



COOPERATIVE EXTENSION

Bringing the University to You

Fact Sheet 91-54

Developing a Water-Efficient Landscape

Dr. David M. Cox, Extension Educator, East Clark County

Throughout the West, people are changing traditional ideas of planting and maintaining home landscapes. Drought, agricultural irrigation, urban development, and growing population are placing increased demands on available water. As the demand for and the cost of water increases, water-efficient landscaping is a trend gaining in popularity.

A number of terms describe water-conserving landscaping. Among them are "xeriscaping," "low water use," "drought-tolerant," "waterwise," and "desert" landscaping. Xeriscaping, a widely promoted term the past several years, is a word of Greek origin with *xeros* meaning dry, combined with landscaping. Drought-tolerant indicates the ability of a plant to survive on limited water, although these plants usually look better as water is increased. With improper watering, a drought-resistant plant may become a water guzzler in the landscape. This publication will use the term "water-efficient" to describe the water-conserving landscape.

Unfortunately, many people associate water-conserving landscapes with sand, gravel, cactus, skimpy plantings, and a hot sun-baked look (the "desert" image). Nothing is further from the truth. The potential beauty of these landscapes when well designed is limited only by the imagination. The idea is to maintain the beauty without being thirsty.

A water-efficient garden is a "balanced landscape," one that uses water efficiently and balances the lawn area, shrubs, and flowers with the hardscape (everything in the landscape that

doesn't grow – decks, patio, sidewalks, fences, benches, gazebos, etc.).

To establish a water-efficient landscape, consider the following ten guidelines.

- planning and design
- practical turf areas
- efficient irrigation
- soil amendments
- mulches
- appropriate plant selection
- plant at proper times
- windscreens
- maintenance
- flexibility

Planning and Design

Start by drawing a plot plan of your property to scale on graph paper (1/8" or 1/10" = 1', for example). Include all the buildings, doors and windows, driveways, property lines, porches, steps, sidewalks, buried services (water, telephone, etc.) and any other features including the present landscaping.

Make your plot plan complete and accurate, and draw plants to at least 3/4 of their mature size. This will prove invaluable in helping you visualize the features of your yard and consider plant placement. Common mistakes include planting trees and shrubs too close to house foundations, septic systems, under eaves or where they encroach into walkways and drives. Include locating plants where they receive protection from sun and wind (next to buildings, decks, or porches), and situating sun and windscreens to protect your home.

(Continued on page 2)

(Continued from page 1)

In planning your landscape, group plants with similar water needs together in the layout, and locate turf strategically for function, benefit, and water efficiency. Zoned irrigation (hydrozoning), the most efficient way to irrigate, delivers water to individual plants or matches the amount of water applied to plants with similar moisture requirements. By reducing overwatering and runoff, fewer plants will die or develop diseases that result from overwatering.

The concepts of hydrozoning are based on the interaction of people with areas of the landscape. Areas of high people activity result in more contact and interaction with plants, which result in more requirements for supplemental irrigation to support these plantings. Areas of less people activity require fewer plantings and less supplemental irrigation. Generally, there are four potential hydrozones found in a landscape.

The Principal Hydrozone is the area of greatest human activity and interaction with the landscape. This high-traffic area is both functionally and visually important as the place where people walk, sit, play, relax, and contact the plant environment. Sometimes referred to as an "oasis" in landscape design, this area of the landscape results in the greatest water use.

The Secondary Hydrozone is visually important to the landscape, but represents an area of less human traffic and interaction. These areas are more passive in function and serve to delineate space and design. Accent areas such as flower borders, shrub beds, bulb gardens, or specimen plants are all examples of the types of medium-water-use plantings found in a secondary hydrozone.

The Minimal Hydrozone contains plants that require minimal water to survive the existing climatic conditions. These areas receive infrequent contact with people and are less visually important in the landscape. Buffer zones, secluded or screened views, parkways, and embankments are all examples of this zone. The typical vegetation in this hydrozone includes low-water-use and drought-tolerant trees, shrubs, and ground cover.

