



Durian

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Durian Tree Characteristics

Scientific Name: *Durio zibethinus*

Family: Malvaceae

Growth Habit

- A large, long-lived tropical tree reaching **25–40 meters** in height.
- Naturally grows with a straight trunk and a broad, dome-shaped crown.
- Produces strong, thick branches capable of supporting heavy fruit loads.

Leaves

- Simple, elliptical leaves, glossy green on top and bronze to golden-brown underneath.
- Evergreen and adapted to humid tropical climates.

Roots

- Has a deep taproot and a wide lateral root system.
- Performs best in **well-drained, deep loamy soils** with good aeration.
- Sensitive to waterlogging — prolonged flooding can kill the tree.

Environmental Requirements

- Thrives in **humid, tropical lowlands** with regular rainfall.
- Prefers elevations below **800 m** but can grow slightly higher depending on variety.
- Requires good sunlight exposure; avoid planting near taller forest trees that block light.

Flowering & Pollination

- Flowers are large, pale green to white, and open at night.
- **Bats** (especially fruit bats) are the major pollinators.
- Flowering often happens once or twice per year depending on climate and cultivar.

Fruit Production

- Begins fruiting around **4–7 years** for grafted trees, 8–15 years for seedlings.
- Peak productivity reaches 15–25 years with proper management.
- Yields vary but well-managed orchards can produce **40–80 fruits per tree per season**, depending on variety and tree size.

Durian Fruit Characteristics

Exterior

- Large and round-to-oval fruit weighing **1–4 kg**.
- Covered with thick, hard spines; requires careful handling during harvest.



Interior

- Contains several segments filled with soft, creamy flesh (called “arils”).
- Color varies from pale yellow, golden yellow, deep orange, to white depending on the cultivar.

Flavor & Aroma

- Famous for its strong aroma — complex, sweet, sulfurous, and custard-like.
- Texture ranges from custardy and buttery to slightly fibrous.

Nutritional Profile of Durian (per 100 g edible portion)

- **Calories:** ~147–160 kcal
- **Carbohydrates:** ~27–33 g
- **Protein:** ~2.5–3.0 g
- **Fat:** ~5–6 g (mostly healthy fats)
- **Fiber:** ~3–4 g
- **Vitamin C:** ~19–25 mg
- **Potassium:** ~430 mg
- **Vitamin B complex:** B1 (Thiamine), B2, B3, B6
- **Minerals:** Copper, manganese, magnesium, folate
- Contains natural sulfur compounds responsible for its aroma.

Health Benefits of Durian

1. Energy-Dense Natural Fuel

- Durian is rich in carbohydrates and healthy fats, making it an excellent natural energy source for farmers, field workers, and athletes.

2. High in Fiber

- Supports digestion, helps prevent constipation, and contributes to a healthy gut microbiome.

3. Rich in Antioxidants

- Durian contains vitamin C, polyphenols, and anthocyanins that help reduce inflammation and support cellular repair.

4. Heart Health Support

- Contains healthy monounsaturated fats that can help manage cholesterol levels.
- High potassium content supports stable blood pressure.



5. Strong Vitamin B Complex

- Thiamine (B1) supports nerve function and energy metabolism — helpful for people with active lifestyles.

6. Improves Immune Function

- Vitamin C strengthens immune response and helps the body fight infections.

7. Natural Mood Booster

- Durian contains **tryptophan**, a precursor to serotonin, which may support mood, relaxation, and sleep.

8. Mineral-Rich for Bone and Muscle Function

- Magnesium, manganese, copper, and potassium contribute to strong bones and healthy muscle function.

Root System of Durian

1. Deep Taproot (Primary Root)

- Durian naturally develops a **strong, deep taproot** during its early years.
- This taproot anchors the tree firmly and allows access to deeper soil moisture.
- It can penetrate **1.5–3 meters** depending on soil structure.

