

## NONI (*Morinda citrifolia* L.) – A WONDER CROP

Akshatha K\*

\*University of Horticultural Sciences, Bagalkot – 587104, Karnataka, India

\*Corresponding author: [akshathakumar95@gmail.com](mailto:akshathakumar95@gmail.com)

Received: Sep 19, 2022; Accepted: Sep 25, 2022

### Introduction

Indian Mulberry is a common name for noni (*Morinda citrifolia* L.). It's a member of the Rubiaceae family. The Latin words morus, which means mulberry, and indicus, which means Indian, are combined to form the genus name for morinda. Noni was given this name because its fruits resemble those of the actual mulberry, *Morus Alba*. It is also referred to as Great Morinda, Beach Mulberry, Tahitian Noni, and Cheese Fruit (from Hawaiian).

Noni is primarily indigenous to Southeast Asia, particularly the Andaman and Nicobar Islands. But it can be found all over the tropics. In recent years, the market for health and cosmetic goods made from leaves and fruits has grown significantly on a global scale. It is one of the most prominent sources of traditional medicine among Pacific island civilizations and grows widely throughout the Pacific. Due of its exceptional salinity tolerance, noni is becoming more popular. This plant has lately been tried in research farms and on salt-damaged soil as a result of tsunamis, and it has proven to be remarkably adaptable to the accessible agro-niches of the A&N Islands. Almost all of this tree's parts, including its leaves, stems, bark, roots, and fruits, are utilised as medicines. There are thought to be up to 80 different species of morinda.

### History

Polynesian tribes and traditional healers have used the fruit for health and wellness for ages. Over 2000 years of ancient literature have included noni as a component of folk cures. Noni has reportedly been grown in South India for a very long time, according to ancient records. Although the South Indian predecessors recognised the medicinal benefits of *M. citrifolia* and employed it in traditional Indian medical systems like Siddha, the information was lost due to a lack of good recording. Therefore, it has not yet been scientifically investigated for its therapeutic potential.



**Fig. 1:** Noni leaves and fruits

### *How noni was discovered?*

Many plants for food and medicine were transported from South East Asia by the ancestors of the Polynesians. Among these, Noni was one of the most well-liked herbal remedies, used to cure a wide range of illnesses. However, noni juice has been a blessing to generations of people in all the areas where it has been grown, regardless of the causes of this interest in natural cures and nutritious foods. Although the Siddha, Unani, and Ayurvedic traditional medical systems of India utilised it, the South Indian forefathers did not. Its therapeutic potential must therefore be thoroughly researched.

### *Nutritional Composition of Noni*

It has a lot of phytochemicals, fatty acids, and plant sterols, which are bioactive substances. Ripe fruits contain about 51 volatile substances that have been discovered. Anthraquinones, limonine, serotonin, and scopoletin are among the phenolic chemicals, organic acids, and alkaloids that make up the majority of noni's functional micronutrients (Xeronine and proxeronine).

A rich amount of proxeronine, a molecule's precursor to xeronine, is found in noni, a cellular meal. One of the most vital enzymes in the human body, xeronine is created in the large intestine and only needs extremely little amounts to be active. Additionally, it may alter the cell's membrane permeability, which may allow big molecules to enter the body and aid in digestion. Many vitamin molecules are improperly absorbed as a result of xeronine deficiency.

**Tab. 1:** Nutritional composition of Noni fruit (Karan *et al.*, 2013)

<i>Nutrients</i>	<i>Per 100 g juice</i>
Calories	15.3
Calories from fat	0.0
Total fats (g)	<0.1
Saturated fats (g)	<0.1
Trans fat (g)	<0.1
Sodium (mg)	10.5
Total carbohydrate (g)	3.4
Dietary fiber (g)	<0.2
Sugars (g)	1.49
Protein (g)	0.43
Vitamin A (IU)	<5
Vitamin C (mg)	33.65
Calcium (mg)	10.1

#### *Benefits of noni*

In addition to supporting protein metabolism and aiding in cell regeneration, xeronine serves to enlarge the pores in the cell walls, improving nutrition and medication absorption.

