

A WORD OR TWO ABOUT GARDENING

Three tropical fruit favorites: banana, papaya and pineapple

Two previous columns have discussed tropical fruits for local backyard growers. The first concerned the familiar (mango and avocado), while most recently some of the less familiar locally grown fruit trees (carambola, jakfruit, litchi, longan and sugar apple) were described. For this article I will discuss three tropical fruits well known to all, that share at least one feature in common - none of them, bananas, papayas or pineapples, grow on trees. The first two have long been familiar sites in Miami-Dade backyards, with some limited commercial planting. After initial successes, attempts in the early 20th Ct. to establish pineapples as a commercial crop in Miami-Dade ultimately failed due to damaging cold weather, depleted soil and outside competition. Today however, pineapples are an increasingly popular choice with local homeowners, and are especially suited to those with limited space.

The banana family (Musaceae) comprises a group of vigorously growing, herbaceous perennials, closely related to gingers, heliconias (lobster claws) and *Strelitzia* spp. (bird of paradise). It includes species grown for their edible fruit, plus those used as ornamentals. Edible banana plants are of two main types: those grown as dessert fruit, and less sweet, starchier, cooking bananas (plantains). The banana plant consists of several pseudostems (each composed of many tightly packed concentric leaf sheaths), an underground rhizome (pseudocorm) and an extensive fibrous root system. The entire plant is referred to as a mat. A true stem bearing the inflorescence emerges from the rhizome, growing up through a groove in the center of the pseudostem. The inflorescence emerges at the top of the pseudostem as a large bud comprising a series of overlapping purplish maroon bracts. As each bract opens a row of female flowers clustered around the stem is revealed, followed eventually by male flowers at the distal end of the stem. Each female flower has a prominent ovary, which swells, eventually developing into an individual banana (known as a finger, each cluster of fruit termed a hand). Fruit develops without the need for pollination (parthenocarpic) and is therefore usually seedless. Male flowers wither, and the tip of the flower stalk, which bears the remnants of these flowers, is usually removed 6 inches beyond the last hand of developing fruit.

Bananas need a sunny site protected from wind, with 8' between plants. The soil should be enriched with organic matter, but remain free draining and never allowed to dry out. In areas that are liable to flood, or with poor draining soil (e.g., marl), plant on a raised bed. Bananas must have regular applications of a high potash fertilizer, e.g. 3 – 5 lbs of a 6-2-12 every 2 months. It will take about 10 –14 months for a new plant to produce a crop. The exact time depending on soil moisture, temperature and available nutrients. Optimally, temperatures should be in the mid 80's, growth slowing as they approach 60°F, and ceasing altogether below 50°F. Do not allow more than three pseudostems to develop per mat at any one time. There should be one bearing fruit, a second that is half way grown and a third more immature pseudostem. Cut out all others as soon as they appear. Stems that

have borne fruit should be removed, at which time a newly emerging pseudostem can be allowed to develop. Once fruit has set on the plant, you should be able to remove it after 2 –3 months for ripening. Fruit left on the plant too long is liable to split. You can cut a mature banana length ways, and if the center appears somewhat slick it is time to harvest the fruit for ripening. To hasten ripening, each hand of bananas can be placed in a paper bag with half a ripe apple, then left in a cool (70°F) shady area for 24 – 48 hours. Whilst dessert bananas are considered fully ripened when yellow, plantains should be allowed to become almost black.

