

PITY THE PITCH APPLE—TREAT IT AS A SPREADING TREE

JULIA F. MORTON
Morton Collectanea
University of Miami
Coral Gables, FL 33124

Additional index words. *Clusia rosea*, copey, cupey, balsam tree, sombrero, Scotch attorney, figuier maudit marron.

Abstract. The pitch apple (*Clusia rosea* Jacq.), of the family Guttiferae, is native to the Bahamas, the Greater Antilles, the Virgin Islands and allegedly but doubtfully to several areas of Latin America. The specimen found on Big Pine Key early in the 19th Century could easily have arisen from seeds transported from Cuba or the Bahamas. This handsome tree, by nature an epiphyte, fast-growing to 50 ft or more, with a broad-spreading crown, is a prime example of misuse in Florida landscaping. Where do we see it in South Florida? Usually placed as though it were a shrub in foundation planters, in pots on terraces, or, if in the ground, in small patios and very close to houses or other buildings, and sometimes espaliered against a wall. Its ultimate size and its aerial-rooting habit are not taken into consideration. The result, in time, is obvious unsuitability for the location, damage to structures, and increasing ugliness as it struggles for space; and, finally, the expense of removal and replacement. It's time for the landscaper and the client to understand the pitch apple and use it wisely and artistically according to its merits.

The pitch apple, of the family Guttiferae, has long been known botanically and euphoniouly as *Clusia rosea* Jacq. Some botanists have reverted to Linnaeus' original name, *Clusia major* L. (49). But that concept actually embraced 3 species and he soon changed to *C. rosea* Jacq. for the species common to the Bahamas, the Greater Antilles, the Virgin Islands and Anguilla, applying *C. alba* L. to the white-flowered species of the Lesser Antilles from St. Eustatius south to St. Vincent. This latter binomial is properly superseded by Linnaeus' *C. major* L. (19).

Because of the tree's attributes and various uses, it has acquired over 50 vernacular names (21, 24, 29) despite its limited geographical range. Among the most commonly employed appellations are pitch apple, balsam tree, copey or cupey, sombrero, Scotch attorney, and figuier maudit marron (20, 24, 26, 28, 47).

Description

The pitch apple tree reaches 50-60 ft in its natural habitats, about 30 ft in Florida; has a short trunk up to 1-1/2 or 2 ft in diameter (10) and wide-spreading branches (5, 44, 46). It is often free-standing, but in the rain forests of Puerto Rico and the Virgin Islands and other moist areas, it is usually seen as an epiphyte, originating as a seedling in a crotch or on a branch of another tree, some of its descending aerial roots, to 20 ft long (14), gradually strangling its host while others anchor themselves in the ground to form a pseudo-trunk (10, 45). The strangling habit is the reason for the nickname, Scotch attorney (17). In Jamaica, it commonly perches on other trees or on outcroppings of rock (1, 16). So far, in Florida, I have seen it

only occasionally emerging as a seedling among the "boots" (old leaf-bases) on the trunk of a young cabbage palm (*Sabal palmetto* Lodd.), and one perched on the edge of a roof! Scientists who studied the leaves of *C. rosea* in a forest on the island of St. John, Virgin Islands, found that the tree, when growing as an epiphyte, has, like epiphytic orchids, bromeliads and cacti, crassulacean acid metabolism, enabling it to endure periodic drought and nutritional stress (45).

The thick, leathery, smooth leaves are evergreen, opposite, wedge-shaped but rounded at the apex; and with short, thick, minutely winged petiole. They vary in size up to 9 in long and 5-1/2 in wide. One clone ("Variegata") has foliage variegated with white (46). The tree blooms all year around in the tropics but only in summer in Florida and then only a few at a time over a period of several weeks (38). Its flowers, borne singly or in 2's or 3's (21, 33), appear at night and sometimes remain open all morning on overcast days. They are circular, 3 to 4 in broad; white with a wide pink band across the center of each petal, or entirely pink. The 6 to 8 petals are obovate and sometimes distinctly notched at the apex; are thick and waxy and subtended by 4 to 6 prominent, rounded, leathery sepals. The reproductive parts are densely massed in a central, button-like, ring. The fruit is round or slightly oval, 2 to 3 in wide, smooth, light-green, capped by the white, pink-tinged sepals and resembling an unripe mangosteen except for the 8 to 12 vertical sutures. When mature, it falls to the ground and splits partly open, showing the brilliant orange arils covering the tan, ovoid, 3/16-in long seeds. When the fruit dries, it becomes dark-brown and woody and the segments fall apart. All parts of the tree, including the fruit, exude a gummy, yellow latex when cut or broken (5, 7, 11, 16, 21, 32, 33, 41, 43).

