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*About the Institute*
The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

THE PAPAYA AND ITS RELATIVES

Native to tropical America, with southern Mexico prabably its center of origin, the papaya (Carica papaya) was widely distributed on the mainland from Mexico to Colombia at the time of the Discovery. It is today a well-known fruit in all tropical and warm subtropical areas of the world. Besides its very extensive culture as a door-yard plant, it is grown on a commercial scale in many countries, notably India, the Philippines, Australia, South Africa, and the United States (chiefly in Hawaii). It is primarily a flavor fruit, eaten when fresh for its pleasant, refreshing taste, since the flesh is nearly 90% water and contains only 6 to 8% of sugar. In Vitamin A it is rather high, especially in specimens with deep orange flesh in which the Vitamin A content may be 2000 to 3000 I.U., about half the value for good butter. Surprisingly, in a fruit almost without detectable acidity, the Vitamin C content is often as high as in oranges.

To a limited extent papayas are used for processing. Slices, cubes, or balls of firm-ripe fruit are canned in syrup for use in making salads. Marmalade and jam are prepared from fully ripe papayas with lemon or lime juice added. Ripe fruits are also used to produce beverages (soft drinks) by combining the pureed flesh with orange juice. A tasty confection is made by drying the ripe flesh to about 6% moisture, which gives a product with 50-60% sugar.

Papain is a commercial product of a few countries, widely employed to make tough meat more tender. The rind of immature papayas contains a milky latex which is dried and marketed as crude papain. As the fruit ripens, the latex loses its milky color and

its enzyme activity, so that ripe fruit has no meat-digesting (proteolytic) property. Much hand labor is required in obtaining papain, hence only in a few countries has it been produced on a commercial scale.

## Description

The papaya plant is a gigantic herb, with no woody stem ever developed. Normally, all vegetative growth is made from the terminal bud only, so that the mature plant somewhat resembles a palm in appearance. However, the axillary buds are quite capable of development into branches and do so promptly when the terminal bud is cut off or killed by cold. Papayas sometimes live for 10 or more years, with steadily decreasing size of leaves and fruits, borne further from the ground each year until a tall ladder is needed to harvest the crop. Allowing papaya plants to reach such age is uneconomical, however, and it is not often possible; old plants are rarely seen in Tropical America. The gigantic leaves may have blades up to 2 feet across, borne on hollow petioles 2 to 3 feet long.

Flowers are produced in the axil of every new leaf after the plant attains an age of 6 months or so. From 4 to 6 months more are required under tropical conditions for the flowers to mature into fruit. Thus from 8 to 10 months after seeds are planted, the first fruits should mature. Production is continuous thereafter, if growing conditions are favorable, with a new fruit read to harvest every few days.

## Climate and soil

While papayas are grown extensively in warm subtropical areas, they grow best and have fruit of good quality only in tropical climates. The plants tolerate cool temperatures (above freezing) but development slows as temperature falls, until below 50 degreesF. no growth takes place. On the other hand, temperatures above 100

degrees F. are increasingly injurious. Maximum yields and good fruit quality are obtained with temperatures between 70 and 90 degrees F. Altitudes to 3000 ft. in the tropics are suitable.

Any well-drained soil seems satisfactory, but water standing on the surface for 48 hours may kill the plants. Well-drained sandy loam or silt loam is ideal. Soil reaction is less of a problem than it is with citrus, but on sandy soils best results are obtained at pH 5.5 to 6.5.

Rainfall which supplies adequate soil moisture is desirable. Too much rain and cloudiness decrease fruit setting and lower fruit quality by decreasing the sunshine, and thus photosynthesis, quite apart from possible bad effects on soil moisture.

## Sex types

There are basically three sex types which papaya plants may show: male, female and hermaphrodite or bisexual. Male plants produce large quantities of staminate flowers, but only rarely a few perfect flowers which can set fruits. They are of no value except to provide pollen for female plants. The latter produce only pistillate flowers, each able to develop into a fruit if pollinated. One male plant is adequate for pollinating about 20 female plants if they are fairly evenly distributed around it. In addition to occasional staminate flowers, hermaphrodite plants bear perfect flowers predominantly, each capable of setting a fruit. There is a good deal of variation in the flowers on hermaphrodites so that several types of fruit may appear on one plant, whereas all fruits are alike on female papaya and some hermaphrodite plants ~~have flowers~~ have nonfunctioning pistils - thus unable to set fruit - during part of the year. Needless to say, seeds from such plants should not be used for propagation.

