

A WORD OR TWO ABOUT GARDENING

Non-Native Trees for Miami-Dade: Shade, Color and Conserving Water.

This is the third and final article of a series concerned with identifying trees and shrubs which, once established, will survive in Miami-Dade landscapes and still remain attractive without the need for supplemental water. When considering non-native trees there are all too many from which to choose. What is presented below is only a selection comprising a mix of trees that are familiar as well as those that are little known but deserve wider use in local landscapes. Some of the trees discussed have already been reviewed in this column; articles accessible on-line at http://miami-dade.ifas.ufl.edu/Pubs_LnG2.shtml In the preceding article, concerned with trees and shrubs native to south Florida, mention was made of the fact that many native species are also indigenous to the Caribbean basin, some being widely distributed. It is therefore not surprising that shrubs and trees found in neighboring areas of the Caribbean and Bahamas also adapt well to Miami-Dade.

A case in point is **sabicu** *Lysiloma sabicu*, indigenous to the Bahamas, Cuba and Hispaniola, a small (20 – 25') low-branching tree with an open, somewhat spreading, rounded canopy. It is smaller and of neater appearance than the south Florida native wild tamarind, *L. latisiliquim*. The leaves of both species are bipinnate, however those of sabicu have larger leaflets giving the canopy a less airy appearance. New growth is tinged a soft pink; the flowers are pale yellow, mimosa-like though not especially showy. The wood of sabicu is hard, durable and a reddish brown (horseflesh is another common name) and the tree less liable to suffer storm damage than *L. latisiliquim*.

Another useful small tree (to 20') from The Bahamas *Tabebuia bahamensis* is commonly known as **five fingers** because of the palmate leaves comprising five obovate leaflets. The trumpet-shaped flowers have yellow throats and white to pale pink petals streaked mauve. The tree may be confused with *T. heterophylla* the common pink tabebuia (see below); the flowers of *T. bahamensis* have larger, more crinkled petal lobes and leaflet tips are often notched (retuse). Apart from being highly drought tolerant, five fingers is well adapted to high pH, calcareous soils. The **Hispaniolan rosy trumpet tree** *T. berteroi* is somewhat larger than five fingers, the leaves thicker, the flowers more a rosy white. *Tabebuia haemantha* **roble cimarrón** is a small (to 25') upright shrubby tree from Puerto Rico. Regarded as endangered roble Cimarrón is found on rocky sites in areas with as little as 28" of rain annually. Flowers occur singly or in small clusters and are tubular, crimson with uneven lobes. The leaves are palmate with 3-5 leaflets, bronze at first becoming dark green. Accounts vary regarding dry season leaf retention, from evergreen to at least partly deciduous (probably depends on local soil moisture). Little used outside of Puerto Rico, this is one of several indigenous plant species that have sparked interest as having wider commercial potential in sub-tropical landscapes.

Also from Puerto Rico but widely dispersed throughout the Caribbean is south Florida's most common pink flowering tabebuia, *Tabebuia heterophylla* (syn. *T. pentaphylla*) **white cedar** or **roble blanco**. This is often confused with what is a

much larger tree, *Tabebuia pallida*, far less common in cultivation, and *T. rosea* (**pink poui**) also larger and in addition more cold-tolerant. White cedar is typically found in dry forest/scrub, where annual rainfall can be as little as 35", growing on a variety of soil types including limestone. In Miami-Dade the tree is evergreen, though leaves will increasingly appear scorched as temperatures fall below 40°F. In the Caribbean leaf loss can be more pronounced during the dry season. Flowering occurs spring to summer, but is highly variable. Some specimens produce scant flowers and/or they are a pallid, insipid shade of pink (especially floriferous trees with showiest flowers should be selected and propagated vegetatively). One other potential drawback; the tree can be weedy, producing numerous seedling volunteers in the immediate landscape. Two insect pests, a thrip that severely distorts new leaves and a plant hopper that causes yellow stippling, can spoil the trees' pearance but are otherwise are not serious. White cedar resists wind throw but some limb breakage can be expected after a wind storm. Far more stunning in its flower display *T. impetiginosa*, **ipe**, found from southern Mexico into S. America, is deciduous bursting forth in winter when almost leafless with a blaze of deep purplish pink flowers.

