# Nobo Pallob

IAAS Bangladesh IUBAT

## Bimonthly Magazine

*January & February | 2025*

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***Nutritious Food for All***

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***Sustainable Agri-Production & Preservation***

5 GENDER EQUALITY

***Equal Wages for Female Workers***


## Published By

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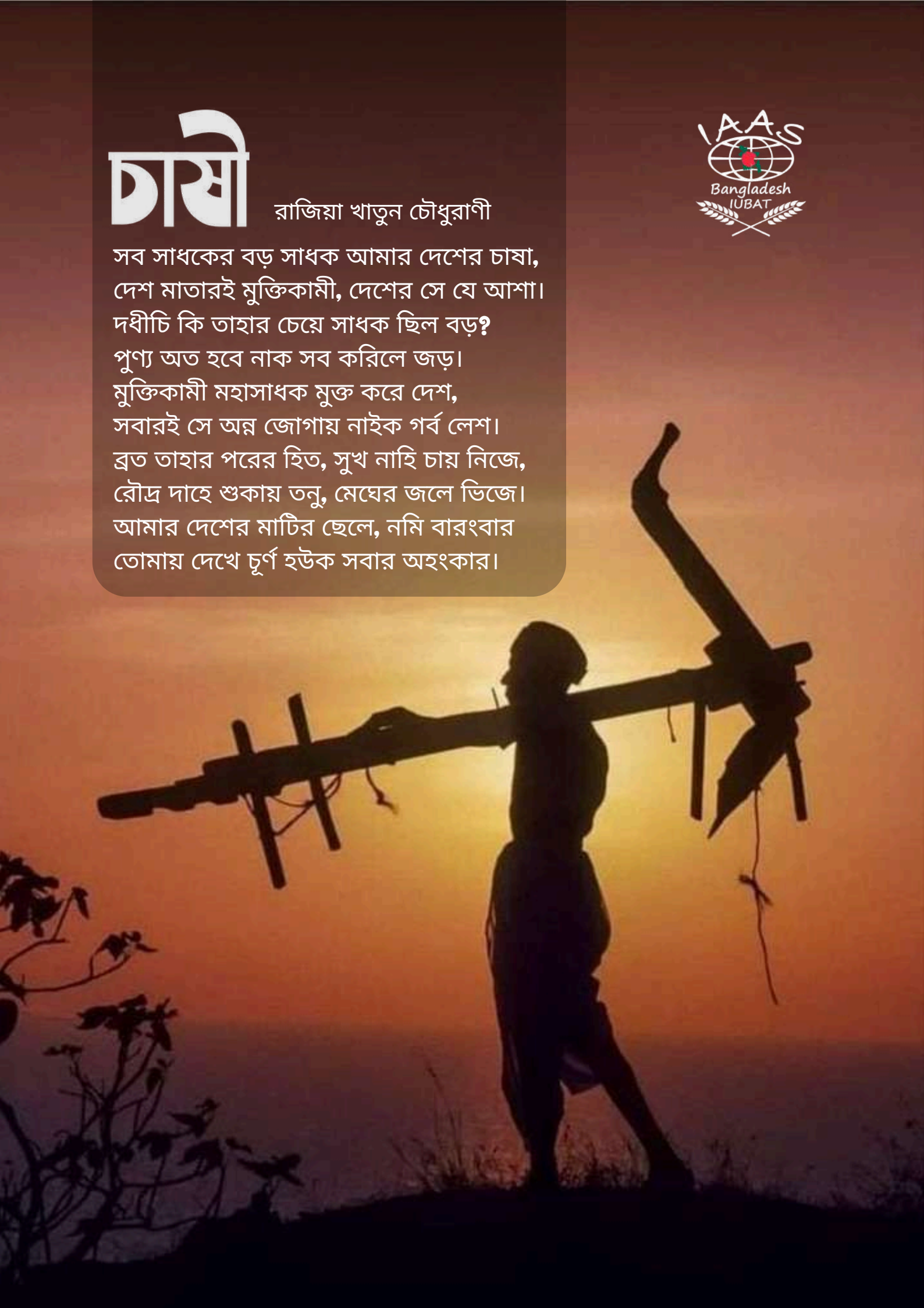
# চাষী

রাজিয়া খাতুন চৌধুরাণী

সব সাধকের বড় সাধক আমার দেশের চাষা,
দেশ মাতারই মুক্তিকামী, দেশের সে যে আশা।
দধীচি কি তাহার চেয়ে সাধক ছিল বড়?
পুণ্য অত হবে নাক সব করিলে জড়।
মুক্তিকামী মহাসাধক মুক্ত করে দেশ,
সবারই সে অন্ন জোগায় নাইক গর্ব লেশ।
ব্রত তাহার পরের হিত, সুখ নাহি চায় নিজে,
রৌদ্র দাহে শুকায় তনু, মেঘের জলে ভিজে।
আমার দেশের মাটির ছেলে, নমি বারংবার
তোমায় দেখে চূর্ণ হউক সবার অহংকার।



VOL 01

Welcome To

# NOBO PALLOB

## Overview

Nobo Pallob is the bi-monthly magazine of IAAS Bangladesh IUBAT, established to serve as a dynamic platform for intellectual exchange, knowledge-sharing, and research dissemination. This magazine reflects the vision of IAAS Bangladesh IUBAT and IAAS Bangladesh, providing members with an opportunity to express their insights, discoveries, and perspectives on agriculture, environmental sustainability, and various scientific disciplines that contribute to these fields.

## Aim

This magazine aims to expand agricultural knowledge, encourage scientific discussions, explore agricultural history and heritage, and enhance the writing skills of IAAS members. By fostering a culture of academic excellence and professional growth, Nobo Pallob will serve as a valuable platform for aspiring agricultural professionals, researchers, and enthusiasts committed to sustainability and innovation.