2. Extensive Lateral Root Network

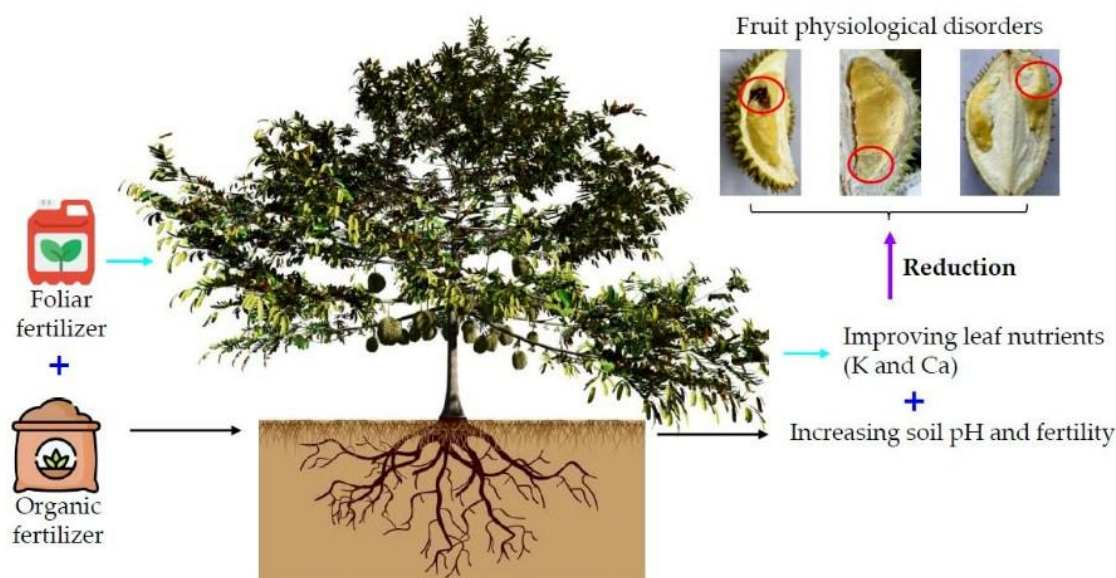
- Beyond the taproot, durian forms a **wide-spreading lateral root system** near the surface.
- Most feeder roots (fine roots that absorb nutrients) lie within the **top 30–60 cm** of soil.
- Lateral roots extend far beyond the canopy—often **1.5× the canopy diameter**.

3. Fine Feeder Roots

- Delicate and sensitive to soil compaction and waterlogging.
- Responsible for nutrient uptake, microbial interactions, and overall tree health.

4. Mycorrhizal Association

- Durian roots naturally form symbiotic relationships with beneficial fungi.
- These fungi enhance nutrient absorption, especially phosphorus.
- Healthy soil biology is essential for vigorous growth.



Growing Implications of Durian

1. Durian Cannot Tolerate Waterlogging

- Because feeder roots are near the surface and require oxygen, durian is **very sensitive to standing water**.
- Flooded soil quickly leads to **root rot** and tree death.
- **Implication:**
 - Avoid low-lying areas.
 - Use **mounds, ridges, or raised beds** (30–60 cm high) to improve drainage.
 - Ensure slopes and contour lines guide water away from the root zone.

2. Requires Deep, Well-Aerated, Loamy Soil

- The taproot needs deep soil to grow properly.
- Hardpan layers or compacted clay restrict taproot development, weakening the tree.
- **Implication:**
 - Perform **deep ripping** or subsoiling before planting.
 - Mix organic matter to loosen the soil.
 - Avoid planting where plow pans or hard clay layers exist beneath the topsoil.



