

## CALIFORNIA RARE FRUIT GROWERS, INC.

### THE ARIZONA CULTIVAR

#### HOW TO MAKE A MANGO TREE:

**A compilation. Everything I've read or been told about that art and craft plus some personal experiences. Dick Gross**

This text is not focused on those of you who could write the book. It is directed to members and non-members whose questions about how to plant mango seeds outnumber any other query. Since the AzCRFG mandate is to gather data through individual research and experience and pass it on, the information contained here is intended to be a voice of the Arizona Chapter of the California Rare Fruit Growers, Inc. to serve that function.

Most mango trees are propagated from seed. As I interpret the experts, they believe that, for the novice at least, seed from just about any variety can be used. Plant any you can get your hands on. I personally have had good luck with Safeway. You may do better with Basha or Frys.

There is a race of mango whose seed have more than one embryo (polyembryonic) that will send up several shoots each with potential to grow into a tree. One of them may be a clone with characteristics and fruit identical to the mother tree, but there is a catch. Like most other seedlings, it won't bloom or fruit for 6 to 8 years. That is also the earliest you could determine, aside from genetic testing, which of the several shoots is the clone. So why bother with it? I have never successfully separated these multiple shoots nor have I been able to find out how to do it. In my opinion, amateurs, I am one and you likely are too, can safely classify this phenomenon as 'don't need to know'. For practical purposes, assume that any Mango seed will not run true; that is, be a copy of the tree that produced the seed. Fruit quality is totally unpredictable. Save the strongest shoot if you get more than one.

Knowing the odds against getting good fruit, you will plant the seed anyway. While mangos are beautiful trees, especially in a desert setting, that is not enough for rare fruit growers who only want stuff they can eat or at least make into jelly. Assume, then, for our purpose, any healthy mango seedling will make acceptable rootstock. You can graft any known variety--or ten varieties if you choose, to that one seedling, letting a "wild" sucker grow from the base, perhaps, to see what might have developed had nature been allowed to take its course.

There are several ways to handle the seed. I recommend that you eat a lot of mangos. Try planting the seed differently and the odds are great that at least one will mature into adulthood. For seed selection, ignore flavor and stringiness. If it tastes like a hospital smells, forget it. You can graft later with a variety whose characteristics are more agreeable to the senses. How do you graft? It is not that difficult. Teach yourself the procedure by studying several Internet sources. Buy a book. Practice by repeatedly grafting a tree to itself until you have the skill mastered. Join the Arizona Rare Fruit Growers and we will show you.

Mango seeds are enclosed loosely in a tough, fibrous pod (endocarp) attached on the inside by a thread. Leave the pod intact until you are ready to plant it. Occasionally you may find a fruit with the pod already opened a crack and the root shoot (radicle) may even be growing. Otherwise, you will need a pair of sharp kitchen scissors to trim (be careful) along the curved-in edge until you can get enough thumbnail leverage to pry it open like a clam. The pod resembles one with hair. The seed will just fall out. If you let the pod dry first, it takes about a day, it is much easier to open but don't allow the seed itself to dry.

A loose, clear membrane and a dark brown skin usually surround a large, white seed shaped like a kidney. Peel away every thing that's loose and gently scrape off all the brown coating you can without damaging the seed. A clean seed is less apt to mildew or mold. A dry seed is a dead one. If you have to delay, wrap it in a damp paper towel. If the seed becomes rubbery, discard it.

Some gardeners like to pre-start root growth as follows. Using a 6½" x 3¼" plastic Ziplock bag, fold a paper towel to fit the space. Dampen it and squeeze out all the moisture you can. Wring it dry in a cotton towel retaining enough moisture to prevent desiccation of the seed that already contains enough moisture at least until the first leaves appear. Place the seeds, four fit nicely, flat on the towel and seal the bag. Protect it from bright light but keep it near-by where you can watch it. Almost immediately the root shoots will begin to grow and the seed body (endosperm) will begin to turn green (photosynthesis). The large seed is the food source for the developing plant until leaves can take over that function. Plant the seed any time after the root node has begun to elongate but don't let it get more than about a half-inch long. The root (called the radicle) will try to grow through the bottom of the plastic bag. Let it get too long and it tends to form loops and kinks that can interfere with penetration into soil. When the root has grown to a half-inch or so, plant it in a well-drained potting soil using one of the methods below.

