

Transplanting Saguaros

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This subject is the source of more myths and misinformation than the Dutchman's gold. Unfortunately, once bad information is printed it takes on a life of its own, and is referenced repeatedly. Most authors have very little experience with the subjects they write about, but are very good at searching the "literature" for references. Thus, the same weary, inaccurate sources are used.

My experience has been gained over the past 17 years as co-owner and operator of Arizona Cactus Sales, Inc. During this time, I have relocated thousands of saguaros from seedlings to mature specimens. Some have died, most have lived. In an average year, we are successful more than 95% of the time, and in good weather we may go months without losing a saguaro. This success rate contrasts sharply with published statements by "experts" who twist the facts to fit their personal agenda. I have read stories where an "expert" has stated that less than five percent of saguaros survive transplanting for as long as five years! I guess he has never driven through Sun City, Sun Lakes, Sunland Village or, hundreds of other neighborhoods in the Valley where there are thousands of healthy saguaros. Using his ratio there would have to be 19 dead plants for every one left standing. Yards having four specimen plants would thus have had 80 to start with! Some expert.

The success rate of saguaro transplants is inversely related to the size of the plant. The smaller (younger) plants have a much greater chance of survival. In fact, it is almost impossible to kill a saguaro that is two feet or shorter. By contrast, the very large saguaros of twenty-five feet and taller rarely survive. These giants do not re-establish due to a combination of problems: their own weight often causes tissues to be crushed allowing rot to begin; they have to be planted so deeply that new roots do not reach the surface; and the trauma of transplanting may accelerate conditions within the plant that would have killed it eventually without the move.

If a saguaro of reasonable size (less than 20 feet tall) is relocated, the primary factors in determining its success are how it is handled, an appropriate planting site, and the correct watering regimen. There are situations where a saguaro is the worst possible plant to use as its special adaptive features are ignored. Unfortunately, the current trend to build very large homes on very small lots is a classic scenario for failure for reasons that will become clear.

PROPER HANDLING

This consists of two parts: protect the saguaro from damage and protect yourself from the saguaro. For saguaros shorter than eight feet tall, this can be a do-it-yourself project, if you have several strong willing friends to help you. Be realistic about your abilities as a healthy saguaro can weight as much as 100 pounds per foot of height. Most of the smaller plants are much lighter of course, but once you have dug the plant out of the ground, your options are very limited.

For exceptionally fat saguaros and any saguaro over ten feet tall, I would heartily recommend calling a professional nurseryman. Be prepared to pay anywhere from \$10 to \$15 per foot to relocate saguaros without arms (called “spears”), and from \$200 to \$400 for armed plants (1994 rates).

If the saguaro you are moving goes from one property to another you also have to call the Arizona Department of Agriculture (602-255-4933) to obtain a trip permit. Moving a native plant without a permit may result in a fine or confiscation of the plant.

Before you begin to dig the saguaro, have your tools and packing material together. You will need a good shovel, a saw to trim the roots, a couple of ropes about 10-12 feet long, and several layers of carpet or foam rubber to pad the plant. Given the nature of most of Arizona’s soils, you may need a pick or digging bar (we use an electric demolition hammer!).

Put the packing material around the saguaro that is still upright.

Remember you will want to re-orient the saguaro in the new location to minimize sunburn problems, so mark the north side of the plant or the packing so you can get it right. Normally, the plant will be set somewhat deeper in the ground when replanted so leave the packing away from the bottom foot to foot and one-half. Tie the packing to the saguaro with your ropes so that you have equal lengths of rope to each side of the knot. These rope ends are your handles to lower, carry and raise you plant as very few of us are macho enough to just put a bear-hug on the saguaro and carry it off.

I recommend digging about a foot away from the base of the plant, and being careful not to cut into the body. You will normally find at least three major roots that radiate from the saguaro just a few inches under the surface. These hold the plant up, as the term “taproot” for saguaros is misleading. Even a 20 foot specimen rarely has a taproot more than three feet deep. Once you have dug down about 12” -18” you are deep enough to cut the roots. I prefer to use a bow saw as the blades are easily replaced. The combination of soil, rocks and roots will ruin a blade very quickly.

Remove or carefully pad any sharp rocks or debris where you are going to lower the plant to so you don’t puncture the saguaro. Gently lower the saguaro to the ground, and stub back the roots to about four inches for laterals. Shorten the taproot to a diameter of about 3” – 4” so it will have the strength to support the plant. New roots begin in the fleshy ring around the woody core of the roots so it is essential that your cuts be clean and square. I have read expert’s advice to save all the taproot—balderdash! Standing a heavy plant on such flimsy roots would be comparable to a human standing on their fingertips for an eternity. The tissues will inevitably be crushed which creates the perfect place for rot to begin. Cut them as outlined above. In Arizona’s hot dry climate the cuts normally dry within hours so normally no special treatment is necessary. If is cold and wet and you can’t wait for better weather, you can disinfect the cuts with a 10% bleach solution, and use soil sulphur to speed the drying.

Carrying the padded saguaro is relatively easy as you have the rope ends as handles. If you place it on a vehicle, be sure to tie it down. Remember also that a horizontal saguaro is very vulnerable to sunburn so don't leave it exposed. Even a few minutes can cause sunburn during the hottest days of summer. So cover your plant.

THE PLANTING SITE

To determine an appropriate planting site, you should take into consideration at least the following: drainage of the soil, overhead obstruction, safety, future access if removal becomes necessary, and satisfying visual design.