Seeds from female plants produce approximately equal numbers of male and female seedlings. By repeated sib-pollination (using pollen from males from the same source as the females) and selection, it is possible to develop a type which comes true from seed, so that all fruits borne by the female plants are in character. The variety will soon be lost, however, if the sib-pollination is not continued, and this means pollination by hand with protection against foreign pollen reaching the female flowers.

Hermaphrodite plants, which will produce nothing but fruits of uniform character, cannot be developed. Genetic research has shown that continued self-pollination and selection will produce a form or variety which has two-thirds of its seedlings hermaphrodites and one-third females. The fruits borne on each group may be quite uniform in type, although some off-type fruit may occasionally appear on the hermaphrodite plants. A field plant with seedlings of such a variety will have all plants fruitful, but only two-thirds of the plants will bear the varietal type. Here again, continued hand pollination, or at least bagging flowers to assure only self-pollination, and also selection are necessary if the variety is to be maintained.

## Varieties

In several countries, a number of forms or varieties have been selected and propagated, but very few have ever had wide distribution or have been maintained for many years. The Solo variety of Hawaii is the best-known hermaphrodite type, while the female Betty variety of Florida is more cultivated in Australia than any other. Solo has fruits averaging 1 lb. in weight, and while it is unusually slow in coming into bearing, self-pollination takes place almost 100% in the field, so that the variety is relatively stable. The small size of the fruit is desirable for retail sales in cities,

but the yield per acre is comparatively low. Betty has fruit weighing about 4 lbs. and comes into bearing at an early age. Probably in most tropical American regions it will be less satisfactory to import seeding of a named variety than to select a desirable type among the thousands of local seedlings and by controlled pollination and selection develop a suitable form. This will require several years of careful work.

## Propagation

Seeds are still the only satisfactory method of propagating the papaya, in spite of many years of research into vegetative methods. Seeds are abundant, they grow quickly into bearing plants, and they can be stored for a year or two if well-dried and kept in sealed jars. Either seeds fresh from the fruit or seeds which have been dried previously for a few weeks may be planted with success. It is advantageous to plant the seeds in community pots, with 3 or 4 seedlings in each pot, to be grown and transplanted to the field without any disturbance of the root systems. Seedlings grown in open seed beds and pulled for transplanting suffer considerable retardation of growth. The pots should be at least 1 qt. in volume so that seedlings may be grown for several weeks without lacking ample root space. Containers may be of polyethylene, tar paper, clay, or other commonly employed material.

Soil for starting seedlings should be a mixture of organic material (peat, compost, etc.) and sand or sandy loam, to assure free drainage yet good moisture retention. If possible, it should be fumigated before being put in the containers, so that seedlings may get a pest-free start in life. Methyl bromide, Mylone, and Vapam all take care of nematodes, soil fungi, soil insects, and weed seeds. Methyl bromide is a gas and the soil must be enclosed in a gas-tight covering. Mylone and Vapam are applied as drenches on

soil in an open drum, but covered with wet newspaper for 24 hours after drenching. Wait 4 days for soil to lose fumes of methyl bromide before planting seeds, and 10 days if other fumigants are used.

In each container 3 seeds should be planted, spaced uniformly 2 inches apart and 1 inch deep, if a hermaphrodite type is being used. For unisexual (male-female) varieties, 4 seeds per pot are recommended. This will assure that in both cases, about 95% of the containers will have, ~~respectively~~, at least one hermaphrodite or one female plant. The other 5% will be females and males, respectively, the former being fruit-bearing although yielding fruit of different type from the dominant hermaphrodite plants, the latter being needed to pollinate the great majority of female plants. Containers should be watered regularly to keep the soil moist but not wet, and occasionally they should be given a dilute solution of nitrate of soda or sulfate of ammonia (1 tsp. per gal. of water), if the seedlings do not seem to grow fast enough. Half shade is preferred to either full sun or full shade. Seeds should germinate in 3 to 4 weeks, and seedlings should be about 8 in. high, ready to transplant to the field, in another 4 to 6 weeks.