When choosing which bananas to grow obtain healthy plants from an established nursery that specializes in fruit trees. Banana plants can be propagated from suckers or sections of the rhizome. If offered such planting material, you need to be absolutely sure it is free of disease and insect pests. In particular, Fusarium wilt (Panama disease) and/or larvae of the banana borer (weevil) can be major problems (contact the UF-IFAS/Miami-Dade County Extension Office at 305 248-3311 for information on these and other pest and disease problems of tropical fruits). For dessert bananas, the ‘Dwarf Cavendish’ and ‘Mysore’ are good choices, being well adapted to south Florida’s subtropical climate, as well as being resistant to Fusarium wilt. The ‘Apple’ (‘Manzana’), ‘Lady’s Finger’ (‘Pome’) and ‘Hua Moa’ (also excellent fried) are all popular choices, but susceptible to Fusarium wilt. The ‘Gros Michel’ (‘Banano’) is of excellent quality, but cannot be recommended for south Florida. For cooking, the ‘Horse Plantain’ is disease resistant, but is especially susceptible to parasitic soil nematodes and corm borers. Both of these pests render banana plants very liable to toppling over in the slightest wind. The need to use pest and disease free planting material was pointed out above, but it is worth repeating again – this is the single most important means of avoiding future problems.

There is a final but important consideration before planting bananas in your yard. Established mats of bananas can be very difficult to remove, especially on the rocky soil found in much of Miami-Dade. Commonly available herbicides are ineffective. It will take a pickaxe and much elbow grease, or better still a backhoe!

Like the banana, the papaya (*Carica papaya*) is a large, vigorously growing, herbaceous plant, and though often described as a tree, this is technically incorrect. The “trunk” is a none-branching, hollow stem that can grow up to 20 –30’, though it is considerably less for cultivated plants. The leaves emerge in a spiral at the top of the stem, each with an 18 – 36” petiole (stalk) and a large, highly lobed leaf blade. Flowering in papayas is complicated. Each plant can bear either male, female or hermaphrodite (bisexual) flowers. The exception is the popular ‘Solo’ papaya grown extensively in Hawaii, which does not produce male plants. However these papayas perform poorly in south Florida. Under certain conditions, usually changes in temperature, the type of flower produced by male or hermaphrodite plants can change. Those producing female flowers are stable, in that they always produce pistillate (capable of producing seed) flowers. On male plants, staminate flowers are borne clustered in panicles on long drooping stems. Female plants produce larger, less clustered flowers on short stems, close to the “trunk”, and near the base of a leaf stalk. Hermaphrodite flowers resemble female flowers, but have stamens (produce pollen) and petals that are partially fused together, rather than

free as in female flowers. It is usual to cull male plants, since they are unproductive, leaving mostly hermaphrodite and some female plants. When you replant, this will also ensure a supply of seeds producing mostly female and hermaphrodite plants. In addition, the more pear-shaped fruit from hermaphrodite plants is regarded as being of superior quality.

When growing papayas it is important to select a site protected from strong winds, in an area of the yard that does not flood. A combination of heavy rain and wind gusts above 40 mph can readily uproot papayas. Where there is poorly draining soil or a risk of flooding, plant on a raised bed. Papayas will die within 24-48 hours if the soil remains waterlogged. Papayas grow readily using the seeds found in fruit purchased from local produce stands. Wash the seeds 3 or 4 times in water, discarding any that float, then dry between paper towels if they are to be stored. Otherwise the washed seeds can be sown to a depth of 1/2" in peat pots containing a light airy potting mix. Keep the soil moist, and expect germination within 2-3 weeks. As the seedlings grow thin out to one healthy plant per pot. After first enriching the soil with organic matter, set each peat pot in the ground when the seedlings are 4 -8" tall (March), leaving 6' between each plant. Apply a 2-3" covering of mulch keeping it away from the stem. Plants will grow rapidly, requiring applications of a 10-10-10 fertilizer every 4 - 6 weeks. Flowering should commence within 4- 5 months, with fruit ready to harvest (an 80% color change from green to yellow) after a further 3-4 months.

