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### HOW TO KEEP JADE PLANTS

This writing began as a Christmas letter to my friends a long time ago. I've learned so very much more about jades and plants in general since then, and I've added to the original at various times. I'm going to do a major rewrite of the whole thing, but I'll try to keep its original flavor as a Christmas letter.

Some years ago, I decided to concentrate on cacti as my greenhouse hobby. Before I got rid of my only jade plant (*Crassula* sp., with *Crassula portulacaea* [=*C. ovata*] being the most likely identity), a spectacular reason for keeping the plant manifested itself. The plant bloomed, and magnificently so. I've kept jades ever since, for the main purpose of enjoying their flowers during the Thanksgiving to Christmas season.

Right now, in our house, there are two blooming jades. Both are about three feet (90 cm) tall and the foliage forms a ball about three feet in diameter. The outer foliage is an almost continuous surface of blossoms. Each blossom is white with hints of pink here and there. There are five petals, about 5/8 inch (15 mm) across, with five stamens and five pistils coming out of the center of the flower. The blossoms are carried on a truss which is a cluster of anywhere from 25 to 75 individual blossoms, and every growing tip of the plant has a truss of flowers. There are well over 100 trusses of flowers on each plant, so I can see about 5,000 flowers blooming. The blooming period can last well over a month. Each flower only lasts some days, but as it withers, another bud swells and opens. In the space of this flowering season, each of my jades will easily produce about 50,000 flowers.

At the end of the flowering time the plant just plain wants to call it quits. It will still have lots of buds, but they wither off faster than new flowers are formed. (This withering of some buds actually starts with the very beginning of the blooming, but at first the blooms far outnumber the withered buds. After about eight weeks, the withering is essentially all that happens.) As the flowers wither, the stalk which supported the truss desiccates and quickly abscises cleanly at the nodal joint. There's a great mess of dry flowers and trusses and stems all around the plant, but that's why vacuum cleaners were invented. After cleaning the plant of its now useless flowering parts, I get set to start the blooming cycle all over again.

You probably have the impression that these three-foot jades I've described above are very old plants. This is a common misconception regarding jades. The truth is that five years ago, these plants were three-inch (7.5 cm) cuttings which I rooted in the spring. Properly kept jades grow like crazy. I have a constant succession of jades coming up so that I can give away the oldest plants to people who admire them. I've gotten some strange responses when I try to give them away. Most people don't think that I'm serious. They think that the plant is too valuable to be given away. I'm going to tell you how to grow a big jade and how to make it bloom.

You could just start with a jade you already have, or get a piece from a friend, or steal a piece from any plant you happen to come upon. The plant won't mind since it's probably dying (very slowly) anyway, and the owner will feel honored that he or she has a plant worth pinching, so to speak. I like to use a very porous cactus soil for growing jades. I make my own and it's unreasonable of me to expect you to do so. The so-called "cactus soil" that you can buy in garden shops should be ok (note the "should be"). Do not, ever, use any potting soil based on bark, such as "Black Magic" products. I had terrible

luck with this stuff when I made the mistake of using it. You could use any decent houseplant soil, even garden soil, but I suggest you mix whatever non-synthetic soil you use half and half with vermiculite or perlite or pumice. It's important for all plants that air reach the roots. Jades are just a special case. All my houseplants and greenhouse plants are in a very loose and drainy synthetic soil. Only swamp plants like standing in wet muck. Root your cutting on a warm windowsill, preferably south-facing, in the early spring. It'll take a few months to get a good root mass going. I've never had a rooting attempt fail in the many years I've propagated jades, but you might do it with several pieces just to make sure that the odds are with you.

Now comes THE trick. You have to get your plant outside for the summer. Many people are in love with jades because they think that the plants are virtually impossible to kill. This is a false impression. Jades die rather slowly. They can take 15 years or more to do so. For some reason, most people think that jades don't like light or heat. Consider, however, that these plants are native to Cape Province of South Africa. They grow in the open savannahs. They love light. They love (or tolerate) heat. (And, believe it or not, they love water. More on this later.) The typical jade that you see here and there has deep glossy leaves. This is a sure sign of light deprivation. The less light a jade sees, the more it attempts to harvest the light by making more chlorophyll and the greener the leaves become. A healthy jade actually has somewhat pale green leaves with red margins. If the plant is getting enough light, it doesn't make a lot of chlorophyll so the other leaf pigments, the carotenes, xanthophylls, etc. (you see these in the fall when "the leaves turn," but this is really just the cessation of chlorophyll production) contribute to the leaf color.

This was a long digression, but I want to make sure that all of you are up with your biology!