## Transplanting

Seedlings are set in the field when they are about 8 in. high, the undisturbed soil and seedlings of one container being planted in each hole. The field should previously have been cleared, levelled, and marked for planting. A spacing of 10 x 10 ft. is good, although some varieties of medium vigor need only 8 ft. spacing each way, and there are dwarf varieties which can be planted 6 ft. apart. A 10 x 10 ft. spacing gives 430 plants per acre, 8 x 8 ft. gives 660, and 6 x 6 ft. gives 1200. If animal manure is readily available, it is good practice to put ½ bu. of well-

rotted manure under each hill. To assure good drainage, the containers should be set in the ground so that their soil level is slightly higher than the soil around them.

When the seedlings first bloom, select among them to leave, if possible, at least 1 hermaphrodite (if a bisexual variety) or 1 female (if a unisexual variety) in each hill. As noted above, about 95% of the hills should allow this. Cut off unwanted plants at the soil level, rather than pulling them out, since the latter method causes some injury to roots of the plants which are left.

## Fertilizing

Unlike fruit trees, which grow in a succession of flushes followed by resting periods, the papaya normally makes new growth continuously. Fertilizing must be done so that there is never a period when shortage of mineral nutrients slows down growth. On sandy soils with heavy rainfall, mixed fertilizer should be applied monthly to bearing plants, whereas on sandy loams or silt loams, it may be applied every 3 months. In semi-arid areas where soils are high in potash and water is supplied by irrigation, growth may be satisfactory with nitrogen alone, 1 lb. nitrate of soda or 3/4 lb. sulfate of ammonia per plant every 3 months.

Two weeks after transplanting to the field, the small seedlings should receive the first fertilizer application. On sandy soils in humid climates, it is recommended to apply mixed fertilizer every 2 weeks for the first 6 months. On heavier soils, the second application may be made after 3 months, which will carry plants until they flower. For heavy soils in semi-arid regions, the same amounts of nitrate of soda or 3/4 as much sulfate of ammonia, may be applied at the same times.

## Culture

Weed control is very important in growing papayas, especially

during the first few months, when the small seedlings are very sensitive to weed competition. Heavy mulching with organic materials is one good means of keeping weeds down around young plants. Papayas are sensitive to most herbicides used for weed control. After the plants shade the ground heavily, weeds are less of a problem and mowing gives sufficient control. There is always the hoe!

Papaya plants need about 1½ in. of water per week, and when this does not come as rain, it should be provided in the form of irrigation. There must be no dry period in papaya growing.

## Harvesting

Papayas have maximum sugar content, and thus best quality, when they are left on the plant until fully colored. ~~and soft, i.e.,~~ ripe fruits. However, such fruits are very subject to attack by insects and birds, and by fruit-rotting fungi, and they are also likely to pull free from the fruit stem and fall to the ground. The firm-ripe stage, when the green color begins to change to yellow, with streaks of yellow starting at the stigmatic end of the fruit, is the best stage for harvesting. The flesh is still firm but ripening has begun and will continue steadily, yielding ripe fruit in 5 to 7 days. The sugar content is only about 10% less than in fruit left on the plant until ripe. In some varieties which do not become yellow as they ripen (e.g., Betty), the firm-ripe condition can be detected by the change in latex appearance from thick and opaque to more fluid and opalescent. (In fully ripe fruit it is clear and watery.) A tiny scratch on the skin will allow a drop of latex to exude for examination. If fruit is to be shipped to markets more than 3 days distant, it should be picked firm-ripe and shipped under refrigeration. After 2 weeks at 45 degrees F., yellow but firm fruit ripens well at 70 degrees F.

