Chikoo Research

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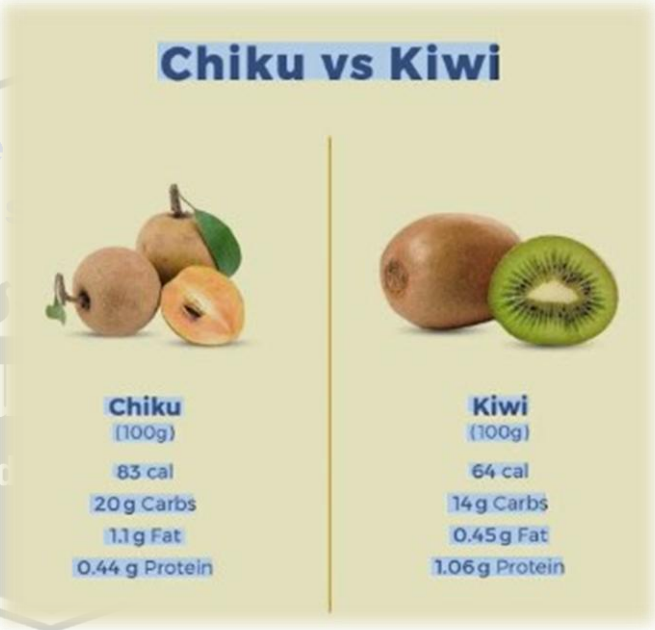
Characteristics of Chico

Chico, commonly known as **Sapodilla** (*Manilkara zapota*), is a tropical fruit native to southern Mexico, Central America, and the Caribbean, now widely cultivated in the Philippines. The fruit has a round to oval shape with brown, rough skin and sweet, grainy flesh with a malty flavor. Chico is highly valued for its natural sweetness, making it popular for fresh consumption, desserts, beverages, and traditional medicine. It thrives in warm climates with well-drained soils.

Culinary Uses

- Puddings and custards
- Ice cream and sorbets
- Fruit jams and jellies
- Cakes, muffins, and pastries
- Sweet sauces for pancakes or waffles



Simple Eating

- Freshly peeled and sliced
- Eaten as a whole fruit (bite-sized pieces)
- Added to fruit salads
- Frozen slices as a snack
- Dried and eaten as chewy fruit

Drinks

- Smoothies (blended with milk or yogurt)
- Milkshakes
- Fruit juice blends
- Sorbets and ice pops
- Chico-flavored cocktails or mocktails

Nutrients per 100 g

- Calories: 83 kcal
- Carbohydrates: 19.9 g
- Protein: 0.4 g
- Fat: 1.1 g
- Fiber: 5.3 g
- Vitamin C: 14.7 mg
- Calcium: 21 mg
- Iron: 0.8 mg
- Potassium: 193 mg

Health Benefits

- Supports digestive health (high fiber content)
- Boosts immunity (rich in vitamin C)
- Promotes healthy skin
- Helps maintain healthy blood pressure (potassium content)
- Provides quick energy due to natural sugars
- May help improve bone health (calcium and iron)

Tree Characteristics

- **Type:** Evergreen tropical tree
- **Height:** 12–30 m at maturity, usually pruned shorter for cultivation (6–12 m)
- **Trunk:** Straight, with rough, brown bark; sap is latex-like (chicle)
- **Leaves:** Simple, alternate, leathery, dark green, oblong, 5–15 cm long
- **Flowering:** Small, greenish-yellow, clustered; fragrant
- **Fruit-bearing age:** Seedlings: 6–8 years; Grafted: 3–5 years
- **Longevity:** Can live and produce fruit for 50–100 years under ideal conditions

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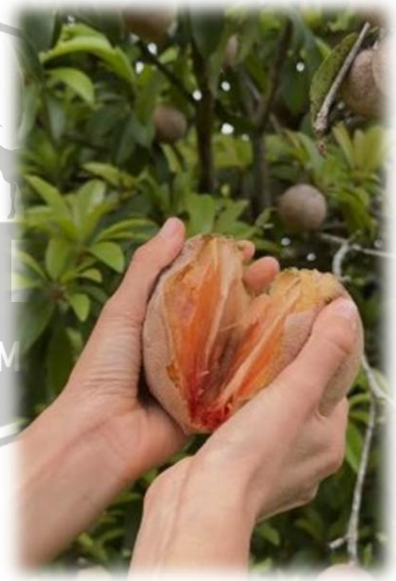
Root System

- **Type:** Deep taproot with lateral roots
- **Depth:** Taproot penetrates 1–2 m, providing drought tolerance
- **Soil Adaptation:** Prefers well-drained sandy loam or loamy soil; tolerates some clay if drainage is adequate
- **Propagation implications:** Deep roots make transplanting older trees difficult
- **Nutrient uptake:** Extensive lateral roots help in absorbing nutrients from topsoil
- **Implications for intercropping:** Requires spacing to avoid competition for water and nutrients



Sunshine and Shade Demand

- **Sun requirement:** Full sun is ideal for flowering and fruiting
- **Shade tolerance:** Partial shade tolerated, but reduced fruit production
- **Climate:** Warm, frost-free regions; optimal growth in 21–32°C
- **Rainfall:** 1200–2500 mm annually; drought-tolerant once established

