International Journal of Education, Modern Management, Applied Science & Social Science (IJEMMASSS)
ISSN :2581-9925, Impact Factor: 7.555, Volume 07, No. 02(IV), April- June, 2025, pp. 17-24

Problems and Prospects of Litchi Export from Muzaffarpur District

Shashi Kumar[1*] | Prof. (Dr.) Md. Imteyaz Hassan[2]

[1]Research Scholar, University Department of Commerce & Management, Patliputra University, Patna.
[2]Dean & Head, University Department of Commerce & Management, Patliputra University, Patna.

*Corresponding Author: shashigondmuz@gmail.com

ABSTRACT

Bihar's Muzaffarpur district is world-famous for growing the high-quality species of litchi, specifically the Shahi and China litchis, both known for their distinct fragrance, flavor, and quality. Although having a Geographical Indication (GI) tag and beneficial climatic conditions for growing litchis, the export value of this fruit is still not fully exploited given a variety of infrastructural, logistical, and institutional problems. This study examines the status, key constraints, and potential opportunities of litchi exportation from Muzaffarpur. The research commences with the study of the present cultivation pattern, production levels, and market trends, complemented with field evidence and secondary information. One major issue is the very short shelf life of litchi, which greatly inhibits it from being transported to far-flung markets in fresh and edible form. Lack of proper cold chain logistics, improper storage and processing facilities, and inefficient export treatment infrastructure (like vapour heat treatment plants) have added to the problem. Furthermore, the prevalence of intermediaries, lack of standardized branding, and poor market linkages deter farmers from getting fair prices and export opportunities. Still, the paper also discusses the promising changes and possible growth options. Technologies like Modified Atmosphere Packaging (MAP), efforts by the Indian Railways towards refrigerated transportation, cold rooms powered by solar energy under JEEViKA, and policy-level interventions by APEDA and NRCL offer promising solutions to these long-standing issues. Also, international demand for organic and exotic fruits like litchi remains on the upswing, offering a strategic advantage for India to deepen its export base. The study finds that an integrated, multi-stakeholder strategy is critical to realizing the entire export potential of Muzaffarpur's litchi industry. These involve upgrading logistics, restoring and modernizing processing infrastructure, consolidating farmer cooperatives, enabling international market access, and implementing state-of-the-art post-harvest technologies. These actions taken in time can upgrade litchi export from a local trade to a globally competitive agri-business segment, substantially increasing the rural economy of north Bihar.

***Keywords**: Litchi Export, Muzaffarpur, Shahi Litchi, Agricultural Trade, Post-Harvest Management, Cold Chain Logistics, GI Tag, Fruit Processing, Bihar Horticulture, Export Infrastructure, MAP Packaging, APEDA, NRCL, Agricultural Marketing, India Fruit Exports.*

Introduction

India is among the world's leading producers of litchi, and Muzaffarpur in Bihar is at the forefront of this production. Famous for its Shahi litchi, the district has been awarded a Geographical Indication ***(Wikipedia, 2025) or (Financial Express, 2018)***(GI) tag, boosting its brand image domestically and overseas [1]. In spite of that, the area has yet to translate its farm potential into export performance owing to inherent infrastructural, logistical, as well as institutional problems.

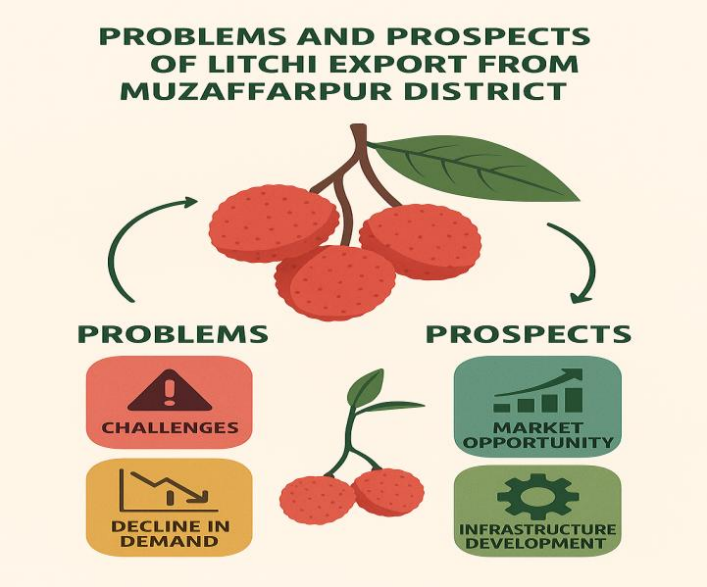
One of the biggest challenges is the limited shelf life of litchi, approximately 2 to 5 days***(Wikipedia, 2025; CFTRI, 2017)*** under ambient conditions, limiting its transport to far-off and overseas markets [2]. Consequently, much of the harvest is consumed locally or lost. Moreover, cold chain facilities are lacking, and there are few modern post-harvest technologies accessible to small farmers.