Yellow flowering *Tabebuia aurea* **silver trumpet** tree from Caribbean basin is an impressive site when in bloom during early spring but is weak rooted and frequently succumbs to windstorms in Miami-Dade. Other yellow flowering drought tolerant Caribbean trees include **brasiletto** *Caesalpinia violaceae* a medium size leguminous tree with upright spikes of bright yellow flowers. Another small, shrubby somewhat prickly tree, especially suited to ocean front sites, *Caesalpinia vesicaria* (old common names include **Indian savin** or bastard Nicarago) is found in dry coastal thickets. Both of these species may be confused with the more familiar *C. echinata* Brazil redwood (the national tree of Brazil), though the latter is a larger, more erect tree. Some of the preceding trees are difficult to find though worth searching out. More easily located, **Jamaican ebony** *Brya ebenus* (also native to Cuba) is a small to medium, spiny tree occurring in dry, coastal, limestone scrub; areas with yearly rainfall totals of about 32", and a prolonged dry season (at least 9 months). The tree has a distinctive growth form – extended somewhat flexuous horizontal branches along which are clustered trifoliolate, sessile, leaves each composed of three small, obovate, shiny leaflets. Masses of rich, golden yellow axillary flowers appear intermittently during summer in response to heavy rainfall (raintree is another familiar name). Nominally evergreen, leaf drop depends on the severity of dry season.

Caribwood, *Poitea carinalis* is a further small leguminous tree that thrives on dry rocky soil. It is the national tree of Dominica where it is known as 'bois kwaib'. In early spring immediately prior to leaf renewal the tree is briefly covered with brilliant crimson flowers. Growing to no more than 15' this graceful, airy tree is ideal for both parking lots and as a small street tree. In common with other deciduous flowering trees described in this article flower production is poor where trees are watered during the dry season or excessive nitrogen based fertilizer is used (e.g., typical turf fertilizers). An earlier article on drought tolerant shrubs included some from the Caribbean – of those the following can also be grown as small trees:

Euphorbia punicea (Jamaican poinsettia), *Hamelia cuprae* (Bahamas firebush), *Plumeria pudica* (bridal bouquet), *Senna polyphylla* (desert cassia), *Jatropha integerrima* (peregrina) and *Jacquinea arborea* (bracelet wood). Finally for this section of Caribbean trees the familiar **Geiger tree**, *Cordia sebestena* often mistakenly listed as a south Florida native, is found from northern S. America and throughout much of the Caribbean. The foliage of this popular tree is frequently disfigured by the Geiger tree beetle; by placing the tree at the rear of the landscape this detracts less from the showy orange flowers.

There are other *Cordia* spp. that make attractive highly drought-tolerant trees, most of which adapt to both limestone soils and salt. ***Cordia dodecandra* (sircote)** is found from Cuba to southern Mexico/northern Central America in dry woodland/thickets, areas with as little as 35" of annual rain – during the dry season trees lose all or some of their leaves. The tree is valued primarily for its hard dense wood, though it is also used for both shade and as an ornamental, and the fruit is used in preserves. Larger than *C. sebestena* (to about 50'), the flowers are a deeper shade of orange. ***Cordia subcordata* (sea trumpet)** is another larger orange flowering species, though with a much wider distribution from E. Africa and throughout the tropical Pacific. A valuable ocean front tree in Hawaii, where it is regarded as a native species; however caution is advised in south Florida as *C. subcordata* is reported to readily volunteers from seed. A white flowering species, ***Cordia boisserei* (Texas olive)** is gaining in popularity; this is a small (to 25') slow growing tree and like most cordias will not succeed unless grown on rapidly draining soils. It is far more cold tolerant than the other listed cordias. ***Cordia gerascanthus*** is a larger, white flowering species found in the dry forests of the Pacific coasts of Mexico and Central America, areas with yearly rainfall totals as little as 24", growing along side familiar trees such as gumbo limbo and *Lysiloma* spp. Known commonly in Mexico as huizache, it forms an erect tree to about 50', valued as a source of high quality timber. Tight cymes of fragrant white flowers appear, usually when the tree is leafless, in response to rain fall.

Mexican calabash *Crescentia alata* is also a component of seasonally dry forests of the Pacific coast of southern Mexico and Central America (plus an isolated area of dry forest on Mexico's Gulf coast). The tree is found on calcareous soils where there is a relatively long dry season and annual rainfall of ≈ 40 ", so it would be expected to adapt well to Miami-Dade. Leaves are trifoliolate, with a winged petiole (the whole giving the appearance of a cross). Nominally evergreen, though some leaf drop can be expected depending on prevailing soil moisture conditions during the dry season. Flowers are bell shaped, maroon to tan, borne directly on the limbs or trunk (cauliflorous) and have a rank cabbage-like smell (to attract bat pollinators). Where pollination is successful large berry-like fruits with a hard woody shell develop (a pepo). Being almost devoid of smaller branches the canopy is open but still provides useful shade, and the tree is more erect, not as sprawling and with greater drought tolerance than the more familiar wild calabash, *C. cujete*. The rough, furrowed bark of calabash trees is useful for supporting epiphytes, finding particular favor with orchid enthusiasts. Mexican calabash is available to a limited extent from area growers.

