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Harishchandrapur: Emerging Hub of Makhana Cultivation and Processing in West Bengal, India.

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ABSTRACT

This article is about the emergence of Harishchandrapur, a rural block in Malda district, West Bengal, as a prominent centre for makhana (fox nut) cultivation and processing. It highlights insights from fieldwork, including visits to cultivation sites and processing units, as well as interviews with local farmers and entrepreneurs, along with documented historical and technical information. Favourable agro-climatic conditions, abundant water bodies, and local entrepreneurship have supported this growth. The pioneering efforts of Purussatam Bhagat from Barduary village, who received a patent in 2002 for developing a storable edible makhana product, laid the groundwork for the region's makhana economy. His innovation, academically validated by Jadavpur University, demonstrated makhana's nutritional and therapeutic value, including high protein content, low fat, and medicinal benefits. Building on this legacy, the Government of West Bengal, under the leadership of Hon'ble Minister Mr. Tajmul Hossain and with the support of the Hon'ble Chief Minister, has established a Makhana Cluster and processing unit in Harishchandrapur, inaugurated by District Magistrate Mr. Nitin Singhania. About 300 hectares are now under cultivation, with training programmes for rural youth. Combining traditional and semi-mechanized techniques, the sector

generates income for small farmers, women, and landless labourers. Field interviews confirm Harishchandrapur's potential as West Bengal's leading hub for makhana production and processing.

Introduction

Harishchandrapur, a rural block in West Bengal's northern Malda district, is steadily becoming a significant hub for the production and processing of makhana (fox nuts). As its output and market share continue to expand, it might be considered West Bengal's Makhana Capital. Historically linked to the Bihar plains, makhana is currently becoming more and more popular in this region of Bengal because of the region's unique agro climatic conditions, the presence of natural water bodies, and growing local interest in sustainable revenue production. This water-based crop is especially popular among farmers in Harishchandrapur because of its high market value and comparatively cheap input costs.

Purussatam Bhagat, a farmer from Barduary village in Harishchandrapur block, is credited with being the first person in his area to cultivate makhana and the first to obtain a patent from the Indian government for turning makhana into an edible food product that could be stored. In honour of his agricultural innovation, New Delhi granted the patent on November 15, 2002. The head of Jadavpur University's Food Technology and Biochemistry department, Utpal Ray Chaudhuri, stated that Bhagat was the first to apply for such a patent, highlighting his innovative role.

Ray Chaudhuri also highlighted makhana's nutritional and therapeutic benefits. He said that it has 35.11% moisture, 11.11% protein, 53% carbohydrates, 0.31% minerals, 0.22% crude fibre, and 0.17% fat. He also emphasised that it is suitable as a baby food with no negative effects and that it has cardiac, renal, and anti-filarial properties. After receiving formal recognition, Bhagat increased his production of makhana, which he had previously grown over 80 bighas. This greatly boosted the local economy.

His work paved the way for the local growth of makhana cultivation, especially in Harishchandrapur, where a number of processing facilities appeared. The expansion of makhana as a cottage industry in Malda is encouraged by this development, which is fueled by demand both domestically and in export markets in developed and West Asian nations. Bhagat also started making baby food from makhana, offering a high-protein substitute for cereals made from maize, such Ceralac.

The Influence of grassroots innovation is demonstrated by Bhagat's instance, where farmer-led creativity backed by academic validation from Jadavpur University resulted in patent recognition and rural economic upliftment. His experience serves as an example of how indigenous agricultural activities can impact public health and regional development (Ref. The Telegraph (Kolkata), 3 March 2003.)

A Makhana Cluster has been developed in Harishchandrapur thanks to the initiative of Hon'ble Mr. Tajmul Hossain, the Minister of State for Micro, Small, and Medium Enterprises and Textiles of West Bengal, and with the support of the Hon'ble Chief Minister of West Bengal. The Malda District Magistrate, Mr. Nitin Singhania, formally launched the project. Makhana farming currently occupies about 300 hectares of land in and around Harishchandrapur. The West Bengal government has set up a processing unit and a cluster to improve production and processing in order to further support this industry. In order to help rural youth acquire skills connected to makhana cultivation and marketing, training programmes are also being implemented. On August 7, 2025, I, Dr. Bhupen Ghimirey, paid a personal visit to the newly opened Makhana Processing Cluster Centre in Harishchandrapur. I also had a conversation with Md. Kais, a Delhi resident who works at the processing unit, while I was there. "The operations are going smoothly," he said. He is responsible for the center's makhana's puffing, roasting, grading, and washing. An important turning point in the state government's drive to modernise and advance makhana farming and processing has been reached with the opening of this cluster. The government is making efforts to modernise and improve makhana cultivation, according to Hon'ble Minister Mr. Tajmul Hossain. Makhana, he stressed, is a very nutrient-dense food. The state government is aiming to increase its market presence not only within the country but also in the international market. (Ref. https://www.facebook.com/share/v/1JXhkmFGE7/)

