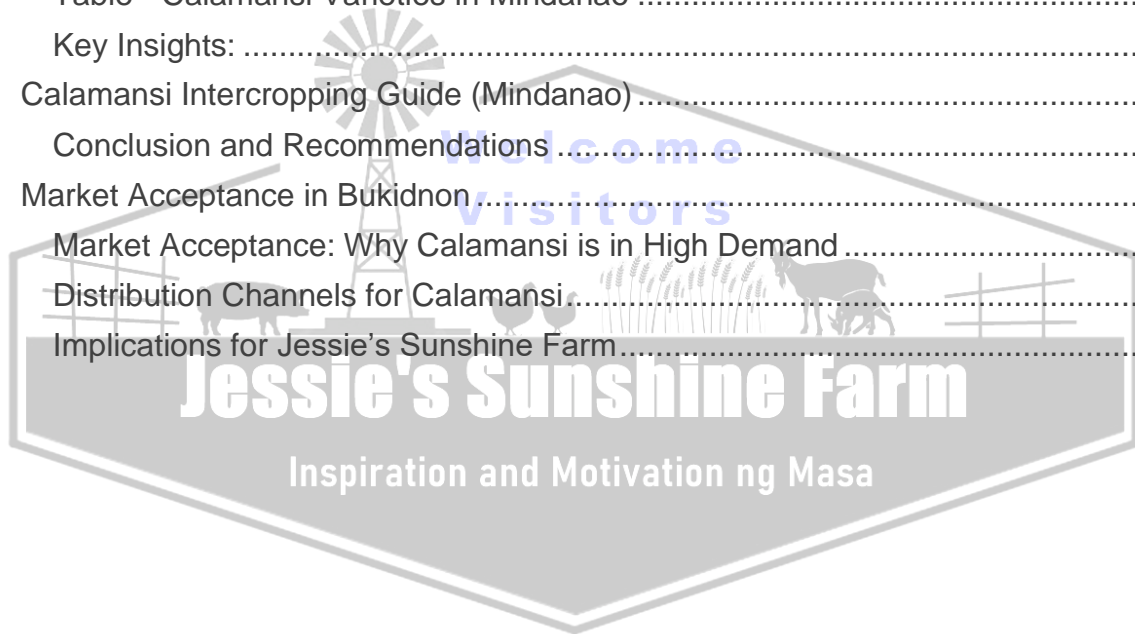




# Calamansi Research

## Calamansi

Characteristic of Calamansi.....	2
Ways to Use Calamansi in Dishes .....	2
Nutrients per Fruit .....	3
Health Benefits.....	3
Root System Characteristics .....	3
Growing Implications.....	4
Calamansi Varieties.....	5
Table - Calamansi Varieties in Mindanao .....	7
Key Insights: .....	7
Calamansi Intercropping Guide (Mindanao) .....	8
Conclusion and Recommendations .....	8
Market Acceptance in Bukidnon.....	9
Market Acceptance: Why Calamansi is in High Demand .....	9
Distribution Channels for Calamansi.....	10
Implications for Jessie's Sunshine Farm.....	11





## ***Characteristic of Calamansi***

Calamansi is a small, tart, tropical citrus fruit native to Southeast Asia, resembling a round lime with a thin, orange rind when ripe, and is a key ingredient in Filipino and Malaysian cuisine. It is also known as Calamondin, Philippine lime, or Philippine lemon, and is cultivated in the Philippines, Indonesia, Malaysia, and parts of China and Taiwan. Calamansi has a unique, zesty flavor that is a cross between a lime and a mandarin orange, and is used to flavor dishes, drinks, and desserts, or as a substitute for lemons and limes in other recipes

### ***Ways to Use Calamansi in Dishes***

#### ***1. Condiment / Seasoning***

- **Dipping sauce** – mixed with soy sauce, patis (fish sauce), or vinegar for grilled meats, seafood, or lumpia.
- **Table seasoning** – squeeze fresh Calamansi over pancit, fried fish, or rice meals.

#### ***2. Drinks***

- **Calamansi juice** – fresh-squeezed, sweetened with sugar or honey, served cold.
- **Iced tea flavoring** – adds brightness to brewed teas.
- **Cocktails** – replaces lime in margaritas, mojitos, or gin-based drinks.