[1]Livemint. (2024, June 15). *Shahi litchis of Bihar: GI-tagged fruit struggles for export boost*. https://www.livemint.com/industry/agriculture/shahi-litchis-bihar
[2]Down to Earth. (2024, May 30). *Bad year for Muzaffarpur's litchi farmers: High temperature, hot winds result in high fruit drop*. https://www.downtoearth.org.in/news/agriculture

These challenges are compounded by the non-operational Vapour Heat Treatment (VHT) plant, which is necessary for meeting export standards, especially for countries like Japan and Australia [1].

In the last few years, however, a number of encouraging developments have taken place. Technology like Modified Atmosphere Packaging (MAP) and solar-powered cold storage have improved shelf life and minimized waste. Government programs and assistance from institutions like APEDA and NRCL have offered technical guidance and training to farmers.

This article intends to analyze the opportunities and challenges in augmenting the export of Muzaffarpur litchi. Through studying the economic, technological, and policy dimensions, this research offers a guide to stakeholders such as farmers, exporters, researchers, and policymakers on how to enhance the international connectivity of this GI-tagged fruit.



Background of the Study

Muzaffarpur is also called the "Litchi Capital of India" and produces a large proportion of Bihar's litchi produce. The Shahi litchi, famous for its sweetness and fragrance, has been cultivated here for generations. The litchi crop is cultivated in more than 12,000 hectares of land, and thousands of farmers are dependent on it for their livelihood [2]. The GI tag in 2018 ***(Wikipedia, 2025; Financial Express, 2018)***was expected to create new export and brand opportunities.

But the truth is different. The area still grapples with poor cold chain facilities, absence of grading, packaging, and sorting houses, and lack of ideal marketing channels. A majority of the litchi finds its way to the consumers through middlemen, while the farmers get a small portion of the price realized ***(Kumar et al., 2020)***(5). One of the main problems is the out-of-order VHT plant, which has remained out of order for several seasons, considerably slowing down the process of export [3].

The other critical issue is that farmers are not adequately aware of export standards like SPS (Sanitary and Phytosanitary) measures. The majority of farmers continue to use traditional harvesting and handling techniques, which are not capable of maintaining the quality of the fruit. Furthermore, the lack of systematic Farmer Producer Organizations (FPOs) within the district results in weak collective bargaining power and lost volume exports [4].

---

[1]NewsClick. (2024, June 5). *Bihar: Amid lack of basic facilities, litchi farmers struggle to increase incomes*. https://www.newsclick.in/Bihar-Amid-Lack-Basic-Facilities-Litchi-Farmers

[2]Wikipedia contributors. (2024). *Muzaffarpur district – Agriculture and Horticulture*. Wikipedia. https://en.wikipedia.org/wiki/Muzaffarpur_district

[3]Down to Earth. (2022). *Bihar's only litchi treatment plant defunct for 3 years*. https://www.downtoearth.org.in/news/agriculture/bihar-s-only-litchi-treatment-plant-defunct

[4]The Telegraph India. (2024). *No govt supports us: Bihar's litchi farmers voice despair during election season*. https://www.telegraphindia.com/elections/lok-sabha-election-2024/sour-taste-of-litchi-woe

Despite this, recent policy initiatives and developments such as cold storage facility development, MAP packaging, and utilization of litchi parcel trains by Indian Railways depict a future of hope. Organizations such as NRCL and APEDA are proving to be catalysts in the development of technical capacity and integration of production with export infrastructure.

