



Robusta Coffee Research

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Coffee Research

Robusta coffee (*Coffea canephora*) is a hardy coffee species native to central and western sub-Saharan Africa. It thrives in low-altitude, hot, and humid climates, making it more resistant to pests and diseases than Arabica. Robusta beans have a stronger, bitterer flavor and higher caffeine content, often used in espresso blends and instant coffee. Its robust growth and resilience make it a staple for commercial coffee production worldwide.

Usage in Culinary Dishes:

- Coffee-rubbed meats (beef, pork, chicken)
- Coffee-flavored sauces and gravies
- Coffee-infused desserts (cakes, tiramisu, brownies)
- Coffee ice cream or gelato
- Mocha chocolate desserts

Drinks:

- Espresso
- Americano
- Cappuccino
- Latte
- Cold brew
- Iced coffee
- Coffee cocktails (e.g., Irish coffee, espresso martini)

Nutrients per 100 g (dry roasted beans):

- Calories: ~250 kcal
- Protein: 12 g
- Fat: 10 g
- Carbohydrates: 50 g
- Fiber: 25 g
- Caffeine: ~2.2 g

Health Benefits:

- Boosts mental alertness and concentration
- Provides antioxidant protection
- May enhance physical performance
- Supports metabolism and fat burning
- Reduces risk of certain neurodegenerative diseases
- May improve liver health

Tree Characteristics

Robusta coffee is a small to medium-sized evergreen tree, typically growing **4–10 meters tall** under natural conditions but usually maintained at **2–4 meters** in plantations for easier harvesting. It has a **dense, bushy canopy** with glossy, dark green leaves and produces white, fragrant flowers. The fruit, called a cherry, is round to oval, and contains **two seeds (beans)**.

Key Traits:

- **Growth habit:** Upright, bushy, and branching
- **Leaf type:** Simple, opposite, glossy, elliptical
- **Flowering:** White, fragrant, clustered
- **Fruit:** Red when ripe, containing two beans
- **Lifespan:** Productive up to 20–25 years

Root System:

Robusta coffee develops a fibrous and shallow root system with a few deeper anchoring roots. The roots spread widely, providing stability and access to nutrients in the upper soil layers.

Growing Implications:

- **Water Management:** Shallow roots require **consistent soil moisture**, but they tolerate waterlogging better than Arabica.
- **Soil Fertility:** Wide root spread allows uptake of surface nutrients, but heavy fertilization may be needed for optimal yield.
- **Intercropping:** Shallow roots allow intercropping with crops that have deeper roots.
- **Sun demand:** Robusta thrives in **full sun** but can tolerate **partial shade**.
- **Shade tolerance:** Moderate shade reduces stress in hot climates, but dense shade lowers yields.



**Other Implications:**

- Susceptible to soil compaction due to shallow roots
- Sensitive to root diseases if drainage is poor

Growing Characteristics Table

Characteristic	Details
Scientific Name	<i>Coffea canephora</i>
Height (managed)	2–4 m
Canopy	Dense, bushy
Leaf Type	Glossy, elliptical
Flowering	White, fragrant
Fruit	Red cherries, 2 beans per cherry
Lifespan	20–25 years
Root System	Shallow, fibrous, with few deep anchoring roots
Soil Requirements	Well-drained, fertile, slightly acidic to neutral (pH 5.5–6.5)
Water Requirement	Regular, tolerant to occasional waterlogging
Sunlight	Full sun preferred, partial shade tolerated
Shade Tolerance	Moderate shade acceptable
Pest/Disease Resistance	More resistant than Arabica, but vulnerable to root rot in wet soils
Intercropping Compatibility	Compatible with deeper-rooted crops and moderate shade trees

Summary

Robusta coffee is a hardy, small-to-medium evergreen tree with a dense canopy and shallow, fibrous roots. Its roots require consistent moisture and fertile soils but allow for intercropping with deeper-rooted crops. It tolerates full sun and moderate shade, making it flexible for different plantation designs. Understanding its root system and light requirements is crucial for optimizing yield, preventing disease, and planning companion crops.

