



low maintenance landscaping



Agricultural Experiment Station
and Cooperative Extension Service

Although the term Xeriscape* is relatively new in Kansas, the concept is not. It simply imitates nature's design: putting hardy, adapted plant materials in the places where they grow best. Once established, this kind of landscape requires little maintenance because it is designed to work in harmony with nature, not against it.

Estimates indicate that nearly 50 percent of water the average household uses is for outside landscape and turfgrass areas. You can reduce your water use by imitating nature with a low-maintenance landscape design. It is applicable to both homes and businesses, on new building sites or previously landscaped sites. To be successful, it requires careful consideration and planning.

Ultimately, you will realize a savings not only in water but also in time, labor, equipment, and materials such as fertilizers and herbicides, and that's dollars in your pocket. Furthermore, because of increasing demands on a limited water supply, a landscape with a record of low water bills may boost the resale value of your home.

A water-conserving landscape design involves using hardy, adapted plant materials which are suited to your particular location in Kansas, its soil and its climate. More specifically, it requires selecting plants according to soil type, slope and available rainfall. It means arranging these plant materials in such a way that they actually can contribute further to water conservation by reducing the evaporative effects of wind and sun in your yard or business site.

Typically the design would include native plant species, those that grow naturally in Kansas, but certainly is not restricted to them and is not boring. In fact, choosing this type of design can result in a greater diversity of plant materials from one yard to the next.

The seven Xeriscape principles are Planning and Design, Limited Turf Areas, Efficient Irrigation, Soil Improvement, Mulching, Lower Water-Demand Plants, and Appropriate Maintenance.

*Xeriscape is a trademark term of the National Xeriscape Council.

Designs can be simple or elaborate, but every plan should take into consideration factors that affect water use. Steep slopes or grades encourage water runoff and soil erosion. Drought-tolerant groundcovers, shrubs and trees can be used to slow down and absorb water, and to reduce evaporation by shading the soil. Terracing with plants is another possibility.

South- or west-facing exposures get maximum sunlight and can benefit from use of mulches or drought-tolerant plants. Wind increases the amount of plant moisture lost through evapotranspiration. Fences and screens can greatly reduce the amount of supplemental water needed by slowing or blocking the wind. Using trees and shrubs as windbreaks can be effective, if the species don't require watering.

As trees provide shade which reduces the soil temperature and lowers water lost through evaporation, they also reduce air temperatures, which reduces water loss. Trees such as maples should be avoided in the low water use landscape. Their invasive surface-feeding roots compete with nearby plants for water and nutrients.

Plant trees and shrubs in attractive compositions and arrange plant materials along water-need zones to prevent overwatering some plants while underwatering others.

Turfgrass areas usually require the most water and maintenance in a landscape. Limit irrigated turfgrass areas to places with high use. Use low-maintenance and native grasses for other areas. The lawn must fit the landscape, but avoid making it long and narrow, which is more difficult to irrigate effectively. Select hardy, adapted lawn grasses suited to the site. Manage your lawn for stress, deep watering when needed.

Warm-season grasses—bermudagrass, zoysiagrass and buffalograss—are drought resistant. Cool-season grasses—bluegrass, fescue and ryegrass—require watering for maintenance (See table). Keep in mind that warm-season grasses do not grow well in shade. When nature is left to take its course, warm-season grasses will dominate sunny areas and cool-season grasses will dominate shady

Turfgrass	Drought Resistance
Burmudagrass	excellent
Buffalograss	excellent
Zoysiagrass	excellent
Tall fescue	good
Bluegrass	fair
Ryegrass	poor

areas. You may see this as a patchwork look because the two types of grasses are different in texture and color. But the total water required will be reduced, and both types of grasses will grow best in the areas suited to them.

Cool-season grasses green up earlier in the spring and stay green later in the fall, which means a longer growing season. They also require more water than warm-season grasses during hot weather—most of the summer in Kansas.

An increased interest in using native grasses for lawns has developed in recent years due to their low water and maintenance requirements and naturalistic appearance. Most native grasses are warm-season grasses and must be planted in areas that receive full sunlight. Buffalograss is the most common native grass used in lawns. It grows best in areas with less than 25 inches of annual rainfall.

Native grasses should be watered and fertilized sparingly or not at all. Watering and fertilizing these grasses causes them to become weedy and you lose the low maintenance aspect of a native grass lawn. Under suitable conditions, native grasses can save water and maintenance, but the cost of seed is high and some watering to get them established is recommended. Weeds are the major problem in establishing a native grass lawn.