Growing Characteristics Table

Characteristic	Description / Requirement	Implications for Cultivation
Tree height	12–30 m (can prune to 6–12 m)	Pruning needed for manageable harvesting
Canopy	Dense, broad	Provides partial shade; affects intercropping
Root system	Deep taproot + lateral roots	Needs well-drained soil; difficult to transplant older trees
Soil	Well-drained sandy loam; tolerates some clay	Avoid waterlogging; amend heavy soils
Sunlight	Full sun preferred; partial shade tolerated	Reduced fruiting under heavy shade
Water	Moderate; drought-tolerant once established	Irrigation may be needed in dry spells
Propagation	Seeds (6–8 yrs to fruit), grafted (3–5 yrs)	Grafting preferred for commercial orchards
Fruiting age	3–8 years depending on propagation	Plan orchard spacing and rotation accordingly
Temperature	21–32°C	Sensitive to frost; tropical regions preferred
Rainfall	1200–2500 mm annually	Ensure supplemental irrigation in dry periods

Summary

Chico (*Manilkara zapota*) is a long-lived, evergreen tropical fruit tree with a deep taproot system that provides drought tolerance but requires well-drained soils. It thrives in full sun and warm climates, producing sweet, brown fruits in 3–8 years depending on propagation. Its dense canopy and extensive roots influence intercropping and spacing decisions. Proper pruning, soil management, and irrigation are key to sustainable and high-yield cultivation.

Varieties of Chico / Sapodilla in the Philippines

Here are some notable **Manilkara zapota** varieties (cultivars) found in or associated with the Philippines:

Variety	Key Characteristics
Pineras (Native)	Traditional / "native" chico in the Philippines. Smooth skin, 150–200 g fruits, sweet aroma. Scribd+2Facebook+2
Ponderosa	Very large fruit size, juicy, smooth brown skin, very sweet. Market Manila
Sao Manila	Known in Philippine cultivation. Cited in grower guides. Growables
Mapino	More recent variety, with documented fruit-characteristics research in the Philippines. ResearchGate
Gonzales	Named in literature as another cultivated variety in the Philippines. ResearchGate

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Top 5 Chico Varieties for Commercial Use

Based on local sources, growers' preferences, and documented commercial cultivation, these are the top five Chico varieties commonly used in Philippine orchards:

Cultivar Name	Key Notes	Evidence of Recent Commercial/Re-search Use
Ponderosa	Large, juicy fruit, popular	Mentioned in Growables list for Philippines. Growables+1
Sao Manila	Established cultivar locally	Listed in same source. Growables
Mapino	Newly released variety in Philippines	Dedicated publication: "Fruit characteristics of 'Mapino'…" ResearchGate
Native (Pineras)	Traditional local variety (Batangas)	Blog/source mentions Batangas "Pineras" chico favourite. Market Manila
Formosa / Java	Also mentioned in cultivar lists	Growables source includes Formosa and Java among selected cultivars. Growables

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Summary

- In short: while rigorous commercial-scale data for Chico in the Philippines is thin, recent sources suggest that the main cultivars used in commercial or semi-commercial contexts include **Ponderosa**, **Sao Manila**, **Mapino**, **Native (Pineras)** and **Formosa/Java**.
- The "**Native/Pineras** from Batangas" niche market remains highlighted for quality.
- For anyone planning orchard development or marketing, focusing on those cultivars plus verifying local nursery/graft availability would be prudent.
- Key local markets for Chico include **Batangas** (especially for Pineras), public markets ("palengke"), farmer's stalls ("kaing"), and specialty nurseries for grafted cultivars.

Intercropping Compatibility

Main Crop Tree	Suitability of Adding Chico	Shade & Light Consideration	Recommended Spacing for Chico
Coconut	**Excellent**	High canopy gives Chico **full sun**; minimal competition	Plant Chico **8–10 m** between coconuts; stagger rows
Mango	**Poor**	Mango canopy **dominates light**; Chico yield drops	If unavoidable, place Chico **10–12 m** away, on sun-facing side
Guyabano (Soursop)	**Moderate**	Both need **full sun**; must avoid shading each other	Chico **8–10 m** spacing; avoid underplanting
Cacao	**Good**	Cacao tolerates shade; Chico must be in **open strips**	Place Chico in **sun corridors** at **8–10 m** intervals
Coffee	**Good (early–mid years)**	Works while coffee is low and open; later shade may increase	Chico **8–10 m**; prune Chico to avoid canopy closure
Mangosteen	**Moderate–Good**	Young mangosteen prefers shade, mature needs more light	Chico at **10 m**, not directly south-side (tropics sun path)
Guavapple	**Moderate**	Guavapple is **sun-loving**; Chico should not cast shade later	Use Chico only as scattered filler; **10 m** spacing
Atis / Cherimoya	**Poor**	Highly **shade-sensitive**; Chico can suppress growth when mature	Avoid pairing or place Chico **in separate blocks**
Tabon-tabon	**Good**	Semi-shade tolerant; compatible with minimal conflict	Chico **6–8 m** spacing; maintain light through pruning