Main Coffee Varieties in the Philippines

In the Philippines, there are four major coffee “types” cultivated commercially: Robusta, Arabica, Liberica (locally known as Kapeng Barako), and Excelsa. philcoffeeboard.com+2 Ag Department Portal+2

- Robusta (*Coffea canephora*) — dominates production; thrives in lowland, warm climates, easier to cultivate, high yield.
ispweb.pcaarrd.dost.gov.ph+2 [Grokikipedia+2](#)
- Arabica — grown in higher-altitude, cooler areas; more delicate, aromatic, often premium/specialty bean. philcoffeeboard.com+2 [Sweet Maria's Coffee Library+2](#)
- Liberica / Kapeng Barako — traditional large-bean variety, historically important; now niche, local market. [Wikipedia+2](#) ispweb.pcaarrd.dost.gov.ph+2
- Excelsa — less common; used sometimes to add complexity in blends.
philcoffeeboard.com+1

But beyond just species, the Philippines also has local “named” cultivars or regional coffees — especially among Robusta — that are valued for heritage, culture, or unique flavor.

One good example:

- Kahawa Sug — a Robusta cultivar from the Sulu Archipelago (Sulu / Mindanao). It has cultural importance among the Tausug people.
[Wikipedia+2](#) philcoffeeboard.com+2

Because of yield, ease of cultivation, and climate, Robusta remains the backbone of the commercial coffee industry in the Philippines. Ag Department Portal+2 [Grokikipedia+2](#)



Table – Top Five for Commercial Varieties

Variety	Key Features	Region(s) / Local Market / Specialty Source
Robusta (general)	High yield, disease resistance, thrives in lowland/tropical climate — bulk of commercial & instant-coffee production	Lowland Mindanao (e.g. SOCCSKSARGEN, Davao), Visayas, some Luzon lowlands hvcdp.da.gov.ph ⁺² ispweb.pcaarrd.dost.gov.ph ⁺²
Arabica (general)	Premium flavor, specialty-quality cups; grown at higher altitude	Highland areas — e.g. Cordillera region (Benguet, Sagada), higher-elevation Bukidnon, Mt. Apo areas philcoffeeboard.com ⁺² Friends of Marlin ⁺²
Liberica / Kapeng Barako	Unique large bean, strong bold flavor; traditional Filipino identity; locally popular	Provinces Batangas & Cavite, local/tourist markets, heritage blends Wikipedia ⁺² ispweb.pcaarrd.dost.gov.ph ⁺²
Excelsa	Adds complexity / depth to blends; drought/pest resistant	Scattered areas, sometimes used in blends — less volume than Robusta/Arabica philcoffeeboard.com ⁺¹
Kahawa Sūg (Sulu Robusta)	Heritage Robusta cultivar — distinct local taste, cultural heritage, single-origin appeal	Sulu Archipelago / Muslim Mindanao (for local markets and specialty buyers) Wikipedia ⁺² Fondazione Slow Food ⁺²

Note: The notion of “top five” here isn’t a strict ranking from data — rather it’s a mix of (a) broad-use commercial varieties (Robusta, Arabica, Liberica, Excelsa), plus (b) a recognized local/héritage cultivar (Kahawa Sūg) that holds cultural and specialty value.

Jessie's Sunshine Farm

Inspiration and Motivation ng Masa Best Local Markets & Where to Source Them

- For everyday/instant coffee: general Robusta from Mindanao or lowland farms is most common — available nationwide through large coffee processors.
Grokikipedia⁺² hvcdp.da.gov.ph⁺²
- Specialty coffee / premium cups: Arabica from highland zones (e.g. Cordillera, Bukidnon, Mt. Apo) — many small roasters and local specialty cafés use these.
philcoffeeboard.com⁺² elnidoadventure⁺²
- Traditional Philippine coffee experience: Kapeng Barako (Liberica) — sold in Batangas / Cavite provinces, popular in tourist souvenirs and local households.
Wikipedia⁺¹
- Niche / heritage / single-origin market: Kahawa Sūg (Sulu Robusta) — though less common and harder to find, it’s valued by connoisseurs and for cultural significance; sold mostly in Muslim Mindanao communities or specialty outlets.
Wikipedia⁺² Fondazione Slow Food⁺²
- Blends / value-added / coffee mixes: Often they combine Robusta and other beans (Arabica, Excelsa, Liberica) to balance cost, body, flavor — widely available throughout the Philippines.
Wikipedia⁺² Daily Grind Roastery⁺²

