Jackfruit Research

Jackfruit Usage

Jackfruit (*Artocarpus heterophyllus*) is a tropical fruit native to South and Southeast Asia, renowned for its large size and distinctive sweet aroma. Its green, spiky exterior hides a fibrous, yellow flesh that can be eaten ripe or unripe. Versatile in culinary applications, jackfruit serves as both a fruit and a meat substitute, making it popular in savory dishes, desserts, and beverages across many cultures.

Culinary Uses:

- Curries (unripe jackfruit as meat substitute)
- Stir-fries
- Stews
- Jackfruit chips (dried or fried)
- Jackfruit cakes and pastries
- Jackfruit jam or preserves

Drinks:

- Jackfruit smoothie
- Jackfruit juice
- Jackfruit shake with milk
- Fermented jackfruit wine

Nutrients per 100 g (approximate):

- Calories: 95 kcal
- Carbohydrates: 23.25 g
- Protein: 1.72 g
- Fat: 0.64 g
- Fiber: 1.5 g
- Vitamin C: 13.7 mg
- Potassium: 448 mg
- Calcium: 24 mg
- Magnesium: 29 mg

Health Benefits:

- Boosts immunity (rich in vitamin C)
- Supports digestion (high fiber content)
- Provides energy (natural sugars and carbs)
- Promotes heart health (potassium for blood pressure)
- Aids in weight management (low in fat)
- Supports bone health (calcium and magnesium)
- May help regulate blood sugar (moderate glycemic index)

Tree Characteristics and Growing Considerations

Tree Characteristics

- **Scientific Name:** *Artocarpus heterophyllus*
- **Type:** Tropical, evergreen, monoecious tree
- **Height:** Typically 8–25 m at maturity
- **Trunk:** Thick, sturdy, often with latex-containing bark
- **Crown:** Wide, spreading with dense foliage; provides moderate shade
- **Leaves:** Glossy, dark green, alternate, simple, leathery
- **Flowers:** Small, unisexual; male flowers in clusters, female flowers solitary
- **Fruit:** Large, oval to oblong, with spiky green skin; flesh ranges from yellow to orange when ripe

Root Characteristics and Growing Implications

Jackfruit trees have **deep and extensive root systems** with both taproots and lateral roots that spread widely. The roots are moderately invasive, capable of stabilizing soil but requiring space away from buildings or pipelines. Key points:

- **Taproot:** Penetrates deeply to access groundwater
- **Lateral roots:** Provide stability and nutrient absorption
- **Feeder roots:** Near surface, absorb nutrients and water efficiently

Implications for growing:

- Requires well-draining soil; waterlogged areas can cause root rot
- Prefers slightly acidic to neutral pH
- Deep watering helps support strong root development
- Roots compete with other plants for nutrients; spacing is important
- Avoid planting too close to structures due to large root spread

Sunshine and Shade Demand

- **Sunlight:** Full sun is optimal for fruit production
- **Shade tolerance:** Young trees can tolerate partial shade, but prolonged shade reduces fruit yield
- **Intercropping:** Can be grown with light-demanding crops; avoid heavy shade under dense canopies

Table: Growing Characteristics of Jackfruit

Characteristic	Description
Tree Type	Evergreen tropical tree
Height at Maturity	8–25 m
Crown Shape	Wide, spreading, dense foliage
Leaf Type	Simple, alternate, leathery
Root System	Taproot + extensive lateral roots + surface feeder roots
Soil Preference	Well-draining, slightly acidic to neutral
Water Requirement	Moderate; deep watering encourages root growth
Sunlight	Full sun for optimum fruiting; young trees tolerate partial shade
Spacing	8–12 m between trees (depending on variety and soil fertility)
Fruit Bearing Age	3–8 years from seed; 2–4 years from grafted trees

Summary

The jackfruit tree is a large, tropical, evergreen species with a wide, dense canopy and strong root system. Its roots provide stability but require careful site selection to avoid interference with structures. Full sun is preferred for optimal fruit production, although young trees tolerate partial shade. Proper spacing, soil preparation, and watering are key to healthy growth and high yields.