The cultivation of makhana not only supplements the incomes of small and marginal farmers but also contributes to employment generation, especially for women and landless laborers during the processing stages. With both traditional and semi-mechanized techniques in use, the makhana sector is creating a unique rural agro-economy that blends indigenous knowledge with emerging market demands. This article presents insights gathered from field visits and interviews with local cultivators and processors, such as Sk. Ajahar and Nasim Parvege, Staff Members of our College and Sk. Khalil local Makhana Entrepreneur who offer firsthand information on the challenges and potential of makhana in this region. As demand for this superfood increases globally, Harishchandrapur stands poised to become a notable player in the makhana economy of West Bengal, India.

In this connection, I had the opportunity to interact with *Sk Ajahar*, a staff member of Harishchandrapur College, during a free period on 3rd June 2025. He has firsthand knowledge of makhana cultivation in the Harishchandrapur region. Below is the transcript of our conversation.

Dr. Bhupen Ghimirey: Good afternoon, Ajahar Babu

Sk Ajahar: Good afternoon, sir.

Dr. Bhupen Ghimirey: Let's talk about makhana today.

Sk Ajahar: Ok, let's start….

1. What is the current status of makhana cultivation in Harishchandrapur?

Ans: The cultivation of makhana is expanding quickly in Harishchandrapur. The great market value of processed makhana is demonstrated by its current price of about ₹30,000 per quintal.

2. Which variety of makhana is mostly grown here?

Ans: There is only one makhana variety grown here, but the size and popping qualities—known locally as "kohi"—are used to determine the quality. Higher prices are obtained for larger seeds with superior popping yield.

3. What type of ponds or fields are suitable for makhana cultivation in this region?

Ans: Low-lying fields in particular, as well as fields that resemble paddy fields generally, are appropriate. Until the seeds reach maturity, water must be kept at least one foot below the surface during the growing season.

4. How is the local climate of Harishchandrapur favorable for makhana?

Ans: The weather is ideal for sowing, particularly from February to March. The temperature falls between 20°C and 30°C throughout this time. By the end of July, harvesting starts, and it lasts until August.

5. How do farmers prepare the pond before sowing makhana seeds?

Ans: The field is prepared much like a paddy field. Water is retained at a minimum depth of one foot. Proper ploughing and leveling are necessary to ensure good sapling growth.

6. What is the average duration from sowing to harvesting in Harishchandrapur?

Ans: Makhana takes around 6 to 7 months to mature fully from sowing to harvesting.

7. What are the major challenges faced during makhana cultivation here?

Ans: The lack of workers is a significant issue, particularly during the planting and harvesting seasons. For farmers, finding skilled and reasonably priced labour is a major challenge. We are totally dependent on workers from Bihar and Jharkhand, particularly for processing.

8. Which diseases or pests affect makhana in this region?

Ans: Small insects primarily harm makhana plants, particularly when they are tender. To manage them, farmers apply chemical sprays and powdered pesticides.

9. How do farmers manage pests naturally?

Ans: There are few natural ways. To protect their crops, the majority of farmers use pesticides and chemical sprays.

10. What is the average yield per acre for makhana here?

Ans: The average yield is about 10 to 12 quintals per acre under proper conditions.

11. What traditional methods are used for makhana harvesting in Harishchandrapur?

Ans: Cultivation employs a hybrid strategy. Although ploughing is done with modern equipment like tractors and power tillers, fields are still levelled with traditional oxen.

12. Can you explain the basic steps of makhana processing locally?

Ans: Typically, seeds come from the previous year's harvest. In January and February, saplings are prepared in watery, low-lying locations. Later, in February and March, these are moved to fields that have been prepared. When lowlands are not available, some farmers also start young seedlings from seeds.

