

Creating Your Own Tropical Fruit Paradise

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Seven reasons to grow tropical fruit

- 1. to enjoy fruits that are difficult to buy: excellent non-commercial fruits such as canistel or jaboticaba, or rare varieties such as Lemon Zest mangos, or just any kind of fruit that's truly fresh
- 2. season-extending varieties mangos from April to October, avocados almost year-round
- 3. save (or even make) money
- 4. guaranteed non-toxic growing methods
- 5. connection to nature
- 6. ethical, environmental, and philosophical reasons
- 7. fun, healthy, interesting, spiritual

Seven key horticultural concerns

- 1. **sunlight** fruiting plants generally need at least a half day of full sun
- 2. **nutrition** to be discussed later
- 3. **drought tolerance** especially important for trees in full sun --- almost no fruit tree can tolerate actual dry soil
- 4. **flood tolerance** -- avocado trees are notably flood-intolerant, also papayas, stone fruit, and to some extent loquats and white sapote
- 5. **cold tolerance** within a species, it depends on many factors, especially the age of the tree
- 6. wind tolerance --- especially a problem with bananas and papayas (which are not true trees)
- 7. **salt tolerance** --- varies with species

Advantages of grafted trees

- 1. a grafted tree is a branch ("scion") from a mature tree, fused to a root system of a tree (the "rootstock") grown from seed
- 2. for most species, growing a tree from seed is the worst possible way to save \$30 or \$40
- 3. a grafted tree is *a genetic copy* of the scion tree, so tree characteristics (fruit quality, disease resistance, tree size, etc.) are reliably obtained
- 4. the rootstock may provide additional qualities such as flood tolerance or disease-resistance
- 5. the scion is already a "mature" tree, so the grafted tree will fruit as soon as it has grown physically large enough seedlings may take 5 to 15 years to reach maturity and start fruiting
- 6. the scion is a branch, so a grafted tree has less tendency to shoot upward
- 7. there are other ways to propagate genetic copies that are preferable for some species (e. g.

"airlayering" is often used to propagate lychee trees, or starting from cuttings for fig trees)

Disadvantages of grafted trees

- 1. the variety won't come back true if it freezes to the ground (it will be the rootstock variety, not the scion) --- example: at 4 miles from coast, I've chosen to grow jakfruit from seed
- 2. additional cost --- for fast-fruiting species that are "true to seed", there may be no benefit in having a grafted plant --- a good example is *Muntingia*, the Strawberry Tree
- *3.* perhaps a little less hardy

Selecting species and varieties

- 1. what fruit do you like to eat? what fruiting season do you want? do rare, exotic fruits turn you on? coordinate with friends and neighbors? how much effort are you willing to invest?
- these days citrus is one of the most difficult fruits to grow--- lemon or lime seem to be better bets than oranges and grapefruit -- there are so many better choices if you have limited space
 --- new disease-resistant rootstocks may help citrus make a comeback, but it's likely to remain a difficult fruit to grow
- 3. apples, pears, and tree nuts (other than macadamia) are just not well-adapted to southwest Florida--- but jujube and the cold-sensitive wax jambu are apple-like, and white sapote is pearlike (and maybe even better than pears)
- 4. variety selection is *very important* for most species, be sure it's a good variety for SW Florida and for your particular needs e. g. the Alphonso mango is one of the world's best-tasting, but often will produce very little fruit in Florida's climate
- 5. commercial growers prefer varieties that have all fruit ready to harvest at one time (e. g. Kent mango), but home growers want production spread out through the season (e. g. Nam Doc Mai mango)
- 6. do your location and planting site address the key horticultural concerns for the particular species and variety?
- 7. some species require some amount of winter cold (measured in "chill hours", i. e. total hours below 45 degrees) in order to achieve a correct annual fruiting cycle for temperate-climate fruits such as blueberry, peach, and plum, you *must* have low-chill varieties adapted to Florida

Fertilization

- 1. the best long-term fertilizer is *mulch* --- over time, its breakdown will supply nutrients and organic matter to build a rich soil ecology *feed the soil, and it will feed the plant* --- try to use a variety of organic brown matter such as wood chips, pine bark, pine fines, perhaps cottonseed hulls (toxicity issues with those?) top dress (i. e. put on top of soil, not in soil), since decomposition bacteria may lock up soil nitrogen
- 2. organic fertilizers also support the soil ecology and consider microorganism supplements, especially when planting
- 3. organic fertilizers, besides mulch, include: compost and composted manure (top dress), kelp, fish emulsion, Fertrell, Espoma. For minor elements: azomite, Magic Sand (successor to greensand which is no longer available), sul-po-mag (langbeinite)