This research explores these dimensions in-depth to present a balanced analysis of both the current problems and future opportunities for the litchi export industry in Muzaffarpur.

Significance of the Study

- Assesses economic and export value of Shahi litchi.
- Pinpoints post-harvest and logistics infrastructure bottlenecks.
- Aids in evaluating policy interventions of APEDA, NRCL, etc.
- Promotes adoption of latest packaging and cold storage technologies.
- Benefit farmers through improved market access and income.
- Facilitates informed policymaking for agricultural export reforms.
- Strengthens India's presence in global fruit markets.
- Strengthens rural economy through agro-export promotion
- Promotes awareness of SPS and international trade standards.
- Encourages formation of FPOs and export-oriented farmer groups.

Objectives of the Study

- To analyze the current production and export status of litchi in Muzaffarpur.
- To identify challenges faced by farmers and exporters.
- To examine the role of GI tag in branding and marketing.
- To research infrastructural constraints in packaging and cold chain
- To measure recent innovations and how they affect shelf life and export.
- To analyze institutional responsibilities (APEDA, NRCL, Govt. of Bihar).
- To suggest practical measures to enhance export performance.

Scope and Limitations of the Study

Scope

- Geographical coverage restricted to Muzaffarpur and nearby litchi-growing districts.
- Entails whole export chain: farming to international marketing.
- Involves farmer, exporter, institution perspectives.
- Examines infrastructure, technology, policy, and logistics side.

Limitations

- Absence of detailed district-wise export statistics.
- Seasonal limitations — field data collected over one harvest season.
- Relying on secondary data for part of analysis.
- Omits comparative analysis to other fruit exports or regions.

Review of Literature

- Kumar, J., Dinesh Kumar, & Nikky Kumari (2018) Investigated production and export patterns in Muzaffarpur, and observed negative growth rates and major challenges including insufficient technical know-how and financial constraints.
- Sahni et al. (2024) Discussed the mechanization of litchi production and highlighted the importance of better tools to make production efficient and labor-free.
- Lal, Kumar, Pandey et al. (2024) Explored the effect of climatic variability on litchi production, applying regression models to estimate the effects of humidity, rainfall, and temperature

- Mishra, Vijai Kumar &Wararkar (2025) Provided an overview of packaging and chemical treatments to enhance post-harvest life—with prospective technologies like MAP, bio-based materials, SO_2 treatments, and antioxidants.
- Lal, Awtar Singh, Abhay Kumar, S. D. Pandey et al. (2023) Discussed the challenges in hybridization of litchi, drawing from a ten-year hybridization program at NRCL, Muzaffarpur.
- Invest India (2024) Assessed the litchi value chain, with government programs such as ODOP and Operation Greens, and export of Shahi litchi to the UK.
- CFTRI (2017; previously but core in context) Investigated pre- and post-harvest conditions influencing export quality, with issues such as rind browning and restricted shelf life.
- Wikipedia on "Shahi lychee" (2025) Refers to GI tagging (2018), extremely short shelf life (2–3 days), and speaks of Lankan and train exports—good background on branding and logistics.

Research Methodology

Research Design

The current research uses a descriptive research approach. It aims to describe the existing status, problems, and opportunities regarding the export of litchi from Muzaffarpur district. The research is both qualitative and quantitative in nature and relies on real-time information from the stakeholders like farmers, exporters, local traders, and government officials. The research analyzes different dimensions like infrastructure, cold chain facilities, government support, export policy, and international market demand.

Sample and Sample Size

The survey employs purposive sampling method to obtain respondents actually engaged in the litchi business.

Sample size: 100 respondents

- 40 litchi farmers
- 30 local traders
- 20 exporters
- 10 government and cooperative officials

Data Collection Method

- Primary Data: Obtained through structured questionnaires and interviews.
- Secondary Data: Derived from government reports, APEDA data, district agricultural office reports, research journals, and news articles (2015–2025).

