

CACTUS, AGAVE, YUCCA AND OCOTILLO

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Cactus

Cactus can give that authentic touch of native dignity that seems to legitimize and complement Arizona desert landscapes. They make excellent specimen plants or striking accents. The Cactus family numbers over 2000 species. Typically cactus are devoid of leaves and have swollen stems, spines or scales. All cacti are native to the New World and are found from North America to the southern tip of South America.

The thick waxy coated stems of these perennial herb are quite resistant to moisture evaporation, which gives them considerable drought tolerance. Desert cacti are leafless; however, most have spines. Photosynthesis (food production for the plant) occurs within the green outer cortex of the stems, and moisture reserves are stored in the internal part of the stems, sustaining these plants through prolonged dry periods of desert climates. Structural support for cactus plants is provided by internal fibrous or woody skeletal forms. Most cacti have tapering tap roots that anchor the plant and fleshy lateral roots close to the soil surface that extend outward for several feet in all directions. These absorb and store moisture and nutrients. The rose-like flowers of cacti, which are contrastingly delicate and beautifully colored, produce edible although sometimes not too palatable fruit.



Golden barrel cactus (*Echinocactus grusonii*)



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Opuntia violacea 'Santa Rita', an Arizona native 'prickly pear' cactus

Transplanting is usually necessary since cacti seldom occur naturally in desired landscape locations. Although they can be transplanted year-round in southern Arizona's lower elevations, quicker reestablishment can be expected from March through October. Warmer temperatures favor active root growth and, consequently, quicker establishment of the transplant.

Transplant cacti in their original directional orientation. This is very important! The south and southwest sides of these plants become toughened and resistant to sunburn. The more tender north or east sides are likely to sunburn and scar and may rot if exposed to the intense hot sun. Before transplanting, mark the north side with chalk, ribbon, etc., and replant with that side again to the north. To aid in protecting against sunburning, the newly transplanted plants may be covered with a piece of shade cloth. The shade cloth should be left on until signs of new growth and establishment occur.

To remove cactus from its original location, first cut the shallow roots by forcing a sharp shovel blade to its depth into the soil completely around the plant about a foot away from the base. Then, dig under and carefully pry and lift the plant out of the ground. Try to minimize injury to the plant. When digging ocotillo and saguaro cacti, care should be taken not to damage the corky area between the roots and above ground parts of the plant. Allow any loose soil to fall away from the roots.



A mature "Saguaro" cactus
(*Carnegiea gigantea*)

Prune off any damaged roots with sharp, clean pruners. Then, prune back the remaining lateral root stubs, leaving them five to ten inches long. Dust these cuts and other wounds immediately with powdered sulphur to lessen chance of infection and hasten callousing (healing).

Cactus transplants should then be placed in a shaded, open area for one to two weeks after digging to allow the fresh-cut roots to heal before transplanting. Replant cacti in dry soil and do not irrigate until new growth appears at the apex (tips) of the plant which may take several weeks.

Large cacti such as saguaro are best transplanted by a reputable nursery or specialized cactus company. Since the plants can weigh up to 100 pounds per linear foot, even a modest 6 foot saguaro can weigh too much for the homeowner to handle without special equipment.

Smaller saguaros (up to 3 feet) can be successfully transplanted without special equipment. Request written planting and care instructions from the supplier and follow them carefully. Since the plants are slow to reestablish, the buyer should request a two-year guarantee from the nursery or supplier. Customers should ask for written instructions if possible. Purchase native cacti from reputable nurseries and follow their written instructions to reestablish properly.

Well drained sandy or gravelly loam soils are best for most cacti. If heavier, tighter soils are used, spade in 1/3 to 1/2 by volume of washed sand plus some crushed granite, fine gravel, etc., and mix it well with the upper foot of original soil.

Raised (slightly mounded) open locations should be provided for transplanted cacti. Avoid locations where water is likely to collect, and keep the soil overly wet. Also, avoid planting against a south or west wall. Intensified and

reflected sunlight may burn the plants. Don't crowd cactus plantings. Allow space for air to circulate freely around them. Smaller cactus varieties that normally grow under native shrubs should be provided appropriate shading. Never nail anything to a cactus as this may lead to scarring, disfigurement or a point of entry for pathogens.

Care of cacti is minimal but important. The soil should not be cultivated or otherwise disturbed in a radius of several feet around cacti, lest their shallow lateral roots be injured or disturbed. Light surface raking is permissible for the sake of appearance. Crushed granite, natural stone or organic surface mulches may be used over cactus beds for decoration and protective effect. Don't mulch with any materials that reflect or intensify light. Don't cover root zones with plastic sheets.

Irrigation typically is not necessary for native cactus plants except for critical periods of prolonged summer drought. Irrigation is a critical consideration in the culture of native desert plants. Never puddle water around the base of cacti for any period of time. Enough moisture is vitally necessary, but excess water can be particularly hazardous to plant survival. Soil surfaces should slope moderately away from these plants, so water will not collect at the base of their stems. Plants may succumb to rots. Unless you know for sure cactus is suffering from lack of moisture, don't irrigate it! Check the soil moisture at rooting depth before subsequent watering to avoid overly wet soils. Irrigate sufficiently to keep the soil in the rooting area slightly damp after transplanting and until new root development begins and the plant becomes established. Established younger plants usually need not be irrigated more than about every two weeks during southern Arizona summers and older plants probably only once to twice each month. With normal amounts of rainfall, no irrigation will be needed during the cooler season from late fall until early spring. Wet soils can be particularly detrimental and even more likely to promote rots during cooler seasons when plants are dormant (not growing). Don't over-irrigate at any time, if in doubt, don't. Most desert plants are more tolerant of too little soil moisture than too much.