Papaya fruits are fragile and must be handled carefully to avoid

bruising or even crushing. To avoid scratching the delicate skin, it is better to wrap fruit in old newspapers rather than to pack it in excelsior as is done with most fruits.

Yields of papayas are exceedingly variable, depending on nutrition, water supply, variety, number of plants per acre, and other factors. Average yields of 100 lbs. per plant per year are unusually high for the first two years after bearing begins. With spacings of 450 to 650 plants per acre, yields may be 10 to 30 tons, and under unusually favorable conditions 40 tons may be harvested. (It is best not to assume that yields will be maximum). After plants are 3 or 4 years old, yields decrease and cost of harvesting increases, and it is almost always better to replant than to maintain the plantation for a longer time. In tropical America, inroads of disease rarely permit papaya plantations to remain profitably productive even through the third year.

## Pests

Virus diseases are very troublesome in tropical America and often two or more are present in the same plant. They are transmitted by sucking insects, although vectors have not been identified for some viruses. Spraying for control is sometimes effective. A suggested schedule is spraying every 3 weeks with 4 lbs. of 50% wettable DDT in 100 gal. of water. Often the only really effective control is to cut down infected plants as soon as symptoms are detected--usually a mottling or mosaic chlorosis of the youngest leaves followed by yellowish rings with green centers on mature fruits. "Mosaic" is the worst enemy of papaya in many regions.

Fruit rot, caused by the fungus Colletotrichum gloeosporioides, is a common disease of mature, ripening fruit. Infection takes place only after fruit reaches the green-mature condition, and

with increasing maturity infection is more severe. The causal fungus is commonly present on many kinds of fruits, and ripe or overripe papayas form a prime source of infection. Destroying promptly such papayas, and any other infected fruit nearby, is one means of control. Another is to pick the fruit as soon as it begins to color. The best control is obtained by spraying the plants, especially the nearly mature fruits, every 10 days with a neutral copper, 4 lbs. in 100 gal. of water. Research in Hawaii has shown that treatment with hot water greatly delays the development of rot in fruits shipped to distant markets. With fruit just beginning to yellow, immersing for 20 min., in water at 115 degrees F. allowed the fruit to be held 6 days at 50 degrees F. and then ripened for another 6 days with very little rot. Temperature below 110 degrees F. is ineffective, and above 120 degrees F. is injurious. The fungus is not killed but only retarded in development.

Common leaf spot, caused by Pucciniopsis caricae, often attacks leaves severely. It is limited to mature leaves, and spraying is directed to the lower surface of these. Spray every 15 days with neutral copper, 3 lb. in 100 gal. of water.

Root-knot nematodes are severe pests of papaya. Newly cleared land is usually free of them, but papayas planted on land previously used for tomato, pepper, tobacco, and many other crops are at a big disadvantage. Planting the field to resistant green-manure crops for a couple of years greatly reduces the nematode population. It can be practically wiped out by soil fumigation with DD or ethylene dibromide, but these are fairly expensive treatments. If papaya plants are free of nematodes when set in the field, are heavily mulched with grass or other organic matter, and are kept vigorously growing by proper use of fertilizer and water, they are not likely to show any bad effects from nematodes

even though the roots are heavily infested.

Papaya fruitfly, Toxotrypana curvicauda, is probably the most troublesome insect pest. The larvae develop inside the fruit. The adult female, which looks like a small wasp, has an ovipositor ½ in. long, and so can lay eggs in the cavity of fruits with flesh less thick than ½ in. Usually the fly prefers fruits which are half-grown or more. Some varieties will have flesh over ½ in. thick by this time, especially the cylindrical fruits with rather small cavities which hermaphrodite types usually bear. Sanitation--burying promptly all fruits which drop prematurely because infected--is helpful. Often a spray program is successful, spraying all fruits every 15 days with 2 lb. 50% wettable DDT in 100 gal. of water. Addition of 8 lb. wettable sulfur is desirable to prevent increase of mites. Spraying for fruitfly is useless if there are other papaya plantations within half a mile which are not sprayed.