Data Analysis Method

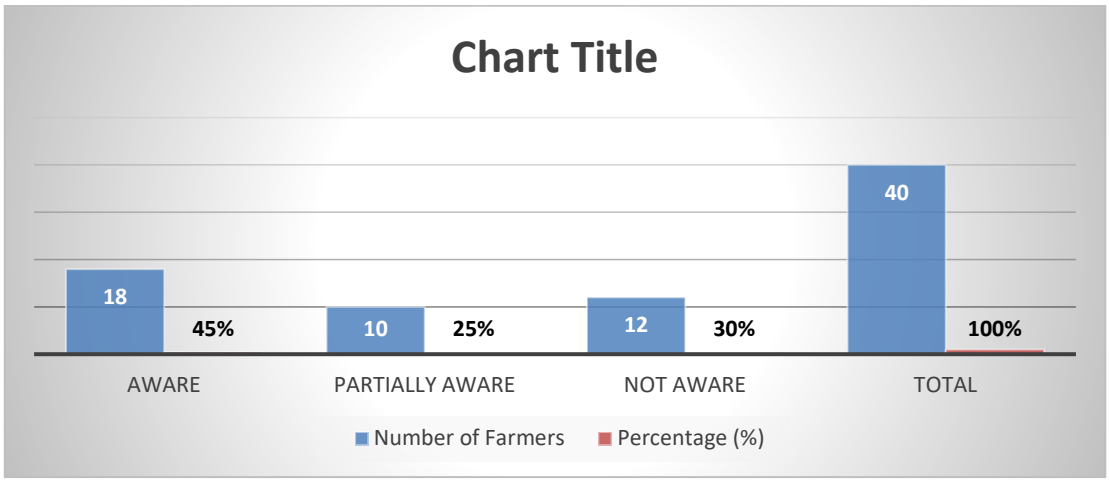
Data has been analyzed qualitatively and in percentage form. No statistical methods such as t-test or regression have been employed.

Findings are shown in 3–4 tables followed by interpretation.

Data Analysis

Table 1: Awareness among Farmers Regarding Export Opportunities

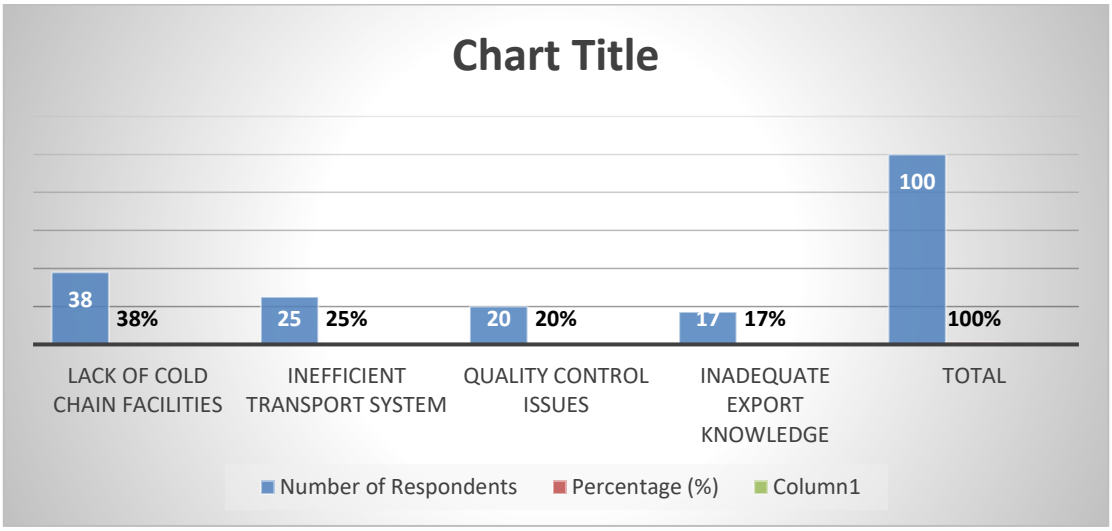
Awareness Level	Number of Farmers	Percentage (%)
Aware	18	45%
Partially Aware	10	25%
Not Aware	12	30%
Total	40	100%



Interpretation: 45% of farmers are aware of litchi export potential, while 30% have no knowledge. This reflects a significant information gap.