Developing fruits should be immediately covered with paper bags as protection from ovipositing papaya fruit flies, the larvae of which cause fruit to rot and/or drop (immediately remove and destroy any fruit that drops). There are no pesticides available for homeowner use. However lures, made from Styrofoam balls, painted dark green then covered a sticky coating (Tanglefoot), can be used to trap adult flies. Scale insects, webworms (caterpillars) and spider mites are some of the other pests that can be found on papaya. You should contact the Extension Office (see above) for current control measures. Malathion, although approved for use - is phytotoxic (causes plant damage) when used on papayas. Ringspot, for which there is no cure, is the most serious disease problem. It is a viral disease spread by aphids and causes plants to become stunted and unproductive. The most reliable diagnostic symptom is the presence of sunken green rings on fruit. Other symptoms include oily streaks on the plant stem, a pronounced yellow mottling of the foliage with a severe distortion of leaf blades ("shoe string" appearance). These latter leaf symptoms may be confused with damage from broad mites. Infected plants should be removed immediately. Replanting with new papaya plants each year can reduce the risk of disease, and is also recommended since plant productivity declines after 2 years. Where plants are left to grow and become too tall, they are cut close to the ground to stimulate development of new side shoots. The most vigorous of these is allowed to grow as a new stem, and the others are removed.

Papayas produce copious amounts of latex containing the proteolytic enzyme papain, which finds various commercial applications, including use as a meat tenderizer. Exposure to latex can cause skin and eye irritation.

While pineapples are not commercially produced in Miami-Dade, they are an increasingly popular container-grown fruit crop with homeowners, especially where space is limited (e.g., apartments and condos). The pineapple (*Ananas comosus*) is a terrestrial bromeliad that grows to a height of 2-4' with a spread of 3-4'. It consists of basal rosettes of lance-shaped leaves, often with spiny margins, growing from a very short, stout stem. The inflorescence, which develops into the pineapple fruit, is born on a stem (peduncle) that arises from the rosette of leaves. At the apex of the developing fruit is found a tuft of leaves, the crown. The inflorescence is composed of up to 200 individual violet to red flowers, those at the base opening first, with flowering lasting for about 2 weeks. Commercial pineapples do not require pollination to set fruit, and seed is rarely produced. In the wild hummingbirds are important pollinators. Where seed is required for breeding purposes, plants are pollinated by hand. The fruit is a syncarp, an aggregate of all the fruits produced by the individual flowers making up the inflorescence.

For homeowners it is most convenient to start a pineapple plant by twisting the crown off store bought fruit. Remove any adhering flesh and the bottom most leaves, then leave to dry out for 5-7 days before planting in a light, sandy, potting mix. Since pineapples require acidic soil (pH \approx 5.5) it is advisable to grow them in containers or a raised bed, since local soil is too alkaline. Grow in full sun, keeping soil barely moist – it is most important not to over water in order to prevent rot. For raised beds use black plastic mulch to limit weed problems. Every 6 weeks apply a complete liquid fertilizer containing iron, such as Miracid. Flowering requires short, cool days, though it is possible to force plants that are sufficiently mature (at least a year) by exposure to ethylene or acetylene gases. Chemicals such as ethephon or to a lesser extent calcium carbide are used for this purpose. For homeowners with only 2 or 3 container plants, try placing each plant with a ripe apple (source of ethylene) in a sealed, plastic, garbage bag. Next, leave for 3 - 5 days, in a cool dry area, then remove each plant and return to a sunny area. Look for flowering within 2 months, with fruit ripening after a further 5 - 6 months. It is difficult to judge when fruit is sufficiently ripe. With 'Smooth Cayenne', the most widely grown pineapple, the green fruit will start to turn a yellowish orange upward from the base. Do not harvest until at least one third of the fruit changes color. Consult the Extension Office regarding pests and disease problems – just remember that as for all bromeliads never use copper based pesticides.

After removing the ripe fruit, suckers (ratoons) that grow from the base of the plant below the soil line can give a second crop of smaller, sweeter pineapples after a further 12 – 15 months. If you intend to harvest a ratoon crop you should have previously removed any slips. These are offshoots that form in the axils of leaves at the base of the fruit when it is about half developed. Alternatively slips can be left, then removed about 4 months after harvest, allowed to dry, then planted. Another option, especially if you wish to try different varieties of pineapples, is to purchase rooted plants available from local tropical fruit nurseries.