Philippine Jackfruit Varieties (Commercial & Local)

Variety Name	Key Features / Notes
EVIARC Sweet (also "Abuyog Sweet")	Recognized as the sweetest jackfruit in the Philippines (≈ 25.15 °Brix). Golden-yellow arils, aromatic, moderately low latex, good yield — about 35 fruits per season per tree. AGRIS+2Philippine News Agency+2
Mabini	Dual-purpose variety (fresh fruit & processing). Oblong fruit ~15.4 kg, bright yellow-orange, juicy, smooth, semi-crispy flesh, strong aroma, thick edible portion (~50%), fairly high yield (50–80 fruits per season). UPLB UKDR+1
Sinaba	Traditional Philippine cultivar. Known for thick flesh, small seed, and good eating quality. Scribd+1
Tinumbaga (sometimes "Tinambaga")	Another traditional/locally selected variety; tends to have sweeter taste and stronger aroma compared to Sinaba, though flesh may be thinner. Philippine Tambayan+1
J-01 / J-02 / TVC (plus some older selections)	Among historically important varieties identified for fruit production in the Philippines (though overshadowed by newer selections). Known for decent fruit size and yields. USAID PDF+1

Note: There are many local cultivars and selections beyond the top commercial ones — but for large-scale production and commercial supply, the ones above tend to dominate. USAID PDF+2AGRIS+2

Top Five for Commercial Use (in Practice)

Based on yield, fruit quality (sweetness, flesh, and aroma), and adoption by growers, these five are often cited as the primary varieties for commercial jackfruit production in the Philippines:

1. EVIARC Sweet
2. Mabini
3. Sinaba
4. Tinumbaga
5. J-01 / J-02 / TVC (older but still in use)

Growers favor them for a mix of sweetness, flesh quality, yield reliability, and suitability for both fresh sale and processing (e.g. drying, canning, value-added products). Philippine Tambayan+3AGRIS+3TFNet+3

Summary / Observations

- The Philippines cultivates a mix of traditional/local cultivars (like Sinaba, Tinumbaga) and improved or selected varieties (like EVIARC Sweet, Mabini, J-01/J-02).
- For **commercial production**, sweetness, yield, and flesh quality matter — which is why EVIARC Sweet and Mabini lead.
- Regions with strong government support and processing infrastructure — especially in Eastern Visayas — dominate commercial supply and value-added jackfruit products.
- Local markets still rely heavily on traditional varieties, ensuring genetic and cultural variety in what consumers eat.

Economics: Jackfruit in Southern Bukidnon / Valencia

Yield & Price Benchmarks

- A mature jackfruit tree typically yields **70–100 kg of fruit per year** in the Philippines under normal conditions. Cabi Digital Library+2Growables+2
- Local farm-gate selling prices for ripe jackfruit vary; recent observed prices in some markets are around **₱60–₱155 per kg (retail range)**, though actual farm-gate prices may be lower. kalipayanfarm.com+2palengkeboy.com+2

Using these conservative yield/price figures:

Scenario	Yield per tree (kg)	Price per kg (₱)	Gross Revenue per Tree (₱)
Low yield, low price	70	60	**₱ 4,200**
Low yield, higher price	70	100	**₱ 7,000**
Average yield, moderate price	90	80	**₱ 7,200**
High yield, good price	100	100	**₱ 10,000**

Note: ₱ 100/kg is used here as a mid-to-good farmgate benchmark; actual market price fluctuates depending on season, demand, transport, and quality.

Thus, a well-maintained mature jackfruit tree in Bukidnon/Valencia might gross **₱4,000–₱10,000 per tree annually**, before costs of harvesting, transport, labor, and processing.

Economic Context & Income Potential

- For small-holder farmers or orchard owners in Southern Bukidnon, integrating jackfruit on several hectares could yield meaningful supplemental income—especially given local demand and limited competition.
- As reported in a case elsewhere in the Philippines, proper management of a high-performing variety (like EVIARC Sweet) significantly boosted yield, translating to increased per-hectare income for growers. TFNet+2Philstar+2
- The rising demand for jackfruit and limited local supply adds to market acceptability, potentially commanding better price — especially for good-quality fruit. PCAARRD+1

Risks and Considerations

- **Price volatility:** Prices can fluctuate depending on supply, seasonality, and market demand. Lower farm-gate prices significantly reduce profitability.
- **Yield variability:** The 70–100 kg/year per tree is average — yields can be lower due to poor management, pests, diseases, or unfavorable climate.
- **Time to maturity:** Trees take several years to mature before reaching full yield potential. Initial years may provide little return.
- **Harvest and labor costs**, plus post-harvest losses (spoilage, transport, waste) can erode gross revenue.

Strategic Opportunity for Bukidnon/Valencia

- Given local demand for jackfruit and relative scarcity — especially if competing crops don't meet demand — jackfruit presents a viable **cash-crop opportunity** for small and medium growers.
- If combined with value-adding (fresh fruit sales, processing: canned/dried jackfruit, chips, preserved fruit), returns per tree—and per hectare—could improve significantly. Experiences from other regions show processed jackfruit attracts good prices. TFNet+2PCAARRD+2
- For a farmer with, say, 20–50 mature trees, gross annual revenue from jackfruit could become a meaningful supplementary income stream, especially when paired with other crops or agroforestry practices.