Origin and Distribution

The pitch apple is limited to tropical and subtropical climates. It is able to survive light frost and has flourished as far north as Vero Beach in Florida (38).

In the Bahamas, it grows in coastal hammocks and in and around hollows in rocky ridges (11) on New Providence, Andros and Inagua (6). Around Nassau, it overwhelms rock walls (38). It occurs, too, on East Caicos in the nearby Turks and Caicos Islands (6). It grows mostly as an epiphyte throughout Cuba and the Isle of Pines (32); favors river banks and slopes at low and medium elevations of Puerto Rico (7, 21); and has been reported as ranging southward to French Guiana and Brazil (17). On the mountainsides of northern Venezuela, *C. rosea* or a similar species (19) is common at altitudes from 1,400 to 6,400 ft (33), and it is said to extend through the lowlands of Colombia and Central America (42) to southern Mexico (39, 40, 41, 43), though there is some doubt as to the identity of various tropical American representatives of the genus (19). *C. odorata* Seem., with small, fragrant flowers is the only species on Barro Colorado Island, Panama (12).

C. rosea has often been listed as a Florida native (8, 22, 35, 37, 38) but, according to a seemingly unpublished manuscript entitled "On some supposed native plants of South

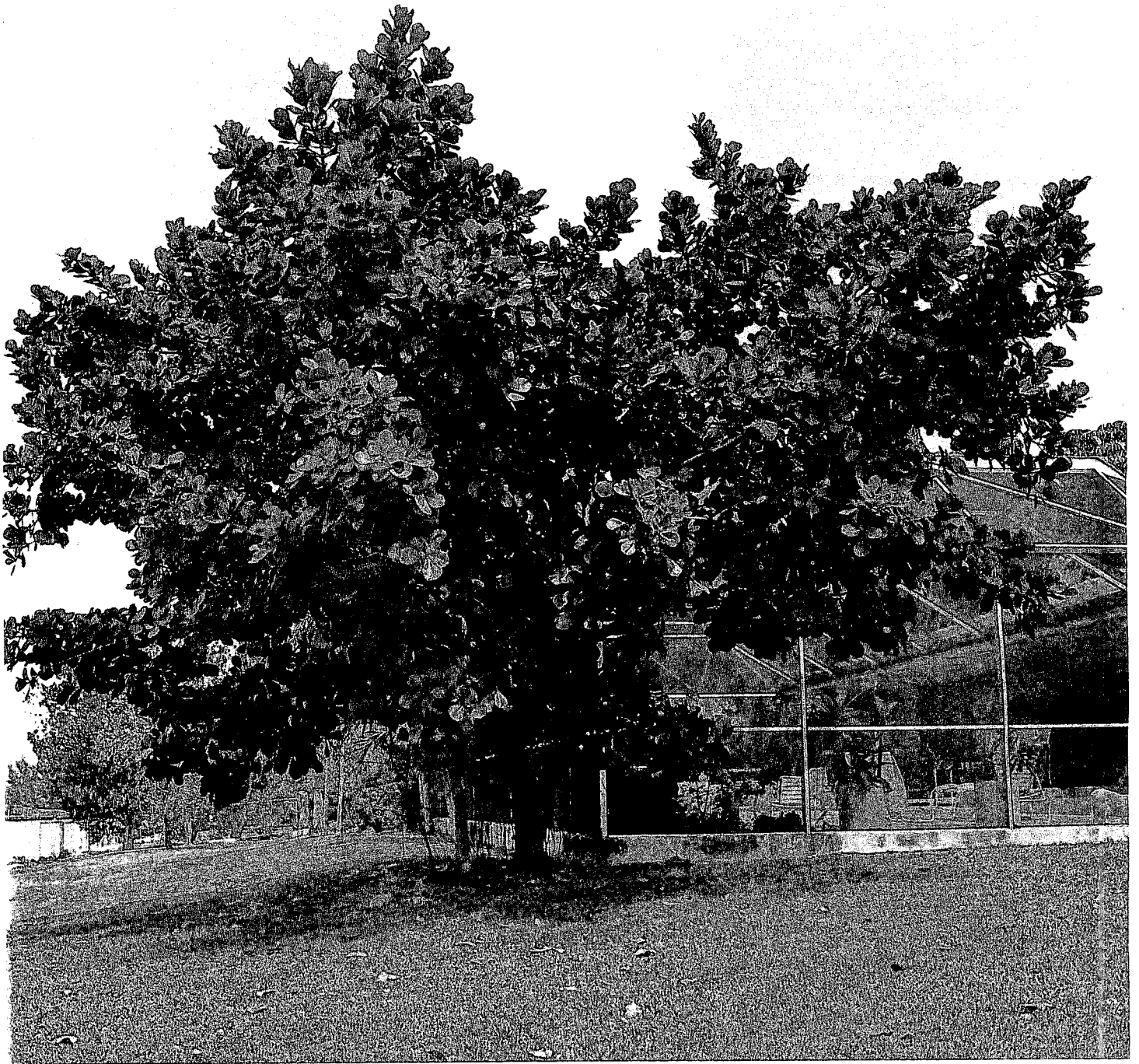


Fig. 1. The pitch apple (*Clusia rosea* Jacq.) is a fast-growing tree with wide-spreading branches. This specimen is much too close to a screened-in patio and some of the many aerial roots descending close to the trunk may soon attach themselves to the structure. (Photo by Julia Morton).