- 4. balance is important, as too much of one nutrient can interfere with plant's uptake of another vary the fertilizers, a *little o' this and a little o' that* --- both in the soil and foliar (sprayed on leaves spray on underside of leaves may be absorbed better)
- 5. there are amendments that improve the soil in other ways, such as mycorrhizal fungi (attach to roots and help plant absorb nutrients), humic acids (support soil ecology), sulfur (acidifies), worm castings (fertilize while improving soil ecology and texture), crushed crabshell (supports soil ecology and suppresses nematodes)
- 6. chemical fertilizers --- with chemical fertilizers, overfertilizing is much more common than underfertilizing --- if you use them, select high-quality slow-release fertilizers that include minor elements --- many people avoid anything containing "biosolids", i. e. sewage, which could contain heavy metals or endocrine disruptors
- 7. in general, young trees need frequent, light fertilizing with balanced fertilizers--- in general mature fruit trees should receive less fertilizing, mostly minor elements (nitrogen promotes growth of foliage, but you want to harvest fruit, not prune trees) --- but trees that produce a lot of fruit calories (e. g. avocados, jakfruit, bananas) generally need more fertilization (and a lot of sunlight) --- also, citrus these days needs heavy fertilization both foliar and in soil (because the "citrus greening" disease interferes with nutrient transport within the tree)

Planting

- 1. trees in nursery pots can be planted any time of year, though in winter it's better to wait until any danger of freeze has passed
- 2. utilize microclimates--- moist or dry sites, part-shade (carambolas and temperate-climate trees are especially suited to part shade), freeze-resistant sites such as next to house or body of water
- *3.* plant with adequate horizontal spacing (especially in non-irrigated or full-sun situations), even though it may look silly at first --- you can plant closer if you have irrigation and even closer if you are willing to prune a lot
- 4. consider vertical space--- put taller trees to the north, don't plant where desired views may someday be blocked, isolate macadamia from other trees to minimize squirrel routes
- 5. put all trees on mounds, at least a few inches higher than surrounding ground, and when planting, the container soil surface should be at least as high or higher than than the mound soil
- 6. use "root pruning" to eliminate circling roots and other bad root structure when planting --- carefully fluff out the outermost roots from the container shape to encourage rapid spreading of the root system
- 7. grass is a *very* tough competitor, so clear the area around the tree and mulch heavily (but not touching the trunk, as it may promote fungus)
- 8. it's OK to add *some* rich topsoil or compost to your planting soil, but don't create a "flower pot" far better to top-dress with compost, manure, or other soil amendments (i. e. put them on top of the soil) and heavy mulch over it (but not touching the trunk of the tree)
- 9. give little if any fertilizer at first especially avoid nitrogen, as the tree needs to grow roots before it puts on more foliage --- but consider supporting soil bacteria and fungi with inoculants, or just add some soil from under a mature tree of same species
- *10.* stake young trees to protect against wind and climbing animals --- use a flexible bamboo stake and allow the trunk some movement so that it will develop its own strength
- 11. avoid planting mulberry trees over driveways or walkways--- its fallen fruit will stain

Pruning

- 1. most fruit trees should be pruned regularly, *and aggressively*, to control their size and shape, to harvest fruit and work on trees easily and safely (ladders are *dangerous*) --- dooryard growers want more, smaller trees, but commercial growers are also moving to smaller trees
- 2. most fruit trees actually *benefit* from aggressive pruning pruning stimulates growth (because the tree will try to equalize its root and foliar systems)
- 3. most important is to control the height --- 15 feet maximum, lower if you can --- the ideal mango tree is 8 feet tall and 15 feet wide --- also, keep lower branches from touching the ground --- and seek to minimize the "wood to foliage" ratio
- 4. use "tipping": on mangos and many other species, take off last ½ inch or so of branches to induce more branching --- you want a mango *shrub*, not a mango tree --- *see YouTube videos on mango pruning by Richard Campbell*
- 5. keep the interior from getting too thick --- airflow through interior combats fungus --- light needs to reach lower branches or they will die off --- also, a dense tree is more vulnerable to high winds, and more inviting to squirrels
- 6. eliminate "crossing branches" that start at one side and grow through the middle-class
- 7. especially on some species, try to select and maintain "scaffold" branches --- a few major horizontal branches at wide not narrow angles to the trunk --- evenly spaced in different directions and separated vertically
- 8. light pruning is OK any time for heavier pruning, the best time of year depends on species (and on source of information) --- usually after fruiting, generally not in fall or winter (don't want to stimulate growth going in winter, and nature might do some winter pruning for you anyway)
- *9.* trees with a "weeping" habit such as mulberries and carambolas need less pruning, as the weeping branches brings a lot of fruit down to eye level.