Considering our local climate (warm to cool dry winters and hot wet summers), it is not surprising that sub-tropical trees from seasonally wet/dry, forest/ savannah often adapt well to Miami-Dade conditions. An obvious example is the **royal poinciana** *Delonix regia*, from dry forests of Madagascar's west coast, Miami's most popular flowering tree. Another case in point the tamarind (discussed in more detail below) is of almost pan-tropical distribution, though believed originally from the savannahs of E. Africa. Unlike the nominally evergreen tamarind, many trees from such seasonally wet/dry climates are deciduous to varying degrees (e.g., the royal poinciana). For deciduous trees in the tropics/sub-tropics, leaf drop is a means of lessening internal water stress (preventing losses due to transpiration) during the dry season; an adaptation to declining soil moisture more so than cooler winter temperatures. Some trees such as the **rain tree**, *Saman samanea* although native to areas with a distinct dry season, where they can be leafless for several weeks or more, retain foliage in locales where rainfall occurs throughout the year. What constitutes the "dry season"? Some authors have defined a dry season as those consecutive months where cumulative rainfall totals do not exceed 1.6". During our local "dry season" mean monthly totals are around 2", though can fall to ½" or less for any month from December to April.

For tropical/sub tropical trees loss of old leaves then is a function of both the duration of the dry season and accessible soil moisture reserves; where moisture is available some mature leaves may be retained well into the dry season with leaf renewal following on rapidly from leaf loss. During an extended period of dry weather with little available soil moisture a tree could be leafless for several months. In a severe drought development of flower/leaf buds will remain suspended until soil moisture levels rise with late spring/summer rains. Conversely where there is sufficient sub-surface soil moisture flowering/ leaf renewal will only occur once the remaining senescent leaves are lost. Leaf loss and renewal as well as flowering is complex and not fully understood; to varying degrees it can involve not only moisture levels but also factors such as day length and age of the leaves.

The **tamarind**, *Tamarindus indica* is essentially evergreen, though in climates far drier than south Florida it may be briefly leafless prior to leaf renewal. It is widely adaptable, being found in semi-arid to wet tropical climates, most often in areas having from 12 – 60" of rain annually. Tamarind is low branching from a short (2 – 6') stocky trunk, and grows slowly to about 50' locally. The trunk and larger limbs become attractively furrowed with age, and the tree develops a dense, spreading, rounded canopy of pinnate leaves, each with up to 18 pairs of small oblong leaflets; flowers are semi-showy, in lax spikes each with creamy colored, red veined petals. Leaf renewal and flowering occur synchronously during summer. Tamarind is intolerant of shade and prefers a light airy sandy soil, but grows well on rocky calcareous soils of Miami-Dade. It survives brief inundation but will fail to thrive on soils that drain slowly. Tamarinds make excellent, large, shade trees, noted for being able to survive windstorms with both a strong root system and flexible limbs. As a shade tree it makes a good substitute for live oak where there is sufficient space – not a tree for a small lot.

As well as being a superior ornamental/shade tree, tamarind is valued commercially as a fruit tree, especially in India and Thailand. After flowering, the fruit (a pod) ripens during the summer and finishes maturing during the dry season, becoming brown and brittle as the pods lose moisture, the pulp within becoming brown and sticky. Trees in south Florida bear fully mature pods after 8 – 10 months, usually late March to May - a few may be still be on the tree as it flowers in the summer. While isolated trees will set some fruit (enough for home consumption), yields are much higher where cross pollination is possible. The most important factor contributing to consistent flowering (and therefore fruit production) is a definite dry season of 2 – 4 months. Trees are normally grown from seed, setting fruit after 6-8 years, though where tamarind is grown commercially vegetative methods are used; cuttings if misted, marcottage (air layers), budding and grafting are all used. Such trees come into production within 4 years and are not as large – the latter a potential advantage where trees are grown in residential lots.

Like the tamarind the **rain tree**, *Saman samanea*, is another large leguminous tree. In open sites it grows to 60-80' and develops a massive wide-spreading, dome-shaped canopy up to 100' in width, larger than the tamarind making it more suited to public areas and as a large shade tree for open boulevards. Unlike tamarind the leaves are bipinnate, with leaflets that are somewhat more leathery and shiny. The individual flowers are tiny, bunched together to form a pinkish mimosa like inflorescence, and are followed by 4-8" dark brown, transversely ribbed pods. These also contain a sticky, sweet, edible paste, though as a fruit the pods are far inferior to tamarind. The rain tree is found in areas of the tropics with annual rainfall of 24 – 96" (a dry season of up to 6 months) and leaf renewal and flowering occur simultaneously during late spring. On sandy soils the tree develops a deep root system, and during wind storms damage is restricted to fallen limbs. However on rocky sites the tree forms an extensive system of shallow roots, many of which are exposed making the tree liable to windthrow during a storm. This could limit its usefulness in much of Miami-Dade. Closely related to the rain tree is the **ear pod**, *Enterolobium cyclocarpum*, with an equally large if slightly more rounded canopy. The fruit is a distinctive, curved, fluted, pod containing seeds set in a sweet pasty pulp, relished by animals rather than humans. A widespread climax component of dry woodland in much of Central America, ear pod is the national tree of Costa Rica. In addition to surface roots, limb breakage due to windstorms and/or rot due to *Fusarium* have probably contributed to limiting landscape use of this magnificent tree.