Florida”, by the late Dr. R. Bruce Ledin, who taught botany at the University of Miami from 1946 to 1951 and then served as a horticulturist at the University of Florida’s Tropical Research and Education Center in Homestead until his untimely demise in 1959, the plant that the botanist, John Loomis Blodgett, saw and collected on Big Pine Key in 1839 or 1840 was most likely introduced [probably from Cuba or the Bahamas]. Another botanist, Thomas Nuttall, who published Blodgett’s discovery, misidentified the herbarium specimen as *C. flava* Jacq. [perhaps because the flowers of *C. rosea* turn yellow-orange with age] and gave its location erroneously as Key West,

thus confusing John K. Small (36) and later writers (5, 22). The 3 plants of *C. rosea* about 8 ft high, found on Big Pine Key in 1937 by Professor Roy Woodbury and his botany class, were at the site of a former habitation where other exotic plants were present. Ledin wrote that though the *Clusia* plants stood at the edge of a hammock, there were also “growing in the area date palms, coconuts, and other plants which were known not to be native.” The young *Clusia* trees were later killed by a fire (38).

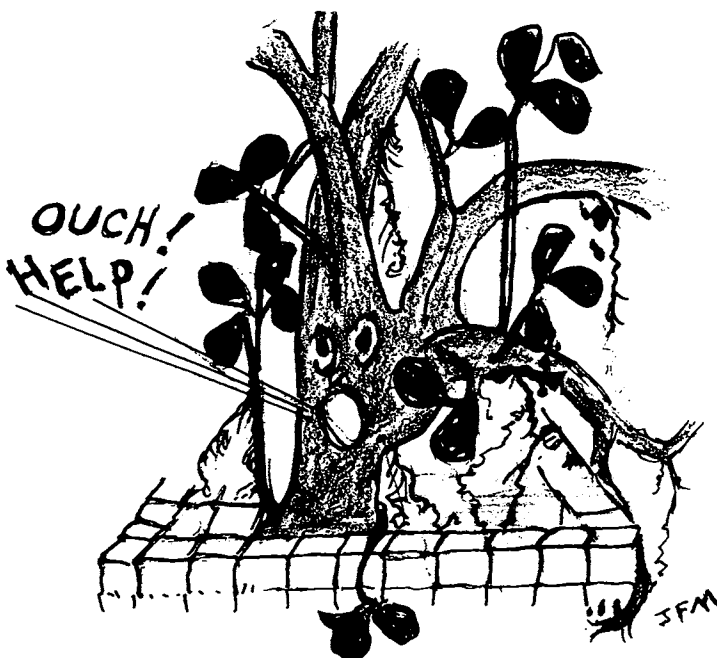
In 1952, Ledin continues, a botany student, John Dickson, found a “small *Clusia rosea* on Little Torch Key . . . in an old abandoned grove of Key lime trees.”

Cultivation

The pitch apple is grown from seeds, cuttings or air-layers (25, 37, 46). In English greenhouses it is propagated by cuttings of half-ripe shoots set in sand with bottom heat (9). The tree is much admired as an ornamental in Cuba and, in the book, *Flowering Plants from Cuban Gardens* (Woman's Club of Havana), we read: "In cultivation, the copley is stunning as a massive shade tree, and since it is both rugged and salt-resistant, it is particularly useful in seaside landscaping" (48). In Puerto Rico, along the main coastal thoroughfare from San Juan to Mayaguez, I have seen such large trees with branches extending well over the broad highway.

