

A WORD OR TWO ABOUT GARDENING

Drought tolerant trees with edible fruit

Previous publications in this series have surveyed both [native](#) and [exotic](#) drought tolerant trees for shade and/or color in Miami-Dade landscapes. The present article is the first of two describing trees which, in addition to being highly drought tolerant, provide an added bonus - edible fruit. The fruit may not be on a par with local favorites such as mango and lychee but they add variety to a fruit tree collection, are often of ornamental value and in most instances require minimal care. Fruit that may possess limited appeal fresh off the tree can often form the basis of flavorful pie fillings, drinks, jams or jellies. Many of the fruits are at the very least colorful and if you're unable to consume all of them there is usually wildlife that will fill the breach!

Most of the familiar fruit trees grown in Miami-Dade can survive with little need for supplemental water once established, though it is often necessary to water (March through May) for trees maturing a crop (e.g., mango, avocado). Included in the review below are both exotic and South Florida native trees. In the latter instance you can add a little bit of South Florida's heritage to your landscape by planting trees that offered sustenance to local Native Americans as well as early settlers.

One of the more interesting of the native fruit trees is the **Florida hog plum** or **tallow wood** ([Ximenia americana](#)). Believed endemic to the New World tropics/sub-tropics it is now of pan-tropical distribution, occurring most often in open dry forest, dry scrub, coastal thickets and dunes, but can also extend into the margins of coastal and inland marshes. It is well adapted to a wide range of poor, dry, sandy to rocky soils, and is highly tolerant of salt. Growing to a height of 10 -25', either as a sprawling shrub or small tree, the stems are lax with a zig-zag pattern of branching and are usually armed with a scattering of thin, straight, axillary spines. Leaves are 1-3", varying from semi-succulent to thin, elliptic to lanceolate, broadly rounded at the apex with a slight notch (retuse), with the base rounded to tapering.

Flowers are rather insignificant, but fragrant, cream to faint pink, borne in small branched clusters, and followed by 1" drupes, yellow to orangey red when ripe with sweet to sub-acid plum like flesh surrounding a single woody seed. The seed has a brittle shell containing a fatty kernel (likened to pistachios); these can according to some reports exert a strong purgative effect if more than a few are consumed. Flowers are perfect, though pollen is released before stigmas are fully receptive thereby limiting self-pollination; this probably accounts for the absence of heavy crops, though some fruit is usually present on the tree year round. Trees can be grown from cuttings or seed; once fruits fully ripen seed should be removed immediately and cleaned free of adhering pulp before sowing in moist sand. Seed grown trees can be expected to produce fruit after three years.

Tallow wood belongs to a family of shrubs/trees (Olacaceae), of which sandalwood (*Santalum ellipticum*) is best known that frequently become semi-parasitic on the roots of other trees. For *X. americana* this is not essential for survival, and does not appear to unduly harm the host tree; the presence of a host tree has been suggested

as assisting establishment of young tallow wood trees. Another common name, false sandalwood, reflects the trees pleasantly fragrant wood.

There are other more familiar native trees that bear edible fruit: **seagrape** (*Coccoloba uvifera*) was described in an earlier review of native trees – only female flowering trees are capable of bearing fruits. The fresh fruit can be astringent, though it was quite popular as a local source of homemade jelly. The **red mulberry** *Morus rubra* is a shallow rooted, small, deciduous tree found from southern-most Ontario, down the eastern half of the US into Florida. Its is of increasing popularity in local landscapes, mostly for attracting wildlife but the blackberry-like fruits are edible and can be used for jellies and pie fillings. Drought tolerance is less than either of above native trees; in the wild it favors sheltered moist hillsides, the margins of streams and even floodplains (trees will withstand limited flooding).

Chrysobalanus icaco (Cocoplum) is a familiar S. Florida native shrub that is frequently used in Miami-Dade landscapes, especially 'Red Tip' an inland form popular pruned as a hedge. Such use severely limits flowering and fruit crops. Cocoplum is far more attractive (and will produce much more fruit) when allowed to develop into a 15-20' small tree/shrub (several can be used to form an attractive informal screen). Although preferring moist soils, cocoplum exhibits some drought tolerance. A much less frequently seen, low growing, horizontal, coastal form is salt tolerant and somewhat more drought tolerant. The cocoplum fruit, is a 1-1½", thin skinned, pinkish yellow to deep purple drupe with a layer of sweet cottony flesh surrounding a large seed. Skinned fruit is used to prepare a flavorful jelly, plus the seed contains a kernel which when roasted is esteemed for its' almond like flavor – the crushed kernel is the 'secret ingredient' that is sprinkled into cocoplum jelly.