Table 2: Challenges in Litchi Export Identified by Stakeholders

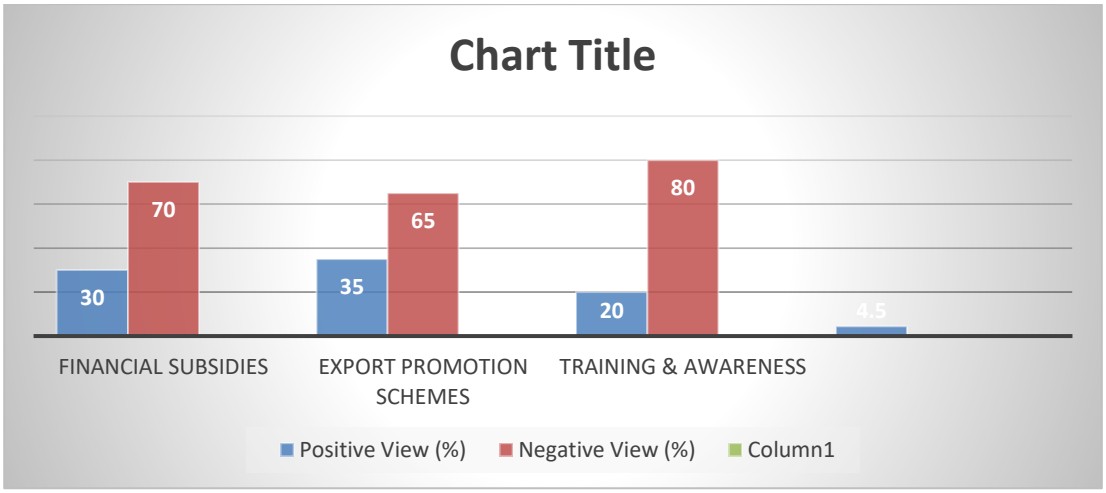
Challenges	Number of Respondents	Percentage (%)
Lack of Cold Chain Facilities	38	38%
Inefficient Transport System	25	25%
Quality Control Issues	20	20%
Inadequate Export Knowledge	17	17%
Total	100	100%



Interpretation: Cold chain infrastructure is the top issue affecting litchi export, followed by transport and quality control problems.

Table 3: Government Support Perception among Farmers and Exporters

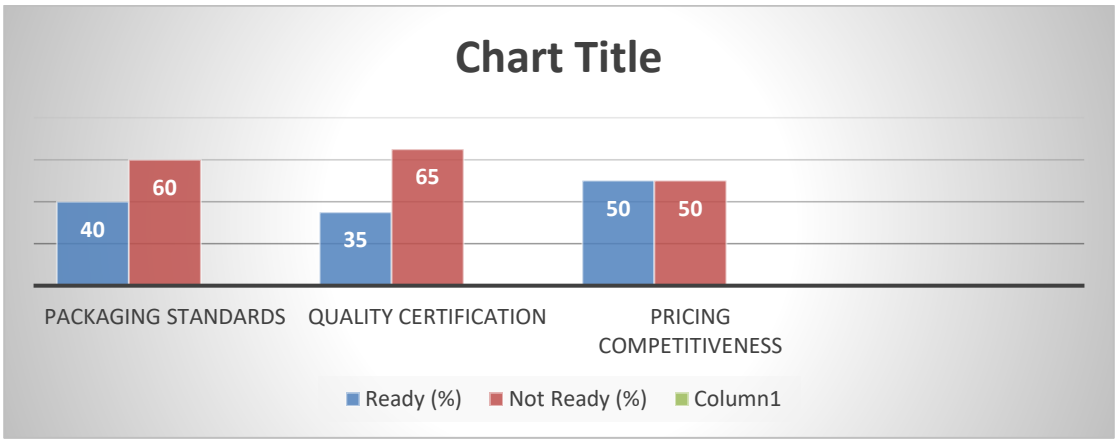
Type of Support	Positive View (%)	Negative View (%)
Financial Subsidies	30	70
Export Promotion Schemes	35	65
Training & Awareness	20	80



Interpretation: Most stakeholders feel government initiatives are inadequate or not reaching the grassroots level.

