

Desert Rose (Adenium) Culture

Desert roses (Adenium) by nature grow in the semi-arid Sub-Sahara region and the Arabian Peninsula. In nature Desert Rose receive full tropical sun all day long and only infrequent rains. In nature, the desert rose loses its leaves and goes "dry" dormant when it doesn't receive rain for a few weeks. This is the reason Desert Roses grow very slowly in their native environment, they are frequently "dry" dormant. In nature desert roses grow in gravel and cracks in rocks and need absolutely perfect drainage as they are used to having lots of air around their roots.

The key for rapid growth of Desert Roses in cultivation is to provide abundant air, abundant moisture and constant fertilization consistently to their roots during their growing season. This is the tricky part especially over the long haul of many years and many rainy seasons. Desert Rose does best in a growing media in which most of the media particles are permanently greater than 1/16 inch in diameter, in order to get adequate air to the roots at all times.



The photo above shows desert roses in their semi-arid native environment. The word "semi-arid" is important. Desert Roses don't thrive on dryness, they actually thrive on lots of water. But they must have a very free draining, gritty, airy and uncompressible soil mix. The desert roses shown above are growing in cracks in the caliche limestone rock, a very uncompressible, free draining, airy and alkaline environment almost completely devoid of what we would call soil and where there is virtually no organic matter. This Desert Rose is totally dependent on its fat stem (caudex) to hold water in between the infrequent rains and misty fog in this region (Socotra, a desert island off the Coast of Yemen on the

Arabian Peninsula). Note that the desert roses above are in bloom but are "dry" dormant, they have no leaves. So these Desert Roses haven't received rain for a while.

Climate for Desert Rose

Anywhere where the temperature drops below freezing Desert Roses must be grown in containers and must be moved under cover to slightly warmer areas. Desert Roses cannot be grown in the ground unless there is some substantial system in place to protect them from the low temperatures.

Light and Water for Adenium

Adeniums are normally thought of as slow growing plants. However, with adequate drainage, lots of fertilizer, water, root aeration and plenty of Florida sun the new hybrids can grow surprisingly fast. Leave Adeniums in their containers in full Florida sun. These are plants which in nature grow in full equatorial sun. They need full sun all day long. Lighting of less than 100% full Florida sun results in leggy growth and a lack of flowers. The Adenium will grow very rapidly in full sun with lots of water and fertilizations in well aerated media.

Don't allow Adeniums in the growing season to go without water too long. Adeniums are semi-arid region plants. Adeniums will drop their leaves and go "dry" dormant even in the middle of the summer if they go dry for too long. Cat litter in their media help Adeniums stay moist yet well aerated during the Florida rainy season.

The claim has been made that the breeding of Adeniums has produced a plant which requires less soil aeration and which accepts large amounts of organic matter in its growing media. This simply isn't true. Breeders breed for flowers and large caudexes. They all use well-draining, well aerated medium. As a matter of fact, unless the breeding program is specifically designed for breeding disease resistant plants, breeding generally results in plants with less tolerance for such things as poor root aeration and fungi. That trend can be seen in lilies, roses and hibiscus, to name just a few extensively bred plants.

Note that breeders select the best plants under conditions of heavy constant fertilization. After several generations of breeding desert roses the breeders have selected to the point where the desert roses won't thrive unless they have constant fertilization. This constant fertilization is important.

Pot Size for Adenium

Some sources claim that a large Adenium requires a large pot. This is a true statement. Research at a University has shown growth and flowering to be directly related to pot size, the more volume in the pot the larger and faster the plant grows and the more it blooms. Research has shown that an Adenium planted in an 8 inch pot will grow at close to double the rate of a Adenium in a 6 inch pot and will have double the amount of flowers. So Adeniums don't bloom better when pot bound.

The Planter for Adeniums

In Florida in the rainy months Adeniums placed outdoors in full sun must drain fast and need lots of air around their roots, much like epiphytic orchids. The water should drain from the top of the planting media in SECONDS and the air content of the media should be at least 15% even during the heaviest rains. In order to get this high aeration and drainage it is necessary to modify most pots.