All members, including the Executive Board (EB), Control Board (CB), Quality Board (QB), General Members, Alumni, Strategic Advisers, Advisers, and members of IAAS Bangladesh's all Local Committees, are welcome to submit articles. The magazine will be published every two months, ensuring a consistent flow of thoughtful discussions, Agricultural heritage, research, and innovations in agricultural sciences and related areas.

The editorial board of Nobo Pallob will be primarily led by members of the Executive Board and Control Board of IAAS Bangladesh IUBAT, who will oversee the selection, editing, and publication of articles.

# Editor in Chief Note

***Nobo Pallob (January - February) 2025***

**Sourav Kanti Bala**

**Research and Project Development Officer**

It is with great enthusiasm that we present the first volume of Nobo Pallob (January-February) 2025, the bi-monthly magazine of IAAS Bangladesh IUBAT. This magazine serves as a platform for knowledge-sharing, discussion, and research, bringing together diverse perspectives on agriculture and related fields.

In this inaugural issue, we focus on agriculture, the ancient agricultural heritage of Bengal, contemporary challenges, and modern advancements. Agriculture is deeply rooted in our history and continues to shape our future. By exploring traditional knowledge alongside modern innovations, we aim to highlight its role in food security, sustainability, and rural development.

We sincerely thank all contributors from IAAS Bangladesh IUBAT and IAAS Bangladesh for their insightful articles. Special appreciation goes to the Executive Board and Control Board for making this publication possible.

We hope Nobo Pallob inspires scientific discussions, Agricultural heritage and innovative solutions in agriculture.

Go Further, Go IAAS Bangladesh IUBAT.

# Message form National Director

***Nobo Pallob (January - February) 2025***

I extend my heartfelt admiration to IAAS Bangladesh IUBAT for their inspiring journey since 2024. Their bi-monthly magazine 'Nobo Pallob' embodies their dedication to addressing key global issues—advocating for gender equality with fair wages for women, promoting sustainable agriculture, and tackling climate challenges.

This publication serves as a beacon of innovation, fostering awareness and driving solutions for a better future. As National Director of IAAS Bangladesh, I am honored to support their transformative efforts and celebrate their achievements.

**Kind Regards**

**Md. Israfil Hossain**
National Director
IAAS Bangladesh

# Massage form Local Director

***Nobo Pallob (January - February) 2025***

As a local director of IAAS Bangladesh IUBAT , I'm thrilled to unveil our bimonthly agriculture magazine "Nobo Pallob" which is designed to create a platform for aspiring student writers to fostering there writings about Agriculture, Innovation, Research, Agri Resources, Higher study and so many informative things.

It will influence the enthusiastic members of IAAS Bangladesh IUBAT to think critically and enhance the power of analysis to make there article meaningful. And We aim to empower our readers with sustainable practices and innovative solutions, fostering a thriving agricultural community.

Finally I would like to convey my heartfelt gratitude to the editorial board to introduce such a insightful magazine among us.
Best wishes for all.

**Kind Regards**

**Rezwana Jahan Oyshe**
Local Director
IAAS Bangladesh IUBAT

# Message form Project Strategic adviser

***Nobo Pallob (January - February) 2025***

Welcome to the inaugural issue of Nobo Pallob, our bi-monthly magazine dedicated to celebrating the dynamic spirit of agriculture and innovation in Bangladesh. As the Vice Director of External Relations at IAAS Bangladesh IUBAT, I am excited to share our collective vision, creativity, and commitment to sustainable progress with you. In these pages, you'll find stories that capture our shared passion for transforming traditional practices into modern, practical solutions that empower our community. Each feature, insight, and update is a testament to our belief that real change comes from embracing both our heritage and the endless possibilities of the future.

I invite you to join us on this journey. Explore new ideas, celebrate our successes, and be inspired by the drive of those who are shaping the agricultural landscape of Bangladesh. Let Nobo Pallob be a source of inspiration, learning, and unity as we work together to cultivate a better tomorrow.

**Kind Regards**

**Shahriar Mannan Imon Talukder**
Vice Director of External Relations
IAAS Bangladesh IUBAT

# Nobo Pallob

## Editorial Board Members

***Nobo Pallob (January - February) 2025***

Sourav Kanti Bala

Editor in Chief

Kamrul Hassan Rabbi

Reviewer

Jahanara Zaman Noboni

Coordinator

# Meet Our
## Executive & Control Board (2024-25)

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**S M Imon Talukder**
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**Sourav Kanti Bala**
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# Nobo Pallob *(January - February) 2025*