Lawn watering and maintenance reduction must be accompanied by a reduction in the amount of fertilizer applied and adjustment of other cultural practices. Taller mowing helps control weeds and reduces watering and mowing frequency. The amount of fertilizer you put on a lawn determines your maintenance program.

The amount of mowing, watering, problems and pests is largely related to the amount and timing of fertilizer

Total Nitrogen per Year

Cool-season grasses	lbs.	Warm-season grasses	lbs.
High maintenance	4*	(low to high range)	
Good maintenance	3	Bermudagrass	2-4*
Low maintenance	2	Buffalograss	0-2
Minimal maintenance	1	Zoysia	1-3

*lbs. AN/1000 sq. ft. (AN = actual nitrogen)

applications. The table above provides guidelines for the total seasonal nitrogen. Phosphorus and potassium should be applied as indicated by a soil test.

Efficient watering is part of the low-maintenance design. Your landscape design should incorporate zones for water need areas—high, medium, low or none at all.

Prevent runoff; harvest water! Collect or redirect water from the downspouts to areas of the landscape that need it. Select and combine different irrigation systems—drip, trickle, sprinkler. Water slowly, deeply and infrequently.

Each type of plant has a maximum depth to which its roots will grow. Roots will penetrate only to that depth where water, air and nutrients are present. Deep watering encourages deep rooting, increasing the reservoir of water so plants can go longer between watering. Deeply placed water is also less subject to loss by evaporation from the soil surface.

The roots of most small trees and shrubs may reach up to 6 feet deep, while smaller shrubs or flowers may root 2–4 feet deep. Consider grouping plants together that may be shallow rooted and require more frequent watering such as flower beds or a mixed border of small shrubs.

It is important to water only long enough to wet the soil to the depth of the root system and not beyond because this is a waste of water. A soil probe or thin rod pressed into the soil will go in easily until it reaches the dry zone.

The most critical factor in determining water use is weather—temperature, humidity, wind, sunlight, and precipitation. There is a constant flow of water through plants, bringing nutrients to the upper plant parts. This

transpiration flow of water increases as conditions cause greater movement of water through a plant.

Most of the absorption of water and nutrients occurs in the upper half of the root system, thus water should be applied directly to the soil surface or the root zone. Water applied to plant leaves and tops is wasted, especially in hot weather, because much of it will evaporate before it reaches the ground.

Most small trees and shrubs should be watered to wet the soil to a depth of 4 feet once a month or every 6 weeks. Plants with shallow roots require more frequent soaking, perhaps to a depth of 2–3 feet every 2–4 weeks. Remember, the water requirements for a mature landscape allow flexibility in this watering pattern; those of a newly planted landscape do not.

Know your soils. Improving the soil helps conserve water. Adding organic matter is by far the most important soil improvement affecting water use. A soil test, which is available through your county Extension office, will determine the organic matter level of your soil.

In sandy soils, organic matter slows down the rapid movement of water through the soil, making it more available to plant roots. In heavy clay soils, the addition of organic matter increases infiltration of moisture, which prevents runoff and wasted water.

Adding organic material is easiest and most effective before planting. Incorporate at least 2–3 inches of organic matter into the top 8 inches of the planting area unless your soil test indicates otherwise. Because organic matter continually decomposes, it needs to be replenished on a yearly basis. Applying an organic-type mulch is the most effective way to do this in an established landscape.

Types of Organic Matter

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| ■ Straw | ■ Compost |
| ■ Well rotted manure | ■ Well rotted sawdust |
| ■ Leaf mulch | ■ Wood chips |
| ■ Peat moss | ■ Shredded bark |
| ■ Lawn clippings | ■ Green manures |
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In areas with hardpan—an underlying layer of clay—subsoiling is recommended before planting. Plants growing on top of unbroken hardpan are more vulnerable to water fluctuations because of the shallow growing area. Planting a deep-rooted legume can be effective in breaking up hardpan, although it may take some time to accomplish.

Mulches can do much more than cut down on water use. They also can improve soil texture, suppress weeds, lower soil temperature, and add ornamental value to the landscape. How well a mulch conserves moisture is determined by its composition and how deeply it is applied.

Common mulches range from wood chips, stone and gravel to landscape fabric, plastic and polyethylene film. Deciding which mulch to use will depend on its cost, availability, ease of use, durability and appearance in your particular landscape. Each mulch has advantages and disadvantages.

