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Achachairu—a Potential Fruit Crop for Florida[1]

Sergio Gutierrez, Tatiana Sanchez, Zhaohui Tong, and Guodong Liu[2]

Introduction

Garcinia humilis, commonly known as achachairu (ah-cha-chay-ROO), is a tropical-fruit bearing crop that is emerging in south Florida. Though native to the Amazon rainforest, achachairu also grows widely in the Caribbean and South and Central America (Oliver et al. 2018; USDA 2020). Its genus, *Garcinia*, falls under the *Clusiaceae* family—formerly known as *Guttiferae*—and includes several tropical and subtropical fruit species. The fruits have attracted certain US markets because achachairu is rich in vitamins, minerals, antioxidants, and many other nutrients. Achachairu's current use is limited and localized. This publication provides an overview of achachairu growth in Florida to help Extension faculty, growers, crop consultants, certified crop advisors, environmentalists, agricultural-policy makers, and students to better understand the potential of achachairu (*G. humilis*).

Achachairu is also known as achacha, Bolivian mangosteen or pacuri (Lim 2012) (USDA 2020), and kamuru and guanabacoa (Lim 2012). Planters harvest achachairu in winter and early spring (https://www.trees.com/achacha-fruit-trees); Floridian fruit markets make the teardrop-shaped fruit available from October through January, given natural growth conditions. The fruit size of *Garcinia h.* ranges from 2.5 to 3 inches (Figure 1) and the fruits have orange skin (USDA 1990) and white, sweet pulp (Barboza da Silva et al. 2018).



Figure 1. (A and B) Achachairu fruit. (C) The skin and pulp of Achachairu. Credit: (A) Alejandra Cáceres, Santa Cruz, Bolivia; (B) Pablo Bauer, Santa Cruz, Bolivia; (C) Adhemar Gomes, São Paulo, Brazil

Achachairu leaves are glossy, dark green, coriaceous (leathery in texture), and opposite (Figures 2 and 3) (Duarte 2011; Joyner 2000). Monoecious—i.e. having both male and female reproductive organs in the same flower (Duarte and Paul 2015)—*Garcinia h.* grows creamy white flowers (Marinho 2019).



Figure 2. (A) Achachairu leaves. (B) Achachairu foliage.
Credit: (A) Alejandro Guerra, Instagram, Miami, Florida; (B) Chang Chieh Min, PingTung, Taiwan, China

The tree adapts well to warm climates (Winterstein 2016) and moderately acidic to moderately alkaline soils. Optimal pH levels in soil range from 4.7 to 6.6 (Joyner 2000); grown in central Florida, achachairu thrives in well-drained alluvial soil with sufficient moisture (Lim 2012). *Garcinia h.* can reach a height of 20 to 50 feet (Figure 3) (Duarte 2011; Joyner 2000). There is a 7-acre farm in south Florida that sells achachairu online at https://miamifruit.org/products/achacha-achachairu-box.



Figure 3. Achachairu trees at a height of approximately 20 feet.
Credit: (A) Adhemar Gomes, São Paulo, Brazil; (B) Chang Chieh Min, PingTung, Taiwan, China

Growing Achachairu

Mature achachairu-seeds are typically brown, cylindrical, recalcitrant (intolerant to dry conditions or temperatures lower than 50°F), and apomictic (reproducing asexually but by different propagation from cuttings; apomictically produced plants are genetically identical to the parent plant) (Duarte and Paul 2015). Immature seeds are lighter in color and softer than mature ones. The average achachairu has fewer seeds per fruit (1–2 [Duarte and Paul 2015]) than its close relative, the Malabar tamarind (*Garcinia cambogia*), which carries 6–8 seeds per fruit (Rasha et al. 2015). (Native to Southeast Asia, the Malabar tamarind is widely cultivated in India, Sri Lanka, Malaysia, and Africa [Rasha et al. 2015]. As a fruit crop, the *G. cambogia* is not classified as invasive.) Achachairu-seed germination can be problematic due to the seed recalcitrancy but improvable by seed coat removal or by applying gibberellic acid (Duarte and Paul 2015).

Direct seeding and grafting are both suitable for propagating achachairu. The seedlings may be transplanted once they reach a size of 16–20 inches (Figure 4). Achachairu scions are grafted onto 3- to 4-year-old ocoro (*Garcinia madruno* [Kunth] Hammel) at the rootstocks, 10–12 inches above the soil surface (Duarte and Paul 2015; Joyner 2000). Grafting is the preferred method; grafted plants can be harvested earlier for a better market price. Over-irrigation is detrimental, increasing the risk of root disease. In the orchard, achachairu plants should be spaced at 26–33 feet (Sanchez et al. 2024). Achachairu trees can tolerate partial shade during the early growth stage (Paul and Duarte 2011) and can be intercropped with maize, bell peppers, eggplants, tomatoes, other fruit crops, and even vegetable crops (Figure 5).