But where do we see the pitch apple on the mainland of southern Florida? Usually employed as though it were a shrub (46). If in the ground, it is planted in small patios and very close to houses or other buildings, and sometimes espaliered against a wall. But most often it is planted in foundation planters, or in pots on terraces. The tree develops rapidly and in a few years it overgrows its location and desperately seeks to escape. Its ultimate size and its aerial-rooting habit are not taken into consideration. The result, in time, is obvious unsuitability for the location, damage to structures, and increasing ugliness as it struggles for space; and, finally, the expense of removal and replacement, and the loss of a span of years when an appropriate, slow-growing shrub could have been giving pleasure. It is time for the landscaper to understand the pitch apple and use it wisely and artistically according to its merits as an attractive, sturdy shade tree.

The pitch apple is relatively free from pests except for scale insects (46). Reported diseases include leaf spot (*Alternaria*, *Ascochyta*, *Gloeosporium*, *Phyllosticta*), root rot (*Pythium*, *Rhizoctonia*) and witches' broom (*Phomopsis*) (3). It requires little fertilizer or water once it is established, but on a dry island I have seen it sending out a long surface root (more than 75 ft) seeking a water source such as a well or septic tank. It should be appreciated for its ability to do well in



locations too rocky, windy and too exposed to salt spray for most other ornamental trees (44).

Sundry Economic Uses of *Clusia rosea* and Similar Species

It is unfortunate that the tree, in public places, is frequently abused by the disfiguring of its leaves by graffiti-prone persons who have heard that the leaves were formerly used as "stationery". It is true that the Spanish chronicler, Gonzalo Fernandez de Oviedo y Valdés, recorded that the Conquistadores in the West Indies scratched messages on the leaves by necessity in the absence of writing paper, and also engraved images of knights, kings, etc., added colors, and used the leaves for playing cards (40, 41, 43). They were preferred to the leaves of the seagrape (*Coccoloba uvifera* Jacq.) because of their much finer, less obstructive, veins (42). However, tour guides would do well to refrain from imparting this bit of history and discourage the use of the epithet "autograph tree" (27) in order to avoid wilful abuse.

The colloquial name "sombbrero" alludes to the sewing of pitch apple leaves together with any suitable spines to make large hats worn by the miners who wash gold and silver in the Chocó region of Colombia (28).

The reddish-brown heartwood (surrounded by yellow sapwood) is fine-grained, hard, heavy (2, 7) and has good machining quality, but is not resistant to dry-wood termites, and therefore is used mostly for rough construction and simple furniture, fenceposts and firewood (21).

The tree's resin has been used as birdlime (20) and for caulking boats (32). In the Virgin Islands it is said to be extracted from the seeds "set in an ordinary Dutch stove, and set alight, burning readily. The melting resin flows down through the grate, and is collected in the ash chamber below" (16). In the Bahamas, burning the stem of the dried fruit causes it to drip resin which used to be employed for mending washtubs and also as sealing wax, the latter purpose giving rise to the old local name, "card wax tree" (O. S. Russell, CMG, OBE, personal communication).

The flowers yield an orange dye (2). The green fruits are considered poisonous (4, 15, 32) but are consumed by bats (32). *Clusia* fruits are eaten by the ochre-bellied flycatcher in Costa Rica (34), and howler monkeys feast on fruits of *C. odorata* on Barro Colorado Island, Panama (12).

I find in my file a note that, on September 20, 1974, I observed, on a *C. rosea* tree on the University of Miami Campus, two blooms, very close together, facing downward, still wide open at noon and being eagerly worked by a dozen honeybees.

Uses in Folk Medicine

The following uses are attributed to *C. rosea* in the literature but may pertain to similar species in Latin America. A decoction of *Clusia* leaves is taken to alleviate pulmonary troubles and a "tea" of the flowers to relieve coughs. The potent liquid from boiling the bark or the fruit rind is employed in baths (31) and as a lotion to allay the pains of rheumatism (30). The gummy latex from the fresh green fruit is put into tooth cavities. Dried and pulverized, it is applied on burns. Venezuelan Indians prepare the latex from the ripe fruits as a resolutive (sold under the name Paramán, or Puremán) to reduce inflammation arising