#### ***3. Cooking / Marinades and Motivation ng Masa***

- **Meat & seafood marinades** – Calamansi juice tenderizes and removes strong odors.
- **Adobo variations** – some use Calamansi instead of vinegar for a citrusy note.
- **Kinilaw (Filipino ceviche)** – Calamansi juice “cooks” fresh fish along with vinegar and spices.

#### ***4. Sauces & Dressings***

- **Salad dressings** – Calamansi juice with olive oil, garlic, and pepper.
- **Sweet-sour sauces** – Calamansi blended with sugar, ginger, or chili.
- **Glazes** – for grilled chicken, pork, or shrimp.

#### ***5. Desserts & Sweets***

- **Calamansi pie / bars** – similar to key lime pie.
- **Cakes & frostings** – Calamansi zest or juice adds citrus aroma.
- **Jams & marmalades** – cooked with sugar for spreads.
- **Candied Calamansi peel** – boiled and sugared for snacks or garnish.



## *Nutrients per Fruit*

- Calories: ~12
- Fat: 0 g
- Carbohydrates: ~3.1 g
- Fiber: ~1.2 g
- Protein: ~0.2 g
- Vitamin C: ~7.3 mg
- Vitamin A: ~57.4 IU
- Potassium: ~37 mg
- Calcium: ~8.4 mg



## *Health Benefits*

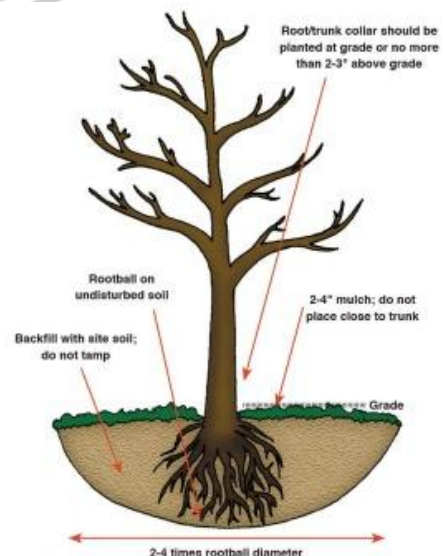
- **Rich in Vitamin C:** Calamansi is an excellent source of Vitamin C, which is an important antioxidant and supports the immune system.
- **Antioxidants:** The antioxidants in Calamansi help protect the body from inflammation and can benefit skin health by promoting cell renewal.
- **Low in Calories and Fat:** It's a low-calorie, low-fat option that can be a refreshing addition to a healthy diet.

The **Calamansi tree** (*Citrofortunella microcarpa*) in Mindanao develops a root system that reflects both its citrus heritage and adaptation to tropical soils:

Inspiration and Motivation ng Masa

## **Root System Characteristics**

- **Type:** It has a **shallow to moderately deep root system**, typical of citrus trees. The bulk of the roots spread laterally rather than vertically.
- **Depth:** Most roots are concentrated in the **top 30–60 cm** of soil, though some feeder roots can reach deeper (up to ~1.5–2 m) if the soil is loose, well-drained, and not compacted.
- **Spread:** The lateral roots can extend **beyond the tree's canopy (drip line)**, often 1.5–2 times the crown radius.
- **Feeder Roots:** Fine fibrous roots dominate and are highly active in nutrient and water uptake. These feeder roots thrive best in **well-aerated sandy loam or clay loam soils**.





- **Anchorage:** Taproot development is weak compared to deep-rooted species (like mango). Instead, anchorage depends on the **lateral root network**, which is why strong winds or shallow soils can make Calamansi prone to toppling if not well-established.
- **Shallow and Fibrous:** The root system is not deep but consists of numerous, fibrous roots that spread outwards near the soil surface.
- **Nutrient Absorption:** These roots are responsible for absorbing water and essential vitamins and minerals from the soil to support the tree's growth.
- **Susceptibility to Competition:** Due to its shallow nature, the root system can be susceptible to competition from weeds.