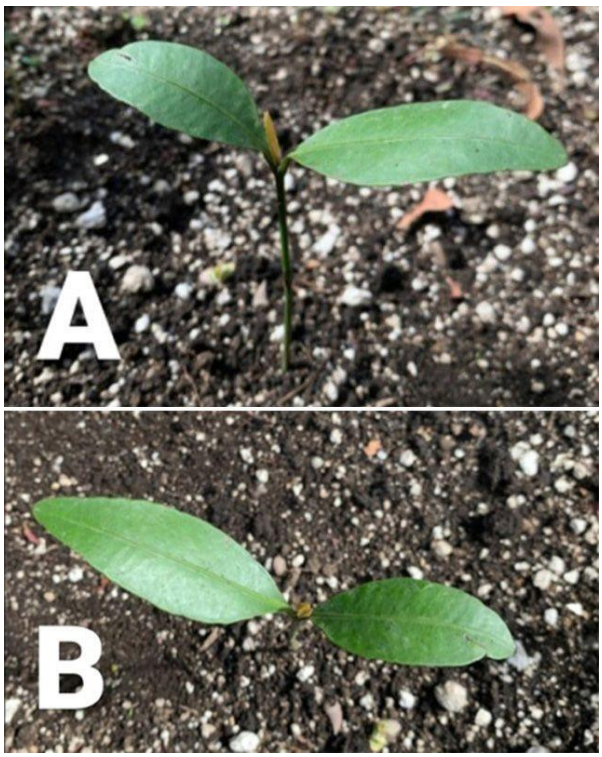


Figure 4. New Achachairu seedlings.
Credit: (A) and (B) Sergio Gonzalez, Alta Verapaz, Guatemala



Figure 5. Achachairu plant intercropped with cucumber.
Credit: Chang Chieh Min, Pingtung, Taiwan, China

There is no fertilizer recommendation available for commercial achachairu production in Florida. Achachairu growers may use the recommendations for litchi production (https://edis.ifas.ufl.edu/publication/MG051) for the time being because these two fruit-crops are similar in size and productivity in Florida. Pruning can make harvesting simpler and easier. Achachairu fruit species can be pruned in the early growth stage. Pruning older trees should be primarily limited to the damaged branches or those close to soil (Duarte and Paul 2015).

Generally, achachairu are most affected by fruit flies (Duarte 2011). Leaf and fruit anthracnose is the main disease (Duarte and Paul 2015). If you see pests or disease symptoms, contact your local UF/IFAS Extension office for a diagnosis and recommendations.

Achachairu Consumption

Achachairu have diverse applications. The trees can be grown as ornamentals (Joyner 2000). The achachairu rind can be used for winemaking (Lim 2012), and natural extracts of dry leaves have shown antibacterial properties (Osorio, Londoño, and Bastida 2013). Achachairu fruit can be consumed raw or incorporated into juices, pastries, sorbets, ice cream, desserts, jams, or jellies (Winterstein 2016; Marino 2019).

Summary

Achachairu may offer a promising new fruit crop opportunity for Florida. As an emerging tropical fruit, achachairu could provide Florida growers with an additional high-value crop option while diversifying farming systems and reducing reliance on a limited number of established fruit crops. Commercial production could also expand the range of locally grown fruits available to consumers, create new market opportunities, and contribute to a more diverse and resilient Florida food supply.

Florida's unique climatic conditions provide several advantages for exploring commercial achachairu production, particularly in the state's warmer regions. The crop's adaptation to warm, humid environments may allow it to take advantage of Florida's long growing season and subtropical to tropical conditions. At the same time, Florida's established fruit-production infrastructure, experienced growers, research and Extension programs, and access to domestic markets provide a strong foundation for evaluating this emerging crop.

Developing achachairu production in Florida, however, will require research to identify suitable cultivars and production regions and to determine optimal practices for propagation, planting, irrigation, nutrition, canopy management, pest and disease management, harvest, and postharvest handling. As these production challenges will be addressed, achachairu will become a valuable addition to Florida agriculture, diversifying growers' production systems, expanding the state's fruit markets, strengthening the local food supply, and creating new opportunities for Florida's fruit industry.

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[2] Sergio Gutierrez, former student intern, UF/IFAS Department of Horticultural Sciences; Tatiana Sanchez, Extension agent III, commercial horticulture, UF/IFAS Extension Alachua County, Gainesville, FL; Zhaohui Tong, former assistant professor, bioproducts, UF/IFAS Department of Agricultural and Biological Engineering; Guodong Liu, professor, crop nutrition, UF/IFAS Department of Horticultural Sciences; UF/IFAS Extension, Gainesville, FL 32611.

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