Summary

Growing jackfruit in Southern Bukidnon / Valencia — under favorable conditions — can yield modest but meaningful income: roughly ₱4,000–₱10,000 gross per mature tree annually. While not a "get-rich-quick" crop, jackfruit offers a low-maintenance, perennial source of income. Success depends on good tree management, achieving reasonable yields, and getting decent farm-gate prices. For smallholders and medium-scale farms,

jackfruit can be a strategic addition or alternative to traditional crops — especially when value-adding or tapping into demand for fresh/processed fruit.

Jackfruit as a Secondary Crop Canopy

Main Tree / Canopy	Compatible Intercrops	Good / Bad	Shade Consideration	Recommended Spacing (m)
Jackfruit (as secondary canopy)	Papaya, Banana, Coffee, Cacao, Kaimito, Valencia Orange	**Good:** Papaya, Banana, Coffee, Cacao, Valencia, Kaimito; **Bad:** Shade-sensitive vegetables, shallow-rooted crops	Moderate shade at young stage; avoid heavy shading for understorey crops like cacao & coffee	8–12 m between jackfruit trees; maintain at least 3–5 m from understorey trees
Coconut (primary)	Jackfruit, Papaya, Banana, Coffee, Cacao, Valencia, Kaimito	**Good:** Jackfruit, Papaya, Banana, Coffee, Cacao, Valencia, Kaimito; **Bad:** Large shade-tolerant trees competing for nutrients	Provides partial shade; tolerant under coconut canopy	9×9 m grid; jackfruit planted midway for partial light
Coffee (secondary / understory)	Banana, Papaya, Valencia	**Good:** Banana, Papaya; **Bad:** Jackfruit (overhead shade may reduce yield if too dense)	Partial shade preferred (40–60% sunlight)	2–3 m from shade trees; 2–3 m between coffee plants
Cacao (secondary / understory)	Banana, Papaya, Valencia	**Good:** Banana, Papaya; **Bad:** Jackfruit if dense	Shade-loving; needs filtered sunlight (~50%)	3–4 m from main canopy trees; 2–3 m between cacao
Papaya (short crop)	Coffee, Cacao, Banana	**Good:** Under partial shade of jackfruit or coconut; **Bad:** Competes for nutrients if roots overlap heavily	Tolerates partial shade; prefers 50–70% sunlight	2–3 m from large trees; 2–3 m spacing between papaya
Banana (short crop)	Coffee, Cacao, Papaya	**Good:** Coffee, Cacao, Papaya; **Bad:** Overcrowding with jackfruit reduces fruit size	Partial shade acceptable; needs high humidity	2–3 m spacing from main trees; 2–3 m between banana plants
Kaimito (medium tree)	Coffee, Cacao, Papaya, Banana	**Good:** Papaya, Banana; **Bad:** Close proximity to jackfruit reduces sunlight	Partial shade tolerant; needs filtered sunlight	6–8 m from jackfruit; 3–4 m between kaimito
Valencia Orange (medium tree)	Coffee, Cacao, Papaya, Banana	**Good:** Papaya, Banana, Coffee; **Bad:** Too close to jackfruit or coconut reduces light	Prefers full sun; some tolerance to partial shade	6–8 m from jackfruit/coconut; 4–5 m between oranges

Summary

- **Jackfruit as a secondary canopy** is moderately shade-tolerant; young trees can grow under taller coconut or other primary canopies.
- **Compatible intercropping crops** include papaya, banana, cacao, coffee, Valencia orange, and kaimito — all of which tolerate partial shade or benefit from moderated sunlight.
- **Incompatible or risky combinations** are shade-sensitive or shallow-rooted crops that compete strongly with jackfruit roots.
- **Spacing considerations** are critical: jackfruit needs wide spacing (8–12 m) to prevent excessive shading and root competition, while understory crops like coffee, cacao, papaya, and banana need adequate light and space for optimal yield.
- **Strategic layering**: Taller trees (coconut, jackfruit) provide shade and wind protection, medium trees (kaimito, Valencia) fill the mid-canopy, and short crops (papaya, banana, coffee, and cacao) thrive underneath.

