

## **Spondias in Florida<sup>1</sup>**

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### **DESCRIPTION**

See Table 1 for information on spondias in Florida.

**Plant.** The ambarella is a large tree up to 18 m (60 ft.) in height. The yellow mombin is a medium tree up to 15 m (50 ft.) in height. The red mombin is a small tree up to 8 m (25 ft.) in height. All have an open spreading canopy, with stout, stiff branches and weak, brittle wood.

**Leaves.** Pinnately compound, with 10-18 or more leaflets. Length of leaflets is 1-4 cm (1/2-1 1/2 in.) in red mombin, 2 1/2-4 cm (1-1 1/2 in.) in yellow mombin and about 7 cm (3 in.) in ambarella. Trees are deciduous in areas with a distinct dry season.

**Flowers.** Small and inconspicuous. Borne in large, loose terminal panicles in ambarella and yellow mombin, in small lateral panicles on previous season's growth in red mombin. The ambarella and yellow mombin have bisexual flowers and are self-fertile. Most selections of red mombin have no fertile pollen and do not produce viable seeds.

**Fruit.** Borne in clusters of 3-20 or more in ambarella and yellow mombin, singly or in clusters of 2-3 in. in red mombin. Fruit length is 5-7 1/2 cm (2-3 in.) in ambarella, 2 1/2-5 cm (1-2 in.) in yellow mombin and red mombin. Fruit is globular to ovoid. Fruit of some selections of red mombin is very irregular in shape. Fruit is a drupe with a tough skin, edible yellow pulp of varying thickness, and a single large seed. Seeds are difficult to separate from the pulp and often have strong woody fibers projecting into the pulp. External color of the fruit is yellow in ambarella and yellow mombin and yellow, red or purple in red mombin.

### **CLIMATE AND SOILS**

The *Spondias* species are best adapted to the hot, lowland tropics, although the red mombin may be found up to an elevation of around 1800 m (6000 ft.). They will grow in warm subtropical areas where no frost occurs, or which experience only occasional light frosts. Cultivation in Florida is limited to the warm southern coastal areas. The trees grow best in fertile, well-drained soils but can be grown satisfactorily in a variety of poorer soils if they are given adequate nutrition.

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## CULTIVARS

No cultivars have been described and named, although several are known and cultivated in Florida and elsewhere in the American tropics. There is great variation in fruit size, color and quality between selections of red mombin and it is the most widely cultivated of the *Spondias* species in this region. Some variation in fruit characteristics exists in populations of ambarella and yellow mombin, but little selection has been done.

## PROPAGATION

Ambarella and yellow mombin may be grown from seed. Red mombin generally does not make viable seed because it lacks fertile pollen. Vegetative propagation is preferable for superior selections because they do not come true from seed. The most widely used method is the rooting of cuttings of mature wood. Large limbs can be cut from the tree and set directly in the ground, where they will form roots and grow if conditions are favorable. This method is used to make "living fences" in the tropics. Vegetative propagation can also be done by veneer grafting and shield or chip budding.

## PLANTING AND SPACING

Young trees should be set in holes larger than necessary to adequately accommodate the root system, at a depth slightly higher than the trees grew in the containers or nursery. A water basin around the young tree is helpful to assure adequate soil moisture during establishment of the tree. Trees should be grown in full sun for satisfactory fruit production.

Ambarella and yellow mombin trees will have a spread of 15-18 m (50-60 ft.) and the red mombin tree a spread of 8-10 m (25-30 ft.) at maturity. Consequently, spacing between trees should not be much less than the mature tree spread, except on poor or shallow soils, unless provisions are made to control tree size. Tree size can be controlled by pruning.

## IRRIGATION

The *Spondias* species are best adapted to areas which have a marked dry season. Mature trees are quite tolerant of drought and do not require supplemental irrigation under Florida conditions. Some irrigation is desirable for establishment of young trees during the first year after planting.

## FERTILIZATION

Plants can be grown successfully in fertile soils without the use of fertilizer. Some fertilizer is necessary in the infertile soils of Florida for adequate growth and fruit production. Fertilizer requirements have not been determined experimentally so a suggested program is presented for use until experience can determine the most practical fertilizer program to follow.

Fertilizer should be applied every 2-3 months during the first year, beginning with 100 g (1/4 lb.) and increasing to 450 g (1 lb.) of 6-6-6-3 or similar analysis. Thereafter, 3-4 applications per year are sufficient, in amounts proportional to the increasing size of the tree—roughly 450 g (1 lb.) per application per year of tree age. Bearing trees can be switched to an 8-3-9-5 or similar analysis fertilizer at the same rates 3-4 times per year. Microelements should be applied as needed.

## PRUNING AND TRAINING

*Spondias* trees will develop their natural shape without the need for pruning or training. Maintenance pruning to remove dead or damaged wood is all that is necessary. Branches cut back past the previous season's growth will not bear fruit for at least a year.

## PRODUCTION AND HARVEST

One main crop per year is produced in Florida, the fruit of a given species or selection maturing over a period of several weeks to a few months. Fruit of the red mombin and yellow mombin matures from June through October and the ambarella from November through May. The fruit generally is harvested when ripe on the tree, as determined by softening of the pulp and by a change from green

external color to some shade of yellow or red. The fruit can be harvested when it is fully mature, but still green and firm, and will ripen to satisfactory eating quality, but has better flavor if ripened on the tree. The fruit is harvested by hand, often by shaking it from the tree and picking it up from the ground.

## USES

The fruit of good selections has a sweet, pleasant flavor. In most areas the fruit is sold in local markets and consumed fresh. It makes a significant contribution to the diet of people in local areas of the tropics when it is in season. In some areas the fruit is dried in large quantity and shipped to distant markets. The fresh or dried fruit can be made into jellies, sauces or preserves. It is a good source of minerals and vitamin C.

## OTHER SPECIES

The imbu, *Spondias tuberosa* Arruda, is native to dry areas of Brazil. It has enlarged roots and is extremely resistant to drought. It has been introduced to other areas but is not well known. The ovoid fruit is 3 1/2-4 cm (1 1/2 in.) in length and greenish yellow in color when ripe. It is eaten fresh and made into jellies or desserts and is much esteemed in its native area. It does not grow well in southern Florida, evidently because of poor adaptation to the soil and climate.

*Spondias pinnata* L. F. Kurz (*S. mangifera* Willd.), native to tropical Asia, grows and fruits well in southern Florida, but is not well-known. It bears ovoid fruit 4-5 cm (1 1/2-2 in.) in length, in terminal clusters of 10-15 fruit. The fruit is extremely sour, even when completely ripe. It is used mostly for cooking although some people like to eat it fresh.

*Spondias borbonica* Baker is native to the islands of Mauritius and Reunion. It makes a large tree with deeply furrowed bark, similar in appearance to the yellow mombin. A few trees have been growing in Florida for many years but have never borne flowers and fruit.

**Table 1.** Varieties of Spondias in Florida

<b>Scientific Name:</b>	<b>Common Names:</b>
<i>Spondias cytheria</i> Sonn. <i>S. dulcis</i> Parkinson	Ambarella, Otaheite apple, golden apple
<i>Spondias mombin</i> L.	Yellow mombin, hog plum, jobo
<i>Spondias purpurea</i> L.	Red mombin, purple mombin, jocote, ciruela
<b>Family:</b>	Anacardiaceae
<b>Origin:</b>	Amabarella, Polynesia; yellow mombin and red mombin, Tropical America
<b>Distribution:</b>	Tropical and frost-free subtropical areas of the world.