Landscape Water Conservation

Principles of Xeriscape

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Curtis W. Smith, Extension Horticulture Specialist

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A surprising amount of water is used in the home landscape. Studies have shown that as much as 70 percent of water from a municipal water system can be attributed to residential use. In addition to municipal water sources, a percentage of water from private sources or wells also goes to residential use. Of water used at homes, almost half is used to maintain the landscape.

The problem is that while we live in New Mexico, we have traditionally landscaped with plants native to England, Japan, the East Coast of the United States, and other regions with much higher precipitation. To successfully grow these plants, we must supplement the natural precipitation with our limited surface and groundwater. The use of plants with high water demands is not our only landscaping option; fortunately, neither is removing plants from the landscape.

Our landscapes may remain beautiful and productive if we use water efficiently and if we use landscape plants that require less water. A secondary benefit is that plants with low water requirements are frequently adapted to the alkaline soils characteristic of New Mexico and other dry regions. Landscapes using these water-efficient plants are often called xeriscapes.

The concept of xeriscape was developed in Denver, Colorado, in response to water shortages. "Xeros" is a Greek word that means "dry." Xeriscape refers to a landscape that uses little supplemental water. It does not refer to a dry, barren landscape, nor is a xeriscape a "no maintenance" landscape. Like traditional landscapes, a xeriscape may be designed to minimize labor or to require frequent care. Many people appreciate beautiful landscapes, but have limited time to spend tending a garden. By using plants that are well adapted, mulches that suppress weeds and conserve water, and drip irrigation to make the most use of water, these landscapes can have color and fragrance with only monthly or seasonal gardening chores. Gardeners who like to spend time in the garden can design a xeriscape to be as labor intensive as a highly maintained traditional garden, but use much less water. There is a xeriscape for every gardener.

Xeriscape is not a landscape style or garden design. Xeriscape is a concept of water conservation that may be applied to landscapes of any style, from traditional to English, Japanese, Southwestern, and others. They may be formal or natural looking. The principles used to develop xeriscapes are good horticultural practices applied to our unique desert environment.

SEVEN XERISCAPE PRINCIPLES

1- Planning and Design

2- Efficient Irrigation

3- Mulch

4- Soil Preparation

5- Appropriate Turf

6- Water-Efficient Plant Material

7- Appropriate Maintenance

Xeriscape incorporates seven water-conserving principles:

1) Planning and design.
2) Efficient irrigation systems, properly designed and maintained.
3) Use of mulch.
4) Soil preparation.
5) Appropriate turf.
6) Water-efficient plant material.
7) Appropriate maintenance.

A good landscape and garden begins with a good **design**. Water conservation in the garden can be maximized if it is considered in the initial planning phase. Xeriscapes can be divided into zones with different water requirements. An "oasis," a zone with the highest water use, is usually where people spend more time. The patio area and perhaps the entry area are candidates for the oasis. An oasis receives more water and, as a result, is cooler. This area also may require more maintenance and usually will be the landscape's most colorful area .

Beyond the oasis is a transition zone of moderate water use. The transition zone contains plants that require less frequent irrigation and usually requires less maintenance. Further away may be a low-water-use zone, which requires no supplemental water or very infrequent irrigation during prolonged dry periods. Designing the landscape with areas of differing water demands is called "hydrozoning."

"Found water" or "harvested water" that runs off roofs and paving during storms can be used to reduce the need for supplemental irrigation. Roof runoff can be directed to the oasis or other areas, drastically reducing the need for supplemental irrigation in the moderate- and low-water-use zones. Because water harvesting requires grading to channel and detain runoff, it should be planned when the landscape is designed.

Irrigation is necessary in a xeric landscape, at least during the first few years while the plants' root systems are developing. Following establishment, irrigation may still be necessary depending on the landscape design and plants' needs. In New Mexico, many landscapes need irrigation for at least a portion of the planted area for the life of the garden. The oasis and the moderate-water-use zones have the greatest need for irrigation, but it is wise to plan irrigation even in the low-water-use zone to allow for new planting, changes, and years of severe drought.

The irrigation system—whether automatic, manual, or hoses moved as needed—also is an integral part of landscape planning. It is the foundation around which the plantings are designed. The water-use zones—low, moderate, and oasis—should be separate from each other, and each managed independently. With in-ground irrigation systems, each zone should be under a separate valve.

