Countless Myrtaceous species that are indigenous to Brazil bear edible fruits. Several are now cultivated among tropical fruit growers around the world. Examples are the guava, *Psidium guajava*; the cattley or strawberry guava, *P. cattleianum*; the jaboticaba, *Myrciaria jaboticaba* and its close allies; the yellow jaboticaba, *M. glazioviana*; the feijoa, *Acca sellowiana*; the pitanga, *Eugenia uniflora*; the grumichama, *E. brasiliensis*; the pitomba, *E. luschnathiana*; the Rio Grande cherry, *E. involucrata* and more recently (Morschbacker, 1994) the cambucá or *Plinia edulis*. 

*Introducing Cambuci... The Flying Saucer Fruit*  
Marco T.C. Lacerda & Antonio L. Morschbacker
The aim of this article is to draw attention to the fascinating *cambuci*, or *Campomanesia phaea*. This Myrtaceous fruit, barely known even among Brazilian horticulturists, has great economic potential to the horticultural world outside of Brazil.

**Historical Perspective**

The Cambuci is one of numerous fruits already known by the Indians when the Portuguese first came to Brazil in the very beginning of the 16th century.

The earliest person who wrote about it was Father Manuel da Nóbrega, a Portuguese Jesuit priest who was very influential in Brazil's early history. In a letter to another cleric, Father Francisco Henríques in Lisbon, dated “São Vicente, 12th June, 1561” (Serafim, 1955: 377) one reads: “(...) sending also [kinds of] marmalades of ibás [Artocarpus integrifolia], cambucis [Campomanesia phaea] and ananases [the word used at that time for pineapples, *Ananas comosus* (...)].” Still in the 1500s, another priest, Father Fernão Cardim, remarked on the cambuci, but more richly. Born in 1548 in Portugal, he lived 42 of his latter 77 years in Brazil. Cardim’s writings reside in reports and documents deposited in the Library of Évora, Portugal. One of these narratives is the Portuguese equivalent to “On the climate and land of Brazil,” and its sixth part, “On the trees that suit medicinal uses,” includes a short note about a certain “Igbacamuci” (Cardim, 1980: 38). It reads: “Of these trees there are many in São Vicente: they bear fruits like good quinces which are similar to a pan or pot (…).”

As registered by Hoehne (1946: 55), who referred to Cardim as his mentor, “cambuci” means “clay pot” in Tupi-Guarani Indian language, and that name was given in allusion to the similarity of its shape to that of the clay pots formerly used by the Brazilian Indians for cooking. Campos Porto (1920) also reinforced this hypothesis.

Still regarding the fruit’s name, Edwall (1913) republished an old document from the Portuguese colonial era, signed by B. Rodrigo de Sousa at Lisbon, October 11th, 1802. Sousa mentioned a wild fruit cultivated in a backyard in the city of São Paulo as green, juicy and locally named “Ubucambuci.” Readers should note the similarity of the later word and Cardim’s “Igbacamuci,” doubtless different spellings of the same object. Edwall also informed that later, at least in the early 1800s, it had been abbreviated to simply “cambuci.” Our investigations based on some Tupi-Portuguese dictionaries, allied to valuable remarks made by Prof. Cecy Fernandes de Assis in personal communication, have brought new possibilities for the etymology of the word.

First, “igba” (as in Cardim, 1980), “ubá” or “ubu” (as in Edwall, 1913) and “yba” are misspellings or Portuguese phonetic adaptations to the Indian Tupi word “yva”, which simply means fruit (for instance, see Barbosa, 1935). Second, Houaiss (2009), in a modern dictionary of Portuguese language, mentions cambuci as “vessel, pot or urn from the Tupi and Aruaco Indians.” Crossing the two bits of preceding information, one may easily deduce that Yvacambuci is the fruit shaped like the Brazil-Indian clay pots.

However, there is another possibility. The noun “camb” means “feminine breast” in Tupi (Di Mauro & Silva, online), whereas “sy” means “mother” (Fernandes, pers. comm.). The immediate association would be “fruit shaped like a mother’s breast”; i.e.—an inflated sinus full of milk, which is similar to the distal view of a cambuci fruit.

Another early but quick citation was published by Georg Marcgraf in his 1648 book, *Historia Naturalis Brasiliae*, one of the first about the natural history of Brazil (Marcgrave, 1942). Under the name “Ibacamuci,” the German naturalist recorded
that it was a common tree in the groves of Piratininga, an early Indian name for the city of São Paulo.

