

A Detailed Review of Jackfruit Production Potential in India: Its Challenges and Opportunities

Ashutosh Vikram Singh ¹, Deepak Lall ² and Aditi Sagar³

Research Scholar ¹, Assistant Professor ² and Research Scholar³

Department of Horticulture, Faculty of Agriculture (FoA)

Naini Agricultural Institute (NAI), SHUATS

Sam Higginbottom University, Technology and Sciences

Prayagraj, Uttar Pradesh, India 211007

Corresponding author: princesinghking00@gmail.com

ABSTRACT

Jackfruit (Artocarpus heterophyllus) is a versatile and underappreciated fruit that has enormous promise in the field of food, pharmaceutical, nutraceutical, and other industries across South and Southeast Asia. With a significant geographical concentration in Kerala, Karnataka, and the northeastern regions, India is one of the top producers. The production of jackfruit is still largely unorganised and under-commercialized, despite its enormous potential for food security, value addition, and rural livelihoods. Varietal heterogeneity, market instability, a lack of post-harvest infrastructure, and low farmer awareness are among the primary barriers. However, there are a lot of prospects due to the fruit's versatility, which includes industrial and nutraceutical applications in addition to fresh consumption and processed products. This assessment addresses the state of jackfruit production in India today, highlights key obstacles, and looks at ways to use institutional, technological, and policy changes to unlock the fruit's untapped potential.

Keywords: Jackfruit Production, value addition, post-harvest management, heterogeneity, Nutraceutical potential.

INTRODUCTION

India is the world's second-largest producer of fruit and is regarded as the motherland of jackfruit. It is widely available in Assam, Tripura, Bihar, and Uttar Pradesh, India. The South Indian states of Kerala, Tamil Nadu, and Karnataka, as well as the foothills of the Himalayas. In Indian agriculture and culture, jackfruit is important. In India, it was cultivated between 3000 and 6000 years ago. It has long been prized throughout South Asia as a staple and famine food. It is frequently planted in homesteads and mixed cropping

systems in India, where it offers supplemental revenue and seasonal sustenance. Jackfruit is high in minerals (potassium, magnesium), carbohydrates, dietary fibre, vitamins (A, C, and B-complex), and bioactive phytochemicals having antioxidant qualities (Kaur, Singh, & Sharma, 2023). While ripe bulbs and seeds are eaten raw or processed into chips, flour, pickles, jams, or baked goods, unripe jackfruit is increasingly promoted as a plant-based meat alternative (Choudhury, Dutta, & Ray, 2021).

In India, jackfruit is regarded as an "underutilised crop" despite its adaptability because of poor value chain development and inadequate policy attention. (Manianga, 2024).

PRODUCTION AND POTENTIAL IN INDIA

With key producing states like Kerala, Karnataka, Assam, Meghalaya, Tripura, and Tamil Nadu, India makes a substantial contribution to the world's jackfruit production (Chikkanna, Raghava, & Aravindakshan, 2020). Since most jackfruit trees are planted in homesteads and intercropped plantations, it is

challenging to determine the exact area under cultivation. However, during peak season, jackfruit is widely available, which frequently results in waste and gluts in local markets. Jackfruit has potential because to its wide range of end uses, tolerance to different agroclimatic zones, and suitability for diversified farming systems, in addition to its existing volume of production. Jackfruit is positioned as an emergent commercial crop from India due to the growing demand for plant-based substitutes and the global demand for unusual and functional meals (Kaur et al., 2023; Manianga, 2024).

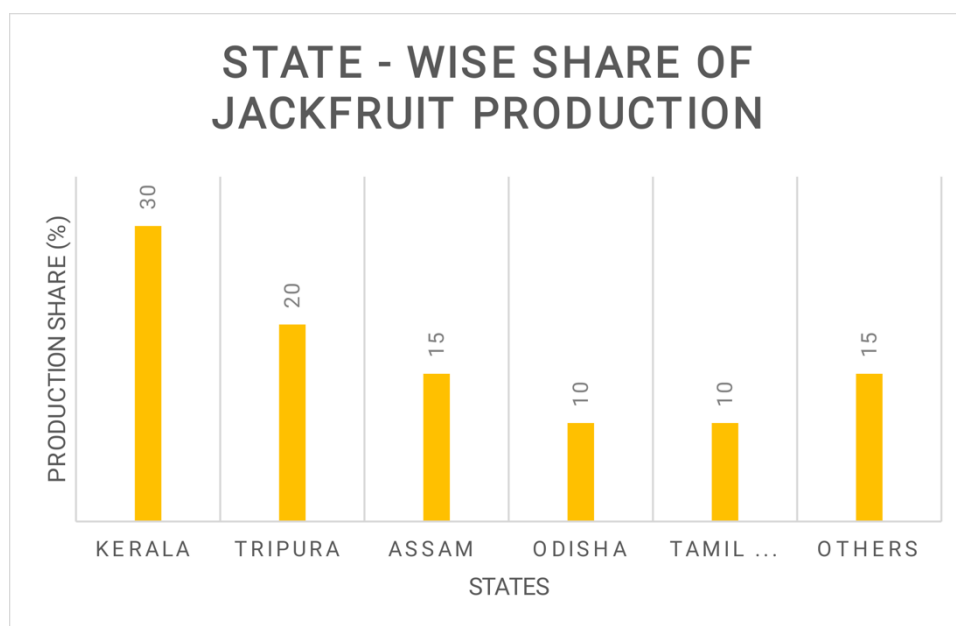


Fig 1: State-wise share of Jackfruit Production (Source: National Horticulture Board, Ministry of Agriculture & Farmers Welfare, Government of India)

CHALLENGES IN JACKFRUIT PRODUCTION AND UTILIZATION

Varietal Heterogeneity and Lack of Improved Cultivars

In India, most jackfruit trees are grown from seeds, which results in a great deal of variation in the size, flavour, maturity time, and shelf life of the fruit. Commercial

production is limited by the lack of systematic distribution of better planting material and large-scale breeding (Tripura Germplasm Study, 2025)

Postharvest Losses And Weak Infrastructure

Transporting jackfruit is challenging due to its size and high perishability. Every year,

30 to 50 percent of the harvest is lost because of bad harvesting, insufficient storage, and a lack of cold chain facilities (Manianga, 2024). During surplus seasons, farmers experience steep price declines, which deters investment in quality control.