13. How is the popping quality of makhana from Harishchandrapur compared to other regions?

Ans: The popping quality is regarded as excellent. Harishchandrapur is now a crucial hub for makhana processing as a result. Even raw makhana is transported here for processing from Bihar, Uttar Pradesh, Dakshin Dinajpur, and some areas of Murshidabad.

14. What role do women play in makhana cultivation and processing here?

Ans: When it comes to planting, moving saplings, pulling weeds, using pesticides, and first roasting (bhaja) before popping, women are essential. During the busy time of year, they also oversee domestic tasks. Their involvement is essential to the process as a whole.

15. What are the main market channels for raw and processed makhana from Harishchandrapur?

Ans: Raw makhana is sold by farmers in the neighbourhood market. After that, it undergoes local processing and quality-based sorting. Puffed makhana is sold overseas and sent to Indian cities. Harishchandrapur is immediately served by transport vehicles. The goods is subsequently packed and branded by dealers after being stored in godowns.

16. How much higher is the income from makhana than rice, wheat, and jute?

Ans: Farmers earn around four times more from makhana compared to traditional crops like rice, wheat, and jute.

17. How important is makhana cultivation for the local economy?

Ans: The cultivation of makhana has grown to be a significant source of income. It is currently one of Harishchandrapur's main economic pillars and has made a substantial contribution to the local economy.

18. Are there any organized farmer groups or cooperatives in this area for makhana?

Ans: No organized farmer groups or cooperatives for makhana exist here yet.

19. What traditional knowledge helps in improving makhana productivity here?

Ans: It is essential to have knowledge of traditional popping techniques, seed selection, and field preparation. Productivity is increased when this is combined with contemporary methods.

20. What are the common post-harvest losses in makhana processing?

Ans: There are losses in weight both after seed collection and after processing. Popping and cleaning further reduce the overall quantity.

21. How do you see the future of makhana cultivation in Harishchandrapur?

Ans: The future is promising. Makhana has potential to support farmers and boost local businesses for years to come.

22. Are local farmers shifting to other crops from makhana? Why?

Ans: No, in fact, more farmers are shifting toward makhana due to its higher profitability compared to rice, wheat, and jute.

23. How does water management affect makhana farming here?

Ans: Water is necessary. It is impossible to cultivate makhana without enough water. Monsoon rains, appropriate drainage, and irrigation pumps are essential to farmers.

24. What are the major quality parameters buyers look for in Harishchandrapur's makhana?

Ans: Buyers assess quality based on size, roundness, and popping quality. Makhana is graded as large, medium, or small.

25. How do you think branding could help Harishchandrapur's makhana farmers and businesses?

Ans: Harishchandrapur would have a unique identity thanks to branding. In both domestic and foreign markets, it would aid in promoting the makhana of the area.

26. What advice would you give to a new makhana farmer in this area?

Ans: There are several advantages to makhana cultivation, particularly in terms of health and money. Makhana alone, however, is insufficient. To guarantee food security, farmers should also cultivate food crops including vegetables, rice, and maize. Sustainable rural living requires a balanced approach.

We learned a lot from our conversation about the physical seed collection process, the use of family labour throughout the entire process, and the ancient methods of growing makhana in ponds throughout the summer. Additionally, Sk Ajahar discussed the relative benefits of makhana farming over traditional crops like rice, wheat, and jute, emphasising its high labour intensity, financial ramifications, and exceptional profitability. He claims that compared to these staple crops, makhana farming generates almost four times as much revenue. His account reflects the depth of indigenous agricultural knowledge and the potential of makhana as a profitable alternative for farmers in this region.

Today (02/08/2025) we had the opportunity to interact with Sk. Khalil, a respected former Organising Committee Member of Harishchandrapur College. He raised a substantial amount of money by going door-to-door to raise money for the college's founding. He currently operates a makhana business in Barduary, Harishchandrapur, where he has a processing unit, a holler machine, a packing equipment, and sizable godowns for storing raw and processed makhana. He owns a wholesale makhana business and has direct experience with the whole makhana production process, from seed to finished product. Even though it was the busiest time of year for makhana harvesting, Sk. Khalil kindly shared his precious time with us. He was interviewed briefly by Sk. Ajahar and me (Dr. Bhupen Ghimirey).