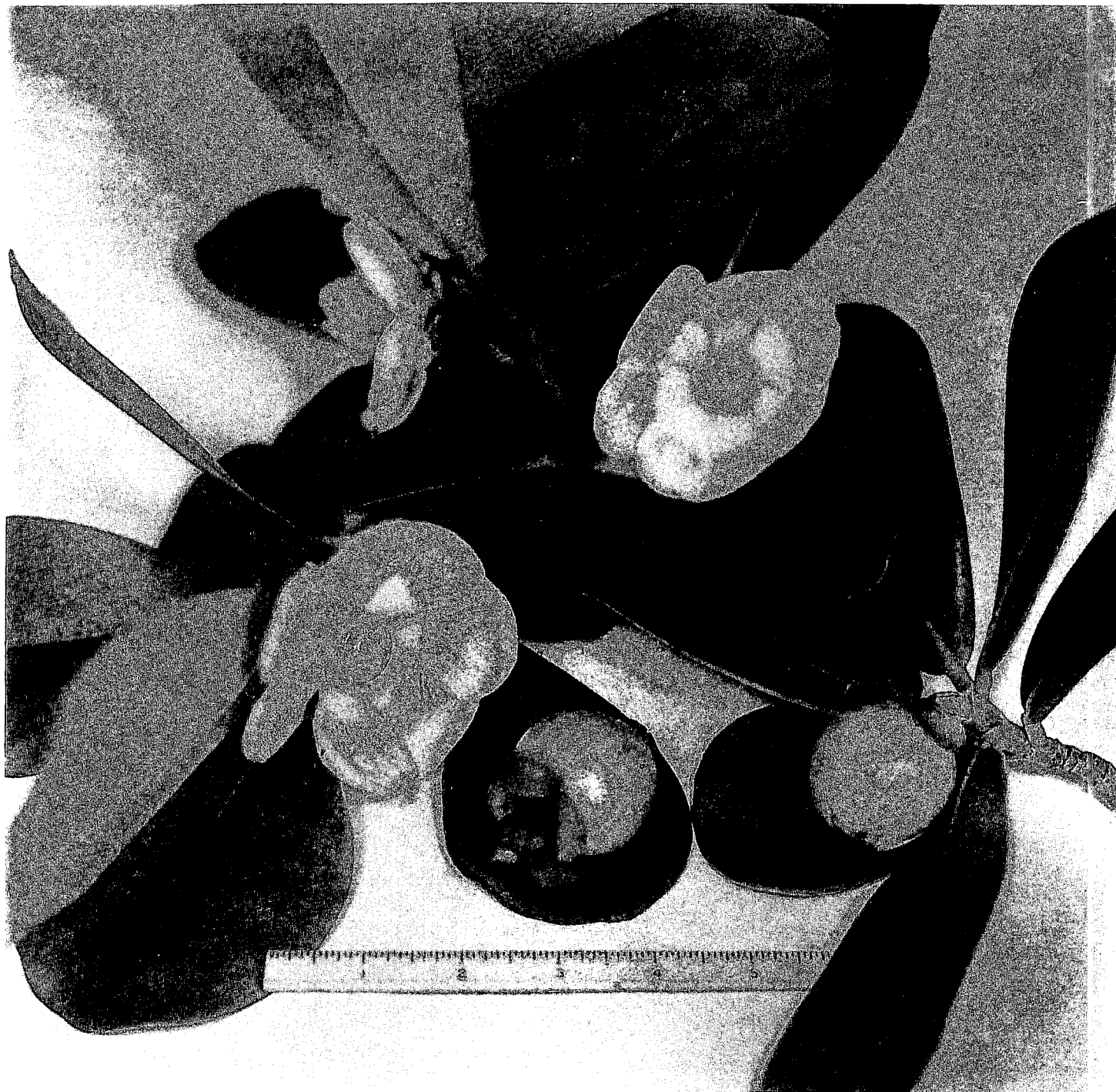


Fig. 2. The lovely waxy flowers of the pitch apple, all-pink or white with a pink band, appear at night and may stay open until noon on an overcast day. (Photo by Julia Morton).

from bone-fractures and dislocations (18, 30) and to promote healing (18). It is even shipped to Florida and rubbed on the sore muscles of racehorses (James Gosling, United States Department of Agriculture, personal communication; 1961). Guatemalans burn the latex to disinfect a house in which someone is ill with an infectious disease (2). In Colombia, the latex from the fruit and that which flows from incisions in the bark is taken as a drastic purgative and also applied on wounds (4, 15, 28). To treat calluses, the foot is put into a cured-leather sack containing the latex (30).

Proc. Fla. State Hort. Soc. 101: 1988.

Chemistry

The powdered latex of the tree contains the triterpenoid compounds apotaxene, friedelin, *a*- and *B*-friedelinols, oleanic acid, and sitosterol (23). Latex obtained from the ground-up ripe fruit has yielded the yellow pigment xanthochymol (13).