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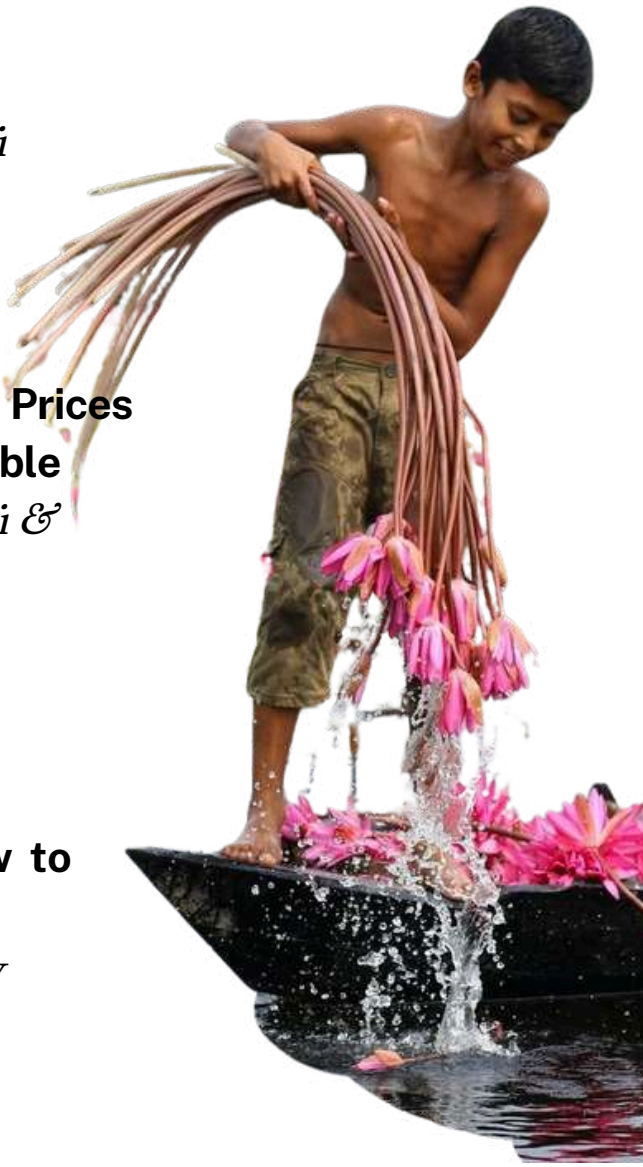
Page | Tropic Author's





# Hajari Gur: The Iconic Date Palm Jaggery of Manikganj

Hajari Gur is a traditional and highly sought-after jaggery made from date palm sap, produced exclusively in Harirampur, Manikganj, Bangladesh. Known for its soft texture, unique sweetness, and ability to melt instantly in the mouth, this jaggery has gained fame not only in Bangladesh but also internationally. The branding slogan of Manikganj, “Hajari Gur and Baul Songs, The True Soul of Manikganj”, highlights its cultural significance.

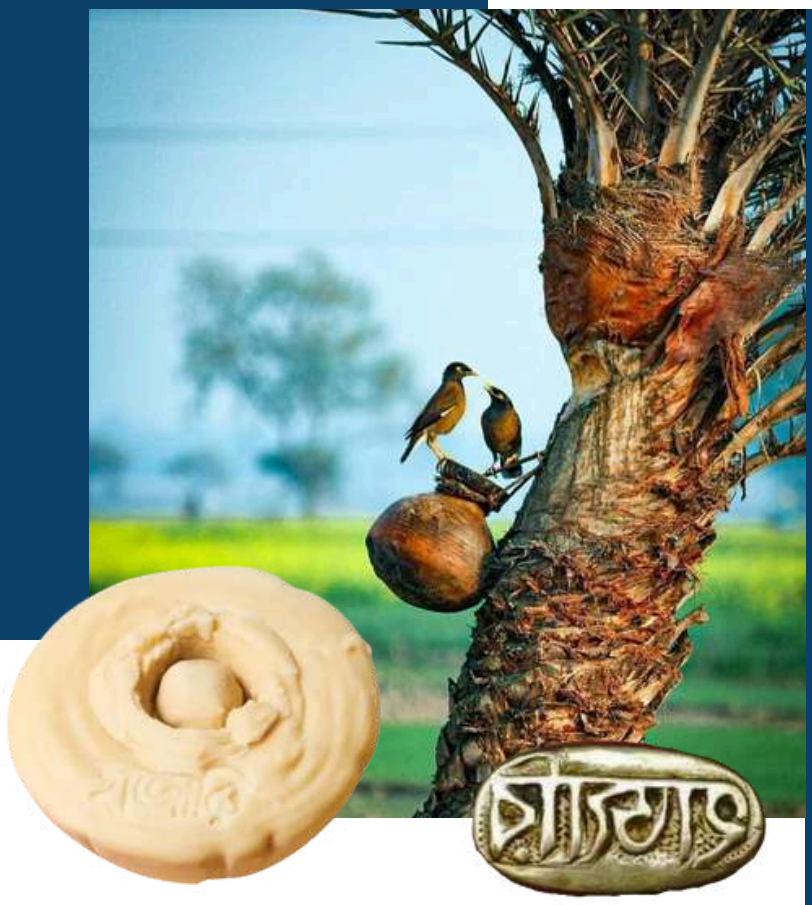
## Origin and History

The origins of Hazari Gur trace back around 350 years to the village of Jhitka Shikdarpara in Harirampur. It is named after Hazari Pramanik, the pioneer of this distinct jaggery-making tradition. According to family records, the British Queen Elizabeth once tasted Hazari Gur and was so impressed that she gifted the Hazari family a brass seal with their name engraved. This rare jaggery, produced only by select families, has maintained its reputation across generations.

## Interesting News & Recognition

- **Cultural Identity :** Hazari Gur has been integrated into Manikganj's official branding, highlighting its deep cultural roots.

**Royal Acknowledgment :** Around 300 years ago, Hazari Pramanik initiated the production of Hazari Gur. During a visit to the Indian subcontinent, Queen Elizabeth II of Britain tasted it and was so impressed that she gifted a brass seal engraved with "Hazari" as a token of appreciation.



# Traditional Making Process

The production of Hazari Gur is a meticulous process :

1. **Sap Collection –** Gachhis collect fresh date palm sap in clay pots overnight.
2. **Boiling & Thickening –** The sap is boiled for 20-25 minutes until it turns light brown.
3. **Intensive Stirring –** It is transferred to clay pots and stirred with bamboo sticks for better consistency.
4. **Cooling & Molding –** The thickened liquid is poured into molds to solidify into pure white Hazari Gur.
5. **Branding –** Each piece is stamped with the Hazari family's signature before distribution.

