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Noni Farming: Sustainable Strategies for the Future

Nandhakumar Natarajan[1], Dinesh Dhakshanamoorthy[1], Gaurav Singh[1], Clarissa Challam[2], M. J. Kaledhonkar[1]

[1]*Scientist, ICAR-IISWC-Research Centre, Vasad-388 306, Gujarat, India*

[2]*Scientist, ICAR-CPRI-Research Station, Shillong-793 006, Meghalaya, India*

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***Corresponding Author: *Dinesh Dhakshanamurthy*,** *Scientist, ICAR-IISWC-Research Centre, Vasad-388 306, Gujarat, India.*

Abstract

Noni (Morinda citrifolia L.), also known as Indian mulberry, has significant potential for cultivation in new regions. This study provides effective practices for introducing Noni as a new crop, covering crop selection, site preparation, planting techniques, irrigation, fertilization, plant protection, and harvesting. Noni is a versatile plant with valuable medicinal and nutritional properties, making it a valuable addition to agricultural systems. The study emphasizes Noni's adaptability to diverse climates and soils and the importance of proper crop management for optimal yield and quality. By implementing these practices, farmers can confidently adopt Noni, leveraging its economic potential and health benefits. This study is a valuable resource for stakeholders seeking sustainable and diversified crop options.

Keywords: *Noni, Antioxidants, Propagation, Nutrient, And Harvest*

1. Introduction

Noni (*Morinda citrifolia*), a versatile plant native to Southeast Asia, is widely found in the Pacific region and valued for its medicinal uses and adaptability (Nandha kumar et al., 2023). It thrives in diverse environments, including dry to mesic sites, coastal areas, and forests, and tolerates wind, fire, flooding, and saline conditions. All parts of the plant have traditional and modern uses, and it is suitable for intercropping. Noni has economic significance through health and cosmetic products. Known by names like 'Indian mulberry' and 'painkiller tree,' it has regained popularity as an herbal remedy and is cultivated in India, Malaysia, Fiji, and Polynesia.

2. Health Benefits

Cardiovascular Health	Noni juice effectively lowers high blood pressure, treats heart disease, and prevents strokes. It contains Scopoletin, a compound that dilates blood vessels and reduces blood pressure. It also stimulates Nitric oxide production, promoting vessel dilation and elasticity. The Xeronine system in Noni supports a healthy circulatory structure. Additionally, Noni's Scopoletin exhibits anti-inflammatory and histamine-inhibiting effects, promoting smooth joint movement.
Joint and Tissue Health	Noni enhances cellular function, minimizing joint and tissue damage. It boosts pancreas function and the immune system. Acting as an adaptogen, Noni aids in cell repair, which is beneficial for diabetes-related issues involving pancreatic beta cells or glucose utilization.
Respiratory and Allergy Relief	Noni increases heart cell magnesium levels, regulates rhythm, and improves cellular structures. It clears bronchioles and treats bronchitis. It also alleviates allergies and reduces inflammation, addressing asthma causes.
Hormonal Balance and Traditional Uses	Noni aids menstrual migraine headaches and numbness from nerve damage by balancing hormones and acting on the liver and hormone receptors. Noni tea is versatile and beneficial, treating malaria, acting as a febrifuge and analgesic. Its stem bark decoction cures jaundice, while the seed oil serves as a scalp insecticide. Noni leaves or fruit poultices heal tuberculosis, sprains, bruises, and rheumatism. The fruits stimulate appetite and brain function. Noni bark and roots yield pigments for dye-making, traditionally used to colour clothing. Additionally, Noni seed oil repels insects on the scalp.

3. Origin and Geographical Distribution

Noni, originating from Southeast Asia, Oceania, and tropical Australia, has spread to India and is now widely cultivated in tropical regions, including Latin America (Mexico, Colombia, Venezuela), Costa Rica, Panama, Kenya, Florida, and the West Indies. In India, it grows naturally along the coasts of Kerala, Karnataka, Tamil Nadu, and Orissa, with significant populations in the Andaman and Nicobar Islands.