Literature Cited

1. Adams, C. D. 1972. Flowering plants of Jamaica. Univ. of the West Indies, Mona, Jamaica.

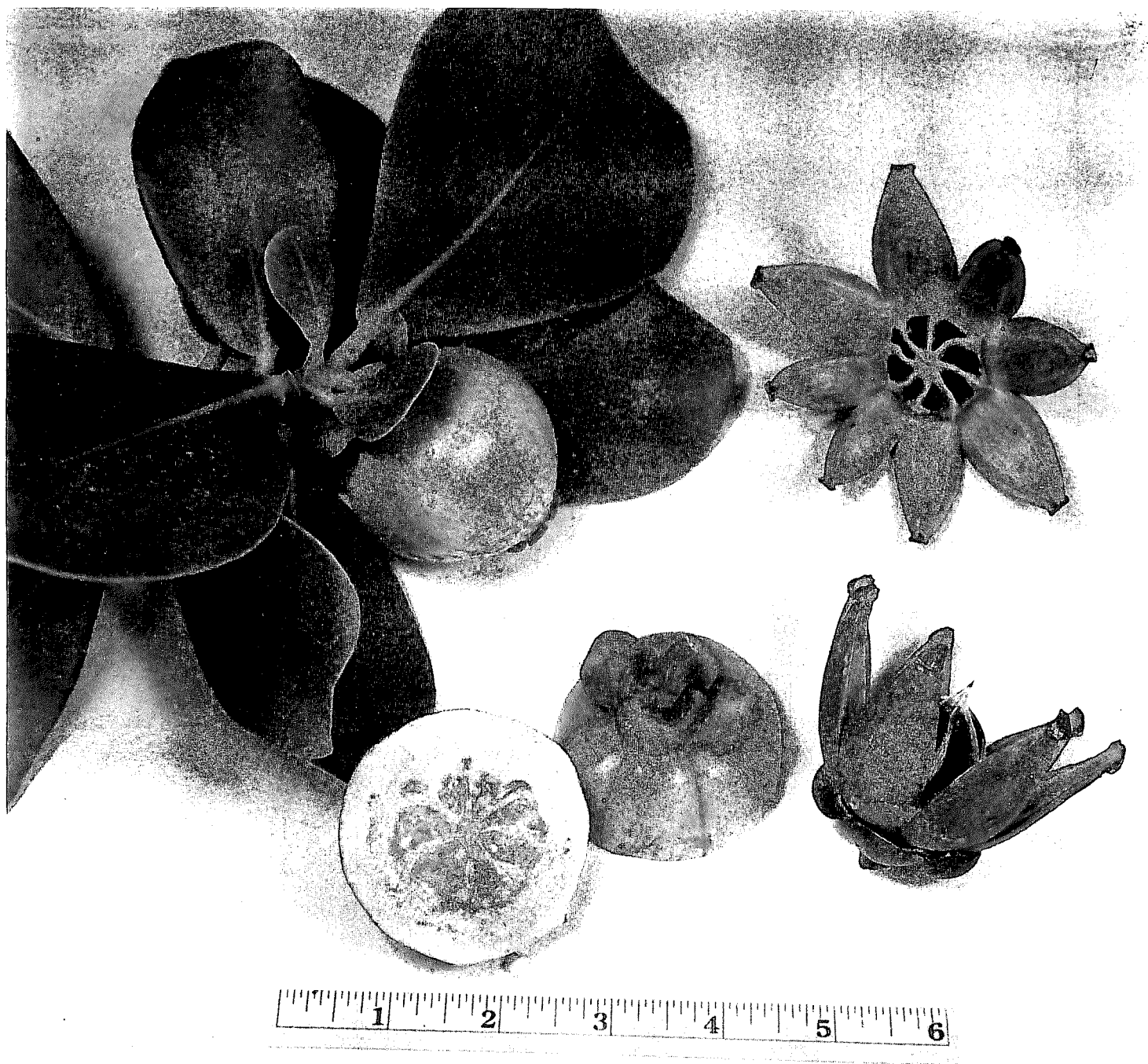


Fig. 3. The unripe fruit, which gives the tree its common name, contains a gummy, yellow resin, as do other parts of the tree. When ripe, the fruit falls and splits partly open, revealing the showy orange arils covering the seeds. (Photo by Julia Morton).