The following transcript captures Sk. Khalil's rich experiential understanding and practical knowledge of makhana as a cash crop and economic driver for the region.

Market-Related Questions:

1. **What is the current local market price of raw makhana and popped makhana in Harishchandrapur?**

Ans: Depending on quality, the current price per quintal for raw makhana seeds ranges from ₹25,000 to ₹28,000. Popped makhana (khoi) is sold in bulk or wholesale for ₹840 to ₹900 per kg. Prices for each kilogramme might reach ₹1,000 or more in the retail market.

2. How much popped makhana is produced from one quintal of raw seeds?

Ans: Approximately 66–68 kg of khoi is obtained from one quintal of raw makhana seeds.

3. Which towns or cities are the main buyers of makhana from Harishchandrapur?

Ans: Delhi, Chandigarh, Mumbai, Gujarat (Surat), Kolkata, Siliguri, Haryana, Rajasthan, and other major Indian cities are important supply destinations.

4.Is makhana from Harishchandrapur exported Internationally?

Ans: Yes, makhana is transported from Mumbai via sea routes to nations such Dubai, the United States, Thailand, Japan, Germany, France, and others.

5**. What are the main uses of makhana in India and abroad?**

Ans: In India, makhana holds religious importance, particularly in Hinduism, where the seeds (kamal gatta) are utilised in hawan. Popped makhana is eaten during fasts (upavas) and in dishes like as kheer and prasad. It is preferred abroad as a sugar-free, hygienic, and healthy diet, including in baby feeding.

6. How long can makhana be stored after harvest?

Ans: Raw seeds are stored in godowns before processing. Popped khoi can be stored for up to one year in dry airtight storage in sacks (bora) or packets.

7. What are the common storage problems for makhana?

Ans: The main challenges include a lack of well-equipped godowns, moisture problems, and pest attacks (particularly by rats) and insects. Improper storage may cause rotting and softening of khoi.

8. How is makhana packaged for the market?

Ans: Makhana comes in packets of 250 g, 500 g, 1 kg, 5 kg, and 10 kg. There are several packing units in Harishchandrapur.

9. Are there any branded makhana products in Harishchandrapur?

Ans: Yes, brands are dependent on quality and size—the highest quality is 19 mm (6 suta). Local brands like as Sai Baba, Sk. Rasgulla, Rajbhog, and Makhana Bhog are available in Harishchandrapur at both wholesale and retail prices.

Labour-Related Questions

10. How many labourers are typically required for makhana cultivation and processing?

Ans: Makhana requires a large workforce from seedling to market. Labour is the backbone of the industry.

11. What is the daily wage or labour cost for makhana processing workers?

Ans: For processing and popping one quintal, the labour charge is ₹5,000 to ₹6,000. In some cases, the share system is followed, where labourers receive one-third of the produce.

12. Is labour readily available in Harishchandrapur?

Ans: Yes, but there is a labour shortage during the peak season. Workers from Bihar are specially engaged in processing and popping.

13. What type of work do women labourers do in makhana processing?

Ans: Women participate actively in popping, drying, cleaning, and packaging processes.

14. When is the peak demand for labour in makhana cultivation?

Ans: Labour demand is highest from July to September.

15. Are skilled workers needed for makhana processing?

Ans: Some basic skills are needed, especially for popping and grading, but no formal training is usually required.

16. Is there labour migration for makhana processing?

Ans: Yes, particularly for processing and popping, labourers come from Bihar during the season.

17. What are the major challenges faced by makhana labourers?

Ans: The high temperatures of July and August, along with the heat from fire-based popping (done in a four-step karai), make the task challenging. However, business owners frequently support employees' health needs.

Processing-Related Questions:

18. How many makhana processing units exist in Harishchandrapur?

Ans: There are around 1,000 or more processing units in the region.

19. What are the key steps in makhana processing?

Ans: Seeds are collected, popped, cleaned using holler machines, graded based on size, and packaged.

20. What machines are used for makhana processing?

Ans: While most work is manual, holler machines and packing machines are commonly used.

21. Is manual popping still practiced?

Ans: Yes, popping is still done manually using traditional methods.

22. What are the main quality criteria in makhana processing?

Ans: Quality is primarily based on size. The highest grade is 19 mm (6 suta).

23. What are the average processing charges per quintal?

Ans: ₹5,000 to ₹6,000 is the usual cost for processing one quintal.