The three preceding trees, especially the latter two, are too big for all but the largest of residential lots; however there are many smaller highly drought-tolerant trees from which to choose. Familiar examples include **frangipanis**, *Plumeria* hybrids (ancestry unsure but most involve *Plumeria rubra*), deciduous throughout most of the winter (unlike the less familiar *P. pudica* and *P. obtusa*). These have all been described in a previous article. **Golden shower** *Cassia fistula* is fast growing to about 35' and found throughout tropical Asia, surviving with as little as 19" of annual rainfall (though more than 100" in monsoonal climates). The tree is tardily deciduous, can take some limited shade and will adapt to limestone. In summer

where an outstanding yellow flowering tree is desired it can prove a worthy successor to the spring blooming yellow tabebuias. Some care is needed when positioning golden shower trees in the landscape as the limbs are somewhat brittle and could break in a windstorm. A smaller related tree from the savannahs of E. Africa, **dwarf golden shower** (*Cassia afrofitula*, 15-20') is evergreen, provides some shade and has an extended period of flowering (golden yellow) from early summer into fall. **Bulnesia arborea** (**verawood**) is another yellow flowering tree that is becoming increasingly popular in Miami-Dade. Locally evergreen, it tends to flower on and off during the warmer months and so is not as stunning when in bloom as a yellow tabebuia or golden shower – it is still however an all-round very attractive tree.

Markhamia lutea (**mgambo**, from central Africa) is a 30 – 40' drought tolerant, upright, evergreen tree, developing an attractive, trim, pointed crown, which ought to be more widely used (it is locally available. It has yellow, bell-shaped flowers with a reddish brown throat (the cultivar 'Pierrii' has a maroon striped throat), occurring in terminal panicles from spring into summer. The tree occurs where annual rainfall is as little as 32" and is not particular as to soil, providing it does not become waterlogged.

If you prefer a springtime display of pink blossoms, **Gliricidia sepium** (**madre de cacao or quick stick**) is a drought tolerant, small tree (\approx 20'). Able to withstand a dry season of up to 9 months and annual rainfall of 35", it is of local interest as a suitable alternative to the weedy pongam tree *Millettia pinnata*. Although having a leggier, rather untidy appearance, the spring time flower display of pale pink flowers lasts longer and is much showier. Quick stick is well adapted to limestone and as the name suggest, cuttings root readily, though shallower than seed grown trees. However the wood is hard and durable and the tree recovers well from severe pruning (a plus during hurricane season). In addition seed grown trees are highly variable with regard to flowering and viable seed production from isolated trees is poor. Locally this latter fact, together with an absence of the large solitary bees responsible for pollination, severely limits the trees invasive potential.

Two trees worthy of consideration are of particular use in coastal situations. The **coastal milkwood** *Mimusops caffra* occurs in coastal thickets and forests from Mozambique to South Africa, and is available to a limited extent in south Florida. Growing from 15 – 50', the trunk is often attractively gnarled, the bark grey and furrowed, and small stiff leathery leaves clustered at the branch tips. The tree is tolerant of both drought and wind – with exposure to constant wind *M. caffra* may develop a shrubbier appearance. The **tree heliotrope** *Tournefortia argentea* is a small 20' tree with a spreading canopy, found from tropical Asia and throughout much of the tropical Pacific. The bark is strikingly grooved, and the ornamental leaves (a pale green but appearing a silvery grey due to a covering of short hairs) whorled toward the branch tips. Clusters of numerous small white flowers are followed by small drupes each of which splits into four nutlets. The tree adapts best to coastal situations on poor sandy to rocky soils and is found in areas with annual rainfall as little as 12" (or as much as 200") and a dry season of up to 4 months. It is slow growing so requires little pruning and since it is adapted to nutrient deficient

soils, never requires fertilizer. Tree heliotrope is related to the smaller, shrubbier ***Argusia gnaphalodes* sea lavender**, a south Florida native also highly recommended for ocean front sites. Neither sea lavender nor tree heliotrope are suited to more inland locations.

There are of course additional highly drought tolerant exotic trees including those with showy flowers as well as others with edible fruit. The latter will be considered in a future article.

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***Poitea carinalis* (carib wood) blooming during March in Miami-Dade**