Plastic or polyethylene film prevents moisture evaporation effectively; is thin, lightweight, and inexpensive. Perforated plastic is more expensive. Some disadvantages are you must punch holes to let in water and air; it is unsightly; must be covered with another material; doesn't improve soil; and can cause roots to concentrate at the soil surface, increasing drought susceptibility.

Landscape fabric—Geotextiles, Weed Barrier, Weed X, Weed Block—are water and air permeable; suppress most water-competing weeds; and are durable. They are, however, expensive; allow some weeds to grow; and must be covered by a top mulch layer.

Wood chips, tree trimmings, and shredded or chunk bark are relatively inexpensive; let in water and retain it in soil; break down to improve soil texture; and suppress weeds if the smaller size is used. The most effective depth for these mulches is 3–4 inches. These materials do break down in 1–3 years, depending on particle size and type of tree used. Smaller sized particles may require addition of nitrogen for plants.

Stone and gravel allow moisture in and retain it in the soil; are long lasting; come in a variety of sizes; suppress weeds; and can have an ornamental appearance. Prices vary with size and type. They do not improve soil; are unattractive if used in a large area; increase soil temperature and glare; and tend to get scattered by lawn mowers and small children.

Selecting lower water use plant materials is essential. A partial list of plants appears at the end of this publication. Check with a nursery for your particular site needs.

Once the planning and planting are complete, maintenance becomes the key to a successful low water use landscape. Mowing, pruning, weeding, mulching and fertilizing will maintain your landscape in a healthy, productive and beautiful condition for years to come.

Selecting Plant Materials

Consider the importance of turfgrass qualities such as drought, cold, heat and shade tolerances, wearability, and fertilizer requirements in your landscape plan; then choose the species that meet your needs. (The following turfgrass information adapted from “Conserving Water in the Landscape,” Nebguide published by Cooperative Extension, Institute of Agriculture and Natural Resources, University of Nebraska—Lincoln.)

- Drought tolerance of popular turfgrasses, ranging from most to least tolerant: buffalograss, bermudagrass, zoysiagrass, tall fescue, Kentucky bluegrass, perennial ryegrass.

- Cold tolerance of popular turfgrasses, ranging from most to least tolerant: Kentucky bluegrass, buffalograss, tall fescue, perennial ryegrass, zoysiagrass, bermudagrass.

- Heat tolerance of popular turfgrasses, ranging from most to least tolerant: buffalograss, bermudagrass, zoysiagrass, tall fescue, Kentucky bluegrass, perennial ryegrass.

- Shade tolerance of popular turfgrasses ranging from most to least tolerant: tall fescue, perennial ryegrass, Kentucky bluegrass, zoysiagrass, bermudagrass, buffalograss.

The shade tolerance of a grass depends on many conditions. Check with your county Extension agent for more information on suitability of turfgrass species for your specific site.

■ Wearability of popular turfgrasses, ranging from those that can withstand most wear to least wear: bermudagrass, zoysiagrass, tall fescue, perennial ryegrass, Kentucky bluegrass, buffalograss.

■ Fertilizer requirements for popular turfgrasses, ranging from most to least: Kentucky bluegrass, perennial ryegrass, tall fescue, bermudagrass, zoysiagrass, buffalograss.

While a lawn may exist on low amounts of fertilizer, a high-quality lawn will require moderate amounts. The cultivar, soil type and climate greatly influence fertilizer needs.

The following plants are adapted to all parts of Kansas though some may need protection in certain areas of the state. All require regular watering until well-rooted and established. This may take 1–2 years or more, depending on the type and size of plants. Only after the plants are established can water be reduced or, in some cases, eliminated. Remember, check with your nursery for your particular site needs!

■ **Tall Deciduous Trees (over 45')**— Black Walnut, Chinkapin Oak, Common Hackberry ('Prairie Pride' and other cultivars), Green Ash, Honeylocust ('Skyline' and other cultivars), Kentucky Coffeetree, Sawtooth Oak, Bur Oak.

■ **Medium Deciduous Trees (30–45')**— Aristocrat Pear, Goldenrain Tree, Lacebark Elm (True Chinese Elm), Osage Orange (thornless and fruitless), White Mulberry (fruitless).

■ **Small Deciduous Trees (under 30')**— Amur Maackia, Amur Maple, Flowering Crabapple, Green Hawthorn 'Winter King', Redbud, Russian Hawthorn, Russian Olive, Sandhill Plum, Thornless Cockspur Hawthorn, Washington Hawthorn, Western Soapberry, Wild Plum.