White peach scale sometimes attacks the trunks of papaya plants. It can be controlled by oil sprays. The papaya whitefly may cause leaves to become yellow and drop, and is followed by the sooty-mold fungus. Control is by weekly spraying with 8 lb. wettable sulfur in 100 gal. of water for 2 or 3 weeks. Aphids and mites may need treatment for control at times.

## PAPAYA RELATIVES

Several other species of Carica are native to high elevations in tropical America and are grown locally, although none can be said to be planted commercially. All require elevations of 6,000 ft. or more.

C. candamarcensis, the mountain papaya or chamburu, is grown in Colombia and Ecuador at 8,000 to 9,000 ft., and has been cultivated at 5,000 ft. or more in India and Ceylon. The small, acid fruits, 3 to 4 in. long, are cooked with sugar to make preserves.

C. pentagona, the babaco, is found in Ecuador at 6,000 to 10,000 ft. The 5-angled fruits are long and slender, 12 in. by 4 in. in size. The white, aromatic flesh is very acid, so that it must be cooked with sugar.

C. chrysopetala, the higacho, is from a similar environment and is reported to endure 20 degrees F. Fruits are like the babaco in character, but only 4 in. long, oval and rounded.

C. monoica, the papayeta, of Peru is native to tropical lowlands like the papaya. The oval fruits are only 2 in. long, and the orange red flesh must be cooked with lemon and sugar. Fruits are said to mature 3 to 4 months after seeds are planted; production continues for many months. The female flower is solitary in the center of a cluster of male flowers. The leaves are eaten as greens; for this reason the plant is sometimes called col de montaña.

## THE PURPLE GRANADILLA OR PASSION FRUIT

The Passion-flower family, Passifloraceae, is very closely related to the Papaya family, Caricaceae, although neither flowers nor fruits appear similar to a non-botanist. The name passion flower was given the genus Passiflora because early voyagers imagined they saw in the various floral parts representations of the crucifixion or passion of Jesus. The passifloras are all native to the Americas, most of the 300 to 400 species being tropical, and all are vines. The edible fruits of several species are called granadilla, "little pomegranate", probably because to the early Spaniards the numerous small seeds, each surrounded by a juice sac, were suggestive of the pomegranate.

The purple granadilla or purple passion-fruit (Passiflora edulis) is native to Brazil but was long ago carried around the world. The name passion-fruit does not indicate that the fruit

has any property of arousing passion, but derives from passion-flower. Queensland and Hawaii have some commercial production, and on a smaller scale there is cultivation in South Africa, New Zealand, and India. The commonly cultivated type, which is a garden plant in many countries, is the purple-fruited form P. edulis proper. In Hawaii, however, a yellow-fruited mutant, P. edulis f. flavicarpa, is of ~~much~~ more commercial importance than the purple form. Besides the difference in rind color, there are significant differences in altitudinal adaptation, time of flower opening, stem and seed color, fruit size, yield, acidity, and flavor.

The passion-fruit is a vigorous, evergreen vine, with 3-lobed leaves (except in juvenile growth), 4 to 5 in. long and equally broad. Tendrils are borne in the leaf axils on the long shoots, and flowers are produced singly at each node on new growth after the vines are 5 or 6 months old. In addition to the normal 5 whitish sepals and petals, there is a filamentous corona which is banded purple and white. In some other species this is much more showy, blue or red. The fruit is oval or round in shape, about 2 in. across, with stiff leathery rind. Inside are many flat seeds, each enclosed in a soft, yellowish, juicy, aromatic pulp of sprightly, sub-acid flavor. This pulp, freed from the seeds, is either eaten directly or is pressed to extract the sweet, acidulous juice which is used commercially for fruit drinks, sherbets, and other processed products. While its flavor is the principal appeal of the juice, it has a content of Vitamin C comparable to that in tomato juice and 500 to 600 I.U. of Vitamin A, one-tenth that of good butter. It also has a pectin:acid ratio favorable for making jelly.

A warm, humid climate is preferred, the species escaping easily from cultivation under these conditions. However, strictly

tropical climates do not seem so favorable as those of the very warm subtropics. Thus in southern India the common purple form fruits much better above than below 2,000 ft., and in Hawaii is successful only above 1000 feet. The yellow form thrives at low elevations in Hawaii and El Salvador, but little is known of its behavior elsewhere. The only important soil requirement, other than low salinity is good drainage.