## ***Growing Implications***

**Climate & Location:** Tropical/Subtropical Requirement: Calamansi thrives in warm, tropical, or subtropical climates. Because roots are shallow, Calamansi is sensitive to drought stress during dry spells. Consistent watering or mulching helps.

**Wind Protection:** Planting in wind-prone Mindanao areas (e.g., uplands or open fields) benefits from windbreaks or intercropping, since the root system does not anchor as strongly as deep-rooted trees

**Sunlight:** It requires ample sunlight, ideally 6-8 hours of direct sun daily, for optimal growth and fruit production. Insufficient light can lead to stunted growth and reduced fruit yield.

**Soil Types:** On **Panas sandstone soils** (light, drought-prone): roots spread widely but remain shallow, so regular mulching and irrigation are essential. On clay soils (like Aduyon or Kidapawan clay loam): roots may not penetrate deeply due to compaction, so drainage and soil aeration are important.

**Soil and Watering:** Drainage is Crucial: The plant is susceptible to root rot if the soil is waterlogged. This means cultivation requires well-draining soil, such as sandy or clay loam rich in organic matter. Heavy clay soils that retain too much moisture should be avoided.

**Consistent Moisture:** While it can tolerate some drought, consistent and deep watering is vital, especially during dry spells and the flowering/fruitletting stages, to prevent flower or fruit drop. Good watering practices, such as checking the top inch of soil before watering, are essential. Apply mulch around the base of the tree to help conserve soil moisture, but ensure the mulch doesn't get too thick.

**Soil pH:** Calamansi prefers slightly acidic to neutral soil (pH 5.5 to 7.0). Monitoring and adjusting soil pH may be necessary to ensure optimal nutrient uptake.



## ***Calamansi Varieties***

In Mindanao, farmers grow several **Calamansi (*Citrofortunella microcarpa*)** varieties, though compared to mango or Lanzones, named varieties are fewer. Most are identified by **growth habit, fruit size, and bearing behavior** rather than formally registered names. Here's a breakdown of the most recognized types:

### ***1. Common / Native Calamansi (Traditional Variety)***

- Most widely planted in Mindanao.
- Small to medium fruit (2–3.5 cm diameter), thin rind, very juicy, aromatic.
- High acidity, commonly used for juice, condiments, and processing.
- Prolific bearer under low-input conditions.
- Often propagated by **seedlings**, leading to variability in tree size and yield.

### ***2. Makasim (Improved Selection)***

- Identified by DA and local research centers as an improved Calamansi variety.
- Larger fruits (3–4 cm), smoother rind, higher juice recovery.
- Average yield in trials: ~10–12 kg/tree/year (young trees).
- More uniform than native seedling trees, especially when grafted.
- Now being promoted for commercial orchards in Davao and Northern Mindanao.

### ***3. Seedless Calamansi (Selections)***

- Found sporadically in Mindanao (mostly farmer-maintained selections).
- **Low seed count** (1–2 seeds or none).
- Still acidic, but preferred for processing (juices, concentrates).
- Not widely distributed; mostly grown in trial/demo farms.

### ***4. Large-fruited Calamansi (Local Selections)***

- Grown in parts of **Bukidnon and Misamis Oriental**.
- Fruits are larger (up to 4–5 cm), sometimes mistaken for small limes.
- Slightly lower acidity but with higher juice volume.
- Suited for the fresh market.

### ***5. Grafted Calamansi Seedlings***

- Not a separate “variety,” but **grafting onto calamander in or other citrus rootstocks** improves uniformity, disease tolerance, and earlier bearing.
  - Many nurseries in Mindanao (Davao, Bukidnon, Misamis Occidental) supply grafted seedlings marketed as “improved Calamansi.”
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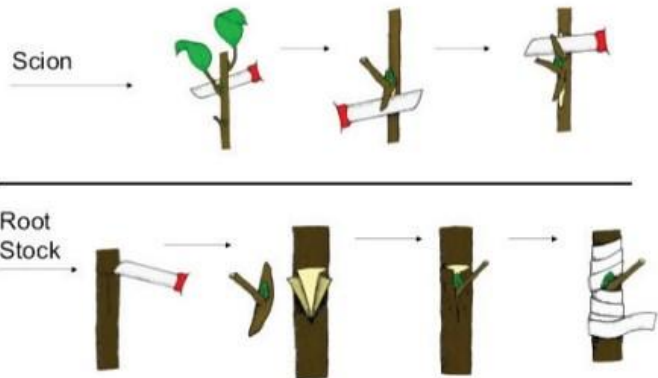