24. What suggestions do you have for improvement in this industry?

Ans: a. Labour training programs.

b. Direct credit facilities for farmers and entrepreneurs.

c. Establishment of a Makhana Board to regulate prices, support marketing, and ensure industry development.

In our discussion with Sk. Khalil, it was clearly understood that makhana has emerged as a major economic and agricultural asset in Harishchandrapur. It generates employment across sectors — farming, labour, transport, hospitality, retail, and wholesale trade. He emphasized that makhana should be officially recognized as a cash crop, like cotton, tobacco, or jute.

From planting to harvest, the availability of water is essential. Because it doesn't require pesticides or much mechanical processing, the crop is environmentally benign. It makes effective use of unused land, some of which are already put to use for farming and others for the establishment of processing facilities. Scrap-to-wealth techniques are facilitated by the use of leftover plywood and scrap wood as fuel for popping.

Although, the makhana sector has a nett positive impact with low ecological hazards and significant employment generating potential, even though land transfers may have a minor influence on the cultivation of other traditional crops like rice and jute.

We believe makhana is the “black diamond” or “black gold” of Harishchandrapur, and the region holds immense potential to emerge as a national hub for its production and processing. Undoubtedly, Harishchandrapur has already emerged as the makhana capital of West Bengal, producing thousands of tons annually and supplying both national and international markets.

The study of makhana has been integrated into the SEC syllabus and IAPC/field projects for students of Harishchandrapur College under the NEP 2020 framework. This article will be useful not only for students but also for anyone interested in understanding the journey of makhana — from field to market to plate — and for general readers seeking information about this emerging crop.

This article is specifically based on a field visit during the makhana planting and harvesting season, interviews with people who have firsthand experience of the harvesting, processing, and marketing of makhana, and conversations with local entrepreneurs, farmers, labourers, planters, and goudam owners.We express our sincere gratitude to Sk. Khalil for sharing his firsthand knowledge and valuable time. We also thank everyone who directly or indirectly helped us in gathering and preparing this article.

Interview:

1.Interview/Conversation with Sk Ajahar, staff member, Harishchandrapur College. Conducted during a free period on 3 June 2025.

2.Interview/Conversation with Nasim Parvege, staff member, Harishchandrapur College. Conducted during a free period on 6 August 2025.

3.Interview/Conversation with Sk. Khalil, local makhana entrepreneur and former Organising Committee member of Harishchandrapur College, conducted at Barduary, Harishchandrapur, in August 2025.

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1.Agarwala, Debarati. “Farmer Reaps Patent Fruit – New Delhi Recognises Makhna Peasant’s Feat.” The Telegraph (Kolkata), 3 Mar. 2003. (https://share.google/9PKioTpIdsTjIBChU) Accessed on 06/08/2025.
2. https://www.facebook.com/share/v/1JXhkmFGE7/ (Accessed on 05/08/2025
3. https://share.google/6sc7gWsJPrjuNWWre (Accessed on 01/08/2025)
4.https://youtu.be/wuax1IVOcZ8?si=13fLdXmAj7MKy82v (Accessed on 04/08/2025)
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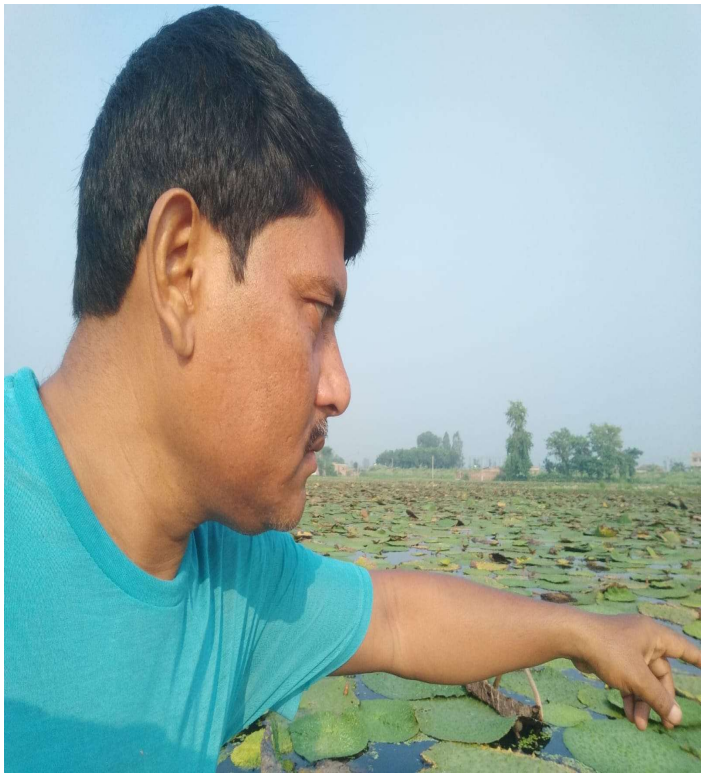
Some firsthand photographs captured during the visit.