Seeds are commonly used for propagation, although cuttings can be rooted. Seedlings are almost always able to cross-pollinate each other, while the prevailing self-incompatibility in this species makes cuttings from the same plant unable to become pollinated. Seeds can be stored in the fruits at 55 degrees F. for up to 2 months, or may be washed, dried in the shade, and stored in sealed containers as long as 12 months. Germination takes 3 to 6 weeks. It is better to germinate seeds in fumigated soil. When seedlings are 6 to 8 in. tall, about 2 or 3 months after planting, they are set in the field.

The vines are commonly planted 15 ft. apart, in rows 10 ft. apart. Like grapevines, they need some sort of support, usually a trellis, preferably of horizontal type. They respond to fertilizer applications, which may be like those for papayas. Pruning may or may not be profitable. Usually it is desirable, after fruiting, to prune back the long shoots to the level of the trellis wires so that the next crop will be borne by shoots starting at this level. Renewal pruning may be needed after 3 or 4 years because so much unfruitful old wood has accumulated and the vines need re-invigoration.

Flowers are borne only on new shoots, usually appearing first about 5 months after field planting. Under tropical conditions the time from flower to mature fruit is about 5 to 10 weeks; this

may be several weeks longer at elevations where there is a cool season. Pollination is done by insects. The pollen is shed about 2 hrs. before the stigmas are receptive, and bees may carry away all the pollen before the stigmas are ready for it. Harvesting is usually done by letting mature fruits fall naturally to the ground, but they must be picked up at least every other day, before shrivelling occurs or disease develops. There is usually a main crop extending through the warmest months of the year, but there may be a second bloom later, especially if there is no dry period at that time. Yields may be from 5 to 20 tons per acre.

Rather few pests are serious problems with passion-fruits. The most common disease is probably brown spot of leaves and fruit, caused by Alternaria passiflorae, most serious in areas of high rainfall. Frequent gathering of fallen fruit helps prevent ~~fruit~~ infection. The plants are very subject to crown rot, usually caused by a Rhizoctonia, a fungus present in soils on which vegetable crops have been grown. Plant on new ground or fumigate the old soil before planting. Fruitflies are a common and troublesome pest. Destroying over-ripe fruits in adjacent plantations which are the usual source of egg-laying females is very helpful.

## THE SWEET GRANADILLA

This highland dweller (Passiflora ligularis)is well-known in the mountains of southern Mexico and Central America, although it is nowhere cultivated on a really commercial scale. Adapted to elevations of 5,000 to 7500 ft., it needs cool growing seasons, hence does not thrive at sea level even in the subtropics. The flavor of the pulp is considered the best of all of the passifloras. The vine is even more vigorous than that of the purple

granadilla, and bears heart-shaped leaves 6 in. long, without lobes or marginal serrations. Flowers are much like those of the better-known species, but fruits are larger and usually orange-brown in color. The sweet, slightly perfumed yellow pulp is eaten as dessert. Propagation is by seeds. No special cultural practices have been developed, although the same ones used for P. edulis would undoubtedly prove satisfactory. Normally the vine flowers at the commencement of the warm season and matures its fruit during several months.