Between 1822 and 1829, the Russian Consul Georg Heinrich von Langsdorff lead a scientific expedition through the Brazilian wilderness. According to von Langsdorff’s diaries (Silva, 1997), on 18th April, 1826, near the city of Santos (in the State of São Paulo) he tasted a new fruit, acid and flavorful, named “gambusi” (obviously a misspelling of cambuci, as already footnoted in Silva’s book).

Berg (1859), based on specimens collected by the Langsdorff expedition (near Mogi das Cruzes, State of São Paulo), described the new species as *Paivaea langsdorffii*, the specific name after the explorer. Nevertheless, the same plant had been previously described by Berg himself using flowering material brought by another plant hunter, Friedrich Sellow (from Rio das Pedras, State of Minas Gerais). Sellow’s samples were named *Abbevillea phaea* in 1857.

The cambuci has been cited as *Paivaea langsdorffii* in the literature until 1986, when Dr. Leslie Landrum of Arizona State University (ASU) published his encyclopedic revision of *Campomanesia* and other Myrtaceae genera in *Flora Neotropica*. He placed both *Abbevillea* and *Paivaea* into synonymy with *Campomanesia*, giving priority to the earlier genus name, and then validating the new combination *Campomanesia phaea* (Landrum, 1986).

Several books about Brazilian native fruits published in the 20th century commented on the cambuci. Pio Corrêa (1926), informed that in colonial times the infusion of cambuci—alone or together with uvaia (*Eugenia pyriformis*)—in “cachaça” [sugar cane spirit] was very popular because of its pleasant smell and taste. Hoehne (1946) was perhaps the greatest enthusiast of the fruit, for he chose it for the front cover of his pioneering work, *Frutas Indígenas*, a color drawing with the following text: “The ‘Cambuci’—PAIVAE- AE (sic) LANGSDORFFI (sic) BERG—typical fruit tree of ‘Paulicéia’ [the city of São Paulo], that occurs from São Paulo to Rio de Janeiro and Minas Gerais, and is highly recommended, for its special flavor, for preparing juices etc.” On page 5 of this book we warmly proposed using the tree in urban landscaping, and suggested it should be the symbolic fruit tree of São Paulo city. He stated that within this city a neighborhood and a street had received the fruit’s name. Fonseca (1954) emphasized a cambuci sorbet, the best of all fruit sorbets in his opinion: “[the fruits] are eaten smashed with sugar, and lend themselves admirably to the preparation of a sorbet, with a fine and delicate flavor. There isn’t any other fruit ice to be compared to the one made with this species.”

Fouqué (1972) put forth a photograph of the *cambucizeiro*, as the tree is referred to in Brazil, and wrote a concise text. Pimentel Gomes (1977) repeated the previously available information, and advocated the attention of agriculture governmental and nongovernmental organizations in Brazil. Andersen & Andersen (1988) added certain horticultural information.

But the first author to mention any relevant association to current society (regarding cambuci) was Silvestre Silva (1991), in his first bilingual fruit book, *Frutas Brasil*: “In what remains of the Atlantic sea board forest, in the middle of afternoon after a gentle little warm drizzle, millions of small green-and-yellow flying discs (sic), measuring some six centimeters diameter may be seen in the woods and in open spaces, shining among the dense foliage.” The features of cambuci immediately bring to memory Hollywood and early TV series images of flying saucers. Absolutely analogous to what happened centuries earlier between pre-Colombus Indians and their cooking clay pots and the impressions of same, made on the Portuguese expeditionaries. Therefore we would like to propose “Flying Saucer Fruit” as the English common name for cambuci, one that we hope will become popular.