4. Soil and Climate Requirement

Noni is highly adaptable to a wide range of soils and conditions, tolerating acidic, saline, and alkaline soils with a pH range of 4.4 to 9. It thrives in diverse climatic conditions, including tropical, subtropical, dry, and humid climates, and can grow in wet to moderately wet conditions, even tolerating brackish water. Noni can withstand temperatures between 20-38°C and altitudes from sea level to 2000 meters above mean sea level. It prefers well-drained soils and can handle mean annual rainfall of 250-4000 mm, though heavy, compact soils and flood-prone areas should be avoided. For field selection, choose a site with good drainage and aeration, preferably in full or partial sunlight, and avoid areas recently used for other crops to prevent root-knot nematode infestation. When transplanting, prepare a hole similar in size to the pot and handle the plant with care. In rocky terrain, disturb or plow the subsoil before levelling the land to create a flat or gently sloping field.

5. Propagation

Noni can be propagated through seeds, stem cuttings, root cuttings, and air layering, with seeds and stem cuttings being the preferred methods. Seed propagation is slower without treatment, while stem cuttings, ideally 20-40 cm long, root faster. Vegetative propagation may produce weaker, less disease-resistant plants with initial fruiting issues. Noni flowers and fruits year-round, and ripe fruits are selected for seed collection. The seeds are reddish-brown, oblong-triangular, buoyant, and have a durable seed coat. A single fruit can yield over 100 seeds. Seeds are separated from soft, ripe fruits by washing and rubbing against a screen or colander, with vigorous washing to remove flesh.

6. Sexual Propagation

Noni seeds naturally germinate sporadically over 6-12 months. Scarifying the seed coat by nicking or puncturing it reduces germination time, improves germination rate, and promotes uniform sprouting. This can be done using physical methods or by separating seeds from fruit flesh in a blender, which can nick the seed coats. Scarified seeds typically germinate within 20-120 days, depending on temperature, environment, and variety. Optimal germination conditions include full sun to partial shade and a mean temperature of around 38°C.

7. Asexual Propagation

To cultivate Noni plants from stem cuttings, select healthy plants and check for sap flow, discarding any that don't produce sap. Insert the cut stem into a pot with a pathogen-free growth medium, optionally using rooting hormone and providing bottom heat. Keep cuttings in partial shade, water adequately until rooted, then transition to full sun and apply fertilizer. Air layering or using sprouted plants from mature roots are alternative methods.

8. Planting, Germination and Planting

For planting Noni, fresh seeds can be planted immediately after extraction, with some growers opting to soak them until germination begins, while others plant directly without pre-soaking. Seedlings are typically grown for 9-12 months before field transplantation, although some growers plant fruit fragments with seeds directly into the field soil. Noni seeds require hot and moist conditions for optimal germination, with unscarified seeds taking several months to a year to germinate, but this time can be reduced to about a month with heat. They can withstand temperatures up to 100°F (38°C) or higher. To germinate Noni seeds, choose the warmest spot in the nursery or greenhouse, using nursery heating pads or a covered "hoop house" with clear plastic. If germinating outside, partial sun is preferable to prevent excessive drying. For planting spacing, a suitable interplant distance for Noni is 10-15 feet, with 12 feet allowing for approximately 290 plants per acre. Higher densities can lead to overcrowding and increase the risk of pest or disease issues.

Figure 1. *Young Noni Plants*

Figure 2. *Well Grown Noni Plants*

9. Wind Breaks

Young Noni plants struggle in windy areas. If cultivating in such sites, plant windbreaks like eucalyptus, ironwood, or wili-wili, spaced 150 feet apart. Planting near ironwood trees is safe.

10. Pruning

Young Noni plants under 3 years old can be pruned after their first fruit production to encourage bushy growth. Mature Noni trees, which can reach 20 feet in height, may benefit from pruning vertical branches for easier fruit harvest. Pruning helps disrupt conditions that promote pests and diseases.