The water should be applied as efficiently as possible. Sprinkler systems are appropriate in areas of turf, but drip, bubbler, and micro-spray systems or soaker hoses are more appropriate for shrubs, trees, and annual and perennial plantings. Efficient irrigation applies water where it is needed, not where it will be wasted and benefit only weeds.

Mulch provides a cover over the soil, reducing evaporation, soil temperature, and erosion. It also limits weed growth and competition for water and nutrients. Landscape mulch materials vary in their suitability for various uses.

Impermeable plastic mulch has a function in the landscape, but is very often misused. It may be used in areas where the soil must be kept dry, for example, next to a foundation where termiticides have been applied and where you are channeling harvested water from one area to another.

Otherwise, permeable weed barriers, bark, gravel, and other porous mulches are better because they allow water and oxygen to pass to plant roots. Dust will eventually collect over the weed barrier fabrics and allow growth of some weeds, so it is not a perfect solution, but these porous fabrics are useful for weed control when the bark or gravel covering it is less than 3 to 4 inches thick, or annual weed potential is great.

Organic mulches keep the soil moist and reflect less heat. They work well with plants adapted to cooler microclimates. Bark mulch should not be used on steep slopes or in drainage ways because it washes away in heavy rains.

Some plants native to very well drained soils grow better in gravel mulches. Remember, rock mulch becomes very hot in our climate and can

injure or limit growth of some plants. Ultimately, the mulch should be shaded by landscape plants that will provide environmental cooling. Using gravel mulch alone as a landscape element may result in increased home cooling bills and require greater weed control efforts.

Soil preparation is an important part of successful xeriscaping and gardening. When done prior to planting, soil testing can help determine which plants are best adapted to the site and which amendments are appropriate for improving the soil for the selected plants. In the oasis and moderate-water-use zones, adding compost increases the soil's water-holding capacity. In the low-water-use zone, soil preparation may only consist of rototilling to loosen the soil and reduce the soil compaction associated with building construction in planting areas. Loosening the soil improves root development and allows better infiltration of water and air needed by plants' roots. This is important in all water-use zones. However, since soil disturbance promotes the germination of weed seeds, limit tilling to areas being planted.

One of the most controversial and misunderstood of the xeriscape principles is the concept of **appropriate turf**. Turfgrasses have a place in the landscape, even the xeriscape. Turf is easy to maintain, although it requires more frequent care than many other landscape plants. Turf provides a play surface for children and pets. It is an important element in cooling the local environment, reducing erosion, and preventing glare from the sun. Other ground cover plants can perform these functions—except providing a play area. Consider where and how large a turf area is desired, how it will be used, and during which seasons it will be used. You are then prepared to limit turf to useful spaces and determine which grasses will best serve your needs. In northern New Mexico and higher elevations of the state, cool-season grasses are best for areas used extensively as play areas, especially if this use extends into the early spring and late fall. Fescue or a fescue-bluegrass mixture is appropriate for these areas.

If the use is light or mostly in the warmer months and in southern New Mexico, use a grass that needs less water such as buffalograss, blue grama, or bermuda grass. If the area is only for appearance, other ground cover plants may be more appropriate and may be irrigated more efficiently. Choose the best plants for each purpose by carefully defining your needs and purposes before selecting specific plants.

Plants that require less water are becoming more readily available in the nurseries. There are many very attractive plants for use in water-wise landscapes. While you may use many of your old favorites in the oasis zone, there is a wide variety of colorful, fragrant, and beautiful plants for the less irrigated part of the landscape. Many have long blooming seasons and attractive leaves. Some provide autumn interest with colorful foliage and fruit, while others offer winter interest with their fruit, seed stalks, and winter colors ranging from silver, to gray, to many different green and brown shades.

Xeric plants depend on the formation of extensive root systems to effectively gather water for proper growth. While they may look unimpressive in nursery containers, they rapidly become beautiful plants in the landscape.

Maintenance cannot be forgotten, even in a xeriscape. While many gardeners find the time spent gardening very relaxing, people with less time or other interests may prefer a landscape that requires minimal time working in the garden. The design will determine the required maintenance. Any garden will require some maintenance: pruning, removing trash that has blown into the landscape, occasional weeding and pest management, checking that the irrigation system is functioning properly, and adjusting automatic irrigation systems as the seasons change.

Xeriscaping offers a way to have beautiful, livable landscapes without excess water use. It allows areas close to us to be cooler and hospitable, while investing less water on parts of the landscape in which we spend less time. Even lower-water-use areas can be very attractive if the seven xeriscape principles are employed. Using xeriscape makes our landscapes more compatible with our New Mexico environment.

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