Wild animals

- 1. squirrels, raccoons, and possums can be a real problem. If you have only a few trees, you may be able to protect your fruit using physical barriers and other dissuasions--- bagging, fencing, repellents, firecrackers, ultrasound, etc., or just sharing some of your fruit--- but wild animals are relentless and clever, and their population will expand to whatever the available food supply will support. If you have a lot of trees, or are growing commercially, or things just get out of hand, it is probably going to be necessary to eliminate the ones who are in the habit of eating your fruit. *Never* poison wild animals--- besides being inhumane, the poison will enter the ecology's food chain and do further damage.
- 2. if you have a large number of trees, or other limitations, it may not be feasible to protect your fruit from wild animals. In this case you will have to take over the role of the large predator animals that humans killed off long ago--- that is, you will need to limit the populations of competing animals in your area. Many people's first instinct is to humanely trap, then transport and release wild animals. Please be aware that *it is illegal as well as a bad practice to transport and release wild animals, and this just means the relocated animal or some animal already living at the target location will starve or die from one of nature's other correctives for overpopulation. In addition, it can spread animal parasites and diseases.*

and a single lethal shot from a small-caliber gun is the most humane approach. If this seems harsh, keep in mind that *any* food you buy commercially also had to be protected from wild animals --- and generally by the cheapest rather than the most humane and ecologically responsible approach. (Actually, if you reflect on it, protecting your fruit by barriers or repellents has the same effect--- more animals starve--- but perhaps we shouldn't go there...)

- 3. Technical details for shooting trapped animals (Warning: some may wish to skip this section): Wait for a clean shot of the head so that the animal loses consciousness immediately--- for possums this is easy, but for raccoons and squirrels it may require considerable patience. For squirrels, an air rifle is quite adequate; for possums and raccoons, you need at least a .22 revolver with fast subsonic (1,050 ft/sec) bullets to reliably achieve a one-shot kill. Of course you must check the laws for your location before using any kind of projectile weapon. I bury the carcasses near my fruit trees to recycle their nutrients. To prevent them from being dug up by dogs and other animals, cover the space with a heavy stepping stone for a few days, then mulch heavily.
- *4*. For birds, the only option seems to be netting.

Diseases and insect pests

- 1. the best defense is a healthy tree --- a perennially plagued tree indicates something wrong, usually it's a problem with a key horticultural concern, or the tree has a bad root system from being in a container too long
- 2. avoid toxic agents whenever possible, they set up a chain reaction of damage to the ecology
- *3.* 99% of insects are either neutral or beneficial --- insect pest problems usually stem from *too few* insects, not too many.
- 4. Use native plants and insect-friendly landscaping to diversify the ecology. For the few species that are pests, use integrated pest management to find the minimum ecological damage that works:
 - 1. Step 0: build a rich soil and insect ecology using mulch, soil-building amendments, native plants and other insect-supporting techniques
 - 2. Step 1: do nothing (let the insect predators find them)
 - 3. Step 2: manual removal (fingers, hose spray, shake into soapy water) --- best to tear head off rather than squish
 - 4. Step 3: non-toxic methods such as repellents (e. g. neem oil), insecticidal soap (smothering), all manner of home remedies
 - 5. Step 4: minimally toxic pesticides (e. g. organic pesticides such as Bt, Spinosad) --- *identify pests and research all pesticides before using to make sure you are using them properly and for the right purpose, and avoid spraying pesticides when bees are out*
 - *6.* Step 5: you're growing the wrong tree in the wrong place, or the tree is not healthy enough *----* figure out why, or just try something different
- 5. disrupt the life cycle of pest insects collect fallen fruit from under trees heavy mulching appears to disrupt the life cycle of root-and-leaf-eating pests such as Sri Lankan weevils and Diaprepes