3. Sensitive to Soil Compaction

- Heavy machinery, livestock, or repeated foot traffic crush the fine roots.
 - Compaction limits oxygen flow, reduces nutrient uptake, and weakens the tree.
 - **Implication:**
 - No tractors or vehicles within the tree's dripline.
 - Maintain grass or cover crops to support soil structure.
-

4. Requires Adequate Spacing

- Because roots spread wide, overcrowding leads to competition for nutrients and water.
 - Durian trees planted too close develop shallow, weak root architecture.
 - **Implication:**
 - Ideal spacing: **8 × 8 m or 10 × 10 m** for standard varieties.
 - For high-density early projects: **6 × 6 m**, then thinning later.
-

5. Benefits Greatly from Mulching

- Lateral roots near the surface dry out quickly.
 - Mulching helps maintain moisture, improves microbial activity, and prevents weed competition.
 - **Implication:**
 - Apply **10–20 cm thick** mulch layer around the tree (but not touching the trunk).
 - Use organic mulch: coconut husk, rice hulls, wood chips, dried leaves.
-

6. Extreme Sensitivity to Root Disturbance

- Durian dislikes transplant shock.
 - Seedlings with damaged roots grow slowly or die.
 - **Implication:**
 - Use **polybag-grown** or **grafted** seedlings with intact root systems.
 - When transplanting, **do not disturb the soil ball**.
-

7. Importance of Mycorrhiza

- Mycorrhizal fungi significantly improve survival rates and reduce stress.
 - **Implication:**
 - Inoculate seedlings with **mycorrhiza** during planting.
 - Maintain soil organic matter to encourage fungal colonization.
-



8. Nutrient Management Must Match Root Behavior

- Most nutrient absorption happens in the surface layers of soil.
- **Implication:**
 - Apply fertilizers **as a ring** or broadcast, not deep in the soil.
 - Drip irrigation or fertigation is highly effective.

Sunlight Requirements of Durian

Durian is a **sun-loving tropical tree** that performs best under **full sunlight** once established. However, its sunlight tolerance varies by age:

Seedlings (0–1 year)

- Prefer **50–70% filtered sunlight**.
- Direct, harsh midday sun can burn young leaves.

Young Trees (1–3 years)

- Require **60–80% sunlight**.
- Partial shade is still acceptable but not too dark.

Mature Trees (3+ years)

- Need **full sun (100%)** to maximize:
 - Flowering
 - Fruit set
 - Fruit sweetness
 - Tree vigor



Major Durian Varieties

1. Puyat (Duyaya Red Pulp Hybrid Lineage)

- **Most commercially dominant variety** in the Philippines.
- Thick, firm, golden-yellow flesh.
- Sweet with slight bitterness.
- Very reliable yield, good fruit set.
- Long shelf life—excellent for transport and export.

2. Arancillo (Carabao Durian)

- One of the **top-quality eating durians** in Davao.



- Very creamy, almost buttery texture.
- Balanced sweetness and bitterness.
- Earlier fruiting than other varieties.
- Smaller seeds, more edible flesh.

3. Duyaya (Red Durian)

- Known for its **distinct deep yellow-orange or reddish flesh**.
- Very soft, custard-like texture.
- Aromatic and intensely flavored.
- Higher market price due to rarity.

4. Alcon Fancy

- Large fruits, thick creamy flesh.
- Very mild bitterness with rich sweetness.
- Preferred by consumers who like strong aroma but not overly bitter taste.

5. Monthong (Imported Thai Variety)

- Widely grown in Mindanao as well.
- Thick, firm, pale yellow flesh.
- Sweet, less aromatic compared to Filipino types.
- Popular for processing and export markets.

6. Chanee (Thai Variety)

- Better disease resistance compared to Monthong.
- Stronger aroma, creamier flesh.
- Reliable in wetter areas.

Intercropping Tree Crops with Durian

Durian is a **sun-loving, deep-rooted, and nutrient-demanding tree**. Intercropping can provide extra income and soil benefits, but it must be carefully planned.



