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Neglected Fruit Trees Are Not Minor Crops: Jamun, Jackfruit and Tamarind as Strategic Assets for Climate-Resilient Food Systems

Opinion

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Introduction

For decades, horticultural development in India has been dominated by a narrow portfolio of commercially fashionable fruit crops, often characterized by high input demands, vulnerability to climate stress, and limited suitability for marginal environments. In this context, traditional fruit trees such as jamun (*Syzygium cumini*), jackfruit (*Artocarpus heterophyllus*), and tamarind (*Tamarindus indica*) have been persistently labelled as "minor" or "underutilized." This classification is increasingly untenable. Evidence from farmers' fields and recent scientific characterization suggests that these species are not relics of subsistence agriculture, but strategic assets for climate-resilient, nutrition-sensitive, and livelihood-oriented food systems.

India is simultaneously facing rising climate variability, micronutrient deficiencies, shrinking farm sizes, and growing pressure on natural resources. Under such conditions, perennial fruit trees that survive on marginal lands, require minimal external inputs, and deliver nutritional and economic returns over decades deserve renewed attention. Jamun, jackfruit, and tamarind exemplify this category of crops that quietly perform where many modern cultivars fail.

Jamun is a particularly striking example. Long valued in traditional medicine for its anti-diabetic properties, the species has remained outside mainstream horticultural planning due to the absence of standardized varieties and organized markets. Yet farmer-led selections in Karnataka demonstrate that jamun harbours remarkable variability for fruit size, pulp recovery, sweetness, anthocyanin content, and harvest window. Farmer selections such as Nirantara Kumar, Patel Jumbo, Patel Samruddhi, and Patel Akal illustrate how on-farm custodianship has generated genotypes suited for fresh markets, nutraceutical applications, and extended harvesting seasons. Their high antioxidant activity and phenolic richness challenge the notion that jamun is merely a roadside or backyard tree, positioning it instead as a functional food crop with commercial relevance.

Jackfruit, often described as a "poor man's fruit," suffers from a similar perception gap. Despite being one of the largest tree-borne fruits and an abundant source of carbohydrates, minerals, carotenoids, and dietary fiber, jackfruit has remained underexploited in organized horticulture. Extensive characterization of seedling-origin trees in Karnataka reveals extraordinary diversity in fruit size, flake thickness, colour, sweetness, antioxidant activity, and consumer acceptability. Importantly, this diversity is not merely academic; it offers a foundation for selecting types suited for table consumption, processing, and emerging plant-based food markets. In an era where alternative protein sources and minimally processed foods are gaining traction, jackfruit's versatility as both a vegetable and dessert fruit gives it strategic relevance well beyond its traditional role.

Tamarind represents yet another overlooked pillar of dryland horticulture. Grown for centuries on wastelands and field boundaries, tamarind trees are exceptionally hardy, long-lived, and productive under minimal care. Farmer-identified selections such as Lakshmana underscore how superior pod size, pulp recovery, and biochemical composition can translate directly into enhanced rural income. Tamarind pulp, seeds, and by-products support multiple value chains ranging from food processing to textiles, making it one of the few tree crops

where nearly every component has economic value. Its exceptionally high artaric acid content and balanced sugar profile further distinguish it as both a culinary and industrial crop.

What unites jamun, jackfruit, and tamarind is not merely their resilience, but the manner in which improvement has occurred. Unlike high-input crops driven primarily by centralized breeding programs, progress in these species has been largely farmer-led, based on long-term observation, selection, and conservation in situ. Participatory identification of elite trees, followed by scientific validation, represents a pragmatic and cost-effective model for tree crop improvement.

This approach shortens breeding timelines, ensures local adaptation, and directly links biodiversity conservation with livelihood security. From a policy perspective, the continued marginalization of these crops reflects a deeper bias in agricultural development one that equates productivity with intensification rather than resilience. Investment frameworks often favour crops with rapid turnover and visible short-term gains, overlooking perennial systems that deliver steady benefits over generations. Yet climate change is steadily exposing the fragility of such narrow strategies.

Fruit trees like jamun, jackfruit, and tamarind offer an alternative paradigm: low-input, climate-tolerant systems that integrate nutrition, ecology, and income. Repositioning these species from "minor fruits" to strategic crops requires more than scientific evidence. It demands changes in varietal release pathways, nursery systems, market linkages, and consumer perception. Recognition of custodian farmers, support for decentralized planting material production, and encouragement of value-added enterprises can collectively unlock the latent potential of these trees. Equally important is their inclusion in national discussions on climate-smart agriculture, nutrition security, and sustainable land use.

In conclusion, jamun, jackfruit, and tamarind are not crops of the past; they are crops for a future defined by uncertainty. Ignoring them in favour of narrowly adapted, resource-intensive systems risks repeating the very mistakes that have made agriculture vulnerable. Embracing these resilient fruit trees, informed by farmer knowledge and strengthened by scientific validation, offers a realistic pathway toward more sustainable and inclusive horticulture. The question is no longer whether these crops are important, but why they have taken so long to be taken seriously.