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Unleashing the Potential of Minor Fruit Crops

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Minor fruit crops precisely can be challenging. Broadly speaking, they refer to fruits that are edible but are considered less palatable compared to other varieties. These fruits typically have lower demand in the market, are grown on a limited scale, and are often cultivated in organized plantations with the application of inputs. They are also referred to by various terms such as less-known fruits, less-appealing fruits, less-exploited fruits, stray fruits, or wild fruits. Minor fruits have abundance of essential nutrients, antioxidants, and fiber makes fruits indispensable for human health, supporting key aspects such as heart health, digestive health, weight management, and immune function. Leveraging underutilized minor fruits, which thrive in adverse conditions and various soil types, presents an opportunity to address this nutritional gap effectively.

Table 1: List of minor fruit crops.

Common Name	Botanical name	Family	Origin
Carambola	*Averrhoa carambola* L.	Oxalidaceaea	Southeast Asia
Elephant apple	*Dillenia indica*	Dilleniaceae	China
Durian	*Durio zibethinus*	Bombacaceae	Southeast Asia
Water apple	*Syzygium aqueum*	Myrtaceae	Tropical Asia and Queensland
Star gooseberry	*Phyllanthus acidus*	Euphorbiaceae	Madagascar
Bread Fruit	*Artocarpus altilis*	Moraceae	Indo-Malay
Phalsa	*Grewia asiatica*	Malvaceae	Indian subcontinent
Karonda	*Carissa carandas*	Apocynaceae	Indian subcontinent
West Indian Cherry	*Malpighia emarginata*	Malpighiaceae	Southeast Asia
Rose apple	*Syzygium jambos*	Myrtaceae	Southeast Asia
Laxman Phal	*Anona muricata*	Anonaceae	Caribbean and Central America
Amla	*Emblica officinalis*	Phyllanthaceae	Indo-China
Bael	*Aegle marmelos*	Rutaceae	India
Spanish lime	*Melicoccus bijugatus*	Sapindaceae	Central and South America
Milk Fruit	*Chrysophyllum cainito*	Sapotaceae	Greater Antilles and the West Indies
Jaboticaba	*Myrciaria cauliflora*	Myrtaceae	southeastern Brazil
Chempadak	*Artocarpus integer*	Moraceae	Southeast Asia
Black Sapota	*Diospyros digyna*	Ebenaceae	Mexico and Central America.

Miracle Fruit	*Synsepalum dulcificum*	Sapotaceae	West Africa
Pea nut butter fruit	*Bunchosia argentea*	Malpighiaceae	South America
Passion Fruit	*Passiflora edulis*	Passifloraceae	South America
Surinam Cherry	*Eugenia uniflora*	Myrtaceae	South America
White Sapota	*Casimiroa edulis*	Rutaceae	Mexico and Central America
Sapida	*Baccaurea ramiflora*	Euphorbiaceae	Southeast Asia
Malayan apple	*Syzygium malaccense*	Myrtaceae	Indo-China
Jatoba	*Hymenaea courbaril*	Fabaceae	South america
Jujuba	*Ziziphus jujuba*	Rhamnaceae	China
Kumquat	*Fortunella japonica*	Rutaceae	S-E China
Langsta	*Lansium domesticum*	Meliaceae	South east Asia
Macauba palm	*Acrocomia aculeata*	Arecaceae	South America
Mangaba	*Hancornia speciosa*	Apocynaceae	Brazil
Mangrove apple or pagatpat	*Sonneratia caseolaris*	Lythraceae.	-
Pitomba/Monkey Pot Tree	*Talisia esculenta*	Sapindaceae	South America
African pear/Safou	*Dacryodes edulis*	Burseraceae	Central and West Africa
Salak/Snake fruit	*Salacca zalacca*	Arecaceae	Indonesia
Marang/Tarap	*Artocarpus odoratissimus*	Moraceae	Borneo
Umbu/Imbu	Spondias tuberosa	Anacardiaceae	Northeastern Brazil
Pear guava/Feijoa	*Eugenia pyriformis*	Myrtaceae	Brazil
Wampi/langsat	*Clausena lansium*	Rutaceae	Southeast Asia

Milk Fruit: *C. caimito*, a tropical fruit tree, offers numerous benefits in alleviating disease symptoms, notably diabetes. Its leaf extract demonstrates anti-inflammatory properties, reducing hypersensitivity and inflammatory markers, while also exhibiting antinociceptive effects. Additionally, the leaf extract accelerates wound healing and aids in regulating fat uptake.

Miracle Fruit: Miracle berries present a valuable solution for diabetics grappling with sugar cravings. Their extraordinary ability to diminish insulin resistance in diabetic patients marks them as an exceptional fruit that can forestall abrupt surges in blood sugar levels, particularly following meals.

Champedak: Cempedak is abundant in vitamin A, which supports optimal eye health and sustains the health of the cornea. Its antibacterial, antiviral, and antifungal properties contribute to combating urinary tract infections. (Rosa *et al*., 2022)**.**

Lemon Drop Mangosteen: This fruit is often described as having a taste reminiscent of lemon-flavored cotton candy. Notably, the fruit also possesses medicinal properties, notably its richness in benzophenones, which have been shown to target colon cancer cells.

