barrel. Some even have special cutouts for growing plants on the barrel itself.

Remember that a larger barrel will help you become more drought resilient. Oklahoma often gets large amounts of rainfall in the spring followed by long dry spells in the summer. A large enough rain barrel can capture much of the rain coming off your roof in the spring and let you slowly use it throughout the summer. If possible, plan to have a spillover valve near the top of the barrel and connect this to an irrigation hose to direct it to an area of your landscape that could use the added water. That way, if your rain barrel fills up, the extra water will go where you want it instead of backing up your rain gutter.

It is important to maintain a proper insect screen and debris filter on your downspout and any openings on your barrel. You want to avoid clogs and prevent mosquitoes from breeding in your rainwater. Regularly inspect your rain barrel to ensure that these features are working as designed.

Rain Gardens

Rain gardens are landscape elements designed to capture rainwater, stop erosion, and reduce polluted runoff. They should be designed to capture large amounts of rainwater but drain it slowly into the soil so that they are empty within 48hrs of the rainfall event.

There are a wide range of recommendations for building rain gardens. To some degree the design depends on your needs/locations, and some of the design simply depends on personal taste. Don't feel like there is only one "right" way to build one. The OSU Extension service put together a great guide to designing a rain garden in Oklahoma, found [here](#).

Some of the main takeaways from this document:

- **Location** - Be sure to locate the garden in an area with no buried utilities (call Okie811 at 1-800-522-6543 to have it checked). It also needs to be located in an area with good drainage (drains at least 0.5in of water per hour). To test the drainage, dig a small hole 8in deep. Fill it with water and let it drain

completely to prepare the soil. After it drains, fill the hole again and record how many hours it takes to drain. Divide 8 by the number of hours to get the drainage rate (for example, if it took 2 hours to drain completely, $8/2 = 4$ in of drainage per hour, which is plenty; if it takes 24 hours, $8/24 = 0.3333$ in of drainage per hour, which is not enough). If you have enough drainage, you're good to go.

- **Poor drainage?** - If the drainage rate was less than 0.5 in of water per hour, you'll need to alter the soil of the rain garden. The extension office recommends digging out the site of your rain garden to a depth of 8 in. If you need to alter your soil, you would then dig out another 6 in of the poorly-draining soil and replace it with a mix of 50% sand, 25% compost, and 25% topsoil. An alternative is to simply make the garden shallower and let excess water run off along a selected route. On the other hand, you could design a more complicated garden using large rocks, gravel, sand, and a planting medium that extends several feet into the soil and maximizes rainfall captured. **Remember that even a small, simple rain garden will capture and filter more potentially polluted runoff than no rain garden at all.**

- **Garden Size** - the size depends on how much land area will be draining into your garden. Recommendations range from 5% to 30% of the land area. If you want to be precise, calculate the area of roofs/sidewalks/roads/other paved areas that might drain into the runoff path for this part of the backyard. You can use the measure tool on Google Maps to estimate this area. As an example, if you have 1000 square feet of impermeable surface then your garden should range from 50 square feet (e.g. a 5ft x 10ft garden) to 300 square feet (17ft x 17ft).

- **Choosing Plants** - You need plants that are both drought tolerant and can handle being occasionally submerged for 24-48hrs. Your rain garden should slope down towards the center, so plants that are more drought tolerant should go on the berm and outer edges and plants that need more water should go in the lower central portion.