Good Tree Crops to Intercrop with Durian

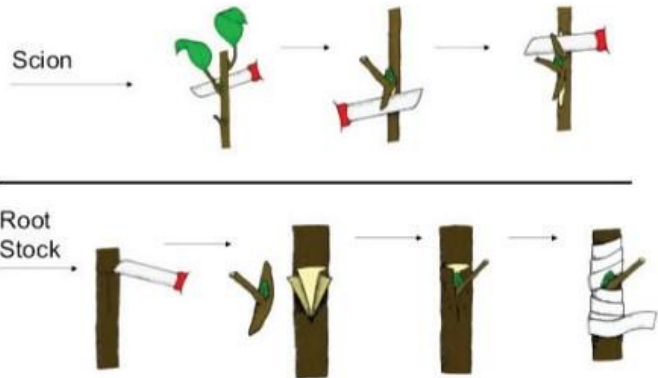
Tree Crop	Pros	Notes / Growing Tips
Banana	<ul style="list-style-type: none">• Provides temporary shade for young durian seedlings.• Quick cash crop while durian matures.• Helps reduce soil erosion and retain moisture.	<ul style="list-style-type: none">• Remove or thin bananas as durian canopy expands (around 3–4 years).• Plant outside main dripline to reduce root competition.
Papaya	<ul style="list-style-type: none">• Fast-growing, early-yielding fruit for income.• Does not form deep shade.	<ul style="list-style-type: none">• Keep spacing from durian dripline to avoid competition for nutrients.• Short-lived, will need replacement after 3–4 years.
Mangosteen	<ul style="list-style-type: none">• Can grow alongside durian in well-drained soil.• Medium canopy tree—minimal shading if spaced properly.	<ul style="list-style-type: none">• Slow-growing; ensure durian gets full sunlight.• Good as long-term companion with proper pruning.
Rambutan / Lanzones / Longkong	<ul style="list-style-type: none">• Similar soil and climate needs.• Offers harvest diversification.	<ul style="list-style-type: none">• Maintain spacing to avoid excessive shading.• Suitable only after durian seedlings are 2–3 years old.
Cacao / Coffee (understory trees)	<ul style="list-style-type: none">• Thrives under partial shade of young durian.• Provides continuous cash flow.• Improves soil organic matter.	<ul style="list-style-type: none">• Remove shade-tolerant intercrops if durian canopy becomes dense.• Regular pruning is necessary to prevent durian suppression.
Coconut (dwarf / tall)	<ul style="list-style-type: none">• Can work if durian is spaced wide (>10 m).• Provides windbreak and extra income.	<ul style="list-style-type: none">• Only plant coconut on edges or in wide rows to minimize shading of durian.• Tall coconuts may reduce durian flowering if too close.

Bad Tree Crops to Intercrop with Durian

Tree Crop	Cons / Risks	Why to Avoid
Jackfruit	<ul style="list-style-type: none">• Large, fast-growing canopy causes heavy shade.• Aggressive root system competes for nutrients.	Reduces durian growth, flowering, and fruit quality.
Mahogany / Timber Trees	<ul style="list-style-type: none">• Tall, dense canopy.• Takes decades to harvest, no short-term benefits.	Blocks sunlight, slows durian flowering, and root competition is high.
Rubber (Hevea)	<ul style="list-style-type: none">• Deep-rooted, competes for water and nutrients.• Dense canopy reduces sunlight.	Can stunt durian growth and reduce yield.
Large Mango / Avocado	<ul style="list-style-type: none">• Can overshadow durian and limit airflow.	Risk of fungal diseases due to poor ventilation; slows durian maturation.
Cassia / Fast- Growing Shade Trees	<ul style="list-style-type: none">• Provides excessive shade.• Rapid nutrient depletion.	Reduces young durian vigor and delays fruiting.

Key Growing Implications

1. **Sunlight Priority** – Durian requires full sunlight for flowering and fruiting. Avoid permanent shade from large trees.
2. **Root Competition** – Avoid aggressive or deep-rooted trees close to the durian root zone.
3. **Temporal Intercropping** – Short-lived, fast-growing crops (bananas, papaya, cacao) are ideal **for the first 2–4 years**.
4. **Pruning Management** – Regular pruning of both durian and intercrops is essential to maintain airflow, light, and reduce pest pressure.
5. **Spacing Strategy** – Maintain **8–10 m spacing** between durian and other medium-to-large trees. Small trees or understory crops can fit within the canopy dripline initially.



✓ Summary:

- **Good companions:** Banana, papaya, cacao, coffee, mangosteen, rambutan, small coconut.
- **Avoid:** Jackfruit, mahogany, rubber, tall mango, large fast-growing shade trees.
- **Strategy:** Use fast-growing, short-term crops early; phase out or prune as durian matures.