Take a decorative plastic pot and snap off the bottom tray. Then take an electric soldering iron and add dozens of hole all around the lower inch of the circumference of the pot and all around under the pot. Add the same holes to the tray, just randomize them so that the media can't get out of the pot. Then put the tray back into the holes in the pot and melt the bosses back over with the soldering iron so the tray can't drop off. To complete the drainage always add lots of holes around the lower circumference which penetrate both the saucer and the pot.

If you use a clay pot and perch it on a soil base there can be a problem. The single hole at the bottom of a clay pot can become plugged as the pot settles into the soil. Clay pots for Desert Roses need to be on platforms or seated on a bed of large gravel designed so that the bottom hole is open to the air.

Another trick is to take a small plastic pot and fill it full of holes with an electric soldering iron. Position this small well holed plastic pot inside the larger clay pot over the center hole in the clay pot and fill in around the small plastic pot with pea gravel. This insures good air flow and drainage through the single hole in the clay pot as long as the hole is elevated and isn't filled with soil.

Also do not use any saucer with a desert rose in a clay pot as the saucer will prevent good aeration. Don't under any circumstance plant a Desert Rose in a metal or ceramic pot without holes in the bottom. That is certain death for the plant.

Planting Media for Desert Rose in Planters which are Outside in South Florida

Most Desert Roses sold in stores are grown in coir or coco fiber, the ground up outer shell of the coconut. It drains fast, is well aerated and can be fertilized and watered frequently for a year or two before it starts to decompose and turn into an overly wet compacted mess. Coir can last years in a greenhouse where watering is controlled to once every few weeks but it doesn't last long in the Florida wet season.

In the Florida wet season organic material slowly decomposes and packs tighter and tighter around the roots of the desert rose. This packing will slowly but surely cut off the supply of air to the roots of the Desert Rose and this can be fatal. Repotting is a shock to the Desert Rose and it takes it up to a year to recover from the shock. So repotting frequently is not desirable for the plant.

If you want to maintain a steady, rapid and unchecked growth of a desert rose and you don't want to repot frequently because of packed down organic matter then:

- Don't leave the Desert Rose in the coir any longer than necessary. When planting the Desert Rose in your container of choice remove ALL the coir from the roots. Wash it off with a spray of water.
- Don't use cactus and palm mix from the store, it has way too much organic matter in it.
- Don't use any commercial soil mix, again, way too much organic matter.
- Use a small amount of fine organic matter, on the order to 5 to 15%. There seems to be a breakdown product of organic matter such as peat moss or composted cow manure which is useful to growing adeniums. I don't recommend pine bark, it is too acidic and too large.
- I don't use perlite or vermiculite; the perlite doesn't absorb any water or nutrients and the vermiculite decomposes and packs down over time. Perlite also has the nasty habit of floating over the rim of the planter and messing up the lawn or concrete with its white particles. But it does no harm to use these materials.

There are many alternatives for desert rose planting media which don't require frequent repotting. These materials don't decompose and remain airy and free draining for the life of the plant. Potting ingredients for desert roses need to be judged on several things, in order of importance:

1. the ability to remain open and free draining as to allow air to get to the roots of the desert rose, i.e. the ability to drain, remain porous and not become waterlogged. This is assured if the particle or chunk size of all media ingredients is between 1/8 and 1/2 inch in diameter.
2. permanence; the ability to not decompose and compress over time

Now many, many media have these properties: gravel, aquarium gravel, ground rock, ground shale, fine volcanic rock, sand, perlite, scoria, pumice, clay cat litter, ad infinitum depending on where you are in the world. This means things are actually quite easy for desert roses. Just don't forget to add 5 to 15% fine organic matter to the mix.

Then there are some additional properties whose usefulness is dependent on your watering and fertilizing regimen.

If you don't fertilize regularly or don't use timed release fertilizers such as Osmocote, then you need to think about:

3. the ability of the media to store plant nutrients (the so called "Cation Exchange Capacity" or "CEC")

If you don't use a hydroponic fertilizer and you don't have some clay in your media you need to look at:

4. the ability of the media to supply needed Calcium and Magnesium to plants

And finally, if you don't water frequently, with the new hybrids raised in nurseries and bred in nurseries for generations, you need to look at:

5. the ability to store water for use by the desert rose (without excluding air)

The formula I have been using lately is an obsessive compulsive's dream. The mix is somewhat expensive but affordable considering that a good grafted Adenium can run \$25. In theory this media should grow great desert roses.