- 6. avoid leaving pruned avocado branches lying around, as their smell can attract the red bay ambrosia beetle that carries a deadly avocado disease (laurel wilt disease) --- prune just before brush pickup day and have clippings taken away
- 7. fungus and other diseases are usually not a problem, except on mangos. Mango trees are subject to anthracnose fungus, fairly harmless unless the tree is too weak to control it --- pruning so air can flow through the tree interior may help --- each species (and variety) has its own particular weaknesses. But anthracnose and powdery mildew fungi may cause severe fruit drop. In this case, try fungus-suppressing bacteria like *Bacillus subtilis* (Serenade), or non-toxic fungicides like potassium bicarbonate (effective against powdery mildew).
- 8. extensive information is available online

Growing in containers

- 1. excellent for blueberries and many other fruiting shrubs (miracle fruit, Eugenias, garcinias, others)
- 2. with few exceptions, trees do not grow well in containers
- *3.* best tree choices: figs, dwarf mangos (Pickering, Cogshall, hard-to-find Amrapali), semi-dwarf mangos, jaboticabas (especially the Red variety)
- 4. it's an art, and one needs to acquire some technique --- plastic pots are lighter and hold water much better -- don't put rocks in bottom of pot -- need to use some kind of potting soil -- there are many potting soil recipes -- if weight is an issue, you can use 1/3 peat moss, 1/3 vermiculite, 1/3 perlite, but will need to water more often.
- 5. If exposed to wind, anchor pot with rebar or other method

Buying trees

- 1. do your homework before you shop --- know what species of fruit tree you want, and have at least a good idea what varieties you want --- you can call the nursery and find out what varieties they have available, and look up info on them before going
- 2. an excellent basic reference book: *Florida's Best Fruiting Plants* by Charles Boning --- but be aware that its information on varieties is not up to date
- 3. look for a strong trunk and healthy-looking graft, also a tree that's not overly large relative to its container (too long in the container produces a bad root system) --- prefer low branching since your long term goal is to limit the tree's height
- 4. fruit tree clubs have annual or semiannual sales --- buying trees there supports these non-profit organizations
- 5. you can order specific varieties at Crowley's, Farm & Garden, and others
- 6. Fruitscapes Nursery on Pine Island (about a 75-minute drive) is an excellent source, of fresh fruit as well as fruit trees

The internet is a marvelous source of information, sometimes accurate

1. for internet searches, put "florida" at the end of your search strings, as info from other regions (especially dry-climate California) is often rather useless

- 2. Julia Morton's *Fruits of Warm Climates* is online, e. g. at mrfc.org --- a classic, though not updated
- 3. Tropical Fruit Forum discussion board, especially useful for info on varieties and uncommon species
- 4. Youtube has many useful videos, especially on pruning and grafting
- 5. growables.org --- much info specific to our region, note especially the fruiting season calendars
- *6.* IFAS has a lot of information, though sometimes it is oriented toward commercial growers, and sometimes is debatable
- 7. And, of course, the SweetSong Groves website sweetsonggroves.com.

Fruit tree clubs

- 1. monthly meetings with an informative speaker, field trips, tasting, plant exchanges, social network
- 2. Manatee Rare Fruit Council --- mrfc.org --- Bradenton and Palmetto area --- giant annual sale in May with more than 20 vendors, worth a trip just to look at all the plants
- 3. Tropical Fruit Society of Sarasota --- tropicalfruitsociety.org --- Sarasota area --- annual sale early in the year at the UU church on Fruitville Rd
- 4. Suncoast Tropical Fruit and Vegetable Club quisqualis.com/SuncoastTropical.html --- south Sarasota County --- semiannual sales in Nokomis
- 5. Tampa Bay Rare Fruit Council --- rarefruit.org

Random tips

- 1. in place of apples, consider jujube; in place of pears, consider white sapote or sapodilla; in place of grapes, consider jaboticaba
- *2.* spraying should be done when the sun is low, morning or evening
- 3. strip fruit (once fully formed) from young trees --- fruiting will take its energy and stunt or distort its growth, and you aren't giving up anything, as a small tree doesn't have the energy to make good fruit anyway --- wait until the tree has a strong trunk --- also, strip some of the young fruit on heavy-fruiting species (longans, loquats especially), to produce larger fruit and to protect tree from broken branches or too much energy spent on fruit
- 4. love your trees, but know when to say goodbye --- a tree that isn't producing what you want is using the resources of one that could --- and don't be afraid to try transplanting a tree that's in the wrong place

Takeaway

- 1. A plant is an adaptive system and is part of an ecology.
- 2. Promote healthy ecologies above and below ground.
- 3. Research species and varieties before buying and planting.
- 4. Be patient and don't get discouraged.

In six words:

Prune aggressively, mulch heavily, fertilize conservatively.