A far less familiar native fruit tree is the **saffron plum**, *Sideroxylon celastrinum*, a small spiny tree in the same family (Sapotaceae) as the more familiar star apple (camito) and sapodilla. Found from northern S. America through Central America into Mexico, it also occurs in the US both in south Texas (coastal marshes to semi-arid scrub) and Florida (where it is restricted to coastal hammocks and marshes). Growing from 15-25' the tree has small, leathery, obovate to spatulate leaves, branches tipped with 1" spines and bark that is distinctively checkered. Flowering maxima occur in spring and fall so trees that can be simultaneously flowering and bearing fruit (sweet tasting, dark purple to black berry with several seeds). Saffron plum is especially suited to coastal locations, and functions well as a barrier plant.

Another small native tree the **darling plum**, *Reynosia septentrionalis* was once common to South Florida's coastal hammocks, but is now mostly restricted to the Keys. More widely distributed in Cuba and the Bahamas, it forms a stiff-branching, 10-25' tree. Leaves are small, obovate with recurved margins and retuse (notched) apices. Darling plum is closely related to the black ironwood tree *Krugiodendron ferreum* (Rhamnaceae, buckthorn family), and like that S. Florida native also has heavy dense wood, though is not quite as slow growing. Flowering extends from spring into early summer and is followed by small, deep purple to black, plum-like drupes. Fruit is superior tasting to the saffron plum, likened most often to blueberries – unfortunately most of the fruit is taken up with a large seed with only a

thin layer pulp. Darling plum is well adapted to limestone and highly drought tolerant.

The first of the non-native, drought tolerant fruit tree to be described, the **Indian jujube *Ziziphus mauritiana***, is also in the Rhamnaceae and a tropical cousin of the more widely grown Chinese date tree *Z. jujuba*. The latter tree is more highly esteemed, but is adapted to warm temperate climates (it will grow as far north as southern New Jersey and succeeds in N. Florida). It is not suited to south Florida – insufficient winter chill to reliably stimulate bud break in spring. Originally from southern Asia in particular India, the Indian jujube is now widely distributed particularly in dry tropical areas of the world including Africa and the New World, and has become invasive in northern Australia and parts of the South Pacific (not currently viewed as invasive in Florida). Growing locally to 20 – 30', *Z. mauritiana* forms a rather graceful tree developing an arching canopy with long cascading branchlets. The 2" leaves are arranged alternately, each broadly elliptical, the tip rounded, the upper surface dark green with the underside covered with a dense, white to light brown tomentum. This latter feature can be used to distinguish the Indian jujube from the Chinese date tree, the leaves of which are glabrous (lack hairs) on both surfaces. Numerous to scattered short but stout stipular spines (usually recurved) are good reason to exercise caution when pruning or removing fruit. Chinese date is more likely to also have a few longer straight spines.

Through summer into early fall tiny yellowish green flowers, most hermaphrodite but also a variable number of male flowers, are found in axillary clusters, with fruit appearing from October into winter. Since flowers are protandrous (pollen released before stigma is receptive), dependable fruit production requires cross pollination (2 or more trees). Pollen is transferred by insects including bees, flies and *Polistes* spp wasps (latter commonly seen locally). A single backyard tree may yield an adequate crop since some parthenocarpic development of fruit (without fertilization) often occurs. The fruit (a drupe) has a thin, smooth, green skin and crisp subacid flesh surrounding a rough stone; external appearance and crisp flesh are akin to a small apple. With further ripening the fruit turns yellow to a pale orangey brown, the flesh becoming sweeter and mealier. Fruit quality from seed grown trees is variable; improved cultivars have been developed in India (larger sweeter fruit) and at least one Thai cultivar with larger fruit is of limited local availability.