# Important Facts About Hazari Gur

**Unique Texture & Taste :** Unlike regular jaggery, Hazari Gur is white, powdery, and melts effortlessly in the mouth.

**Production Ratio :** Approximately 10-12 kg of sap is required to produce 1 kg of Hazari Gur.

**Limited Producers :** Initially, over 100 families were involved in making this gur, but today, only about 22 families continue this tradition.

**High Price & Demand :** Due to its labor-intensive production, 1 kg of Hazari Gur costs around 1,800-2,000 BDT ($15-$20), making it one of the most expensive jaggeries in Bangladesh.

# Conclusion

Hazari Gur sustains many families in Manikganj through seasonal employment, while its global demand extends to the UK, USA, and the Middle East. Tourists visit Harirampur, boosting local businesses. However, declining date palm trees and high production costs threaten its future. As a symbol of Bangladesh's heritage, preserving and promoting this artisanal delicacy is crucial to ensuring its legacy and global recognition for generations to come.

# ANCIENT WISDOM, MODERN SOLUTIONS: SUN-DRYING FOR FOOD SECURITY

## Project Background

In the 2024-2025 winter season, Bangladesh experienced a bumper harvest of tomatoes and cauliflower. High production in areas like Ishwardi and Ulipur led to market oversupply, causing a sharp price drop. Many farmers, unable to sell at fair prices, were forced to abandon their produce in the fields.

The lack of proper market management and storage facilities worsened the situation. To prevent such waste, our documentary highlights how sun-drying techniques can preserve tomatoes and cauliflower, ensuring long-term storage and reducing losses for farmers throughout the year.

## Methods

1. We Bought 1 kg of tomatoes and 1 cauliflower from Uttara sector 10 .
2. We Cut the tomatoes into thin slices (removing seeds) and chopped the cauliflower.
3. Washed the vegetables thoroughly with fresh water.
4. Brushed oil on a tray and placed the vegetables on it under direct sunlight.
5. Dried them for 5 days and then ground them using a grindstone.
6. Stored the powdered vegetables in a glass container.

## Food compounds of tomato powder (mg/100g)

| | |
|---|---|
| Vitamin C | 125.00 |
| Copper (Cu) | 0.876(+-) 0.80 |
| Manganese (Mn) | 1.83(+-) 0.53 |
| Calcium (Ca) | 226.55 |
| Potassium (K) | 2805.8(+-) 21.41 |
| Zinc (Zn) | 2.71(+-)0.05 |
| Iron (Fe) | 3.99(+-) 0.32 |

Srivastava, S., & Kulshreshtha, K. (2012). **Nutritional content and significance of tomato powder.** [Annals of Arid Zone], [*52(2)*], Page- 122

## Sustainable Development Goals


## Food compounds in dried Cauliflower (mg/100g)

| | |
|---|---|
| Tiamin B1 | 0.16 |
| Riboflavin B2 | 0.21 |
| Magnesium (Mg) | 207.66 |
| Calcium (Ca) | 226.55 |
| Potassium (K) | 226.55 |
| Zinc (Zn) | 4.10 |
| Iron (Fe) | 14.27 |

Caglarirmak, N., & Heocimen, A. Z. (2013). "**An Investigation of Nutritional Values of Dried Vegetables.**" [GIDA], [*38(6)*], page- 330

**Rural Farmer women :** Aduri Begum Anika (Showcased the Food Preservation Process in the Documentary) token of appreciation.

# The Beetroot Boom : Cultivating a Healthier and Wealthier Bangladesh

Beetroot (*Beta vulgaris*) is a nutrient-rich root vegetable known for its deep red color, earthy taste, and numerous health benefits. Often referred to as a "superfood," it is packed with essential vitamins, minerals, and antioxidants. Originally cultivated in the Mediterranean region, beetroot has gained global popularity due to its versatility in cooking, medicinal properties, and economic value.

In Bangladesh, beetroot is emerging as a promising crop with the potential to improve nutrition and boost farmers' incomes. It's play a vital role in enhancing food security and economic prosperity in Bangladesh.

## Current Malnutrition Status in Bangladesh

**Children:** According to national surveys, about 28% of children under five suffer from stunting (chronic malnutrition), while 10% suffer from wasting (acute malnutrition).

**Women:** Around 30% of women of reproductive age are underweight, while 23% suffer from anemia, affecting pregnancy outcomes and maternal health.

Addressing malnutrition through beetroot health benefits can have long-term positive impacts on the population.

## Beetroot Nutrition (Per 100g of Raw Beetroot)

1. Energy - 43 kcal
2. Carbohydrates - 9.6 g
3. Sugars - 6.8 g
4. Fiber - 2.8 g
5. Protein - 1.6 g
6. Fat - 0.2 g
7. Vitamin C - 4.9 mg
8. Vitamin B9 - 109 µg
9. Potassium - 325 mg
10. Magnesium - 23 mg
11. Iron - 0.8 mg
12. Calcium - 16 mg
13. Nitrate - 50-500 mg

# How Beetroot Helps Combat Malnutrition in Bangladesh

**(A) For Children**

**1. Prevents Anemia :**
- High iron content helps combat iron-deficiency anemia, which affects around 40% of Bangladeshi children.

**2. Boosts Brain Development :**
- Folate and nitrates support cognitive function, memory, and learning abilities.

**3. Improves Digestion :**
- Fiber prevents constipation and improves gut health, ensuring better nutrient absorption.

**4. Enhances Immunity :**
- Rich in Vitamin C and antioxidants, beetroot strengthens the immune system and helps prevent infections.

**(B) For Women (Pregnant & Lactating Mothers)**

**1. Reduces Maternal Anemia :**
- Iron and folate in beetroot help prevent iron deficiency, a major issue during pregnancy.