A couple of years later *Árvores no Brasil*, a compendium coffee-table book about trees in Brazil, sponsored by a bank (Lobello, 1993) dedicated two of its pages (30–31) to our beloved subject of discussion. They carried three new excellent color images by Silvestre Silva himself—open flowers, a hanging bunch of fruits and a centenary tree in its natural biotope.
In addition to the latter contributor (who published the first color photos of this type of Myrtaceae in his 1991 book—fully ripe fruits and tree), still in the 1990s, two other authors put in new data on Campomanesia phaea. The first was Lorenzi (1992), in his book about Brazilian native trees, *Árvores Brasileiras*. On page 255 one finds color photographs of the tree, foliage and flowers, fruits, seeds, bark and wood. A detailed text on different characteristics of the plant is also included. The second work was published by the end of that decade, and it was the first article ever written originally in English about the cambuci (Kawasaki & Landrum, 1997). The authors made a compilation of the previously available information from most of the writers herein cited and raised some new questions. One of them is: “It would be interesting to know if some local inhabitants without botanical training perceive a relationship between guabiroba [other Campomanesia spp.] and cambuci, but our limited inquiries indicate that no relationship is seen even among most trained botanists.” We can herein inform that Edwall (1913), not exactly a well-trained botanist but rather an agronomist of Agriculture Service of São Paulo, when trying to botanically classify the plant, already noted that its opened flowers were very similar to those of *Campomanesia*. The second question they write about, first suggested by Landrum (1986), is about the possible occurrence of *C. phaea* in a locality a bit out of the presently known distribution range of the species—the municipality of Cambuci, a town of only 15,000 people 350 km NW from Rio de Janeiro city. The answer was given by Gomes (2007), who explained in his blog that the settlement was founded by Italian immigrants in the 19th century. Amongst them there was Vicente Belo, who first lived in the neighborhood of Cambuci (in São Paulo city, as mentioned earlier). Belo started to call his new home “Nova Cambuci” (nova = new, like in New York), hence reduced to simply “Cambuci.” Gomes emphasizes in his story that there isn’t any trace of *C. phaea* or the Indian clay pots that could justify another origin of the city’s name.

The 21st Century

The years since 2000 brought more light to the knowledge of the cambuci. First, Adati (2001) defended a master’s degree thesis dealing with chemical and pharmacological aspects. The volatile oil proved to be very effective against a wide range of microbes, including bacteria and fungus.

Donadio et al. (2002) presented a three-page entry for this kind of Myrtaceae, adding much useful information, plus three black and white photographs of a young tree, fruits and flowers.

Felipe & Tomasi (2005) repeated old information but appended the fact that a certain chili (*Capsicum baccatum var. pendulum*) is popularly called pimenta-cambuci (“Cambuci Chili”) because its shape is pretty much the same as *C. phaea*. A beautiful watercolor of a fruiting branch of this Myrtaceous species appeared in the color part of the book.

Vallilo et al. (2005) made a detailed study of its physical characteristics, nutritional potential and use in food industry, based on wild fruits harvested in a forest state park at Caraguatutuba in the State of São Paulo.

The first writer of the current text (Lacerda) coauthored *Frutas brasileiras e exóticas cultivadas*, depicting nearly 400 additional fruits cultivated in Brazil, including *C. phaea* (page 185). A ripe fruit and its cross section over a scale in centimeters, plus a flowering branch color photos, were included (Lorenzi et al., 2006).

Muniz (2008) increased the amount of available information regarding its horticultural practices. In the same year, a beautifully illustrated eight-page article (Pimentel, 2008) appeared in *Terra da Gente*, a Brazilian environmental magazine. Several interesting features about our flying saucer were revealed, e.g., the fantastic recipe for a cambuci pie, prepared by a traditional “Paulista” (native of São Paulo) family.

Finally, Mattos (2010) published a short compilation of all the previously known data, including a brief report on the main features of its botanical variety *C. phaea* var. lauroana, which fruits in September and October instead of February and March as does the typical variety.

Plant Description

The cambucizeiro tree usually reaches medium size, from 3 to 7 m, though some centenarian individuals or a few wild populations that have been observed to reach 15 to 20 m. But definitely a fruit grower is unlikely to ever see his own specimen reach even close to that; a specimen in Rio de Janeiro Botanic Garden planted in 1919 by Paulo de Campos Porto is no higher than 8 m. The trunk is often multiple and not thicker than 20 to 30 cm; the bark is somewhat papery, grayish and peeling in pieces in a very similar way to the well known grumichama, *Eugenia brasiliensis*.

The leaves are almost leathery and glabrous when fully mature, but soft and slightly pubescent when young. They are sub rostrate at the apex, and have the margins wavy. Size varies: 4–8 cm length x 2.5–3 cm width.

Cambuci flowers are presented on short pedicles and are relatively big with five very showy white petals, borne solitarily or in pairs. They attract many native bees in the species’ homeland, and have a pleasant sweet fragrance.

The fruits are oddly shaped berries that, from side view, are convex at the upper half and in the lower part—which can be somewhat flattened. When seen from above they might be orbicular, but usually have the shape of an irregular polygon. They exhale an enjoyable aroma, are quite juicy and possess a thin, almost imperceptible green skin. Flavor is acidulate and a bit tannic, without any trace of resinous aftertaste, very agreeable to most people. The pulp is white, and its texture absolutely smooth, totally grainless. According to the variety, they may be more or less sweet, as well as varying in its dimensions. A type named “gauçu” (meaning big or jumbo sized, as Americans would say) reaches up 8 cm diameter, whereas the regular ones are merely 4 to 6 cm. All strains present a fruit depth of 3 to 5 cm.