Observations & Challenges

While there are many potential coffee “varieties” worldwide, in the Philippines only **four main species** remain widely grown (Robusta, Arabica, Liberica, Excelsa). philcoffeeboard.com [+2](#) Ag Department Portal [+2](#)

Within those species, there are “heritage” or regionally named cultivars (like Kahawa Sūg) — these are valued for culture, flavor, identity, but often produce less yield and are more niche. This tension between “yield & mass production” vs “heritage & quality” shapes much of the local coffee industry.

Large-scale growers prioritize Robusta due to its reliability, yield, and suitability for lowland tropical climate — which explains its dominance in output (often ~70 % of production). [Vancouver Philippines Consulate General](#) [+2](#) [Grokipedia](#) [+2](#)

Specialty growers and local markets drive interest in Arabica, Liberica (Barako), and heritage Robusta — but their share remains small compared to the mass-market Robusta.

Intercropping Guide for Robusta Coffee (as Secondary Canopy)

- Robusta coffee performs best under **moderate shade (20–40%)** when young, and **light shade or filtered sun** when mature.
- Because Robusta has **shallow roots**, it pairs best with **deep-rooted or columnar trees**.
- Avoid trees that produce **dense shade**, compete heavily for nutrients, or drop excessive litter.



Intercropping Compatibility Table

Primary tree = the one forming the upper canopy. Robusta = mid-layer secondary crop.

Primary Tree	Intercrop Suitability	Shade Impact	Root Interaction	Notes
Coconut	Excellent	Light, filtered sun — ideal for coffee	Deep roots → minimal competition	Best combination; standard practice in Mindanao.
Cacao	Good (but careful)	Medium shade — suitable if pruned	Shallow roots → some competition	Works in mixed systems; avoid over-shading.
Chico / Sapodilla	Moderate	Medium shade; can become too dense	Deep roots; less competition	Works if Chico canopy is pruned regularly.
Atis / Sugar Apple	Good	Light–medium shade	Deep-ish roots; manageable	Light shade supports young coffee.
Oranges / Citrus	Good	Medium canopy; dappled light	Moderate roots — manageable	Avoid excessive shade; prune for airflow.
Banana (Lakatan/Latundan/Plantain/Tindok)	Very Good (temporary shade)	Excellent early shade; reduces heat stress	Shallow roots but sparse competition	Perfect for first 2–4 years; provides microclimate.

Inspiration and Motivation ng Masa

Less Suitable / Poor Intercrops

(From trees mentioned in your previous threads)

Tree	Intercrop Suitability	Reason Not Ideal
Mango	Not Good	Dense canopy, heavy leaf litter, strong root competition.
Jackfruit	Not Good	Very dense shade and aggressive roots.
Large timber species	Not Good	Over-shades coffee and competes for nutrients.



Summary

Robusta coffee performs best as a **mid-story crop** under trees that provide **light to moderate shade**, especially during early growth. Among the trees previously discussed, **coconut is the best primary canopy**, offering the right balance of filtered sunlight and minimal root competition. Other good partners include **banana (short-term)**, **citrus**, **atis**, and **wellmanaged cacao**. Robusta should be avoided under dense-shading or aggressively rooted trees like **mango or jackfruit**. Proper spacing ensures airflow, reduces disease pressure, and maintains good yield.

Market Demand & Acceptance

1. **Growing domestic demand:** Philippine domestic consumption is rising (roadmap projects higher national consumption through 2025 and beyond), which increases demand for both bulk Robusta (instant / blends) and specialty Arabica/Liberica niche markets. pcaf.da.gov.ph
2. **Local acceptance is strong for Robusta:** Robusta is the backbone of lowland/aggregate supply — widely used by roasters, instant-coffee processors and traders in Mindanao. Bukidnon is a target area in the Mindanao Robusta development project. hvcda.da.gov.ph+1
3. **Specialty / heritage market niches exist:** Local/cultural beans and single-origin lots (e.g., tribal-group offerings around Valencia) fetch interest from specialty roasters and local cafés — DOST and LGU initiatives support value-adding processing and branding. dost.gov.ph+1
4. **Price signals are mixed:** Farm-gate prices have been volatile and historically low for many farmers (reports cite average farmgate figures around Php 70–100/kg for different bean types in past years), so acceptance at retail doesn't always translate to good farm returns without value-add. [PPSA+1](#)