Saguaros are very efficient at obtaining and storing water. They can not stand being wet. This presents your first major problem in choosing the right location for the plant. Eliminate those areas that are low or can not drain. Always remember that your saguaro's roots are from 12" – 30" below the surface so merely moving the plant a few inches up a slope may still leave their root area in the retention basin. You have to study the drainage patterns off your house to see where the water will go. Planting directly in front of a downspout or valley of the roof could be a disaster. Conversely, planting directly in front of the apex of a gabled roof may be genius as all runoff will be directed away from the saguaro. Every situation is different, and most are not perfect, but search out the highest and driest location and you are on the right track. Do not plant in areas that are surrounded by concrete or behind a low wall that will trap water.

Check your chosen spot(s) for overhead obstructions. Will the saguaro grow into the eave of your house? Don't laugh; I have been called out many times to remove a plant that is jammed under a roof overhang. I guess the urge to be cute overpowered any other thought processes when these locations were selected.

Safety is yet another concern. It comes in two sizes, yours and the plant's. For your safety, avoid putting a saguaro close to walkways and high traffic areas. For a plant's safety, don't locate it where vehicles are likely to hit it such as immediately alongside a driveway.

Future access is seldom considered when planting a saguaro. This lack of planning can be expensive when you have a mature specimen that may weigh thousands of pounds with no access for heavy equipment. Try to find a place that can always be reached by a truck, and you will not have to face the extra expense of hand labor to remove it.

DIGGING THE HOLE

Before you dig, call the utilities free Blue Stake service (602-263-1100). Omitting this step and cutting a telephone cable or an electric line can sure ruin your day.

Add a few inches to the widest dimension of the roots to get a reasonable width for the hole. Obviously, the depth will vary with the overall size of the plant, so I will give you some basic depths we use:

<u>Original standing height</u>	<u>Depth of hole</u>
1 – 2’	6 – 8”
3 – 4’	10 – 12”
6’	15”
8’	18”
12’	24”
15 – 20 ‘	30 – 32”

I try to make the walls of the hole as vertical as possible to minimize the amount of soil disturbed. Your biggest immediate danger with saguaros is that they will fall over shortly after transplant. Stand the saguaro up and have your friends hold it while you backfill. Put in a few inches of soil, and then tamp it down firmly. Continue this process until the hole is full. We also leave a tapered mound (cone) of soil around the base of the saguaro to divert rainwater away from the soft disturbed soil that holds the saguaro up. This cone will gradually erode, but by the time the soil has stabilized, the plant is secure.

Don’t take shortcuts and don’t think if a little is good, a lot is better. Put in the effort to get the proper depth, because if you plant shallow the plant will fall. If we recommend 30” deep, don’t think that 36” or 48” is better. The plant’s new roots will return to within a few inches of the surface before spreading sideways to form new laterals. If you have buried them too deeply this may never occur.

Several sources of gardening information right now are claiming that saguaros must be planted at their “original depth” to survive. They recommend these shallow plantings with a series of braces held together by cables, etc. The braces will rot away long before the plant can grow strong enough laterals to hold itself up if planted this shallow. You only have to realize that a 12 foot saguaro may be sixty to one hundred years old to see that your braces must last quite a long time. If you follow the procedures outlined in this article, you will be planting from 12 – 15 inches deeper than “original depth.” The plant will live very well without the ugly braces.

Another “expert” requirement is some form of soil amendment. Whenever you change the composition of the soil in such a relatively small area you create uneven water absorption, inevitably one side or the other will hold the water better. This can have two effects: either the planting will stay wet (disaster) or, the surrounding area will wick the water away, which is also bad for the plant. Our success rates have been achieved by simply replanting in the native soil.

WATERING REQUIREMENTS

Plant the saguaro dry. This does not mean just a little water—it means none. Saguaros have a very high water content that is locked up in their tissues. This allows them to survive for extended periods without adding water. The stress of transplanting occasionally causes some rotting in the root area. If the plant and soil are dry, the saguaro’s evolved defenses halt the problem and the plant lives.

This dry regimen should be followed through the first six months or more to give the plant its best chance of survival. If your saguaro is very dehydrated after this period, you can remove the cone of soil around the base and dig a shallow watering well right at the plant. The well should hold no more than two or three gallons of water for a large plant, and somewhat less for a plant shorter than eight feet tall. Give the saguaro about five gallons of water once a week to help build it back up. This watering should not be started in winter, wait until temperatures get back to the 90's.

If your saguaro has not dehydrated badly and the color looks good, I would never water it, ever. Saguaros in urban settings have so much more water than in the desert that they average over one foot per year in growth.

When you get a half-inch of rain on your roof, the flow into your yard may be several inches. Add this runoff to the supplemental watering for your other plants, and there is an abundance of water for your other plants, and there is an abundance of water for the saguaro. You will be better served to have a healthy plant that grows slower and does not become a bloated monster.

Thankfully, the use of black plastic under gravel toppings is declining as we have found plastic causes many problems for saguaros. The plastic makes a nearly perfect vapor barrier so when the soil becomes wet it may take months to dry out. This constant wetness encourages the growth of organisms that cause rot. If you have plastic under your toppings, it is a good idea to remove it at least 6 – 8 feet in all directions from the saguaro so it has a chance to dry out.

After reading this article, you may determine that your location just isn't right for a saguaro. Saguaros have evolved as a species dependent on quick-draining soil with intermittent rainfall, and well-spaced vegetation. If you can not provide a site that fairly well meets those criterion, you may need to select other desert plants that handle water better.