In each berry one can find only one or two fertile seeds, that are small (0.5 to 0.6 cm diameter) and very flattened, almost like a paper disk.

Distribution and Climatic Needs

The Flying Saucer Fruit is native to southeastern Brazil, in the states of São Paulo, Minas Gerais and Rio de Janeiro. It thrives from the Serra do Mar Mountains to the lowlands, and in nature always associated with rainforests. The authors’ personal experience revealed that each particular climate and altitude leads to a distinct strain. By the way, the population of *salesópolis* in the hills of São Paulo was raised to the category of a botanic subspecies, receiving the name of var. lauroana (Mattos, 1967).

Cambuci has adapted to most regions in Brazil, and despite being a plant of subtropical origin, certain varieties could adapt well to more equatorial climates. The tree is
very tough and can withstand light freezes in winter to heat of 40°C (104°F) in summer.

There is no information about the existence of any cambuci specimen growing outside Brazil. Dr. Leslie Landrum (pers. comm.) opined that it would be a very desirable addition to American orchards. It wouldn’t be a difficult task to establish the plant in states like Florida or California, as it is proven to be cold hardy.

**Propagation and Culture**

The cambuci is propagated by seeds, which remain viable for up 6 weeks if kept in damp peat or sphagnum moss. If the seeds are dried, they quickly lose germination viability.

Seeds should be best planted in the top of a tray filled with sand, covered with the minimum layer possible, as their embryos are very sensitive. The addition of fungicide and bactericide is desirable, as well as placing the set under mist irrigation. At a temperature of 25°C (77°F) on average, they should germinate in 30 to 60 days. Afterwards, the tiny seedlings should be transferred to a 1-gallon pot with good organic soil that is slightly acid. Slow-release fertilizers are recommended.

Planting in the field should be done only after the seedling is about 1 m high, in a sunny spot but protected from full sun in the first few weeks. In our estate the soil is very acid, with a pH of 4.5, so we add limestone to raise pH to 6.5. In a pit of 60 cm x 60 cm x 60 cm, we add 10 liters of organic compost, plus 100 g phosphate, 100 g NPK 10-10-10, and a minor amount of trace elements.

The growth rate is relatively fast, and in 3 to 5 years most trees start to bear fruit. Bearing becomes heavier as the tree gets older. Fertilization should be done by split-
ting 500 to 800 g of NPK 10-10-10 plus 300 g of potassium chloride (or another potassium [K] source) annually. The addition of potassium increases fruit sweetness.

Season and Harvesting

In Rio de Janeiro, flowering begins in October, extending until the first week of December. The harvesting months are late February to April.

Flying saucer fruits should be picked up only after falling to the ground, when they become very soft, as unripe fruits usually are hard and astringent. At this point the skin color changes from green to yellowish-green, and takes on a translucent appearance. A crop of more than 400 berries per tree can be expected.

The fruits are very soft and have thin skin. Because of this growers who might be interested in commercialization of cambuci are advised to consider the need for immediate processing into pulp and freezing to avoid spoilage.

Pest and Diseases

Almost no pest or disease has been reported; the cambucizeiro is quite a resistant tree. Even problems common to Myrtaceae, such as rust disease or fruit fly, never affect the cambuci. The only trouble ever observed by the authors was a fatality from a fungus attack of the root system when the cambucizeiro was planted in a soggy area.

Utilization

As previously mentioned, cambucis are popularly used to prepare a marvellous sorbet. To the pulp puree, a bit of egg white is added (to reduce tannins), then sugar and water to taste. In São Paulo city, one of the best restaurants belonging to a famous chef serves this ice cream as its feature dessert.

Other uses are to make a kind of marmalade that takes on a beautiful coppery-red color and perfect texture, as well as in fresh juices and as a flavor infusion in sugar cane spirit. A number of products such as liqueurs, bonbons, ice coolers and mousses are also prepared using Flying Saucer Fruit. Some of them can be seen in the website of Cooper Cambucy, the fruit producers’ cooperative in Rio Grande da Serra, State of São Paulo: http://coopercambucydaserra.com.br/page008.aspx.

Conclusions

Despite its excellent attributes and ease of cultivation, the cambuci was never introduced in cultivation outside its country of origin. Even serious recommendations like those in the article published in Economic Botany (Kawasaki & Landrum, 1997) failed to achieve their purpose, most probably because of the lack of viable seeds. The challenge of starting the introduction of cambuci into U.S. tropical fruit horticulture is being posed to the most talented of American tropical fruit gardeners.

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