THE GIANT GRANADILLA

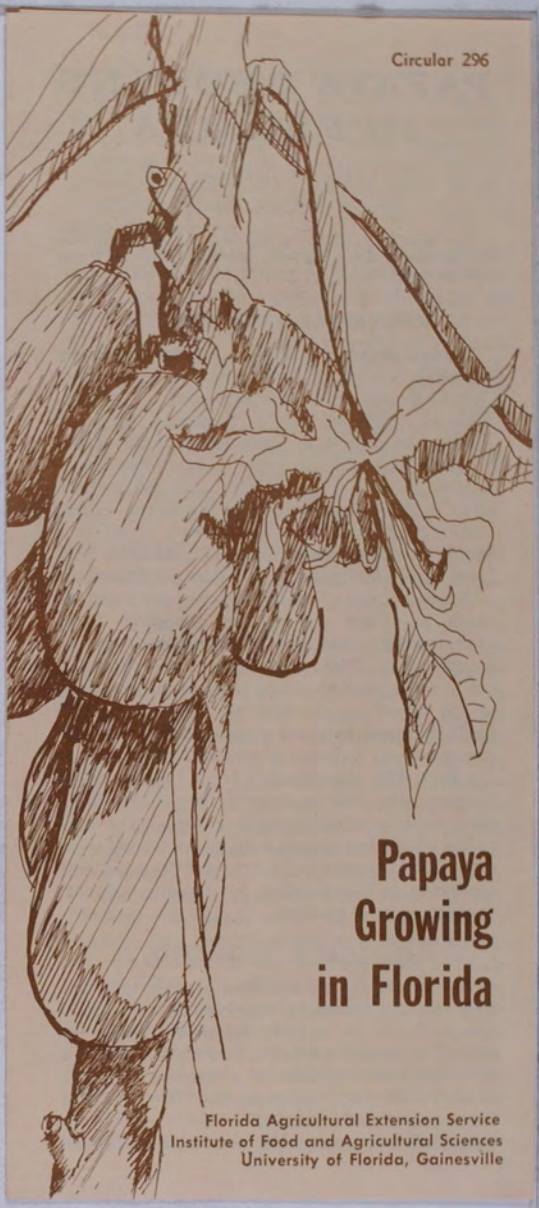
This species (Passiflora quadrangularis) bears the largest fruit, but not the best, of ~~any~~ all the passiflora. Native to the lowlands of tropical America, it has been carried to similar climates around the world and is often seen in gardens, but only in Queensland has there been even small commercial cultivation. The vine is very vigorous as a climber and has 4-angled stems, whereas those of its relatives are round. The large, coarse leaves, 6 to 8 in. long, are oval in shape. The greenish-yellow fruits resemble papayas, being 6 to 10 in. long, oblong in shape, with walls 1 to 1½ in. thick, again quite unlike the other species. The purplish pulp is much like that of P. edulis in taste, and the fleshy fruit walls are edible, like papayas but less esteemed. Flowers are not very different from those of P. edulis, but there seems to be no self incompatibility and no protandry. Insect pollinators do not seem much attracted to the flowers, so that self-pollination by hand may be needed for good fruit-setting. Pollen should be from flowers on the same vine. Propagation is usually by seed. The vine is often grown in slat-houses so that the heavy fruits hang down from the overhead slats. While fairly common in tropical America, where its fruits occasionally appear in the markets, it is not a species of great value.

## THE CURUBA, OR TACSO

In the high Andes of Colombia, Ecuador and Venezuela there grows a fruit little-known outside that region but greatly appreciated by residents of Bogotá, who make from it delicious sherbets and ice-creams. This is the curuba, known as tacso in Ecuador. It is such a close relative of the passion-fruits that botanists have had a hard time deciding whether to put it in the genus Tacsonia or leave it in Passiflora. While there are numerous wild forms of curubas and tacsos, the one most commonly seen in the markets - it can scarcely be called a horticultural plant though it is occasionally planted in dooryards - is probably Tacsonia mollissima of the botanists, called curuba de Castilla, following the custom of Colombians, who append the term de Castilla to anything which is especially good of its kind.

This particular curuba differs from Passiflora edulis in bearing a long and somewhat slender fruit with a soft velvety pericarp instead of a hard, leathery one. The pulp in which the numerous seeds are enclosed is orange-colored, juicy, subacid, perhaps of better flavor than that of most passion fruit. The strong-growing vine has deeply three-lobed leaves, slightly pubescent; the handsome pink flowers, nearly two inches across, are long-tubular.

Coming from high elevations, 6000 or 7000 to 10,000 feet, the Tacsonias are sufficiently cold-resistant to succeed in southern California; just what they will do in tropical America at low elevations probably is not yet known - at least there seems to be no information in the literature. It is likely that they will thrive in the Central American highlands and similar regions.



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# Papaya Growing in Florida

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