If you take your house-bound jade and put it outside, within a few days all the leaves will fall off and you'll have a skeleton on your hands. New leaves will grow, but you've given a tremendous shock to the plant and it won't like you for doing so. What's happened is that the plant has had no exposure to ultraviolet light, and a good dose of UV light promotes the leaf-dropping bit. To avoid this shock, you have to acclimate your jade to sunlight gradually. The process is exactly like getting a tan (not recommended by the A.M.A., by the way): expose the plant to direct sunlight for about 10 minutes at first, and increase the exposure by 10 to 20 minutes every day over about two weeks. Your plant will now be acclimated to the sun. Now, unless you haven't joined the rat race, you probably can't devote all this loving care and time to a plant. One alternative, just like for people, is to use a sunscreen. The white plastic garbage-pail liners (1.5 mills = 0.0015 inch thick) that Safeway, or whoever, sells work fine for me. You can put the bag over the plant, being careful that there is LOTS of ventilation (cut holes with scissors) on the not-sun side. I do mean lots of ventilation. You'll literally cook the plant if you don't do this right. You also stand a chance of frying any leaf that gets glued to the bag directly because of moisture, so try to fix the bag so that the contact of the bag to the plant surface is minimal. A wire framework or some wood sticks can be used to help this.

Alternatively, you can make a wood frame and stretch and staple the white plastic (NOT CLEAR PLASTIC--THE WHITE PIGMENT [titanium dioxide, just like in people sunscreen] IS THE SUNSCREEN) to the frame. Put your plant underneath this shade. I take the shade off the plant for some period of time every day, if I'm home, but it seems to be ok if you just leave the plant under the white plastic for a week to ten days. You can then remove the plastic and the plant should survive the more intense light just fine. Another alternative is to find a spot somewhere which gets only 25 to 50 minutes of direct sunshine about two hours either side of high noon. For me, now in New Mexico, on daylight savings time, high noon is about 1 PM. So I want to give the plant about 30 minutes of direct sunlight sometime between 11 AM and 3 PM. It turns out that I have a space between my garage and greenhouse that's ideal. After a week to two in this space the plant can be moved to an all-day sunny spot.

One more reminder, jades do love light; it's the shock of coming off a starvation diet with no sun tolerance that you're trying to mitigate for the poor thing. Incidentally, growing the jade under or behind GLASS is a bad idea. All ordinary glass absorbs almost all of the sun's UV radiation. You'll get a fine plant, but little if any flowering.

During all this messing around, you've been watering your plant thoroughly. **When a jade is growing**, keep the soil wet. That's why you made or obtained the drainer soil above. Water cuts air away from the roots and roots need air. Jades are typical xerophytes--they can withstand drought but they'd rather not. When they're growing, water and fertilize like crazy. Use about 1/10 or less of the recommended fertilizer strength on the bottle. (The manufacturer wants you to waste the fertilizer so that you'll buy more. Think about this hard. ALL fertilizer labels tell you to use too much!) Fertilize weekly or more often if your plant is really growing. Use a liquid fertilizer which also contains trace elements. I grow all my plants with Peters "Peat-Lite" 20-10-20. The "Peat-Lite" formulations have larger amounts of trace elements because they're meant for artificial soil. Any reasonably balanced formulation (XX-YY-ZZ) is ok. Every several months, thoroughly leach the pot. Run about ten volumes of water through to get rid of waste. Every potted plant benefits from periodic leaching. Most people who keep houseplants pride themselves on being able to water so that only a tiny amount of water gets through the pot. This may save on a mess, but it's killing the plant. Any plant. All of you with houseplants--toss them into the (empty) bathtub two or three times a year and run water through the soil. Many volumes. Then re-charge with fertilizer and trace elements (use some kind of cheap "fish fertilizer" or any Peter's with trace elements. Miracle-Grow is Peters with a different label and at twice the price).

In the fall, before a killing frost threatens, take the jade inside. You can enjoy it in the house, if you'd like, all winter. The leaves will gradually lose their red edge and go to glossy green, even if you've got the plant in a south window. Glass lets (almost) NO ultraviolet through. If you're going to have the plant in the house where it's warm, the plant won't go fully dormant, and you'll have to keep the root ball damp. It doesn't need huge amounts of water because you don't have the sun inside your house baking the water out of the leaves. I've actually let my plant's root ball dry out, and then I've stored the plant in a cool (not freezing!) garage (or basement) after they're done blooming. If the temperature is below about 50° F (10° C), the plant will go dormant. Next spring, when the weather warms up, wake the plant up inside your warm house and when all danger of frost is past (or pull the plant back inside the house when a frost threatens) re-acclimate your plant to the outside by repeating the above acclimation to sunlight directions. Jades seem to not need a well-defined dormant period to cause flowering. The drying out in the winter seems to be enough. Most of my cacti must go dormant for healthy growth and flowering, so I arbitrarily treat my jades the same. Don't let the jade get too warm in the house if you don't keep it dormant. you'll get misshapen and poor growth, called etiolation. Of course, you may not be able to tell if you're not a jade nut. Probably less than one percent of people who keep houseplants know what etiolation is.