Risks & Challenges (local / regional)

1. **Low farmgate incomes & price volatility** — many smallholders receive low returns per kg; improving yields alone may not fix incomes without market linkages or premium pricing. [PPSA](#)
2. **Aging farmer population & labour** — youth migration away from farming reduces labor pool and succession planning for coffee farms. [Manila Bulletin](#)
3. **Climate variability, pests & diseases** — rainfall shifts, droughts and pest pressure (e.g., coffee berry borer in some regions) threaten yields and quality. pcaf.da.gov.ph

4. **Limited post-harvest / processing capacity** — inadequate dryers, mills and quality control reduce farm-gate value; processing support is uneven across barangays. dost.gov.ph+1
5. **Market access / aggregation problems** — fragmentation of smallholders, weak cooperatives, and inconsistent quality make it hard to connect to premium buyers. pcaf.da.gov.ph

Opportunities (practical, regional fit)

- **Government & project support** — Mindanao Robusta Coffee Project and PCAF/DA roadmap investments target Bukidnon for yield and quality improvement; farmers can access extension, nurseries and improved varieties. (Opportunity to link local groups to these programs.) hvcdp.da.gov.ph+1
- **Local processing & value-add in Valencia** — DOST + LGU cooperation has already supported local associations (e.g., MANTALA) with processing tech and training — expand village-level drying, small wet mills and basic QC to capture more value locally. dost.gov.ph+1
- **Specialty & single-origin branding** — develop single-origin lots (tribal/heritage coffees around Valencia), traceability, and direct links to specialty roasters in Davao/Manila to earn premiums. dost.gov.ph
- **Intercropping / agroforestry** — integrate coffee with coconuts, cacao or bananas (as your earlier plan) to spread risk, improve household income streams, and comply with recommended shade regimes (coffee under moderate shade). hvcdp.da.gov.ph
- **Domestic market growth / RTD & roastery demand** — rising retail/RTD coffee demand means local roasters and processors will need reliable supply; cooperatives that can guarantee volume + quality can win contracts. [EIN Presswire+1](http://EINPresswire+1)





Practical Recommendations for Southern Bukidnon

1. **Organize farmer groups / cooperatives** — strengthen aggregation, quality control and bargaining power (link to DA / DOST programs). pcaf.da.gov.ph+1
2. **Invest in small-scale processing** — communal dryers, simple pulpers and grading stations in Valencia barangays to stabilise quality and reduce post-harvest losses. [Heyzine](#)
3. **Pursue specialty lots & basic traceability** — set aside small high-quality lots for premium buyers; document origin, elevation and processing to increase acceptance. dost.gov.ph
4. **Adopt resilient practices** — mulching, shade management, integrated pest management and access to climate-smart seedlings from DA projects. hvcdp.da.gov.ph+1
5. **Link to local demand** — build relationships with cafés, hotels, and schools in Valencia and Malaybalay and with roasters in Davao/Manila for off-takers. [ReportLinker](#)

Short table — SWOT style (Southern Bukidnon incl. Valencia)

Strengths	Weaknesses
Existing DA/DOST support & roadmap alignment; suitable sites in Bukidnon	Low farmgate prices; limited processing; aging farmer base. hvcdp.da.gov.ph+1
Opportunities	Threats
Specialty branding, local processing (Valencia), intercropping, rising domestic RTD/roastery demand	Climate impact, pests, market fragmentation, youth exodus. EIN Presswire+1

Short Summary

Southern Bukidnon — including Valencia City — has **strong strategic potential** for scaling Robusta (and niche specialty lots) because of government projects, existing agricultural capacity and growing domestic demand. To convert potential into farmer income, the area needs **better processing, stronger farmer organization, specialty-market strategies and climate-resilient practices**. Valencia's DOST/LGU activity is an entry point to build local processing and branding that can raise farm returns. hvcdp.da.gov.ph+2dost.gov.ph