Key Principles for Intercropping

- Chico **must not be planted directly under** dominant canopies
- Position **on the sun-facing side**
- Maintain **open-row or alley spacing** for light access
- Chico's **dense canopy later** may require pruning to protect the main crop
- Works best where vertical space is **not fully occupied** (e.g., coconut)

Best Main-Crop Pairings

- **Coconut** — ideal (vertical separation + high light)
- **Cacao** — strong pairing with proper row orientation
- **Coffee** — profitable early-stage system
- **Mangosteen** — suitable if monitored for light balance

Avoid / High-Risk When Chico Is Secondary

- **Mango** — heavy canopy competition
- **Atis / Cherimoya** — poor shade tolerance

Summary

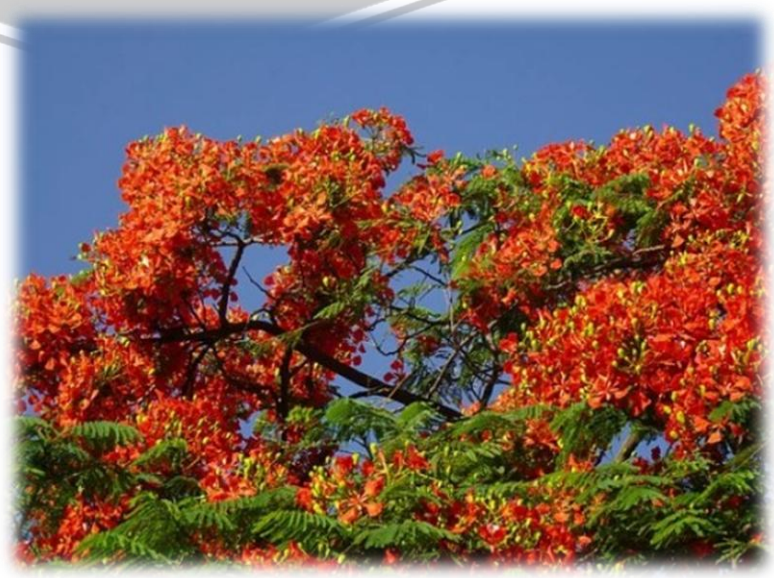
When used as a **secondary crop**, Chico performs best under **high-canopy and shade-tolerant systems**, especially with **coconut, cacao, coffee, and mangosteen**. It should **not** be placed under dominant, sun-demanding fruit trees like **mango and atis/cherimoya**, where it will struggle and reduce main-crop performance. Maintain **8–10 m spacing**, sun-side placement, and pruning to ensure both crops yield well.

Market Demand & Acceptance

- **Stable local demand**, mainly for *fresh consumption* in household and wet markets
- Considered a **traditional Filipino fruit**, familiar and accepted but **not a mainstream high-volume crop**
- Demand peaks during **harvest season** due to limited year-round availability
  - Premium pricing possible for:
    - **Large, sweet varieties** (e.g., Ponderosa, Mapino)
    - **Chemical-free / naturally grown fruit**
- **Direct-to-consumer sales**
  - Strongest demand in:
    - **Public markets (Valencia, Maramag, Quezon, Don Carlos)**
    - **Roadside and farm-gate outlets**
- Households seeking *native, nostalgic fruits*

Risks & Challenges

- **Low commercial scale** → limited buyer networks for bulk volumes
- **Perishability** when fully ripe; short post-harvest shelf life
- **Irregular fruiting** if unmanaged (lack of pruning, water stress)
- **Price fluctuations** due to seasonal oversupply in some areas
- **Limited processing industry** compared to mango, banana, pineapple
- **Pests**: fruit flies, seed borers, leaf spot (humid conditions may increase pressure)
- **Market awareness** outside local zones is still low



Opportunities

- **Niche specialty fruit positioning** (native, heritage, chemical-free)
- **Off-season production** using:
  - irrigation during dry months
  - balanced fertilization and pruning
- **Value-addition potential**:
  - jam, puree, dried chico, ice cream, shakes
  - supply to café and dessert shops in Valencia
- **Agro-tourism integration**:
  - pick-and-pay experiences
  - educational farm visits
- **Intercropping advantage**:
  - fits well under **coconut-based systems**
  - compatible with **cacao, coffee, young mangosteen**
- **Low maintenance once established**, good for diversified orchards
- **Long productive lifespan** (50–100 years) → long-term asset

Summary for Southern Bukidnon & Valencia

Southern Bukidnon—especially **Valencia City**—offers ideal conditions for Chico due to **warm temperatures, well-drained upland soils, and dry-season irrigation access**. Chico is **not a high-volume commercial crop**, but performs well as a **supporting, value-fruit enterprise** within diversified farms. The strongest potential lies in:

- **local direct markets**, roadside sales, and community distribution
- **niche branding** (native, sweet, farm-fresh)
- **intercropping under coconut or alongside cacao/coffee**
- **small-to-medium scale production**, not plantation scale

With proper spacing, pruning, and post-harvest care, Chico can provide **steady supplemental income** and help diversify risk while enhancing farm resiliency.