Fertilization is generally not necessary; however, limited cautious application of a well-balanced fertilizer early in the growing season will stimulate growth and vigor. Stimulated growth of cacti in the fall by fertilization or irrigation makes them more susceptible to winter freeze injury. No irrigation or fertilizer is required during the winter months.

Agave, Yucca and Ocotillo

Agaves are one of several types of "succulent" (high moisture content) plants. They typically have thick fleshy leaves and depending on the species may have numerous spines on the tips or margins of the leaves. Some may have no spines at all. The "century plant" is the most commonly grown in local landscapes; however, there are numerous other agaves equally appropriate and often more desirable for specific desert landscape use. Actually considerable variety in size, color and form are available within this



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Agave parryi, a popular garden agave species

interesting family of desert tolerant succulents. Many varieties of agave die soon after flowering, however, some varieties will produce offsets around the base of the original plant which will develop and replace the original plant. Some varieties such as Octopus agave (*Agave vilmoriniana*) produce small plants (bulbils) on the flower stalk; that can be removed and easily rooted.

Yuccas are also naturals for any Southwest desert scene. Their characteristic profiles offer aesthetic contrast when appropriately displayed in desert landscapes. Yuccas, unlike agaves will bloom year after year and the plant will not die after blooming. Many yuccas have sword-like leaves, and at maturity may either be small trunkless plants or have large stems or trunks. Here too, there is more variety than the average gardener would expect. Growth of yuccas occur at top and center of the plant. As their older leaves mature and hang downward, the plant depicts a rustic shaggy appearance.

Ocotillo is another unique native desert plant that lends striking accent with its low-branching, leafy, whiplike canes topped with bright orange-red flowers. Ocotillos can grow to 15 feet in height and as wide. They are typically leafless most of the year, but profuse leafing of the canes follows periods of sufficient soil moisture. During periods of drought, these curious plants shed their leaves to reduce evaporative loss and conserve plant moisture. Widely adaptable to landscape use, ocotillos are right at home in the desert Southwest.

Transplanting of these desert plants can also be done year around with knowledgeable care, but greatest success is achieved during March through May. Transplant to the original growing depth and, as with cacti, in their original directional orientation. The original south side of the plant,

which has become more heat and sunlight-resistant, should again face the hotter southern direction. Well drained sandy or gravelly loam soils with light to moderate amounts of organic content favor root development of these desert plants. To help prevent the newly transplanted ocotillo from falling over or blowing down in a storm, large stones may be placed over the root area (2-4 inches from the trunk). Sunny, open, unrestricted locations and those where surface water does not collect are best. Some degree of growth set-back is to be expected. Properly transplanted, however, natural desert plants reestablish themselves fairly successfully.

Most yuccas and agaves can be dug, the injured and diseased roots pruned off, and transplanted immediately or held in shaded, open-air storage for a few days to allow root cuts to heal. It's not necessary, nor recommended, that the tops of any cacti, agave, yucca or ocotillo plants be pruned back when transplanting. Agaves and yuccas benefit from shade cloth draped over the transplanted plants and removed at first signs of establishment and growth. Be patient with transplants some may take up to a year to reestablish in their new locations. As an alternative, many yucca species are container grown and available from specialty nurseries.

Fertilization with a well-balanced plant food in light to moderate amounts will usually help stimulate plant growth and vigor. However, do not apply fertilizer to newly transplanted plants. When using fertilizers, apply them evenly to the soil surface over the rooting area and water it into the soil with an early summer irrigation. Don't risk over-fertilizing. As with irrigation - if in doubt, don't. Remember, these plants survive in nature on naturally-occurring fertility.



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'Ocotillo' *Fourquieria splendens* in full bloom



'Soaptree yucca' (*Yucca elata*)

often is best to do nothing without first seeking advice from a competent authority or knowledgeable person.

State Plant Protection Laws are Enforced!

Contact the Arizona Department of Agriculture, 1688 W. Adams, Phoenix, Arizona 85007, for specific regulations, restrictions, permits, penalties, etc., before digging and moving any Cacti, Agaves, Ocotillos, Yucca, Joshua Trees, etc. For your own protection, purchase your transplants from a reputable source.

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Pests

Pests of cacti are not so numerous as they are serious. Among the most hazardous are people. Vandals and well-meaning, over-zealous, but uninformed gardeners often cause needless damage.

Spider mites on yuccas, mealy bugs on stems and roots of various cacti, cochineal scale on prickly pear cactus, the cactus longhorn beetle on cholla and prickly pear and pocket gophers and ground squirrels on desert plants are in general the most common insect and animal pests. The agave may be attacked by the agave snout weevil. Damage to agave foliage can result in scarring and potential entry of rot producing organisms, so care should be taken when working with agaves. Never remove healthy foliage, and never prune agaves. Woodpeckers can do considerable damage to saguaro cacti. Check with a recognized authority for specific controls for these pests.

Rots result from various forms of injury. Bacterial soft rot (*Erwinia carnegiana*) is the primary disease of saguaro and control measures include removal of the soft, black rotting tissue and treating with a solution of one part household bleach to 10 parts water. All tools such as knives should be sharp and sterile. Use a 10% household bleach solution to clean tools. Re-clean tools in the bleach solution after each cut. Take care to remove all discolored plant tissue. The best controls are always prevention. The second best is quick healing before infection can set in. Powdered sulphur can also be dusted into the wounds of cacti as a healing aid. Unless the problem and solution are understood, it most



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