11. Nutrient Management and Irrigation

Noni's fertilizer needs vary based on soil and rainfall. While forest-grown Noni thrives without artificial fertilizers, agricultural settings benefit from a fertilizer program for intensive fruit production. Frequent, small applications of fertilizer are ideal, with Noni tolerating high fertilizer salt levels. Young non-fruiting plants benefit from balanced fertilizers like 14-14-14, while mature or fruiting plants prefer high-phosphorus fertilizers such as 10-20-20. Controlled-release formulations are suitable for young seedlings, and granular formulations for mature plants. Apply fertilizer away from the trunk at the drip line, and consider foliar fertilizers, especially high-phosphorus ones, to enhance flower and fruit production. Organic options include crushed coral, dolomite, K-mag, 7-7-7, composted chicken manure, and macadamia nut husks. Some areas may require yearly lime applications of 1 pound per plant. Regarding irrigation, Noni plants require moderate watering and can tolerate drought once established. For plants under 2-3 years old, irrigate once or more per week during dry conditions, while older plants need less frequent irrigation. Avoid over-watering to prevent damage from root-knot nematodes, root rot, and nutrient leaching.

Figure 4. *Flowering in Noni*

Figure 5. *Fruiting in Noni*

12. Weeds

Noni transplants are susceptible to weed competition, particularly from Guinea grass and sensitive grass. Young plants should be hand-weeded until their stems are strong enough to withstand mechanical damage. While weed mats can suppress weeds, they hinder fertilizer penetration and promote nematode reproduction. Established Noni plants tolerate weed competition better. It is important to eliminate weeds that host root-knot nematodes and remove dodder, a parasitic weed, from infested Noni plants.

13. Organic Cultivation

An experiment at the Horticultural College and Research Institute, Tamil Nadu Agricultural University, Periyakulam, evaluated the effects of different irrigation regimes and organic manures on Noni using a split plot design. The study found that the M2S4 treatment (100% drip irrigation + 50% FYM + 50% VC) yielded the best results for plant growth, physiological parameters, nutrient status, microbial populations, flowering, fruit characteristics, yield, and fruit quality. This treatment also showed the highest alkaloid content, water use efficiency, and benefit-cost ratio, highlighting the benefits of drip irrigation and organic manure application for Noni cultivation (Muthu Kumar et al., 2013).

14. Harvesting and Handling

Noni plants produce flowers and fruits within 9 months to 1 year under favourable conditions. Early-stage fruits can be harvested, though they are usually small in quantity. Some farmers prefer pruning branches instead of harvesting during the first or second years. In Hawaii, Noni fruits are harvested year-round, influenced by weather, fertilizer, and irrigation, with 2 to 3 harvests per month. Fruits can be picked at any stage based on processing preferences. Noni fruits are durable, with tough skin that withstands shipping and ripens quickly at room temperature. They can be processed for juice immediately, and refrigeration after harvest is usually not required.

15. Future Prospects

Noni (*Morinda citrifolia*) is ideal for intercropping in coconut and cashew orchards due to its adaptability to various soils, including degraded lands. Its deep roots improve soil quality and allow it to thrive alongside other trees. Integrating Noni enhances land use, productivity, and sustainability. Unlike monocultures, which often fall short in generating income and employment, perennial crops like Noni offer higher productivity. An optimal agronomic system should ensure long-term productivity. Thus, Noni is a suitable choice for cashew and coconut-based cropping systems in Gujarat.

References

[1] Barthwal, R., Kumhar, B., Jain, S., & Bhatt, N. (2021). Production technology of Noni, Indian Farmer, 7(04), 298-306.

[2] Dar, B., Malik, AR & Wani, S., (2009). Noni (Morinda citrifolia L.) -A hope in a bottle. In book: Biotechnology: Cracking new pastures eds Publisher: MD Publications New Dehli, pp339.

[3] Mohd, Z. Z., Abdul-Hamid, A., & Osman, A. (2007). Isolation and identification of antioxidative compound from fruit of mengkudu (Morinda citrifolia L.). International Journal of Food Properties, 10(2), 363-373.

[4] Muthu, M., & Ponnuswami, V. (2013). Effect of different water regimes and organic manures on quality parameters of noni (Morinda citrifolia), African Journal of Agricultural Research, 8, 3534-3543.

[5] Yanine, C.B., Fabrice V., Ana M.P., Max R., Jean-MB., & Pierre B. (2006). The noni fruit (Morinda citrifolia L.): A review of agricultural research, nutritional and therapeutic properties. 19(6-7), 645–654

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