What is the Broader Durian Market

High Export Demand

- The Philippines (particularly Mindanao) is tapping into **lucrative export markets**, especially China. [BusinessMirror+2MindaNews+2](#)
- Export access is growing. [MindaNews+2BusinessMirror+2](#)
- This export demand could drive up local farm-gate prices if you target export-quality durian varieties.



Domestic Supply-Demand Imbalance

- According to an agricultural economics study, *demand continues to outpace supply*. [AgEcon Search](#)
- Local consumption is relatively low in the Philippines (estimated at only ~0.2 kg/person/year) compared to other Southeast Asian countries. [AgEcon Search](#)
- This suggests that increasing local production (e.g., in Bukidnon) can help satisfy both **local and export markets** as supply expands.

Durian Prices Can Be Volatile Locally

- In Davao markets, durian prices fluctuate heavily depending on supply. [SunStar Publishing Inc.](#)
- There is also a segmentation in pricing: “export varieties” like Puyat may command **≥ P100/kg** locally. [Mindanao Times](#)
- For growers, this means **timing** (harvest, transportation) and **quality** (variety, grade) will be crucial to maximize returns.

Strong Mindanao Consumption

- Historically, Mindanao is a **strong durian consumer base**. One older source claims that ~80% of people in Mindanao are durian eaters vs. only ~20% non-eaters. [Edge Davao](#)
- This suggests that local markets in Bukidnon (or nearby) likely have a decent acceptance, especially among durian lovers.

Production Presence in Bukidnon

- According to a Value Chain Analysis (VCA) document, Bukidnon is listed among provinces with significant durian activity. [Google Cloud Storage](#)
- This means there is some production infrastructure or participation already in the durian value chain in the province.

Inferences for Southern Bukidnon

Based on the broader market data and the specific characteristics of Don Carlos, Maramag, Kadingilan, Kibawe, etc., here are some **opportunities** and **risks** for market acceptance

Opportunities

- **Local Demand Potential:** Because of Mindanao’s strong durian-eating culture, there is likely a robust **local market** for quality durian in southern Bukidnon.
- **Export Orientation:** If you produce high-quality or export-standard durian (e.g., **Puyat**, other premium varieties), you can tap into export channels, especially as the export market continues to grow.



Risks / Challenges

- **Price Volatility:** Durian prices locally can swing a lot. Harvest timing, fruit grade, and market access will strongly influence profitability.
- **Logistics:** To target export or even high-end local markets, you need good post-harvest handling (cold chain, packaging) to preserve quality.
- **Market Saturation Risk:** If many farmers ramp up durian production in Mindanao, local supply could flood markets and depress farm-gate prices, especially for lower-grade fruit.
- **Cost of Production:** Establishing a durian orchard is capital-intensive (seedlings, land, labor). Without efficient operations, returns could be delayed.
- **Competition with Davao:** Davao Region is still the biggest player in durian production. Competing on volume or price may be difficult unless you differentiate (variety, quality).
- **Climate Risks:** Durian is sensitive to climatic conditions; unfavorable weather could reduce yield or fruit quality, affecting both local and export sales.

Assessment: Likely Market Acceptance in Southern Bukidnon

- **Moderately Strong:** Given Mindanao's historical durian consumption, and Bukidnon having some durian production, there is a **good base of local demand**.
- **High Growth Potential:** Because of growing export avenues and the existing supply gap, durian from your area could be very competitive—especially if you produce well.
- **Value-Add Advantage:** Focusing not just on fresh durian but on processed pulp or frozen could help stabilize profitability and expand market share.
- **Value-Added Products:** Given volatility in fresh durian prices, there may be room for **processed durian products** (frozen pulp, candies, pastries) that can stabilize income.
- **Supply Gap:** If local production is still low relative to potential demand, new orchards in your area could fill a **niche or underserved market**.
- **Premium Pricing Seasonally:** During peak seasons or low-supply periods, good-quality durian may fetch premium prices in local or regional markets.