

## Stocks for Grafting Cacti in the Desert

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In July 1967, Ted Hutchison stated in the *Cactus and Succulent Journal* that very little information was available in print about cacti suitable as grafting stock for hot, dry, desert areas. This situation hasn't changed. Commonly used genera such as *Hylocereus*, *Pereskia* and *Selenicereus* don't hold up under desert conditions unless grown in a glasshouse. *Trichocereus spachianus* is the most commonly used stock. It does well in the heat, speeds up the growth of most cactus scions, and many species of cacti seem to thrive when grafted on this stock.

If *T. spachianus* has so many virtues as a stock, you might ask, why I have spent the last ten year trying every other possible stock that I can get my hands on? *T. spachianus* has two faults: The main one is that a year or two after grafting the stock becomes brown and scaly. Fungicides slow this down for me, but never eliminate it. Perhaps if I used the fungicide more regularly the problem could be solved. A crest grafted on it will become a beautiful show plant in two or three years, but by then the stock isn't fit to be seen in the company of healthy plants. The other fault is that sometimes it pushes too fast. Miniature gems, that are favorites of mine, become bloated monsters—more like pickles than cactus. Commercially this isn't a problem as growers are able to remove the scions and root them as cuttings when they are of suitable size. Propagation is speeded up and I use it for this reason myself, but I no longer graft show plants on it.

Other *Trichocereus* that I have used are *pachanoi*, *knuthianus*, *macrogonus* and several hybrids. *Pachanoi* is difficult to keep turgid outdoors in the summer. *Knuthianus* offsets too profusely. I have made but a few grafts on *macrogonus*, but they worked out well and this seems to have possibilities. A problem I have had with this and some other *Trichocereus* is that if the temperature is hot, they develop black rot very easily if roughly handled. I've had good results with some of the hybrid *Trichocereus*. One in particular, has a bright green epidermis, and huge pink flowers. I've been told that it is a Diehl hybrid. It works well with the scion grafted low so that the stock is eventually hidden, and it doesn't seem to offset much when used in this manner.

A *Trichocereus* appearing plant of dubious origin is called "Imperialis." There seems to be some question as to whether it is a *Trichocereus*, *Echinopsis* or, a natural hybrid between the two. From what I understand, it was grown from seed imported many years ago from Argentina, but no one has found the plant growing in the wild. Whatever its pedigree, it makes a magnificent stock. It tolerates summer heat and winter cold as well as a wide range of sun and shade conditions. Its worst fault is that it's a slow propagator compared to most other stocks. I hoard every piece to use for grafting show plants. If you have a chance, try to get some of this stock—but not from me.

Most *Echinopsis* and their hybrids are acceptable and are fine to practice on when learning to graft. Some tend to drive you crazy because they produce so many pups, but these push off easily enough when small.

*Bolivicereus* or *Borzicactus samaipatanus* is a great stock for small scions. Most of them grafts well on it, offset rather than get blown up, and bloom much better than on *Trichocereus*. This stock can be used unrooted as well as rooted. During the summer, roots are put out about two weeks after the cutting is made, even when it is out of the ground. A tendency to offset is its worst fault, and large scions may cause its collapse. When this stock is needed, I collect some from a patch growing under a Palo Verde tree, cut it into five-inch sections, and usually graft unrooted. This is probably the most useful stock that I have tried. Sometimes it blooms while carrying a scion—this is quite a sight.

*Lemaireocereus pruinosus* is good for large scions. Some of the so-called “Mexican living rock cactus” that don’t take easily to other stocks, do well on this one. Their chemistry seems to be compatible. This is a good stock for hot areas although very frost tender. *Lemaireocereus marginatus* makes a beautiful stock and grafts take well on it, but it bruises easily if roughly handled, and then rot sets in.

Most of my early grafting experiments were on *Eriocereus martini*, *Echinopsis* hybrids or, long spineless *Opuntia* pads. During April 1965, the first year I was grafting, both top and bottom of a *Lobivia pentlandii* were put on *Eriocereus martini*. They were planted about a foot apart in the yard, and are still growing there. It now appears to be a single clump about two feet in diameter with no sign of the stock. A *Trichocereus* crest grafted about this time is still growing. After I had obtained sufficient stocks of *Trichocereus*, I quit using the *Eriocereus* except for cactus such as *Wilcoxia*, because the *Trichocereus* was easier to use. *Eriocereus* grows beautifully in the heavy soil of the yard, but in a pot, it barely survives. The huge tuberous root needs lots of room to develop. It grafts easily during cool spring weather, but I’ve had poor results during the hot summer. If these idiosyncrasies are taken into consideration, it makes a fine long-lasting stock for grafts planted out in the ground.

The long Burbank spineless type *Opuntia* pads have given me good results with *Echinocereus*, other *Cereus* types, and other *Opuntias*. This stock is my favorite for *Opuntia clavarioides*. A *Wilcoxia papillosa* grafted about two weeks ago has started to grow and looks very good. I haven’t had much luck with *Mammillarias* on these pads, but they put tremendous growth on cactus that is compatible.

*Cereus* of the *peruvianus* and *hildmannianus* types do well either as seedlings for small grafts or when planted out for growing larger cacti. They take the heat and cold quite well, but need lots of water. If you provide enough to keep them turgid all summer, large plants make great pushers.

A plant much more suited to our Valley climate and soils is the *Senita* or *Lophocereus schottii*. I have just used it for a year or two and have had some problems with it rejecting certain scions. I’m experimenting with it this year since Whit Evans uses it a lot, and I’ve seen beautiful grafts on it in his lath house. Some clones of this plant may be much better as grafting stock than others, which is true of other species as well.

I've also tried other stocks. *Myrtillocactus* is good although a little frost tender and *Nyctocereus* and *Cleistocactus* make good stock, but are horribly spiny and literally a pain to use. This is true also of other stocks that were mentioned, as I have never learned to keep my hands out of the spines while grafting. Actually, any cactus that "grows like a weed" for you is well worth trying as a grafting stock. Most cacti will graft to others, but there is little point to it unless you have an improvement in growth. Grafting onto a shriveled piece of stock is a waste of time, and no stock is any good unless it can be kept turgid without too much trouble.

My plants are all grown outside either in the yard, in a lath house or on the patio. If you are the lucky owner of a heated and cooled glasshouse, you can use just about any stock.

Every time I look at a barely living piece of *Ceropegia woodii* in a pot on my patio, I'm reminded to use a stock more suited to my conditions. Rauh and Dinklage have a great article on grafting succulents in the July 1972 issue of the *Cactus and Succulent Journal*. They report *Ceropegia* tubers grow by themselves under the tables at the Botanical Garden in Heidelberg. When they wish to grow one of the difficult stapeliads, they simply pick up a tuber, pot it on its side, and graft onto it a few weeks later. Reading this sounded great, so I obtained some *Ceropegia woodii* in California. Unfortunately, a great difference must exist between the climate under the benches at Heidelberg and on my patio in Phoenix. I may have better luck grafting one of the *Ceropegia* tubers onto a stapelid stock rather than visa-versa. All of them grow easier for me than does the *Ceropegia*. *Stapelia hirsute* seeds itself in the tree wells out in the yard. I'll have to try that as a stock.

To summarize, the most useful cactus stocks for me to use outdoors in Phoenix are *Trichocereus spachianus*, *Echinopsis* (?) "Imperialis," *Bolivicereus samaipatanus*, and *Lemaireocereus pruinosus*. I haven't found the ideal all around stock yet, and I probably never will. For me, experimenting is what this hobby is all about.