

## BIHAR'S MAKHANA: FROM LOCAL STAPLE TO GLOBAL SUPERFOOD

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### ABSTRACT

*Bihar's flood-fed ponds have quietly raised fox-nuts, locally called makhana, for centuries. Yet the seed's journey from fasting-day staple to best-selling "super-food" has been remarkably swift. With Geographical Indication (GI) status granted in 2022 and Bihar now producing almost 90 % of India's crop, makhana now sits at the intersection of wellness trends, climate-smart aquaculture and India's drive for value-added agri-exports. This article traces makhana's rise, from pond ecology and nutrition science to export numbers and policy reforms and argues that careful scaling can turn the snack into a marquee rural-development success.*

**KEYWORDS:** Agri-exports, Fox-nuts, GI tag, Superfood, Wellness snacks, Value chain

### INTRODUCTION: WHY MAKHANA MATTERS

Walk into any premium grocery in Delhi or Dubai today and you'll spot pouches of lightly salted, peri-peri or even tiramisu-coated *makhana* beside trail mixes. Shoppers grab them because the pops are plant-based, gluten-free and non-allergenic. Behind those bright packs is an ecosystem of roughly five lakh Bihari farmer-fishers who wade chest-deep to pluck spiny fruits from ancestral ponds. GI registration in August 2022 officially tied the product to its birthplace, while media stories celebrate Bihar's claim to supply nearly 90 % of the world's fox-nuts.

### NUTRITIONAL HIGHLIGHTS

A 2023 peer-reviewed study measured popped *makhana* at about 9 g protein, 77 g complex carbohydrates, negligible fat and meaningful magnesium and potassium per 100 g, plus polyphenol antioxidants that tame oxidative stress. Its modest glycaemic load suits diabetics, and its airy crunch creates satisfying volume for weightwatchers looking to replace calorie-dense chips.

### CULTIVATION IN THE MITHILA HEARTLAND

Ideal ponds are 1-2 m deep, warm (20-35 °C) and refreshed each monsoon by the Kosi's floods. Sowing

begins in February, leaves bloom by May and harvest peaks between July and September. Today the Makhana Vikas Yojana reimburses up to 75 % of input costs and subsidises five-tonne storage sheds while distributing improved cultivars like *Swarna Vaidehi* and *Sabour Makhana-1*, moves that can lift yields from 1.4 t to 3 t ha<sup>-1</sup>

## FROM PONDS TO PACKETS: THE CHANGING VALUE CHAIN

Village artisans once roasted seeds in sand and cracked shells with wooden mallets before selling pops loose at local *haats*. Now semi-automatic roasters, optical sorters and nitrogen-flushed pouches have cut processing time by 40 % and stretched shelf-life to eight months. Farmer Producer Companies in Darbhanga and Purnia negotiate directly with e-commerce platforms, capturing margins that middlemen once pocketed.

## WORLDWIDE APPETITE AND MARKET SIZE

Three macro-shifts fuel global demand: the post-pandemic wellness boom, the rise of vegan and gluten-free diets, and an “authentic-ethnic” craze that turned turmeric and quinoa into kitchen staples. Market analysts predict the fox-nut category could double to roughly USD 87 million by 2031, growing at 8-12 % annually. Overseas product developers now fold milled *makhana* into granola and cereal bars, stretching its use beyond the snack bowl.

## EXPORT SCORECARD

India shipped around 25,000 t of *makhana* in FY 2023-24, headed chiefly to the United States, Canada and Australia. Freight rates have cooled since the pandemic, and duty-free passage under the India-UAE CEPA has turned Dubai into a lucrative redistribution hub. Exporters who earn ISO 22000, organic or non-GMO seals report 15-20 % price premiums and easier supermarket entry.

## CHALLENGES THE INDUSTRY MUST CRACK

- Fragmented ponds make mechanisation tricky.
- Missing HS code lumps *makhana* into “other nuts,” muddying trade data.
- Monsoon humidity raises spoilage without affordable dryers.
- R&D lag means protein-isolate research trails behind soy.
- Prices, meanwhile, are whiplashing, surging from ₹950 to ₹1,250 kg<sup>-1</sup> after the 2025 Union Budget spotlighted a new Makhana Board for Bihar.

## THE ROAD AHEAD

If average yields reach 2.5 t ha<sup>-1</sup> and half the crop goes into flavoured or fortified lines, Bihar's *makhana* economy could top ₹15 billion within three years. Carbon-labelled supply chains and ready-meal innovations, think instant *makhana* soup cups could anchor the seed in the global health-food aisle.

## CONCLUSION

In a world hunting for snacks that are kind to both body and planet, Bihar's humble fox-nut has finally popped into the spotlight. Protecting its pond ecology, modernising processing clusters and telling its Mithila story with pride will decide whether the crackle heard around the world grows into a sustained roar, or fades back into the farmyard.

## REFERENCES

- Allied Market Research. (2024). Fox-nuts market expected to reach USD 87.1 million by 2031. ([alliedmarketresearch.com](https://alliedmarketresearch.com))
- India Today. (2025, February 7). How did makhana become a global superfood? ([indiatoday.in](https://indiatoday.in))
- Intellectual Property India. (2022). Mithila Makhana: Certificate of Geographical Indication Registration [GI application no. 696]. ([search.ipindia.gov.in](https://search.ipindia.gov.in))
- Jagran. (2024, April 12). Makhana Vikas Yojana: Bihar government offers 75 % subsidy to fox-nut farmers. ([jagran.com](https://jagran.com))
- Mummadi, M. K., et al. (2023). Differentiating the nutrient composition of raw and popped makhana (*Euryale ferox*). Journal of Food Measurement & Characterization, 17(6), 5828-5844. ([researchgate.net](https://researchgate.net))
- The Economic Times. (2025, February 14). Makhana prices surge 32 % post-budget amid rising demand. ([economictimes.indiatimes.com](https://economictimes.indiatimes.com))
- The Hindu. (2024, May 14). Makhana cultivation in Bihar: Running on vegetable protein. ([thehindu.com](https://thehindu.com))

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