1. Four \$1 seven pound bags of "EverPet Basics Litter Unscented" cat litter from the Dollar General Store. Any cheap unscented non-clumping clay cat litter will do.
2. One container activated charcoal for aquariums (\$9 per 39 oz.).
3. One container ammonia absorbing zeolite for aquariums (\$11 per 36 oz.).
4. 5 to 15% composted cow manure.

I've planted some desert roses in this media and to tell you the truth I can see no difference in those plants in this mix and those plants just in sand or gravel (each with 5 to 15% cow compost added). I think the key to my success is frequent fertilization with hydroponic fertilizer. I have one plant I didn't fertilize as an experiment and it is a straggly twig with three leaves on it. Hybridizers constantly pick the plants which grow and flower best under conditions of constant fertilization and that has left its mark on the desert roses we are growing.



Clay Cat Litter



Ammonia absorbing
Aquarium Zeolite



Activated charcoal

Note that these ingredients have permanent particle sizes between 1/8th and one quarter inch. This is vital to maintain air between the particles. All the particles adsorb water, another important point considering I'm not religious about watering. All these particles have excellent cation exchange rates, which is probably over-kill on my part as I when I water I water with a hydroponic fertilizer solution at half strength.

Potting of Adenium

Mix the ingredients thoroughly, and put them in planters which have the many holes through them made with a soldered iron. Always add a one inch layer of pea gravel at the bottom of the pot for good drainage and aeration.

1. After cleaning all the old media off the roots of the Adenium to be repotted, the roots can be dusted with a rooting hormone such as Hormex or Rootone to speed up the repotting process.
2. Then plant the Adenium with the entire stem (the fat "caudex") well out of the planting media. Much of the caudex in many store bought Adeniums is below the soil line so don't be afraid to sit the whole caudex out of the soil and trim off any small roots that are coming off the caudex portion which was below the soil. Some growers, especially bonsai growers, expose all of the caudex, including the caudex below the soil line, each time they repot the Adenium to give a nice artistic twisted and gnarled look to the lower caudex of the plant. The newly exposed caudex won't sunburn in Florida.

When a Adenium is repotted it is quite normal for it to lose all its leaves. Adenium are much like weeping figs, change anything in their environment and they tend to lose their leaves. Just keep watering it and the Adenium will come back. Initially the Adenium can be watered with a very weak solution of liquid rooting hormone such as "Dip-n-Grow" in distilled water (hard, alkaline well water will neutralize the acid rooting hormone).

Fertilizing of Adeniums

The unhybridized forms of adeniums found in nature grow and bloom well in very infertile soil. But the hybridizing process changes that. The hybridizing process consists of making crosses and planting thousands of seeds. These seeds are heavily fertilized to maximize growth. The one or two plants out of the thousand that bloom well under conditions of heavy fertilization are the "selected" for further hybridizing. Most hybrids are the result of tens of generations of such high fertilizer condition selection.

99% of the plants sold are much hybridized adeniums and are heavy feeders. I've recently switched fertilizers based on University of Florida research. I've gone to a hydroponic fertilizer, General Hydroponics MaxiGro 10-5-15 half of a teaspoon per gallon with an addition of half of a teaspoon of potassium phosphate. One could also use General Hydroponics MaxiBloom 5-15-14 with added potassium sulfate. All these fertilizers are available on Amazon. It turns out that the media we use for potting plants needs the addition of Calcium, Magnesium, Sulfate and micronutrients. Do not use a high Nitrogen fertilizer. High Nitrogen will give you an Adenium with no blooms.

Apply this hydroponic fertilizer solution with every watering. Make sure to water to the point where solution runs out the base of the planter, flushing any accumulated salts.

Be careful about using organic fertilizers such bone meal, blood meal, feather meal and fish fertilizer. Local critters dig up anything planted with these organic fertilizers.

