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Sumallee Sala Fruit: An Overview of Cultivation, Uses, and Production Technology

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Introduction

The Sumallee Sala (*Salacca zalacca* var. sumalee) makes up the native tropical fruit of Southeast Asia, which is now particularly grown in Thailand and Indonesia. This type of Salak is commonly known as snake fruit because of its scaly brownish skin shaped like a snake's skin. Of the many varieties of salak, the Sumallee is the one with strong sweet and sour flavours, a firm texture, and is rich in nutrition. As such, its economic significance in Thailand and its fame in world markets are growing, which puts Sumallee Sala – a juicy and sweet fruit with various uses in enormous demand. This article examines production technology, cultivation characteristics, harvesting and post-harvest handling of Sumallee Sala and its prospects and market demand.

1. Botanical Description and Varietal Features

1.1 Taxonomy and Botanical Classification

The Sumallee Sala belongs to the palm family (Arecaceae) and is a member of the Salacca genus. Botanically classified as *Salacca zalacca* var. sumalee, this fruit shares many characteristics with other salak varieties but differs in its specific morphology and taste.

- **Kingdom:** Plantae
- **Order:** Arecales
- **Family:** Arecaceae
- **Genus**:** *Salacca*
- **Species:** *Salacca zalacca*
- **Variety:** *Sumalee*

1.2 Morphological Characteristics

The Sumallee Sala grows on low-growing palm trees 4–6 m high which have long pinnate leaves that are fern-like and have many spines. The fruit appears at the bottom of the palm in form of clusters and is about the size of a fig covered by reddish brown thorn scales.

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Fruit Shape: The form of the fruit is oval conoide in shape.

Colour: When the fruit ripens, its color is dark reddish brown and has a scaly sheath that appears glossy.

Flesh: The edible portion has 2-3 lobes of light yellow and firm flesh. Each lobe has one inedible seed inside.

Flavour Profile: The bananas labelled Sumallee have a fairly uniform flavor that is sweet with a faint tang, with flavor descriptions comparing it to pineapple, banana, and honey, with a tart sourness.

1.3 Nutritional Profile

Sumallee Sala is a rich source of vitamins, minerals, and antioxidants, making it a valuable addition to a healthy diet.

Calories: 50-60 kcal per 100g

Vitamin C: Prominent, contributing to immune health.

Fiber: High in dietary fiber, promoting digestive health.

Antioxidants: Contains polyphenols and flavonoids, which are beneficial for reducing oxidative stress.

2. Cultivation Practices

The geography, the soil, and the cultural practices — all need to be accommodating for optimal yield and fruit quality in the case of Sumallee Sala. This portion highlights some of the cultivation rhythms of farmers who grow this variety in Thailand and other regions of the tropics where Sumallee is relatively widely grown.

2.1 Climatic Requirements

A humid and warm tropical climate with plenty of rains is what the Sumallee Sala prefers. This plant needs:

Temperature: Best growth occurs when temperatures are within 25°C to 32°C. The cold temperatures and frost have adverse effects on growth and fruits development to this plant.

Rainfall: Among the factors for better growth high annual average rainfall of about 1500-2500 mm is fundamental. But they must ensure that the waterlogged condition does not occur for the sake of the root position which in this case can be decayed.

Humidity: The plant requires high humidity around 70-90% for supporting its lush vegetative cover and fruit setting processes for the plant.

2.2 Soil Requirements

For growing Sumallee Sala suitable highly productive loamy to sandy loam soils with pH ranging from slightly acid to neutral (5.5 to 7.0) are sought. The productivity for the fruit can be improved by applying compost or organic fertilizers in regular intervals.

2.3 Propagation Methods

Sumallee Sala is a variety that can be propagated best through suckers or seedlings. Suckers are known to give better uniformity

and faster returns as compared to seedlings and are therefore commonly used in commercial plantations. Suckers can be defined as vegetative lateral branches arising from the lower part of the mother plant.

Seed Propagation: While seeds can also be the means of propagation, it would take approximately 4-5 years for seedlings to produce fruits. The procedure includes washing the seeds and then placing them in nurseries for a period of between 12 – 18 months before transplanting.

Sucker propagation: This is also the most common method of commercial cultivation. Suckers are cut off from older plants and placed in the main field for planting purposes.