The Elemental Hydrozone includes natural plantings that are capable of surviving on the available natural precipitation. No supplemental irrigation takes place in this zone and plantings seldom, if ever, come into human contact or activity. Utility areas and mulched, native plantings are examples typical of this hydrozone.

Practical Turf Areas

A water-efficient landscape promotes a practical turf area that is based on function. It includes no more turf area than what is required for the family recreational area or to satisfy the personal needs and desires of family members.

As you plan, remember that a lawn is an integral component of many landscapes. At the same time, the lawn represents the single greatest area for misuse of irrigation in the landscape. In the Desert Southwest, turf must be irrigated or it will become stressed and eventually lost. Drought-tolerant turfgrass species such as Bermuda are available that will survive extreme drought conditions. These varieties may turn brown under such conditions, but will green up again when water is applied.

Lawns require mowing, fertilization, weed control and other intensive maintenance activities to keep an attractive appearance. Use the following guidelines to reduce turfgrass irrigation.

- Zone your landscape and locate turf areas based on water use.
- Plant adapted, low-water demand turf species and varieties.
- Use turf in areas that provide function (recreational, aesthetic, foot traffic, dust and noise abatement, glare reduction, temperature mitigation).
- Irrigate turf based on true water requirements.
- Reduce fertilizer and make applications only when grass turns off-color and irrigation is available.

The turf needs of every family are different. Some experts recommend that a maximum of 25% of the landscape is enough turf. Others say that 600 to 800 square feet is adequate for most family activities.

(Continued on page 3)

Efficient Irrigation

Properly designed, installed, maintained, and operated sprinkler and drip irrigation systems may apply water very efficiently to the landscape plants. Plant selection will determine which system to use. Often a combination of drip for trees and shrubs, and sprinkler for turf and ground covers works best. With drip systems, plan and install sufficient emitters to water individual plants thoroughly and deeply. The system must have sufficient capacity to allow the addition of emitters as the plants grow. Larger plants will require more emitters with time.

Whatever system you use, keep it well maintained and in good working order. Check the system frequently to see it is operating efficiently, repair leaks, clear plugged sprinkler heads and emitters, and correct uneven water applications. Place emitters to water trees and shrubs evenly about the plant. Maintain flexibility with the system, as emitters will require moving as the plant grows.

Both drip and sprinkler systems have the capabilities of clock-controlled watering. This is a big advantage for watering while you are away from home. It is also a disadvantage when the entire system relies on a control device, and gardeners need to recognize that malfunctions are a possibility. The drip system requires long run times and is separate from the controller for the sprinklers. However, more expensive clocks may accommodate both.

Remember that clocks will need adjustment to match the seasons and the watering requirements. To prevent evaporation and wind drift, set your system to water early in the morning (6 a.m.). Select and install emitters that will apply sufficient water to deep-water your plants for the time and days the system is operating.

Make sure you don't overwater. Runoff, visible by simple observation of your system when operating, wastes water and leaches nutrients. Overwatering also results in a continual saturation of the plant root zone and will kill or damage many plants. Periodically, heavier soils will require leaching with additional watering to flush the salts.

Soil Amendments

Desert soils are poor and require the addition of organic matter to improve them. Routine cultivation with the incorporation of organic matter (manure, peat moss, rotted sawdust, compost, etc.) will increase the ability of the soil to conserve water and avoid compaction.

Mulches

The use of organic and inorganic mulches in the landscape will conserve soil moisture by reducing evaporation. Also, as these mulches decompose, they mix with the existing soil to improve it. Mulches also prevent weed growth and control erosion in problem areas.

The use of mulches adds interest and color to the landscape. These materials also serve as an alternative for turf. Examples of organic mulches are bark, well-rotted sawdust, peat moss, and compost. Inorganic mulches would include colored stone, rocks, and gravel.