Market Demand & Acceptance

- The demand for jackfruit in the Philippines is high and outpaces local production: about **30% of domestic demand** is met by imports (from countries like Vietnam and Thailand). Tridge
- This unmet demand suggests a large local market potential for jackfruit producers willing to scale up production. Tridge+2Grokipedia+2
- Bukidnon overall remains a major agricultural province: in 2024, it led all provinces in agriculture and fisheries output. Philippine News Agency+2Grokipedia+2
- Valencia City — as a central trade hub with functional public markets (central public market and farmer's market) — provides accessible local market outlets for agricultural products. Wikipedia+1
- Coconut remains a recognized crop in Region 10 (which includes Bukidnon), with established processing and industry support structures — indicating acceptance and potential for value-added products from coconut. pca.gov.ph+2oaj.fupress.net+2
- For citrus / orange (like Valencia Orange), though major citrus production in the Philippines is more concentrated in certain regions, there is growing national demand for citrus fruits and awareness of citrus industry profitability. Agri Farming+2km4aanr.pcaarrd.dost.gov.ph+2
- Given Bukidnon's fertile soils, favorable climate, and large agricultural area (many hectares suitable for crop production) — often called the "food basket" of Northern Mindanao — there is structural support for expanding fruit and high-value crop production there. saad.da.gov.ph+2Grokipedia+2

Conclusion on demand/acceptance: There appears to be a strong and rising demand for jackfruit and other fruit/crop products; local market infrastructure (especially around Valencia) is in place; and Bukidnon's agricultural capacity supports scaling up production.

Risks & Challenges

Challenge / Risk	Description / Impact
Supply gap vs. high demand — but production limited	Though demand for jackfruit is high, many farmers prefer other crops (e.g. cocoa, coffee, avocado) over jackfruit — leading to limited expansion. Tridge+1
Economic inequality / poverty among smallholders	Despite high province-wide agri output, poverty remains high in many Bukidnon areas; many farms are commercial plantations, while smallholders lack land ownership or resources to expand. MindaNews+2saad.da.gov.ph+2
Environmental / climate-water stress	Deforestation and watershed degradation in Bukidnon have diminished water retention, leading to drought risk, siltation, and water scarcity — which can affect fruit tree health and yield. bukidnon.gov.ph
Low diversification / weak value-adding / processing capacity	Even though coconut (and other crops) have processing potential, the province's manufacturing/processing sector remains underdeveloped; value-adding may be limited. bukidnon.gov.ph+2pca.gov.ph+2
Market & logistic challenges for non-traditional/organic produce	For organic or small-scale fruit producers (jackfruit, citrus, etc.), finding stable markets can be difficult; integrating into formal supply chains or value-added lines is challenging. ResearchGate+1
Competition from imports and from other crops	Imported jackfruit fills part of demand; also alternate crops (pineapple, banana, corn, sugarcane, rice, conventional export crops) compete for land, labor, and investment — especially in a province with many major crops. Wikipedia+2bukidnon.gov.ph+2
Rural-urban and intra-provincial inequality	Agricultural wealth often concentrates in commercial farms; remote or upland communities, especially IP-dominated, may lack access to markets, infrastructure, or support — limiting equitable benefit. saad.da.gov.ph+2MindaNews+2

Opportunities (Why Southern Bukidnon Could Work Well)

1. **High latent demand for jackfruit** — with local production insufficient to meet demand, there's a niche for farmers to supply fresh fruit (or processed jackfruit) to local and regional markets.
2. **Strong agricultural foundation and government support** — Bukidnon is already recognized as a top agrifishery output province; infrastructure developments (e.g. farm-to-market roads, support for agro-industry) are underway. saad.da.gov.ph+2Manila Bulletin+2
3. **Value-adding potential** — especially for coconut (processing into nontraditional products) and jackfruit (fresh fruit, processed, dried, canned) — tapping into markets that rely on imports. Coconut sector development programs in Bukidnon have shown some success in improving profitability for farmers. ResearchGate+2pca.gov.ph+2
4. **Local market access via Valencia City** — thanks to its public markets and growing commerce, farmers can more easily market produce. Wikipedia+1
5. **Diversified cropping & agroforestry suitability** — the fertile soils, plateau climate, and existing diversity of crop production in Bukidnon support agroforestry or mixed-crop farms blending fruit trees, coconuts, and other high-value crops. saad.da.gov.ph+2Wikipedia+2
6. **Potential to reduce import dependence** — by producing more jackfruit locally, farmers and the region could help reduce reliance on imported jackfruit, capturing domestic market share and possibly supplying other regions.

Summary (for Southern Bukidnon with Valencia)

Southern Bukidnon — especially around Valencia City — presents a promising environment for fruit tree agriculture involving jackfruit, coconut, or citrus (including Valencia-type oranges). The high demand for jackfruit, coupled with existing agricultural infrastructure and market outlets, offers a lucrative opportunity for farmers willing to invest in production and (ideally) value-added processing. However, success is not guaranteed: challenges such as water stress, unequal land ownership, competition from other crops, weak processing/industrial capacity, and logistic/market constraints must be addressed.

For smallholders or farming cooperatives, strategies that combine **good site selection, efficient water/soil management, diversification (e.g. jackfruit + coconut + citrus), and value-adding (processing or fresh-supply chain linkages through Valencia City markets)** could maximize chances for economic gain.