Depending on just which *Crassula* you get a hold of (there are several which are similar) this routine should get you a blooming jade about 1.5 feet tall in three years. The setting of buds (and once buds are set, even if you can't see them yet, the plant must flower) is caused by a combination of high light intensity, and ultraviolet light, and declining day length, and a certain amount of root-boundedness, I think. (More about the latter below.) When you take the plant in because the weather has turned, after a few weeks in the house, buds will appear at the apical tips of the branches. They'll swell up and bloom by Thanksgiving, lasting to Christmas. You can delay the blooming by letting the plant go dry before you take it in, store it in a cool place, below 50° F (10° C) and bring it into warmth about four weeks before you want it to start blooming. Water the plant adequately as it blooms. The flowers consume lots of water as they form.

(I've tossed small jades into my garage refrigerator after buds are set in September. I can then take them out whenever I feel like it and they will start the blooming process in the warmth of the house. It's not necessary to put the plant in a window.)

Since moving to Los Alamos, New Mexico, I just leave the plant outside until the first fall frost, usually around October 12. By this time I can see lots of buds already formed on the plant.

One more thing. As your plant grows, you'll have to put it into bigger pots (remember to always add drainy soil). The best time to do this is when the plant is vigorously growing in midsummer. Don't use too big of a pot. A big pot retards flowering, I think. Remember, flowering can be a stress response--the plant thinks it's going to die so it flowers to reproduce! My three-foot jades are in one gallon (4 liter) pots. No kidding. It may look ridiculous to have a 3.5-inch (9 cm) trunk coming out of such a relatively small pot, but otherwise the plant gets too big. I recently had a surprise in regard to this matter of pot size and flowering. A friend took a piece off a jade and placed it into a small ornamental pot, outside, on the patio in full sun. After two years of growth (dormant in the winter) the plant is about 10 inches (25 cm) tall, with a trunk diameter of less than an inch (about 2 cm). There are eight apical tips and all eight are setting buds and they will bloom soon. So don't make your plants too happy! And another thing, if you put the plant against a south wall, that is, it gets no exposure to the north sky, the plant will naturally grow very much toward the sun. To prevent unbalanced growth, and a tippy plant, rotate the plant every few days. Don't wait too long between rotations. You can actually kill a plant that's grown facing one way for three months if you suddenly turn it around. The function of the north sky, believe it or not, is to make plants generally grow straight up-and-down. If a plant can't see the north sky, it grows at an angle toward the sun. If you can give it uniform light, that is, in the open not against a wall, wonderful. Don't rotate the plant. But, always grow the plant with the same side toward south; mark the pot.

I just rewrote some of the above in September 2013. I wrote the following note about ten years ago in a different version of this essay, but there is enough good stuff in there that I think it's worth leaving in, maybe for no other reason than to reinforce the advice given above: I've learned a few more things about jades since moving to New Mexico. They apparently are winter-growers. That is, in their native habitat they grow in the winter because they find their summers intolerably hot. Their winters have at most very light frosts. Last year I took some jade cuttings just about this time. I kept them in my greenhouse, which I only heat enough at night in the winter to keep things from freezing. The greenhouse temperature dropped to 29° F Christmas Eve morning, when the outdoor temperature was -10° F; the jades did just fine. These cuttings are now about a foot tall and are covered in blooms. So it may not take very long at all for you to get a blooming jade. I've used the shade of trees and bushes to help acclimate indoor jades to the sun. Put the plant partly into a shadow that will get smaller as the sun climbs higher into the sky with increasing day length. Or move the plant into and out of the shade as you can. I'm now using the space between my greenhouse and garage for sun-acclimation of jades, cacti, figs, citrus, and even banana trees. The space is three feet wide and has a north-northwest to south-southeast orientation. This slot gets about an hour of direct sun at around local noon. You can rig up something like this using cardboard or plywood or some other material if you don't have a space between buildings like I do. Do something reasonable. Just think about you getting used to the sun for guidance. It seems to me that jades don't care very much about a dormant period. Some years ago I gave a one-foot-tall jade to friends in Los Alamos (White Rock). They put their now-monster jade (only six feet tall because they have standard ceilings) outside at the end of May (they have a deck with a space between the house and a juniper tree that gets about two hours of noon sun during a summer day) and bring it inside before the first frost. They keep their house very warm all winter. This plant has had easily 1,000,000-plus flowers every year for many years.

Good Luck!