Appropriate Plant Selection

Selection of your permanent plants should follow careful thought and include the needs, use, and desires of the family. Final selections of turfgrass and woody plants should be adapted to the existing climate. For a list of water-efficient plants, request Fact Sheet 91-32, Low Water Use Plants of Southern Nevada.*

Plant at Proper Times

The best time of the year to plant is in the spring or early fall. Plant annuals and herbaceous perennials in the spring so they become established before the arrival of harsh summer conditions. Shrubs and trees have the best success when planted in the fall. Fall planting encourages root development, and plants become well established before winter dormancy.

Windscreens

Some of the more tender landscape plantings may need protection from the hot southerly summer winds or the cold, northerly flows of winter. Either of these drying winds will quickly desiccate or dry out plants. Careful planning

(Continued from page 3)

(determine the prevailing wind directions for your property) and the use of hardscape (buildings, fences) will shelter plantings from both wind and sun. Buffer zones created by hardier trees and shrubs will also protect plantings. Evergreens are often planted to create year-round protection for the less wind-tolerant plants. Examples of evergreens planted as wind-breaks include Oleander, Blue Point and Spartan Juniper, and Italian and Leyland Cypress.

Maintenance

Haphazard maintenance results in wasting many gallons of water per year and defeats the purpose of establishing a water-efficient landscape. Water-efficient landscaping requires paying attention to details:

- eliminate leaking faucets and valves
- sprinkler and drip systems distribute water evenly
- sprinklers are upright and at grade
- water plants when they need the moisture
- apply the actual amount of water plants need and apply it at a rate the soil can readily absorb.

Other maintenance activities include weeding, fertilizing, mowing, and pruning. Weeds grow well in the irrigated landscape areas and take water from desirable plantings. Eliminate or control weeds by hoeing, hand pulling, or using a herbicide. After weeding, apply a mulch to these problem areas to control future weed growth.

Fertilizing and pruning are maintenance activities performed on an "as-needed" basis. Spring is the best time to fertilize turf. Use a high-potassium fertilizer and follow the instructions on the package for the amount to apply. Excessive fertilization will cause unnecessary growth that will use more water. Taking a soil test every two to three years will identify soil deficiencies and determine fertilizer needs.

Flexibility

Gardeners in desert climates have a challenging assignment. Harsh weather, poor or salty soils, mixed irrigation methods, drought, and poor drainage are factors the successful landscaper must master. Paying attention to details, exercising patience, and remaining flexible as you develop and work with your landscape all help.

Of the guidelines offered for water-efficient landscaping, water management provides the greatest opportunity for water conservation in the landscape. Remember that plants do not waste water, people do. Also, irrigation systems do not save or waste water, people do. To develop water-efficient landscapes, it is first necessary to change attitudes and irrigation habits. We can all do much to use water efficiently in the landscape.

**For northern Nevada, request "Fact Sheet 88-73, Hardy, Drought-Tolerant and Moderately Salt-Tolerant Trees for Northern Nevada" or "Fact Sheet 89-05, Hardy, Drought-Tolerant and Moderately Salt-Tolerant Shrubs and Vines for Northern Nevada".*

References:

- Korr, Marge. (1992 July/August) Countdown to Xeri. National Gardening, 24-27.
- Smith, Ken. (1978). Western Home Landscaping. Tucson, Arizona: HP Books.
- Waterwise Gardening. (1989) Menlo Park, California: Lane Publishing Co.
- Welsh, Douglas F., Ph.D. (1991) Practical turf areas: the controversial xeriscape guideline. Turf and the Landscape Architect.

The University of Nevada, Reno is an Equal Employment Opportunity/Affirmative Action employer and does not discriminate on the basis of race, color, religion, sex, age, creed, national origin, veteran status, physical or mental disability, and sexual orientation in any program or activity it operates. The University of Nevada employs only United States citizens and aliens lawfully authorized to work in the United States.