**2. Supports Healthy Pregnancy & Fetal Development :**
- Folate reduces the risk of neural tube defects in newborns.

**3. Boosts Energy & Reduces Fatigue :**
- Nitrate-rich beetroot enhances blood flow, reducing tiredness and dizziness.

## Nutritional Benefits of Beetroot

**Per 100g of beetroot :**
- **Iron :** 0.8 mg – Helps prevent anemia, common among Bangladeshi women and children.
- **Folate (Vitamin B9) :** 109 µg – Essential for maternal health and fetal development.
- **Vitamin C :** 4.9 mg – Boosts immunity and enhances iron absorption.
- **Fiber :** 2.8 g – Supports digestion and gut health.
- **Nitrates :** Improves blood circulation and brain function.

## How to Incorporate Beetroot in Diet (Local Context)

To increase beetroot consumption among Bangladeshi women and children, it can be included in :
- **Beetroot juice –** Mixed with lemon for iron absorption.
- **Beetroot salad –** With cucumbers, carrots, and mustard dressing.
- **Beetroot soup –** Nutritious and easy to digest for children.
- **Mixed vegetable curry –** Added to local dishes like shak bhaji and dal.
- **Beetroot paratha –** A child-friendly nutritious option.

Expanding beetroot cultivation in Bangladesh can combat malnutrition by providing essential nutrients while boosting agricultural income. Promoting its production and consumption enhances food security, improves public health, and strengthens the rural economy, paving the way for a healthier and wealthier nation.

# Farhana Yasmin: A Successful Entrepreneur in Vermicompost Production

Bangladesh's agriculture is undergoing a transformation, and women are not just part of this change—they are leading it. The involvement of women in agriculture has always been crucial in the country, but recent stories are proving that women can drive innovation and growth. One such inspiring example is Farhana Yasmin, a trailblazer from Jashore who is revolutionizing farming practices with eco-friendly solutions.

Farhana Yasmin is a dynamic agricultural entrepreneur from Kazipur Mobarakkati in Jashore district. Since 2022, she has been actively engaged in the production of vermicompost, a sustainable, organic fertilizer made using worms to decompose organic waste. Vermicomposting is an environmentally friendly alternative to chemical fertilizers, enriching the soil and improving crop yields without harming the environment.

Farhana started her journey with just a few small composting houses, but her efforts have grown into a full-fledged business. Today, her farm produces an impressive 75 maunds (approximately 2,800 kg) of vermicompost per month, supplying local farmers with a high-quality organic fertilizer that improves soil fertility.

This organic solution not only helps farmers improve crop yields but also reduces dependency on harmful chemical fertilizers, aligning with global sustainability goals.

Farhana's business is also contributing to the local economy by providing employment opportunities. She has created jobs for several individuals, primarily women, helping them develop skills and become economically independent. By training others in vermiculture, Farhana is empowering more women to participate in agriculture, creating a ripple effect of opportunity and empowerment.

## A Vision for Urban Agriculture: Rooftop Gardening

Farhana Yasmin's contributions go beyond vermiculture. She has also set a remarkable example of urban agriculture by creating a thriving rooftop garden.

The garden houses over 500 plants, showcasing the potential of sustainable farming in urban settings. This project not only helps her meet her organic farming goals but also demonstrates how individuals, even in the most densely populated areas, can cultivate their food and contribute to environmental sustainability.

## Recognition and Impact

Farhana Yasmin's innovative contributions have not gone unnoticed. In 2018, she was honored with the prestigious National Agriculture Award, recognizing her outstanding achievements in the agricultural sector. She was also awarded the Joyeeta Award in 2020, which celebrates the accomplishments of women in Bangladesh across various sectors. These accolades are a testament to her hard work and commitment to transforming Bangladesh's agricultural landscape.

Farhana's work has inspired many local farmers, especially women, to embrace sustainable practices and innovative farming techniques. She has become a role model for aspiring agricultural entrepreneurs, showing that with dedication and a focus on sustainability, women can lead the way in agriculture.

## Role in Bangladesh's Agricultural Development

Farhana Yasmin's success story highlights the growing role of women in Bangladesh's agricultural development. Women have long played a central role in farming, but now, they are moving from being workers to entrepreneurs, innovators, and leaders in the sector. With women like Farhana leading the charge, the future of agriculture in Bangladesh is brighter and more sustainable.

The increasing involvement of women in agriculture is not only benefiting the economy but is also contributing to the empowerment of women across rural and urban communities. As women continue to break barriers and take on leadership roles in agriculture, they are helping build a more resilient, sustainable, and inclusive agricultural system in Bangladesh.

Farhana Yasmin's journey proves that with determination, innovation, and a deep commitment to sustainability, women can make a significant impact on the agricultural sector. She has shown that women are not just participants in the agricultural revolution—they are leading it, driving change, and ensuring a brighter future for all.

# Daughter of the Teesta Riverbank

**Umme Kulsum Popi** is a prominent Bangladeshi agricultural influencer and entrepreneur, recognized as the country's first female agri-influencer. She has made significant contributions to modernizing agriculture and inspiring many through her innovative content and business ventures.

## Early Life and Passion for Agriculture

Umm Kulsum Popi, Bangladesh's first female agri-influencer, was born and raised in a small village in Lalmonirhat, Northern Bangladesh. She pursued higher education at Begum Rokeya University in Rangpur, where she graduated in Geography and Environmental Science. This academic background, combined with her rural upbringing, provided her with a strong foundation to explore modern farming techniques and sustainable agricultural practices. Growing up in a farming environment, she developed a deep connection with nature and agriculture from an early age.

## Rise as an Agri-Influencer

Inspired by agricultural documentaries and experts like Shykh Seraj, Talha Zubair Masroor, and Azharul Islam, Popi began creating short educational videos focused on farming techniques, crop cultivation, and innovative agricultural practices.