Processing And Value Chain Constraints

Even if there are many processed goods available, small-scale processors frequently do not have access to contemporary technology like aseptic pulping, individual quick freezing (IQF), or vacuum frying. Competitiveness at home and abroad is hampered by the lack of standardised procedures, branding, and quality control (CCS-NIAM, 2021).

Market Access And Seasonal Gluts

India's jackfruit markets are dispersed and mostly unofficial. During peak season, farmers frequently discard unharvested fruits and sell at cheap farm-gate prices. Low negotiating power is caused by a lack of organised procurement chains and a lack of farmer collectives (Eximpedia, 2023).

Research And Extension Gaps

There are insufficient extension services available for pruning, insect control, nutrient management, and maturity evaluation. Beyond fresh fruit, farmers are not aware of prospects for value addition. Furthermore, compared to mango or banana, jackfruit is not as well integrated into national horticultural missions (Chikkanna et al., 2020).

OPPORTUNITIES IN JACKFRUIT PRODUCTION

Product Diversification And Value Addition

Chips, jams, flour, frozen pulp, canned slices, and seed-based flours can all be made from jackfruit. There is more room for jackfruit-based components due to the growing demand for plant-based and gluten-free cuisine (Kaur et al., 2023).

Potential For Exports

India is increasingly exporting jackfruit and items made from it, especially to North America, Europe, and the Middle East. Jackfruit has the potential to become a specialised export good if it complies with international requirements (Eximpedia, 2023).

Industrial And Nutraceutical Uses

The rind, seeds, and latex of jackfruit include starch, pectin, antioxidants, and phytonutrients that may find use in functional foods and medications (Manianga, 2024).

Livelihood Security And Agroforestry Integration

Jackfruit is a robust crop for small and marginal farmers, particularly in mountainous and tribal areas, because it thrives with little care and blends well with agroforestry systems. Women-led entrepreneurship and jobs in rural areas can be produced by processing microenterprises (CCS-NIAM, 2021).

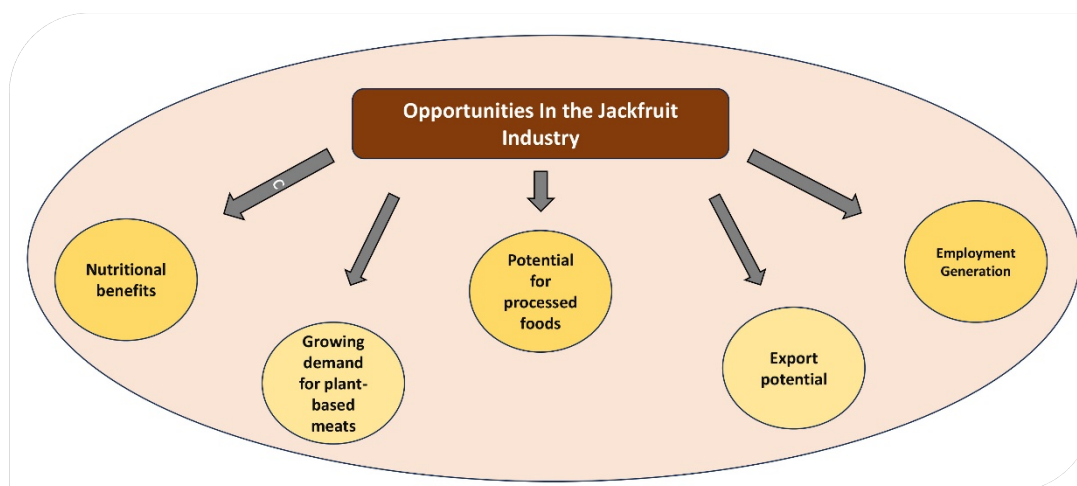


Fig 2: Opportunities in the Production of Jackfruit

STRATEGIES FOR UNLOCKING POTENTIAL

- Breeding and enhanced cultivars: Create nurseries and systematic breeding programs for clonal, uniform, high-yielding cultivars (**Tripura Germplasm Study, 2025**).
- Postharvest management: Establish main processing facilities, packhouses, and decentralised cold storage close to production clusters (**Manianga, 2024**).
- Technology for processing: Encourage the use of contemporary processing methods, quality certifications, and branding for products with added value (**Kaur et al., 2023**).
- Institutional support: For aggregation, group marketing, and export facilitation, strengthen farmer-producer organisations (FPOs) and cooperatives (**CCS-NIAM, 2021**).
- Policy inclusion: Under national horticultural development missions, acknowledge jackfruit and provide funds for research, training, and subsidies (**Chikkanna et al., 2020**).

CONCLUSION

Jackfruit is a versatile, climate-resilient crop that has great potential to improve India's export diversification, income creation, and nutrition. Despite the crop's high current production, systemic issues with production, processing, and marketing mean that it is still underutilised. Jackfruit may be turned from a subsistence fruit into a profitable product with focused breeding, postharvest infrastructure, processing, and market linkage initiatives. Jackfruit's potential for sustainable agriculture and rural development can be realised by its inclusion in national horticulture priorities.

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