Flowering occurs on current year's growth therefore some pruning in spring will help ensure a larger crop – avoid excessive pruning as this will stimulate a profusion of vigorous new shoots, most of which will eventually need to be thinned to prevent growth becoming overly tangled. Vigorous root suckers can develop following root damage/heavy pruning (e.g., following a windstorm). Trees are easy to grow from seed – untreated, germination should occur within 6 weeks (seeds germinate more rapidly after storage for 4 months). Exposure to sunlight is required to ensure germination once the seed has been sown. Since seedlings develop a deep taproot it is advantageous to start them in plastic tubes, planting them out once they reach a height of about 12". There are few pests; leaves are frequently infected with the black rust *Phakopsora* – apart from some increase in leaf drop it has little effect on tree vigor.

Originally endemic to the Sudan, *Z. spina-cristi* (**Christ's thorn**) is now found throughout the more arid parts of Africa and the Middle East, and is much used as a source of both fruit and fodder. The name reflects speculation that it formed Christ's crown of thorns. **Florida ziziphus**, *Ziziphus celata* is listed as critically endangered, occurring in a few scattered locations on the sandy soils of the Lake Wales Ridge of central Florida – the fruit is best left for the enjoyment of local wildlife.

With the decline of citrus in home yards (the citrus canker saga and now more importantly the threat of citrus greening disease), interest in alternative fruit trees has been on the increase. This is especially so with mango and promotion of so-called “condo-varieties”, selections that are more easily managed as small trees where space is limited. It may strike some as at least a tad ironic that such a popular fruit tree is in the same family (Anacardiaceae) as poison ivy and poisonwood. However the Anacardiaceae contains several other widely grown tropical fruit trees, many of which exhibit excellent drought tolerance.

Most familiar is *Anacardium occidentale* the source of **cashew nuts**, but also grown for the **cashew apple**, the swollen fleshy receptacle that holds the nut (the true fruit). In some countries the cashew apple is the principal crop, widely used both candied and as a source of juice – for most it is too astringent eaten fresh. Endemic to semi-arid areas of NE Brazil, cashew trees prefer deep, free-draining, sandy soils. Sensitive to cold, young trees in particular will not survive even brief exposure to frost. Like mango they are both susceptible to anthracnose disease, and require nutritional supplements (e.g., iron) to correct trace element deficiencies on Miami-Dade's high pH soils. Cashew trees are currently available from a few local growers.

Also in the Anacardiaceae, *Spondias spp* adapt more readily to local conditions, and are especially popular with those from the Caribbean Basin where **ciruela** or **red mombin** (*S. purpurea*) is a popular, easy to grow, backyard fruit tree. Growing from 15–25' as a deciduous shrub or small tree, red mombin usually develops a crooked stem and a spreading canopy of pinnately compound leaves. Clusters of pink to red flowers appear in late February-March directly on bare branches with new leaves appearing April to May. The fruit (an oval to uneven 1½" drupe) is green becoming yellow to reddish purple as it ripens, with a layer of yellow, sweet to sour, juicy pulp surrounding a large fibrous stone. Each stone contains several seeds, which due to a lack of fertile pollen are usually non-viable. Propagation is therefore vegetative; as new growth emerges in spring large (3ft x 2-3") straight cuttings can be placed directly in the ground to a depth of 10-12". Choose a site in full sun, but sheltered from strong winds – limbs are brittle and susceptible to storm damage.

The **yellow mombin**, *S. mombin* is native to more humid tropical areas than the red mombin and prefers moister soils, but adapts to drier conditions and once established can be grown in S. Florida without supplemental water. The fruit of the yellow mombin is generally regarded as inferior to that of the red mombin. Found wild in the arid scrub of NE Brazil *S. tuberosa*, **umbu** is the most drought tolerant of all the *Spondias*. A low, spreading tree to 20', it develops an extensive system of swollen tuberous roots for water storage (up to 3000 liters of potable water per tree). It can take up to 10 years before trees bear a crop, but fruit production is

heavy. A 1½" green skinned drupe, the fruit contains a large stone surrounded by thin watery flesh which is sour in unripe fruit but becomes sweeter with further ripening. The fruit is juiced and used for drinks, jams and fruit paste. The tree requires a very fast draining gravelly soil; attempts to date to grow umbu in South Florida have not been encouraging.