Winter Dormancy of Desert Rose

Desert Roses never experience temperatures below 50 degree Fahrenheit in their native lands. When night temperatures start falling below 50 degrees consistently for days at a time Desert Roses go "cold" dormant even if they have water. And "cold" dormant desert roses don't like water, period. "Cold" dormancy is an unnatural state for desert roses and when they are in "cold" dormancy they tend to shut down their natural defenses against fungi and bacteria. During "cold" dormancy a Desert Rose is very prone to wet rots caused by fungi and bacteria.

What typically happens when night temperatures drop is that the leaves of the desert rose start to yellow and drop off as it enters "cold" dormancy. This is perfectly natural and will continue typically until there are no leaves left. Unfortunately, at the first yellowing of the leaves the novice grower will panic and start watering the Desert Rose to prevent further yellowing. This will kill a desert rose. If night temperatures have been below fifty for several days one must let the leaves fall and STOP watering.

At the first sign of weather with four days or more of night lows below 50 degrees Desert Roses will enter "cold" dormancy and must be brought into a dryer and slightly warmer covered environment such as a garage, a shed, or a covered enclosed porch. "Cold" dormant desert roses don't even need light. Once the desert roses are under cover only water lightly once a month, even if the plants retain their leaves. Root rot due to excessive moisture during the "cold" dormant winter months is probably the biggest killer of Desert Rose.

Leaving desert roses out under a timed irrigation sprinkler system in the winter (typically in LaBelle Florida this is about December 15th through February 15th) months is sure death. Even infrequent winter rains can kill "cold" dormant desert roses if they are left out. In addition to dying from too much water during the winter "cold" dormancy, desert roses will also die in a Florida freeze if they are not very well protected from the low temperatures.

When the warm spring weather arrives, desert roses can be put back out in full sun and watered frequently, carefully watching for those occasional late frosts which will require the plants to go back inside. The flowers typically come out before the leaves.

Now it is possible to bring desert roses inside the house in the winter and to grow them on and have them flower. The key is to give them as much sunlight as possible in the house. A south or west facing window is a must for flowering. The Desert Rose will live with less light or artificial light but it will only flower sparingly at best.

Types of Desert Roses

There are actually many types of desert rose; large and small caudexes, variegated, reddish or green foliage, frilled flowers, large flowers, striped flowers, yellow, white, pink, red, blackish red and black flowers. There is no true yellow, purple or blue Desert Roses and photos which show such flowers are "photo-shopped". Some desert roses have double petals and look just like small double camellias or roses.

Note that the best desert roses are grafted, not seed grown. Other good Desert Roses are grown by rooting stem cuttings of desirable varieties. Note that stem cutting started plants will typically not get the large fat caudexes of seeded or grafted plants. A caudex is an enlarged stem and/or root area which appears very fat and engorged. In desert roses the caudex stores water for the plant and is considered part of the charm of desert roses by most people. But then some people don't like the fat caudexes.



A few double Desert Rose varieties. These tend not to bloom as prolifically as single blooms and the dead blooms tend to hang on the plant.



The artistic plant above was probably grown in a compressible organic media such as coir and frequently repotted. With each repotting the large “root” caudex was more and more exposed. This can be done with compressible organic media. But it's a lot of work. Repotting a desert rose isn't easy. And each time the desert rose is repotted its growth is checked for several months. It won't happen with the three media recommended above. The “root” caudex will be small or non-existent and most of the caudex will form above the soil line when the Desert Rose is grown in non-compressible media. Frequent repotting will not be necessary.

The claim has also been made that a shallow wide container is necessary to create a large, fat caudex. A better statement might be that a large “root” caudex will form below the soil line in deep containers with compressible organic soil media and needs to be exposed as the plant grows by careful repotting. With uncompressible inorganic media or a shallow container no “root” caudex will form. Planting the desert rose in a media which won't decompose and which won't compress favors the formation of a single fat caudex above the soil level

The plant below is typical of a plant grown in uncompressible media.



Personally I just start out with a permanent 12 inch 2 gallon plastic container, permanent, uncompressible media and don't repot until the container begins to fail from old age. I want as large of a single fat caudex as possible. I'll typically repot into a 15 inch diameter 3 gallon container. Anything larger than 3 gallons is just too heavy for my bad back to handle. If the Desert Rose gets really large and requires a large container I switch the potting media to one based on perlite.

Dave Bogert DLBoge2@gmail.com