If pre-sprouted, nestle it flat (I have had better success with the seed flat) and uncovered with the growing radicle pointed down in a 1 gallon container filled with a lightly moistened potting soil. No fertilizer is needed at this time but add water as needed only to keep the seed and root from drying out. After a tiny shoot with leaves emerges in 2 to 4 weeks, give the plant bright light and more water. No direct sunlight yet. Harden it gently and gradually.

Or, plant as follows: In a container such as that above, insert the seed vertically in the soil with the curved-in (concave) edge down. The seed crown (convex) should protrude slightly above the soil. This is the method recommended in virtually all the professional literature I find on the subject. If the radical is pre-started, don't allow it to get more than about a half inch long before you plant it and use caution not to damage the tip.

In the ground, the seed can be planted directly with the pod intact or without it. Make sure the spot is where you want the tree because transplanting would probably not be successful. Prepare a hole filled with potting soil or compost. Confirm that the site and the

material drain rapidly. Test it. Some planting mixes become soggy and the seed will rot. The soil should be moist, not wet. If soil is compacted around the hole, loosen it with a shovel, don't turn it, for two feet around. Prepare the site large enough for several seeds. Plant some flat, some on edge. Seeds planted flat, with pods or without, should be at a depth of about 2". If vertical, the crown should be about ground level. The pods will deteriorate and the seed sprout surprisingly soon. The most favorable location seems to be an Eastern or Southern exposure receiving shade or, at most, only mottled summer sun after the noon hour. If you end up with several seedlings from the same hole, cull all but the one most vigorous at one foot tall or, let them all grow and see what happens.

Make a greenhouse. Cut the bottom from a two-quart plastic juice bottle. It will fit tightly inside the mouth of a 5"x5" 32 ounce Styrofoam tub. I buy them at Smart and Final. Sixty four-ounce plastic soft-drink containers (Bug Gulp) are good pots for planting but usually last only one summer. Their height allows long root growth but the mouth is smaller. A 2-liter juice bottle fits it. The purpose of the greenhouse is to prevent the seed and potting mix from drying out. Remove the bottle as soon as a stem and leaves are established. Finally, the pot must have good drainage. Cut at least four V shaped notches in the bottom lip as well as several ½" holes in the very bottom. Make the notches at least ½" wide. If your greenhouse is too warm and wet, mold and mildew may ruin the project.

Carl Denig's method getting about 90% success: Remove the husk and clean the seed. Fold the seed in a paper towel. To offset chlorine and minerals, use Reverse Osmosis water to presoak the seed and toweling. Continue to use R/O water. At the first sign of mold or fungi, change the paper and add a small amount of vinegar or hydrogen peroxide to the water. Store the germinating seeds convex side up in a warm, protected spot. When the root shoot has reached some prominence, (+/- the length of the seed)-or, whenever leaves emerge, unwrap the seed carefully to avoid damaging the new growth and plant it half submerged at an angle; concave side down in a gallon pot. Carl's soil: A mix of 2/3 Supersoil, 1/12 peat, 1/12 coconut fiber, 1/6 earthworm castings and 1 tbs bat guano when on hand.

Maria Erlandson's method is a good one. Maria is a long time member of the CRFG Inc. and a founding member of the Arizona Cultivar. She plants the mango seeds in a prepared bed as follows: Remove the husk but don't bother to clean the seed because it won't make any difference in her opinion. Plant the seed vertically with the crown slightly above the soil level so that you can find it again. When the shoot is 3 or 4 inches tall, prick it out as you would any other seedling and pot it up. I tried this method and presently have five healthy seedlings in gallons to show for the effort. Not all the seeds germinated but only two shoots failed. All survived transplanting.

Some of the mango seeds you plant will fail but that's okay. Even if you are not one of those people blessed with a green thumb, whatever the heck that is, don't be discouraged. It only takes one seed to make a tree and the odds will even out. Many subtropical plants thrive in

the geographical extremes of the Salt River Valley, a desert with low humidity, hot summers, an occasional mild frost but blessed with adequate water. Mangos presently thrive and set fruit here. That is sufficient evidence for you to believe that, with a little persistence and maybe a smidgen of luck, one will also grow in your yard. This, however, is not the final word on mango seed. Your efforts could produce knowledge the rest of us don't have. Do pass it on.