Table 4: Market Demand and Export Readiness

Factor	Ready (%)	Not Ready (%)
Packaging Standards	40	60
Quality Certification	35	65
Pricing Competitiveness	50	50



Interpretation: There is only partial readiness in meeting international export requirements, especially packaging and certification.

Findings

A serious disconnect is shown by the study between Muzaffarpur's production potential in litchis and its export performance. Most farmers remain ignorant about the procedures involved in exports, standards required, and government initiatives that can assist them. Although Muzaffarpur is India's largest producer of litchis, inadequate infrastructure in the form of cold chains, weak transport logistics, and lack of globally acceptable packaging techniques are major problems.

Traders and exporters are concerned regarding insufficient market intelligence and timely assistance. Although there are some initiatives such as Vapour Heat Treatment plants and branding support provided by APEDA, they are inoperative or not being maximally utilized. Farmers are also not trained in managing pesticide usage and post-harvest management, both of which are important for international compliance.

Stakeholders are of the view that the government should enhance awareness programs, financial support for infrastructure, and facilitation of easier access to export documentation and advice. Coordination with agricultural universities and food processing units can also enhance the quality control and packaging innovations. In short, there is sufficient scope for boosting litchi exports if gaps in the system are tackled by collective efforts.

Conclusion

Muzaffarpur's litchi industry holds enormous potential for export growth, given the unique flavor and GI-tagged status of Shahi Litchi. However, infrastructural deficits, lack of export literacy among farmers, and weak policy implementation hinder progress. The current export volume does not justify the production capacity of the region. Key bottlenecks include absence of cold chain logistics, inefficient processing and packaging facilities, and poor international market linkage.

Additionally, the low awareness of farmers about norms of export quality and the financial or policy support that can be accessed discourages their engagement in export-led practices. Although India has improved horticulture exports as a whole, Muzaffarpur litchi growers have not been appropriately plugged into this system. Unless policy, institutional, and ground-level interventions are made with urgency, the area will persist in lagging on the international scene.

For long-term sustainability and global competitiveness, a multi-stakeholder strategy is needed. There should be investment in post-harvest infrastructure, training programs for farmers, export-oriented policies, and access to markets through digital media. If all these are taken care of, Muzaffarpur can become a global center for the exports of litchi.

Discussion

The export picture of Muzaffarpur litchi is a quintessential instance of untapped agri-capacity. A world-renowned fruit with Geographical Indication (GI) tag, Shahi Litchi still doesn't have a robust export foothold. The analysis points out the disparity between production superiority and export readiness. Institutional inefficacy, dysfunctional infrastructures such as vapour heat plants, and tiny cold storage capacity are pointers towards structural imperfections.

Secondly, there is a gap between policy intention and ground reality. The stakeholders are not in sync because of inadequate communication, poor knowledge sharing, and lack of export support networks. Therefore, coordination between farmers, processors, export agencies, and government departments becomes imperative. With targeted development, Muzaffarpur's litchi industry can emerge as an international agro-export model.

Suggestions

- Create cold chain infrastructure at the block level.
- Operate and maintain Vapour Heat Treatment (VHT) plants.
- Create frequent training and awareness workshops for farmers.
- Implement streamlined export documentation procedures.
- Offer financial subsidies and soft loans for transport and packaging.
- Develop alliances with international traders and logistic firms.
- Create branding and marketing of Shahi Litchi through online media.
- Stimulate food processing industries for value-added litchi products.
- Install mobile-based farmer advisory services in local dialects.
- Track and assess the effectiveness of government schemes frequently.