Popi gained widespread popularity by simplifying complex agricultural topics into easy-to-understand content. Her videos, which cover a range of topics such as fruit and vegetable farming, organic pest control, and sustainable agricultural practices, have resonated with a large audience. With 1.7 million followers on Facebook and 371,000 subscribers on YouTube, she has become a key figure in Bangladesh's online agricultural community, earning recognition as the country's first female agri-influencer.

## Unique Content and Farmer Engagement

She actively engages with farmers, showcasing their traditional knowledge and innovations. By highlighting real-life farming challenges and solutions, she helps bridge

the knowledge gap between rural farmers and urban audiences. Her content also appeals to professionals outside agriculture, emphasizing the universal connection to nature.

## Entrepreneurial Ventures

In 2016, Popi co-founded BD Assistant, an electronics servicing platform that quickly gained attention for its innovative approach to providing reliable and accessible repair services across Bangladesh. The success of this venture laid the foundation for her future entrepreneurial pursuits.


In 2020, Popi, alongside her husband Abu Sayed Al Sagar, launched Premium Fruits, a business dedicated to delivering high-quality mangoes and other fresh fruits throughout Bangladesh. This venture emphasizes a strong commitment to supporting local farmers by ensuring that they practice organic farming methods while offering them fair pricing for their produce. By bridging the gap between farmers and consumers, Popi and her husband have created a business that not only delivers premium fruits but also promotes sustainable farming practices and improves the livelihoods of local farmers.

## Advocacy for Agricultural Growth

Popi's work goes beyond just encouraging young people to engage in farming. She stresses the importance of aligning the agricultural sector with modern technology, entrepreneurship, and sustainability. In doing so, she hopes to build a vibrant agricultural community that contributes to the nation's economic growth, reduces poverty, and strengthens food security.

# "From Phuti Karpas to Kapasia"

## Scientific classification

| | |
|---|---|
| **Kingdom** | Plantae |
| **Clade** | Tracheophytes |
| **Clade** | Angiosperms |
| **Clade** | Eudicots |
| **Clade** | Rosids |
| **Order** | Malvales |
| **Family** | Malvaceae |
| **Genus** | *Gossypium* |
| **Species** | *G. arboreum* |
| **Variety** | *Neglecta* |

The revival of Phuti Karpas is not just about bringing back an agricultural species but also about reclaiming a lost chapter of Bangladesh's glorious textile heritage. With ongoing government and private sector initiatives, there is hope that this plant—and the legendary Muslin fabric it once produced—will once again be a part of Bangladesh's cultural and economic landscape.

## The Cotton That Shaped Kapasia and Muslin's Legacy

Phuti Karpas (*Gossypium arboreum var. neglecta*) is a rare and historically significant variety of cotton that once thrived along the riverbanks of Dhaka and West Bengal. This plant played a crucial role in the production of the world-famous Dhaka Muslin, a fabric so fine and delicate that it became a symbol of luxury across Europe and beyond. The fiber of Phuti Karpas was known for its exceptional strength and fineness, making it superior to other cotton varieties. However, by the late 18th century, its cultivation had vanished, leading to the decline of the Muslin industry.

The name Kapasia, a sub-district in Gazipur, Bangladesh, is believed to have originated from this unique cotton plant. Historical sources suggest that the region was once a major hub for Phuti Karpas cultivation, which directly contributed to the legendary Muslin production. In recent years, efforts have been made to rediscover and revive this lost cotton variety. Researchers have found Phuti Karpas-like trees in Kapasia.

## Origin and History

Phuti Karpas (*Gossypium arboreum var. neglecta*) was essential for producing the world-famous Dhakai Muslin, known for its exceptional softness and intricate weaving. Bengal, especially Dhaka, became the heart of Muslin production, with references dating back to ancient times. During the Mughal era, particularly under Emperor Aurangzeb, Muslin reached its peak, with Murshidabad and Kasimbazar thriving as major trade centers. European traders, including the East India Company, exported vast quantities of this prized fabric globally.

However, British colonial policies led to the industry's downfall through heavy taxation and the promotion of machine-made textiles. Legends suggest skilled weavers were deliberately maimed, while economic oppression and forced migration further devastated production. By the mid-19th century, both Dhakai Muslin and Phuti Karpas cultivation had nearly vanished, with the last authentic Muslin exhibited in London in 1850, marking the tragic end of a legendary craft.

## Plant Discretion

**Plant Type:** Soft-stemmed, perennial cotton shrub.

**Stem & Structure:** Flexible, greenish stems that bend as they mature, with a tendency to droop.

**Leaves:** Palmately lobed with prominent green veins, deeply divided into three sections.

**Flowers:** Pale yellow or white, cup-shaped calyx with five petals, blooming twice a year under specific climatic conditions.

**Cotton Fibers:** Exceptionally fine and short, requiring precise spinning under controlled humidity and temperature, making it the ideal raw material for Dhakai Muslin.

A student from the Faculty of Fine Arts at the University of Rajshahi was commissioned to paint an illustration of the plant

## Distribution & Cultivation

The cultivation of Phuti Karpas (Gossypium arboreum var. neglecta), historically limited to the high banks of the Meghna, Shitalakshya, and Brahmaputra rivers near Dhaka, declined by the late 18th century. Thought to be extinct, efforts to restore this cotton variety began in 2015 with seed plantation near Kapasia, Gazipur. Subsequent surveys in riverbank regions of Gazipur, Mymensingh, and the Chittagong Hill Tracts revealed a 70% similarity with the lost variety. Under a government-led project by the Bangladesh Handloom Board, Cotton Development Board, and Rajshahi University, six samples resembling Phuti Karpas were identified from Comilla. Further research in 2017 confirmed the presence of potential specimens in Kapasia and Rangamati, leading to the establishment of a research collection of 700 trees at Rajshahi University.