3. Orchard Establishment and Management

3.1 Planting Design

The arrangement of a Sumallee Sala orchard plays a role, in making the most of the space and guaranteeing that each plant receives the right amount of sunlight exposure needed for growth and development.

During the growth phases of Sumallee palm trees, certain farmers opt for intercropping techniques by planting crops such, as bananas or pineapples to make the most out of their land.

3.2 Irrigation Management

Proper irrigation management is essential for the Sumallee Sala palm, particularly during dry seasons or in regions with inconsistent rainfall. Drip irrigation systems are commonly used to deliver water efficiently to the root zone without causing waterlogging. Young palms require frequent watering, while mature palms benefit from consistent, moderate irrigation.

3.3 Fertilization

The Sumallee Sala palm requires careful irrigation management, especially in areas with erratic rainfall or during dry seasons. In order to effectively supply water to the root zone without creating waterlogging, drip irrigation systems are frequently utilised. While adult palms benefit from regular, moderate irrigation, young palms need to be watered frequently. The process of fertilisation: Regular applications of organic fertilisers, especially in the early years of growth, help Sumallee Sala meet its nutritional demands. Essential nutrients can also be supplemented using inorganic fertilisers:

Nitrogen (N): Promotes the development of the canopy and vegetative growth.

Phosphorus (P): Essential for early fruit production and root growth. Fruit size, flavour, and disease resistance are all improved by potassium (K). Biofertilizers, compost, and farmyard manure

can be used to enhance soil fertility, moisture retention, and organic content.

4. Pollination and Flowering

4.1 Pollination Process

Due to their dioecious nature, Sumallee Sala palms produce both male and female blooms on different plants. Both male and female palms must be present for the fruit set to be effective. Male palms are frequently planted in commercial orchards at a ratio of 1:10 to female palms.

Manual Pollination: To get the best fruit set in controlled environments, farmers may manually pollinate female flowers by collecting pollen from male flowers and dusting it on them.

4.2 Flowering and Fruit Set

In well-kept orchards, flowering usually starts three to four years later. Although the exact time of flowering depends on the climate, Sumallee Sala often flowers in the cooler months, with fruit set taking place soon after. After pollination, the fruit reaches maturity in four to six months.

5. Harvesting Techniques

When the fruit's scales grow glossy and the skin turns a rich reddish-brown, the Sumallee Sala fruit is ready to be picked. For optimal taste and texture, the fruit must be harvested at the ideal moment. The fruit's prickly, scaly texture makes machine harvesting challenging, therefore hand-picking is the most popular harvesting technique.

Measures of Harvest Maturity: The fruit's exterior colour and the firmness of the flesh when gently pressed are the main markers of ripeness.

Harvest Frequency: In Thailand, the fruit is picked several times during the season, with May through August seeing the highest harvest.

6. Post-Harvest Handling and Storage

6.1 Post-Harvest Practices

Sumallee Sala fruit needs to be handled carefully after harvest to prevent bruising and harm to the fragile flesh. For shipment, the fruit is usually cleaned and placed in containers. Low temperatures must be maintained throughout storage and transit in order to extend shelf life. chilling: By lowering respiration rates and postponing ripening, immediate post-harvest chilling can increase the fruit's shelf life. Packaging: The fruit is often transported in vented boxes or plastic crates. In order to avoid bodily harm, appropriate padding is used.

6.2 Storage

Under normal circumstances, Sumallee Sala has a somewhat limited shelf life of 7–10 days. Fruit is stored at 10°C to 12°C with high humidity (85–90%) for a long time. Chilling

damage brought on by lower temperatures might alter the fruit's flavour and appearance.

7. Economic Importance and Market Potential

7.1 Market Demand

In Southeast Asia, especially in Thailand and Indonesia, sumallee salad is a highly prized fruit that is eaten both raw and cooked. It frequently appears in drinks, jams, and sweets. Interest in overseas markets, especially in Asia and Europe, has increased as a result of rising understanding of its health advantages.

Export Potential: China, Japan, and Malaysia are among Thailand's top export destinations for sumallee salad. The fruit appeals to niche markets overseas due to its unusual look and distinctive tasting character.

7.2 Economic Viability

Because of its high market value and very low input costs, Sumallee Sala may be grown commercially. Given the rising demand for tropical fruits worldwide, the return on investment is good. Value-added goods such as chocolates and dried Sumallee Sala.