***Annona muricata* (Soursop):** Both the seeds and fruits are also applied in the treatment of parasitic infections (Al Kazman *et al.,* 2022). Interestingly, the plant's leaves have earned the nickname 'the cancer killer' and are utilized in traditional medicine for cancer treatment.

Amla: Vit C rich amla can give a boost to immunity. It helps in improving health of both air and skin. Amla contains chromium which is great for stabilising your blood sugar levels. (Prananda *et al.,* 2023).

Jamun: The seeds are known for their effectiveness in managing diabetes. Polyphenols present in jamun exhibit neuroprotective properties, which may contribute to promoting brain health.

Wild sweetsop (*Annona mucosa*):The leaves are utilized in folk medicine as a treatment against rheumatism.

Egg Fruit (*Pouteria campechiana*): Egg fruits are packed with beta-carotene, boosting the immune system and protecting vision (Fitriansyah *et al.*, 2021).

Sapida (Burmese grape): The Burmese grape (*Baccaurea ramiflora*), native to Southeast Asia, is widely used in traditional medicine for treating ailments like jaundice, constipation, indigestion, cellulitis, and snake venom. Its various parts—leaves, fruit, bark, and seeds are being scientifically studied for numerous medicinal properties (Rohilla., 2023) .

White Sapota: *Casimiroa edulis*, known for its sedative effects as a sleep inducer, is cultivated in Egypt for its edible fruit.

Pea nut butter fruit (*Bunchosia armeniaca*): The peanut butter fruits are a rich source of lycopene presenting 10 times more than the tomato fruit (3.5 mg/100 g). Peanut butter fruit, with its potent antioxidant properties, offers a promising natural source of health-boosting nutrients.

Black sapote *(Diospyros texana):* The fruit, which is bitter and astringent when unripe, becomes a sweet, dark chocolate- brown delicacy when fully ripe, though its appearance may be unappealing. It is best enjoyed mashed with citrus juice or used in smoothies and jams.

Jaboticaba (*Myrciaria cauliflora*): Jaboticaba has a long history in folk medicine, with its sun-dried peel used in a decoction to treat diarrhea and respiratory issues such as hemoptysis, asthma, and chronic tonsillitis. This dual role as a nutritious fruit and traditional remedy highlights its significant health potential

Spanish lime (*Melicoccus bijugatus*): Rich in caffeic acid, the pulp may help alleviate respiratory issues by inhibiting leukotriene biosynthesis, which supports inflammation management in conditions like asthma.

Bael fruit (*Aegle marmelos*): Bael fruit is indeed celebrated for its medicinal properties. its cooling properties during the summer months and its ability to enhance cognitive functions make it a versatile fruit in traditional medicine.

Delinia (*Dillenia indica*): Delinia commonly known as elephant apple, has a unique knobby shape and an acidic flavor that lends itself to various culinary and medicinal uses. Its juice, when sweetened, serves as a refreshing drink, particularly during fevers, and can also help soothe coughs (Saikia *et al.*, 2023).

Rose apple (*Syzygium jambos*): Rose apple is a versatile fruit rich in vitamin C, commonly used in desserts and savory dishes. it helps reduce the risk of heart disease and regulates blood glucose levels. Its seeds and peel are used to treat diarrhea, dysentery, and ulcers.

Phalsa fruit (*Grewia subinaequalis*): Phalsa is a nutritious fruit known for its sub-acidic taste and rich content of vitamins A and C, phosphorous, and iron. Currently processed into products like squash, jam, and juice, further research is needed to enhance its nutritional composition and overall quality for pharmaceutical applications.

Karonda (*Carissa carandas*): The plant fruit is rich in nutrients, vitamins and minerals such as protein, carbohydrate, calcium, iron, carotene, vitamin B1, B2, C etc. High pectin content makes it ideal for jelly and jam production. Traditionally, karonda is used to treat sore throats, mouth ulcers, and skin disorders. its leaves have anti- inflammatory properties, and fruit extracts show antioxidant, anticancer, anti-diabetic, and hepatoprotective activities. (Saeed *et al.*, 2024).

Durian: Durian, despite its polarizing aroma, holds immense nutritional potential, making it a valuable minor fruit. Its edible aril, which comprises 20-35% of the fruit's weight, The content of polyphenols and antioxidant activity were more in case of overripe fruits, flavonoid was highest in ripe durian, and flavanols and antiproliferative activity were highest in mature durian.

Carambola: *Averrhoa carambola* is rich in essential nutrients and natural antioxidants like L-ascorbic acid, epicatechin, and gallic acid. In India, it is used as an anti- pyretic, laxative, and for treating conditions like coughs, asthma, and mouth ulcers.

Pitanga (*Eugenia uniflora* L.):. Purple Pitanga has a higher concentration of total phenolics than red due to its greater antioxidant content.

Conclusion: Minor fruit crops offer significant potential for enhancing agricultural diversity, food security, and sustainable development. These underutilized fruits, rich in essential nutrients and bioactive compounds, can address global malnutrition, improve health outcomes, and boost local economies, especially in rural areas.

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