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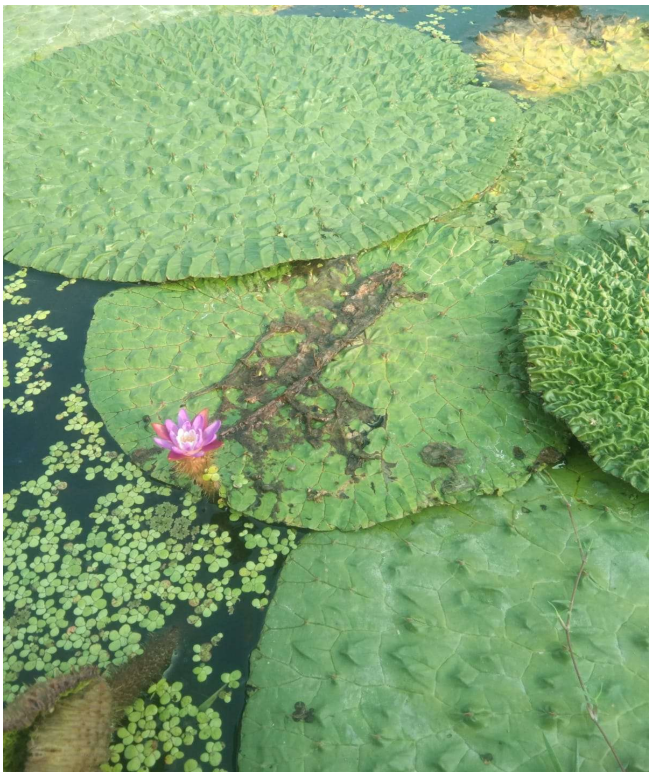


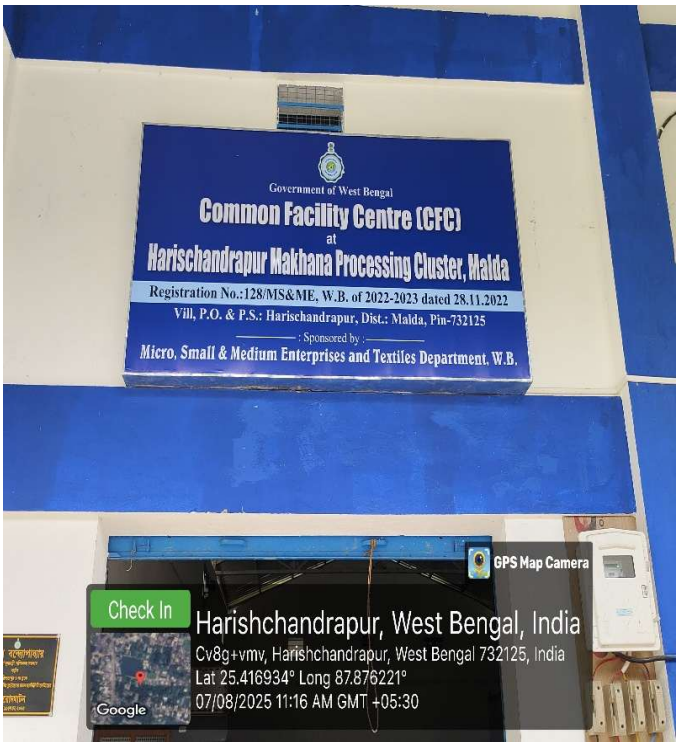
2

1.Makhana field — where black diamonds grow, sowing the seeds of prosperity.