### ☆☆ Summary:

The most **important** Calamansi varieties in Mindanao are:

- **Native / Traditional Calamansi** (still dominant).
- **Makasim** (improved, promoted by DA).
- **Seedless selections** (rare, specialty).
- **Large-fruited local selections** (Bukidnon, Misamis).
- **Grafted seedlings** (improved planting material, not a distinct variety).



Welcome  
Visitors





*Table - Calamansi Varieties in Mindanao*

Variety / Type	Fruit Size	Juice & Acidity	Yield Potential	Propagation	Best Use / Market
Native / Traditional Calamansi	2–3.5 cm	Very juicy, high acidity, aromatic	Moderate–high (variable, 8–15 kg/tree/year in mature trees)	Seedlings (variable traits)	Condiments, daily household use, local markets
<b>Makasim (Improved)</b>	3–4 cm (larger, uniform)	High juice recovery, balanced acidity	10–12 kg/tree/year (young), higher as tree matures	Grafted or clonal propagation	Commercial orchards, juice processing, export potential
Seedless Calamansi (Selections)	2.5–3.5 cm	Similar acidity, easier to process (few/no seeds)	Moderate (slightly lower than native, but consistent)	Clonal or grafted	Juice and concentrate industry, specialty markets
Large-fruited Local Selections (Bukidnon / Misamis)	4–5 cm	Slightly lower acidity, more juice per fruit	Moderate (10–15 kg/tree/year)	Seedling/grafted	Fresh fruit markets (preferred for larger size)
Grafted Calamansi (nursery stock)	Depends on scion (often Makasim or native type)	Depends on scion; usually more uniform	Higher early yield (due to grafting, earlier bearing)	Grafted onto citrus rootstocks	Any commercial planting, improves consistency

**Key Insights:**

- **For processing / juice:** *Makasim* and *Seedless* are best.
- **For fresh market sales:** *Large-fruited selections* and *Native Calamansi* dominate.
- **For commercial uniformity & orchard ROI:** Always use **grafted seedlings** (whether native, *Makasim*, or seedless) — they bear earlier and more consistently.





## Calamansi Intercropping Guide (Mindanao)

Combination	Root System Interaction	Compatibility	Notes
Calamansi + Coconut	Shallow (Calamansi) + deep (coconut)	✔ Very good	Minimal root competition; coconut canopy provides filtered shade; Calamansi benefits from organic matter from falling fronds.
Calamansi + Banana	Both shallow-rooted, fibrous systems	⚠ Moderate-low	Competition for topsoil nutrients and water; bananas are heavy feeders. Works only with <b>intensive fertilization and mulching</b> ; short-term since bananas are harvested every 9–12 months.
Calamansi + Mangosteen	Shallow + deep taproot	✔ Good	Complementary; Mangosteen needs partial shade in early years, Calamansi can coexist if spacing is wide.
Calamansi + Rambutan	Shallow + moderately deep	🐜 Workable	Competition possible in topsoil; manageable in fertile clay loam soils with fertilizer support.
Calamansi + Lanzones	Both shallow	✘ Not ideal	High competition for surface nutrients; feasible only in very fertile, well-drained soils with mulch and regular fertilization.

### Conclusion and Recommendations

Calamansi trees can be planted where there is low soil cover. Calamansi is sensitive weed and needs often cleaning. But also, do not clog water. We can plant them closer to the cliff. Maybe in water runoffs.







## ***Market Acceptance in Bukidnon***

Calamansi enjoys exceptionally strong and steady acceptance across Southern Bukidnon due to its role as a household staple, key ingredient in Mindanao cuisine, and a raw material for expanding juice and concentrate industries. Local demand is so consistent that even small farms can sell their entire harvest without difficulty. With Bukidnon's cooler nights and elevated terrain, Calamansi fruit tends to be more aromatic, with deeper color and higher juice content, making the region an attractive source for both traders and processors.

