University of Nevada
Cooperative Extension

Desert adaptations

One reason some people give for maintaining water-wasting landscapes is they "don't like cactus", as if all desert landscaping creates an inhospitable space. Water thrifty landscapes should contain a variety of beautiful adapted plants, with brilliant colors, attractive foliage, and interesting growth habits.

Adaptations to our difficult environment, climate and soils are essential to plant survival. Uncongenial conditions demand changes either in physiology or in structure to make the most of the limited water. Mesquites send roots eighty feet deep. Creosote's shallow root system spreads out over a wide area.

Succulents and cacti wait until nighttime before doing reactions that cost large amounts of water. Lower nighttime temperatures lessen the moisture demand.

Plants lose their water a plant through the stomata in leaves. With fewer stomata, the plant holds onto moisture more efficiently. Smaller leaves have smaller numbers of stomata. Cactus spines developed as the plant's leaves became narrower; now they are only act as protection.

Acacia

Desert plants rarely have large floppy leaves. Many of them are slender, having less surface area for water loss. The foliage of acacia, mesquite and many desert shrubs tends to be fine, limiting the surface area. Members of the buckwheat family have small leaves, often rolled at the edges.

Leaves of some desert plants are very thick, to store water. Agaves have this kind of succulent foliage. A waxy coat that slows down evaporation from the leaf surface generally accompanies this. The leathery leaves of yucca are not succulent, but do have a waxy cuticle for water conservation. Creosote bush has very small waxy leaves.

Mesquite

Most plants move their leaves as they follow the sun. By holding their leaves at a sharp angle, some desert plants avoid the most direct sunlight, protecting them from burning.

A number of desert plants have fuzzy leaves. This makes them pleasant to touch, while the "fur coat" shades leaves against blistering sun, and inhibits water loss from leaf surfaces, the same way mulch acts on the soil. Globe mallow, a non-woody native with attractive small orange coral flowers, has this kind of leaf coating.

Not only is desert soil infertile, it can be salty, a remnant of the ancient ocean that once covered our area. Few plants evolved in regions with the salt levels found in Southern Nevada, but our native members of the *atriplex* (saltbush) group actually accumulate salt. One can taste the salt in the soft, grey green fuzzy leaves. Many desert plants are not spiny. Creosote, saltbush, buckwheat, globe mallow and the colorful spring annuals are all free of such armaments. The desert annuals will often bloom early in the year, before the weather turns too hot. Early blooming helps them survive.

Small and fine, thick and succulent, fuzzy or waxy, desert plant leaves provide diverse visual, tactile or tasty treats. The flowers can be glorious or insignificant. The whole plant can be a short-lived herb, or tree-like, surviving for a hundred years.

With such variety, a landscape can be water saving, without a cactus in sight.

Dr. Angela O'Callaghan is the Social Horticulture Specialist for Clark County Cooperative Extension. Contact ocallaghana@unce.unr.edu or 702-257-5581.