2. A blooming makhana flower atop its leaf — nature's promise and a farmer's hope.

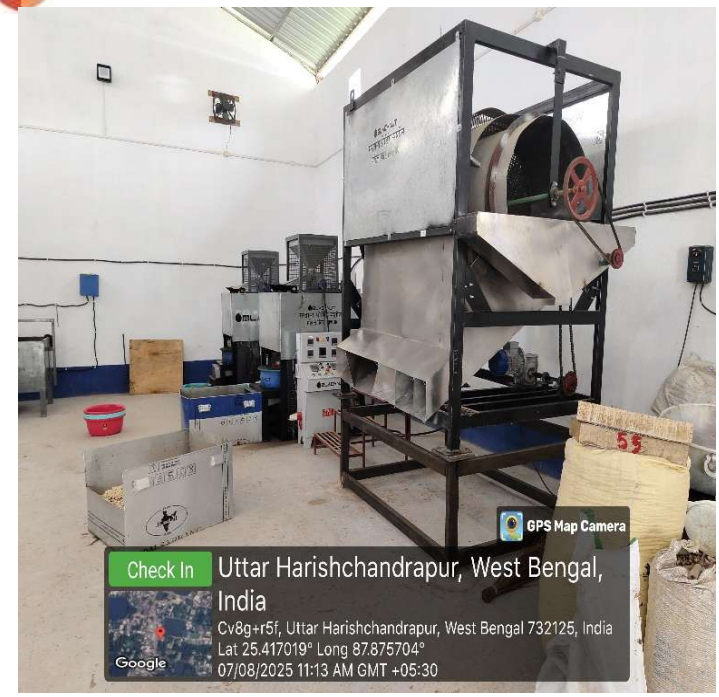
1.**Makhana Seeds- the black diamond being processed before reaching the market.**

2. Women roasted makhana in Kadai- a key step before popping the black diamond.



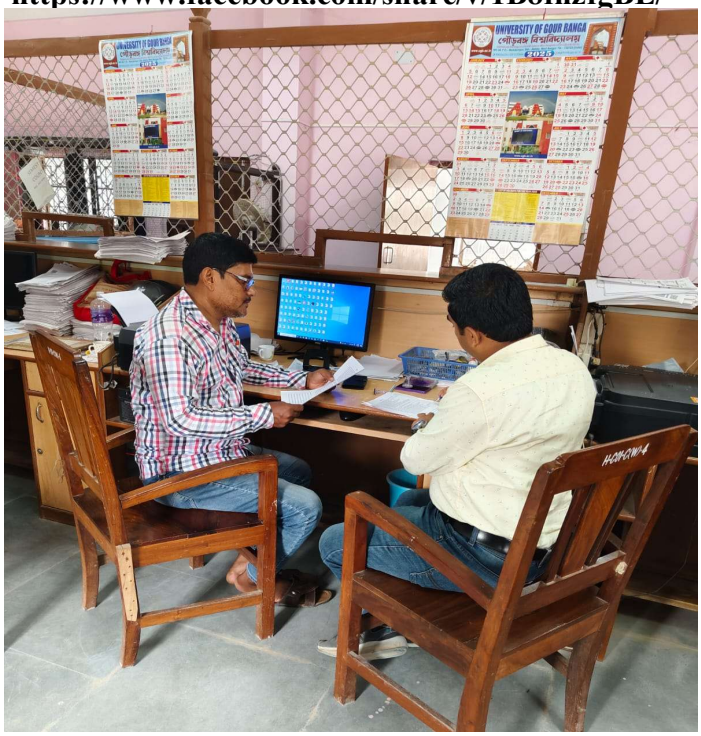
3.Makhana godown at Burdwary with white khoi ready for packing.

4.Makhana Processing Cluster, Harishchandrapur – A Govt. of West Bengal Initiative.



1.Processing, grading, and cleaning – Inside view of the Makhana Processing Unit.

2.Mr. Tajmul Hossain, Honourable Minister of State for MSME & Textiles, West Bengal, explaining the establishment of the Harishchandrapur Makhana Processing Cluster and its benefits for local farmers and entrepreneurs. (Photo Source: https://www.facebook.com/share/v/1B8fnzfgBE/



1.Sk. Ajahar shares views on makhana farming during a free period at college.

2.Dr. Bhupen Ghimirey and Sk. Ajahar interact with Sk. Khalil, former Managing Committee member and makhana entrepreneur, as he shares firsthand insights into the local makhana trade.