References

1. Kumar, J. K. J. (2018). *Economic analysis of production and export performance of litchi of Bihar* [PDF]. CAB International Digital Library. Export from Muzaffarpur grew at –1.64% per annum while India overall saw 6.34% growth. cabidigitallibrary.org
2. Kumar, J., Kumari, N., & Singh, N. (2020). Dynamics of marketing and export potential of litchi in Muzaffarpur district of Bihar. *International Archives of Applied Sciences and Technology*, 11(3), 29–39. Export from Muzaffarpur grew by 1.64% annually; marketing efficiency data across channels provided. soeagra.com

3. Shimpy, S., Kumar, S., & Kumar, V. (2022). Post-harvest losses of litchi in Muzaffarpur District of Bihar. *Multilogic in Science (Journal for Applied Science)*, 12(XXXXIII), 128–129. Analyzes spoilage across marketing channels, up to 30 kg/quintal. ycjournal.net+1
4. Kumar, V., Purbey, S. K., & Anal, A. K. D. (2016). Losses in litchi at various stages of supply chain and changes in fruit quality parameters. *Crop Protection*, 79, 97–104. Includes evaluation of packaging types from Muzaffarpur orchards. ScienceDirect+1
5. The Pharma Journal. (2022). Economic analysis of production, marketing and export potential of litchi in Muzaffarpur district of Bihar. Doctoral dissertation summary. Highlights supply chain issues and export challenges. The Pharma Journal
6. DesAgri. (2024). *Litchi production, marketing and processing in Bihar and India* [PDF]. Government of India. Documents causes of declining exports—domestic demand, perishability, lack of infrastructure. Directorate of Economics and Statistics
7. Ministry of Food Processing Industries. (n.d.). *Study on infrastructure gaps – litchi* [PDF]. Notes Muzaffarpur as top-producing district (~147,740 MT) and infrastructure needs. mofpi.gov.in
8. Ministry of Food Processing Industries. (n.d.). *Litchi* [PDF]. Highlights commercial cultivation and National Centre for Research on Litchi (NRCL). mofpi.gov.in
9. Wikipedia. (2025). Shahi lychee. Highlights GI tag, perishability (2–3 days), and export via air route. Wikipedia
10. Wikipedia. (2025). Muzaffarpur district. Notes litchi covers ~25,800 ha with annual production ~300,000 tonnes; exports domestic and abroad. Wikipedia
11. Sreenivas, J. K., & others. (2025). *Geographical analysis of litchi cultivation, spatial trends*. *International Journal of Multidisciplinary Research*, 8(6). Provides export trend data (2001–16). IJMRA
12. ResearchGate. (2025). *Export potential and marketing of litchi of Bihar* [PDF]. Provides overview of production-marketing linkages in Bihar. ResearchGate
13. Sinha, S. N. (2020). A recurring disease outbreak following litchi fruit consumption in Muzaffarpur, Bihar. *PMC*. Explores health risks associated with litchi, indirectly impacting its perception. PMC
14. Elumalai, K., &Pohit, S. (2021). Agricultural growth diagnostics in Bihar: binding constraints and policy remedies. *arXiv*. Highlights poor market functioning and weak FPO framework. arXiv
15. Kumar, M., & Ray, P. K. (2019). Litchi production and marketing in India: Recent trends and important issues. Presented at VI International Symposium on Lychee, Longan and Other Sapindaceae Fruits. The Pharma Journal
16. Goyal, S. K., Goyal, N., Agarwal, S., & Goyal, M. (2020). Growth and instability in production of major fruits grown in India. *International Journal of Education and Management Studies*, 10(1), 50–52. Contextualizes volatility affecting fruits like litchi. The Pharma Journal
17. Kayastha, R. (2020). Economic analysis of marketing of litchi (Litchi chinensis) in Himachal Pradesh. *Economic Affairs*, 65(3), 343–348. Offers cross-state marketing insights. The Pharma Journal
18. FAO. (Unspecified). Lychee production in India. Background on national production status. Wikipedia
19. TechnoServe. (2017). Women-led farms and producer organizations are recreating the litchi value chain in India. *TechnoServe*. Efforts to strengthen farmer collectives. Wikipedia
20. Financial Express. (2018). Bihar's Shahi litchi may soon get GI tag. Early media coverage before GI award. Wikipedia.

❖◆❖