■ **Large Deciduous Shrubs (over 8')**— Autumn Olive, Beauty Bush, Border Privet, Chokecherry, Common Buckthorn, Elderberry, Lilac, Mountain Ninebark, Ninebark,

Peking Cotoneaster, Rose of Sharon, Rough-leaved Dogwood, Siberian Pea Shrub, Silver Buffaloberry, Staghorn Sumac, Wahoo, Western Sandcherry, Winter Honeysuckle.

■ **Medium Deciduous Shrubs (4-6')**— Butterfly Bush, Cherry Prinsepia, Dwarf Ninebark, Flowering Quince, Forsythia, Fragrant Sumac, Japanese Barberry, Korean Lilac, Mentor Barberry, Mockorange, Serviceberry, Shining Sumac, Spirea (Vanhoutte), Spreading Cotoneaster, Tartarian Honeysuckle, Three Leaf Sumac.

■ **Small Deciduous Shrubs (under 4')**— Alpine Currant, Bluemist Spirea, Common Bladder Senna, Coralberry (Buckbrush), False Indigo, Golden Currant, Golden St. Johnswort, Gooseberry, Hardy Potentilla, Leadplant, New Jersey Tea, Prairie Rose, Pygmy Pea Shrub, Russian Sage.

■ **Evergreen Trees**— Austrian Pine, Red Cedar, Limber Pine, Pinyon Pine, Ponderosa Pine.

■ **Large Evergreen Shrubs**— Junipers, Mugho Pine.

■ **Medium Evergreen Shrub**— Junipers, Mahonia, Manhattan Euonymus.

■ **Small Evergreen Shrubs**— Compact Mahonia, Compact Mugho Pine, Juniper, Soapweed, Yucca.

■ **Groundcovers for shade (beneath trees, shrubs, or along north walls)**— Bergenia, Bishop's Weed, Hall's Honeysuckle, Mahonia, Creeping Grape Holly, Periwinkle, Potentilla (Cinquefoil), Sweet Woodruff.

■ **Groundcovers for full sun**— Baby's Breath (Creeping), Bachelor Buttons, Bird's Foot Trefoil, Crownvetch, Border Jewel (Himalayan), Buttercup (Creeping), Catmint, Creeping Junipers, Daylily (most species), Evergreen Candytuft, Gro-Low Fragrant Sumac, Hall's Honeysuckle, Hen and Chicks, Lilyturf, Mock Strawberry, Phlox (Creeping), Pussytoes, Ribbon Grass, Rock Soapwort, Sedum (Stonecrop), Silvermound, Snow in Summer, Spurge (Cushion), Spurge (Donkey-tail), Thyme (Creeping), Veronica (Rock Speedwell), Wintercreeper, Woolly Yarrow.

■ **Ornamental Grasses**— Big Bluestem, Blue Fescue, Blue Oat Grass, Feather Reed Grass, Fountaingrass (annual), Fountaingrass (perennial), Indiangrass, Little Bluestem, Oat Grass, Quaking Grass (annual), Ravenna Grass, Ribbon Grass, Sideoats Grama, Weeping Lovegrass.

■ **Perennials** (all grow in full sun; * indicates plant tolerates part shade)— Artemesia (Sagebrush), *Balloon Flower, Basket of Gold, Blanket Flower, Blue Star (Amsonia), Brown-eyed Susan (Rudbeckia), Butterfly Weed, Candy Tuft (Perennial), Coreopsis, Creeping Phlox, *Daylily, Euphorbia, Evening Primrose, *False Indigo, Gaura, *Globe Thistle, *Goldenrod, *Hibiscus (hardy), *Iris, *Kansas Gayfeather, Lambs' Ears, Lavender, *Mullein, Oriental Poppy, Pitcher's Salvia, Poppy Mallow, Prickly Pear Cactus, Purple Coneflower, Red Hot Poker (Torch Lily), Rock Rose, Sea Holly, Sea Lavender, Sea Thrift, *Sedum and 'Autumn Joy', Yarrow.

■ **Annuals** (all grow in full sun; * indicates plant tolerates part shade)—Baby's Breath (annual), Bachelor Buttons, *California Poppy, Celosia, *Cleome, Coreopsis (annual), Cosmos, Dusty Miller, *Four O'clock, Gomphrena, Kochia, Marigold, Morning Glory, *Nicotiana, Portulaca, Sanvitalia, Sunflower, Vervain, *Vinca, Zinnia.

For assistance with identifying low-maintenance, drought-tolerant plants for your home or business landscape design, contact your county Extension office.

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