Selenium supports skin health, scopoletin (a phenol) has anti-inflammatory qualities, limonine and anthraquinones (a phenol) have antiseptic properties, and terpins help with detoxification. Flavonol and iridoid glycosides, which have antioxidant properties, are used to fight free radicals.

#### *Cultivation practices*

##### *Soil & Climate*

It may be grown everywhere from sea level to 2000 metres above mean sea level, including tropical, subtropical, dry, and humid conditions. The optimal rainfall for noni farming is between 2500 and 4000 mm per year. A temperature range of 20–38 degrees Celsius is optimum for noni cultivation and mature, farmed noni can tolerate drought for at least six months. Highly resistant to acidic, shallow, saline, sodic, and infertile soil. It thrives in pH range of 4.4 to 9.4.

### *Propagation*

Noni can be multiplied from either seeds or stem cuttings. In nursery beds, seedlings are raised until they are eight weeks old. Commercial cultivation involves the use of tissue culture plants. A recommended distance between the plants is  $3.5 \times 3.5$  m. Young plants that are under 2-3 years old require irrigation, and in dry conditions, they need to be irrigated once per week.

### *Pruning*

Young plants that are under three years old can be cut down following or during the initial fruit production. Pruning mature plants vertical branches makes it easier to harvest their fruit and is a reliable way for preventing pest and disease infestations.

### *Harvesting*

Approximately 9 to 12 months after planting, noni begins to produce flowers and fruits but the plant's economic yield doesn't begin until the third year. Fruits are collected all year long, though productivity is decreased in the winter. After the "hard white stage" of the fruit has been harvested, translucent noni fruits are prepared to release their juice. About 30% of the fruit's juice is recovered. A healthy 12-year-old tree can produce 100 kg of fruit per year, or 30 t/acre.

### *Storage*

To be transported to the processing facility, they are put in bins, sacks, or baskets. Noni fruit doesn't bruise or ripen easily, therefore there's typically no need for protective measures like using special padded containers. After being harvested, noni can be preserved for 20 days.

### **Conclusion**

Noni's numerous active ingredients, such as Xeronine and Glycosides, give it a wide range of applications, especially in therapeutic medicine. It aids in lowering blood sugar levels in the body, which is linked to a quicker healing of wounds. Noni juice has a powerful anti-oxidative capability that hunts down oxygen-free radicals and counteracts their harmful effects. Due to its healing qualities, this unusual fruit is highly prized in today's developing health-conscious civilizations.

## References

- Nagalingam S, Sasikumar CS and Cherian KM. (2012). Extraction and preliminary phytochemical screening of active compounds in *Morinda citrifolia* fruit. *Asian Journal of Pharmaceutical and Clinical Research* **5**(2): 179-181.
- Okamoto H. (2012). *Morinda citrifolia* (Noni) in the treatment of psoriasis. *The Open General and Internal Medicine Journal* **5**(1).
- Singh H, Banerjee S, Karan S, Das B, Naskar D and Chatterjee TK. (2015). Pharmacological overview of freeze dried Andaman noni (*Morinda Citrifolia*. L) Against cancer and neurological disorder. *International Journal of Pharmaceutical Sciences and Research* **6**(4): 1342.
- Soemardji AA and Sigit JI. (2011). Decoction of *Morinda Citrifolia* L. Leaves as a Herbal Medicine. Experimental Pharmacology–Two Synergistic Combination Effects for One Therapy. *eJournal of Indian Medicine* **4**(1): 1-10.
- So-Young L, So-Lim P, Hwang JT, Sung-Hun Y, Young-Do N and Lim SI. (2012). Antidiabetic Effect of *Morinda citrifolia* (Noni) Fermented by Cheonggukjang in KK-Ay Diabetic Mice. *Evidence-Based Complementary and Alternative Medicine*.