Closely related to *Spondias* is the **Burdekin plum** *Pleiogynium timorense*, potentially a very large tree it usually grows to at most 30-40' in Miami-Dade. Being semi-deciduous it can make a useful shade tree, allowing more sunlight to penetrate during winter. Burdekin plum is associated with seasonally dry rain forest, from NE Australia to Malaysia but is also found in drier inland areas and is tolerant of a wide range of soils. A stout trunk with a dark grey, rough, somewhat fissured bark supports an irregular canopy of semi glossy compound leaves. The tree is dioecious - in spring small creamy flowers are borne in two types of open axillary panicles: long (up to 12") on trees with functionally male flowers or short (≤5") on trees with functionally female flowers. For fruit production both trees are required which limits its use as a backyard fruit tree, though I have seen fruit produced on an isolated tree that grew near the Miami-Dade Extension Office. The fruit, an oblate, pinkish red to dark purple drupe has a large stone and a layer of astringent to subacid flesh. Fruit needs to fully ripen off the tree for several days (till soft) to improve flavor. Quality is highly variable, however Burdekin plum can be used to prepare flavorful jams and jellies.

The **wild plum** *Harpephyllum caffrum* from southern Africa is far more widely used in southern California than Florida, being appreciated for its' attractive foliage plus the ornamental and edible, small, bright red fruits. Fruit only appears on female flowering trees if pollinating trees are present. Drought tolerance is less than for *Spondias* and Burdekin plum and the tree requires plenty of space for its' broad canopy and spreading root system. The last of this group of fruit trees belonging to the Anacardiaceae the **marula**, *Scleroya birrea ssp. caffra* is also from Africa; there the tree finds multiple uses, but elsewhere is little known. Highly tolerant of drought and salt, it is usually found growing on dry sandy soils. The drupaceous fruit resembles a small greenish yellow mango with juicy sweet/sour flesh that is difficult to remove from the stone. Refreshing to some it has an overly resinous taste to others. The stone is also consumed as a nut and highly valued for its oil content which is low in saturated fatty acids.

The Myrtaceae contain some of the most ornamental of tropical fruit trees (e.g., jaboticaba, grumichama and Malay apple). Two of the most drought-tolerant are ***Pimenta dioica* allspice**, and the less familiar **uvalha**, *Eugenia pyriformis var uvalha*. While still green the berries of *P. dioica* are removed, dried then used whole or powdered as allspice. Unfortunately for backyard growers obtaining fruit is not simple; although flowers appear perfect (male and female parts) some trees are functionally male, producing abundant pollen but rarely any fruit. Other trees have flowers with non-viable pollen and are functionally female (unless pollinated by 'male' trees they produce few if any berries). Termed incipient or cryptic dioecy, this means in practice that in order to set fruit both types of tree are required.

Irrespective of these constraints on fruit production, allspice is a very attractive, slow growing tree, well adapted to Miami-Dade's limestone-based soils.

Uvalha (or **uvaia**) is one of large number of small myrtaceous fruit trees from Brazil that are little known outside their country of origin. The tree is native to Brazil's southernmost states and well suited to Miami-Dade, not as intolerant of local high pH soils and far more tolerant of drought compared to [grumichama](#) or [jaboticaba](#). Like these two trees, uvalha is both slow growing and intolerant of salt or flooding. It prefers a light, free- draining soil of moderate fertility and a full-sun location. The fruit is a 1", pear-shaped berry with yellow to orange skin and soft, aromatic, sweet/tart pulp. These are sometimes consumed out of hand, but more often the juice is extracted for use in drinks and jellies. Cultivars producing acid (azedada) or sweet (doce) fruit are grown in Florida by tropical fruit enthusiasts. The juice is reportedly similar to that from a related species *Eugenia stipitata* (araza) from the western Amazon which is enjoying some limited popularity in N. America as a health drink.

Some of the above trees are available from area nurseries, for items not available locally there are on-line suppliers, including seed sources for those with green fingers. In a final article a further selection of drought tolerant fruit trees will be presented, from majestic shade trees to slow growing ornamental shrubs – some familiar such as loquat and Spanish lime and others more suited to the serious fruit tree aficionada.

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August 15, 2008



Red mombin *Spondias purpurea* showing flowers and unripe fruit