2. Aguilar Giron, J. I. 1966. Relacion de unos aspectos de la flora útil de Guatemala. 2nd ed. Tipografía Nac. de Guatemala, for Asoc. "Amigos del Bosque", Guatemala, Guatemala.
3. Alfieri, S. A., K. R. Langdon, C. Wehburg, and J. W. Kimbrough. 1984. Index of plant diseases in Florida. Bull. 11 (rev'd). Fla. Dept. Agr. and Consumer Services, Div. of Plant Indus., Gainesville, FL.
4. Allen, P. H. 1943. Poisonous and injurious plants of Panama. Supp. to Amer. J. Trop. Medic. Vol. 23, No. 1. Williams & Wilkins Co., Baltimore, MD.
5. Barrett, M. F. 1956. Common exotic trees of South Florida. Univ. of Florida Press, Gainesville, FL.
6. Britton, N. L. and C. F. Millsbaugh. 1920. The Bahama flora. Authors, New York, NY.
7. Britton, N. L. and P. Wilson. 1923-1924. Botany of Porto Rico and the Virgin Islands. Sci. Surv. of Porto Rico and the Virgin Islands. Vol. 5, Pts. 1-4. New York Acad. of Sci., New York, NY.
8. Buswell, W. H. 1945. Native trees and palms of South Florida. Bull. Vol. 19, No. 6. Univ. of Miami, Coral Gables, FL.
9. Chittenden, F. J. and P. M. Syngé (eds.). 1956. Dictionary of gardening. 2nd ed. Clarendon Press, Oxford.
10. Cook, O. F. and G. N. Collins. 1903. Economic plants of Porto Rico. Contrib. U. S. Nat'l Herb. VIII, Pt. 2. U. S. Nat'l Museum, Smithsonian Inst., Washington, DC.
11. Correll, D. S. and H. B. Correll. 1982. Flora of the Bahama Archipelago (including the Turks and Caicos Islands). J. Cramer, Vaduz, Germany.

12. Croat, T. B. 1978. Flora of Barro Colorado Island, Panama. Stanford Univ. Press, Stanford, CA.
13. Dryer, D. L. 1974. Xanthochymol from *Clusia rosea* (Guttiferae) Phytochem. 13:2883-2884.
14. Eggers, H. F. A. 1879. The flora of St. Croix and the Virgin Islands. Gov't Ptg. Office, Washington, DC.
15. Escobar A., N. 1972. Flora tóxica de Panamá. Editorial Universitaria, Univ. de Panama, Panama.
16. Fawcett, W. and A. B. Rendle. 1926. Flora of Jamaica. Vol. V. The British Museum, London.
17. Grisebach, A. H. R. 1864. Flora of the British West Indian Islands. Lovell Reeve & Co., London.
18. Guzman, D. J. 1947. Especies utiles de la flora Salvadoreña. Imprenta Nacional, San Salvador, El Salvador.
19. Howard, R. A. 1962. Some Guttiferae of the Lesser Antilles. J. of the Arnold Arboretum 43 (4):389-399.
20. Liberty Hyde Bailey Hortorium. 1976. Hortus Third. Macmillan Pub'g Co., Inc., New York, NY.
21. Little, E. L., Jr. and F. H. Wadsworth. 1964. Common trees of Puerto Rico and the Virgin Islands. (Agr. Res. Handbook 249). U. S. Dept. of Agr., Forest Service, Washington, DC.
22. Long, R. W. and O. Lakela. 1971. A flora of tropical Florida. Univ. of Miami, Coral Gables, FL.
23. Mathur, S. B. 1972. Triterpenoid constituents of *Clusia rosea*. Phytochem. 11:1313-1314.
24. Morton, J. F. 1981. Atlas of medicinal plants of Middle America. Charles Thomas, Springfield, IL.
25. Morton, J. F. 1977. Exotic plants for house and garden (A Golden Guide). Western Pub'g Co., Inc., Racine, WI.
26. Moscoso, R. M. 1943. Catalogus florae Domingensis. Part I. Univ. de Santo Domingo, Santo Domingo, D. R.
27. Neal, M. C. 1965. In gardens of Hawaii. Spec. Pub. 50. Bishop Museum Press, Honolulu, HI
28. Perez-Arbelaez, R. 1956. Plantas utiles de Colombia. 3rd ed. Libreria Colombiana, Camacho Roldan, Bogotá, Colombia.
29. Pierre-Noel, A. V. 1971. Nomenclature polyglotte des plantes Haitiennes et tropicales. Presses Nationales d'Haiti, Port-au-Prince, Haiti.
30. Pompa, G. 1974. Medicamentos indigenas. 41st ed. Editorial America, S. A., Miami, FL.
31. Roig y Mesa, J. T. 1945. Plantas medicinales, aromaticas o venenosas de Cuba. Cultural, S. A., Havana, Cuba.
32. Sauget, J. S. (Hermano Leon) and E. E. Liogier (Hermano Alain). 1953. Flora de Cuba. Vol. III. Contrib. Ocas. del Museo de Hist. Nat. del "Colegio de la Salle", Vedado, Havana, Cuba.
33. Schnee, L. 1984. Plantas comunes de Venezuela, 3rd ed. Ediciones de la Biblioteca Caracas, Univ. Central de Venezuela.
34. Sherry, T. W. 1983. *Miconetes oleaginea* (mosqueitero ojenido, tortillo, ochre-bellied flycatcher). P. 586. In: Janzen, D. W. (ed.) Costa Rican natural history (with 174 contributors). Univ. of Chicago Press, Chicago.
35. Simpson, C. T. 1932. Florida wild life. The Macmillan Co., New York, NY.
36. Small, J. K. 1933. Manual of the southeastern flora. Author, New York, NY. (reprinted by Univ. North Carolina Press, 1953).
37. Smiley, N. 1959. Native ornamental has flourished. Miami Herald, Aug. 30 (garden page).
38. Smiley, N. 1950. Strangler tree extinct here except few cultivated plants. Miami Herald. Dec. 31 (garden page).
39. Standley, P. C. 1937. Flora of Costa Rica. Pt. II (Pub. 392). Bot. Ser. Vol. XVIII. Field Museum of Natural History, Chicago, IL.
40. Standley, P. C. 1928. Flora of the Panama Canal Zone. Contrib. U. S. Nat'l Herb. Vol. 27, U. S. Nat'l Museum, Smithsonian Inst., Washington, DC.
41. Standley, P. C. 1923. Trees and shrubs of Mexico. Contrib. U. S. Nat'l Herb. Vol. 23, Pt. 3. Smithsonian Inst., Washington, DC.
42. Standley, P. C. and S. J. Record. 1936. The forest and flora of British Honduras. Vol. XII. Pub. 350. Field Museum of Natural History, Chicago, IL.
43. Standley, P. C. and L. O. Williams. 1961. Flora of Guatemala (Fieldiana, Bot. Vol. 24, Pt. 7, No. 1). Chicago Natural History Museum, Chicago, IL.
44. Sturrock, D. and E. A. Menninger. 1946. Shade and ornamental trees for South Florida and Cuba. Stuart Daily News, Inc., Stuart, FL.
45. Ting, I. P., E. M. Lord, L. da S. L. Sternberg, and M. J. DeNiro. 1985. Crassulacean acid metabolism in the strangler *Clusia rosea* Jacq. Sci. 229 (4717):228-230.
46. Watkins, J. V. 1969. Florida landscape plants, native and exotic. Univ. of Florida Press, Gainesville, FL.
47. Williams, R. O. and R. O. Williams, Jr. 1951. Useful and ornamental plants of Trinidad and Tobago. 4th rev'd ed. Guardian Commercial Pty., Port-of-Spain, Trinidad.
48. Woman's Club of Havana. 1952. Flowering plants from Cuban gardens. Criterion Books, New York, NY.
49. Woodson, R. E., Jr., E. W. Schery, and collaborators. 1980. Flora of Panama. Pt. IV. Ann. Missouri Bot. Gard. 67 (4):986-987.