## Rediscovery of Phuti Karpas: A Journey of Science, History, and Perseverance

The rediscovery of Phuti Karpas, the cotton plant used to produce the legendary Dhaka Muslin, is a story of scientific dedication and historical revival. In 2014, a team of experts, including botanists and textile engineers, set out to revive Dhaka Muslin by locating the long-lost Phuti Karpas plant, which had disappeared due to neglect. Using clues from historical texts like Carolus Linnaeus's "Spice Plantrum".

The researchers collected 38 Phuti Karpas samples from regions like Gazipur's Kapasia, a historically significant area for its cultivation. These samples were grown at Rajshahi University and the Institute of Biological Sciences, showing promising results. However, identifying the exact cotton variety for authentic Dhaka Muslin proved challenging. Despite efforts to seek help from the public and institutions like the National Museum of Bangladesh and Kolkata, success came in July 2017 when a team obtained a Dhaka Muslin sample from London. DNA sequencing matched it with a Kapasia-grown cotton variety, confirming the rediscovery of Phuti Karpas—a pivotal moment in reviving the centuries-old Dhaka Muslin tradition.

The rediscovery of Phuti Karpas represents both a scientific triumph and a cultural revival, reconnecting communities with their rich heritage. Supported by local initiatives, its cultivation has expanded across key regions, ensuring a sustainable supply for muslin production. Efforts to develop high-yielding varieties aim to make this historic crop viable for farmers, blending tradition with modern science. Driven by a visionary commitment to restore Dhaka Muslin, this achievement symbolizes a return to a glorious past, showcasing the power of collaboration, determination, and the enduring legacy of a fabric that once captivated the world.

# Revolutionizing Fish Culture: Cage Farming in the Jamuna River

Cage fish farming is an innovative and sustainable aquaculture method that involves growing fish in floating net enclosures placed in natural water bodies such as rivers, lakes, and reservoirs. This technique allows fish to be raised in a controlled environment while benefiting from the natural flow of water, which helps maintain water quality and provides a steady supply of oxygen. It is widely recognized for its efficiency in utilizing available water resources without the need for extensive land use, making it an attractive option for fish production.

In Bangladesh, the Jamuna River has become a significant site for cage fish farming, providing thousands of people with an alternative source of income.

This method has revolutionized the fisheries sector by enhancing productivity while ensuring environmental sustainability.

## How It Started

Cage fish farming in Bangladesh was first introduced experimentally in the early 2000s by government initiatives and NGOs. The success of pilot projects encouraged small-scale farmers to adopt the practice, leading to its widespread adoption, especially along the Jamuna River.

## Interesting Facts

- Bangladesh is one of the top ten fish-producing countries globally.
- The Jamuna River's natural water flow ensures a continuous oxygen supply, reducing the need for artificial aeration.
- Tilapia and pangasius are the most commonly farmed fish in cages due to their fast growth and high market demand.
- A single cage (typically 5m x 5m) can produce up to 1,000 kg of fish per cycle.

## Recognition & Government Support

- The Bangladesh Fisheries Research Institute (BFRI) has played a key role in promoting cage fish farming.
- Various NGOs and development projects, including WorldFish and FAO, have supported farmers with training, financial aid, and technological guidance.
- The government offers loans and incentives to encourage sustainable fish farming practices.

## Method of culture :

- Floating cages made of bamboo/HDPE in selected river areas.
- Stocking species like tilapia, pangasius, and carp.
- Feeding, regular monitoring, and harvesting after 4-6 months.

## Expenses (BDT) :

- Initial investment: ৳1,00,000 - ৳2,00,000 per cage
- Recurring costs: ৳50,000 - ৳1,00,000 per cycle

## Profits (BDT) :

- Revenue: ৳1,50,000 - ৳3,00,000 per cycle
- Net profit: ৳50,000 - ৳1,50,000 per cycle

## Benefits of Cage Fish Farming

- Economic Growth – Provides income opportunities for thousands of families, especially those affected by land erosion.
- Efficient Space Utilization – Requires no land, making it ideal for landless farmers.
- Higher Yields – Controlled feeding and protection from predators result in better survival rates and productivity.
- Environmental Benefits – Uses the natural flow of the river, reducing dependency on groundwater for fish farming.

## Benefits of Cage Fish Farming

- Natural Disasters – Seasonal floods and strong currents can damage cages and lead to fish loss.
- Pollution & Water Quality Issues – Industrial waste, pesticides, and agricultural runoff can harm fish health.
- Financial Constraints – Initial investment in cages, feed, and maintenance can be challenging for poor farmers.
- Theft & Conflict – Incidents of fish theft and disputes over river usage occasionally arise.

Cage fish farming on the Jamuna River has the potential to significantly boost Bangladesh's economy, ensuring food security and sustainable livelihoods. With better infrastructure, pollution control, and financial support, this industry can continue to grow, helping thousands of people escape poverty.

# Soy-milk-based food innovation: a step toward low-carbon solutions in Bangladesh

Soy milk is one such plant-based solution to dairy that hardly captures the imagination of Bangladeshi consumers who have so far only associated oil from soybeans with beans, but the unattained potential of soybeans has yet to be explored in introducing milk or dairy-like products. However, given the ongoing upward shift in the global trend toward plant-based diets, soy milk has matured into a form of food that is nutritious, good for the environment, and highly affordable.

Considering that Bangladesh is based in a very fast-growing population, where climate change has become a threat to food security, promoting soy milk production and consumption would be a sustainable solution to the problem. In terms of nutrition, soy milk is rich in essential vitamins and minerals along with high-quality plant protein. It could also become a healthy and easily accessible substitute for cow's milk in a country where lactose intolerance is common.