### ***Market Acceptance: Why Calamansi is in High Demand***

#### **1. Daily household consumption across Mindanao**

Calamansi is used in almost every meal—dipping sauces, marinades, beverages, and health remedies. This creates a constant baseline demand in local wet markets and sari-sari stores, where Calamansi is among the fastest-moving items.

#### **2. Strong demand from food stalls, carinderias, and restaurants**

Bukidnon's expanding food sector—from mountainside eateries to growing café culture—continuously pulls Calamansi from farm suppliers. Even during low harvest seasons, buyers actively search for suppliers, keeping prices stable.

#### **3. Juice and concentrate processors**

Northern Mindanao hosts several citrus processors and Calamansi-based beverage producers. There is continuous interest in farms that can provide:

- uniform-sized fruits
- consistent weekly volume
- clean, well-graded harvests

Jessie's Sunshine Farms's structured spacing and multi-canopy integration (Calamansi under the coconut layer) matches exactly the quality profile processors favor.

#### **4. Expansion of cold drinks and health beverages**

Calamansi is increasingly used in ready-to-drink health beverages, energy drinks, and vitamin C blends. This is driving manufacturer interest in sustainable local supply that can meet hygiene and volume requirements.

#### **5. Limited competition from large plantations**

Unlike pineapples or bananas, Calamansi in Southern Bukidnon is still dominated by small to medium farms. This keeps market acceptance high and prevents price suppression typically caused by large-scale plantations.

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## ***Distribution Channels for Calamansi***

Distribution of Calamansi in the region is highly flexible. Farms can move small or large volumes through multiple channels, depending on growth stage, yield cycles, and sector planning.

### ***Local Wet Markets and Municipal Buyers***

This is the primary distribution channel for many growers in Kibawe, Quezon, Maramag, Don Carlos, Kitaotao, and Dangcagan.

Buyers source Calamansi daily for:

- public markets
- carinderias and restaurants
- fruit stands and rolling vendors

Volumes range from small sacks to truckloads. Prices tend to remain stable year-round due to constant household demand.

### ***Rolling Buyers and Mobile Fruit Traders***

These traders visit farms directly, often collecting mixed loads of Calamansi, banana, mango, and coconut. This channel supports farms as soon as trees start producing, whether yields are small or large.

Calamansi is valuable to them because:

- it is a “fast-resale” item
- it moves well in markets and at highway stalls
- traders rarely return home with unsold fruit

### ***Supply Contracts with Juice and Concentrate Processors***

For well-managed farms with uniform fruit size and consistent output, processors offer steady weekly or monthly pickups.

These processors produce:

- Calamansi extract
- frozen juice concentrate
- ready-to-drink Calamansi beverages

Bukidnon farms that can organize production by sector—like your planned orchard layout—fit directly into processor requirements.

### ***Regional Retail and Farm Shops***

Increasing numbers of farms are selling:

- fresh Calamansi
- Calamansi concentrate
- honey-Calamansi blends
- bottled Calamansi juice



Research, Jessie's Sunshine Farm, September 2025

Your farm's planned **Yana's Farm Shop** and <http://ourmindanao.com> platform make this a natural distribution channel, especially once your Calamansi layer matures.

### *Eco-tourism and Farm-to-Table Markets*

With tourism increasing across Bukidnon, Calamansi is widely used in:

- farm restaurants
- mountain cafés
- eco-tourism beverage stands
- pasalubong items (Calamansi-based mixers, syrups, and jams)

Jessie's Sunshine Farm's tourism plans make this a future internal channel that adds strong brand value.

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### *Implications for Jessie's Sunshine Farm*

Calamansi fits perfectly into the layered orchard system we designed:

- It belongs in the **second canopy**, under the coconut trees, filling shade-tolerant spaces.
- It produces fast, providing early cash flow while coconuts and fruit trees mature.
- Sector labeling and road naming ensure organized harvest scheduling, which processors appreciate.
- The farm's future shop and website support higher-value processed products.
- Your Mindanao location provides ideal climate and market proximity.

As a second-canopy crop, Calamansi strengthens your farm's commercial base while supporting your long-term multi-layer agroforestry model.