Proc. Fla. State Hort. Soc. 101:127-129. 1988.

CONTAINER GROWING OF DOORYARD TROPICAL FRUITS

GENE JOYNER

*Pam Beach County Cooperative Extension Service
531 N. Military Trail, West Palm Beach, FL 33415-1395*

Abstract. Increased interest in tropical fruit cultivation by many people with limited growing areas has increased plantings of fruit trees in containers. Many tropical fruits can be easily grown to a normal fruiting size in large containers and will nke attractive accent or specimen plants. Some plants can also be used as indoor plants in high light areas. Container growing of tropical fruits also affords many people in colder areas the opportunity to successful fruit tender tropical plants that could not survive in permanent plantings. Plants in containers could also be put in protected areas during the adverse colder weather and then left outdoors during milder periods of the year. The important points in successful container growing of fruits are to use a well drained medium, apply light frequent fertilizations and use containers large enough to allow normal root developent. Periodic root pruning and repotting my be needad for continued heavy fruiting of some trees. The use of grafted or superior varieties of fruit trees is recommended for best results.

Proc. Fla. State Hort. Soc. 101: 1988.

There has been a great deal of increased interest in recent years in the growing of tropical fruits. Many have very attractive foliage, some have very attractive flowers, and the growth habits of many tropical fruits lend them to wide use in landscapes. Unfortunately, increasing urbanization in some large tropolitan areas has forced many people to limit the amount of tropical fruits grown in their landscapes or turn to an increasingly popular way of growing, containerizing tropical fruits.

Many tropical fruits are well adapted for growing in containers with varying degrees of success. Some people live in areas where they do not have outside growing areas, such as apartments or condominiums and are therefore forced to grow tropical fruits in containers if they wish to have them.

Some people in colder areas also prefer growing tropical fruits in containers so that they may be moved indoors to more sheltered locations during periods of adverse weather. In the growing of tropical fruits in containers, several considerations are very important.

First of all, one must make sure that the tree is grown in a container large enough that the tree can provide suf-