The true versatility of soy is in transformability—just like cow's milk makes a number of dairy products such as yogurt, cheese, butter, and ice cream, soy milk can offer products such as soy-based yogurt and tofu, plant-based cheese, and soy ice cream all in the consumer's pantry. Such an ingredient takes care of the adaptation in the whole Bangladeshi diet while reducing dependence on dairy farming, which plays a leading role in the emission of greenhouse gases.

## 1. The Nutritive Power of Soy : Why Choose Soy Milk?

Soy milk is a nutritionally rich, wholesome substitute for cow milk, especially for people with lactose intolerance.

Key Nutritional Benefits of Soy Milk:

- **Good Protein**—has all the essential amino acids, with a protein content of 3.4%–3.6%.
- **Healthy Fats**—A rich source of beneficial heart-healthy polyunsaturated fatty acids (PUFA 63.5%).

### Vital Vitamins and Minerals:

| | |
|---|---|
| Iron (Fe) | 0.16% |
| Zinc (Zn) | 0.02% |
| Vitamin C | 0.04% |
| Vitamin A | 0.003% |
| Vitamin E | 0.01% |

## 2. The Benefits of Sustainability: Carbon-Low Soy Milk

Soy milk production is considerably less polluting compared with dairy farming. Dairy farming, especially, is a heavy emitter of greenhouse gases, while growing soybeans demands less land, water, and energy.
Environmental Arguments for Soy Milk:

- Lower GHG Emissions: soy milk production emits an estimated 3–10 times less $CO_2$ than cow milk.
- Water Conservation: About 300 liters of water are needed to produce one liter of soy milk; cow's milk production may take more than 1,000 liters for one liter.
- Soil Health Improvement: Soybean plants can enhance soil fertility by fixing nitrogen in soils naturally rather than using chemical fertilizers.

A switch to soy milk can go a long way in reducing the agricultural carbon footprint of Bangladesh and increasing sustainability.

## 3. Making Soy Milk at Home: Easy-Peasy Blender Edition

Notably, soy sipping is easy to prepare. Unlike dairy milk, which necessitates animal husbandry and multiple processing stages, soy milk can be made at home with little else than ingredients and equipment.

### How-To: Make Soy Milk at Home.

**Ingredients:**

- 1 Cup of dried soybeans
- 3–4 cups water
- Optional sweetener: honey or date syrup

### Method of Preparation:

1. **Soak :** Rinse the soybeans and soak in fresh water for 6–8 hours.
2. **Blend :** After draining, fresh water is added to the beans and blended to a pulp.
3. **Boil :** Heat the mixture in order to phase out the raw bean taste for 10-15 min.
4. **Strain :** Strain using a very fine cloth or mesh sieve, separating the milk from the residue.

Within this straightforward method, one can prepare nutrient-packed soy milk in under a half hour.

## 4. More soy-based food alternatives need to be introduced in Bangladesh.

make the soy more attractive, it must be integrated into the common food culture of Bangladesh. Just as dairy products have been derived from cow milk, soy products can be developed to produce delicious plant-based alternatives.

**Soy Dairy Alternatives :**

🥛 **Soy Yogurt:** The Probiotic Yogurt Substitute

🧀 **Soy Cheese:** A Plant-based Alternative Satisfy the Texture of Dairy Cheese

🍦 **Soy Ice Cream:** A Creamy Frozen Dessert Without Lactose

🥤 **Soy Milkshakes & Lattes:** A Nutritious Incarnation of Deliciousness

🍮 **Soy Kheer & Pudding:** Healthier Alternatives to Traditional Bengali Sweets

Bangladesh expects these soy innovations to reduce dairy imports and open up new opportunities for local entrepreneurs.

## 5. Health And Beauty Benefits Of Soy Milk:

Soy milk is not only limited to nutrients but also provides numerous benefits for health and skin.

### Health Benefits are as follows:

- **Heart Health:** Polyunsaturated fats in soy milk lower cholesterol.
- **Heart Health:** Polyunsaturated fats in soy milk lower cholesterol.
- **Bone Strength:** This comprises calcium and vitamin D, both important components for strong bones.
- **Diabetes Control:** It has a low glycemic index, so it's a safe choice for diabetic patients.

### Benefits in Skin Care:

- **Moisturizes Skin:** Isoflavones in soy milk will retain moisture in the skin.
- **Anti-aging Feature:** It has plenty of antioxidants to reduce premature aging.

This would enrich the soy diet and also act as an eco-beautifier.

## 6. Research on soybeans and economic potential in Bangladesh

Bangladesh has considerable prospects to extend and expand soybean production. Now, researchers at Gazipur Agricultural University (GAU) have been taking yields that are high in soybeans developed for local conditions. Under the leadership of Professor Dr. Abdul Karim, extensive studies have identified five promising varieties, which can increase soybean production and provide a profitable alternative crop for farmers.

# Automated Irrigation System: A New Horizon in Modern Agriculture

Automated irrigation system is a type of smart irrigation technology that automatically controls water supply by analyzing soil moisture, ambient temperature and weather data In conventional irrigation systems, farmers have to irrigate manually, which is time-consuming, labor-intensive and in many cases causes water wastage But automated irrigation systems supply a specific amount of water according to the needs of the soil, resulting in reduced water wastage, increased crop productivity and reduced farmer's labor.

The main function of this technology is sensor-based monitoring, data analysis and automatic irrigation control. As a result, farmers can control the irrigation system remotely using smartphones or computers even when they are not in the field. It is considered an important part of Precision Agriculture or precise agricultural management, which is making agricultural production more advanced and sustainable worldwide.

## Development of automated irrigation system technology

The idea of automated irrigation systems first came from Israel, where agricultural researchers invented drip irrigation technology in the 1960s. To address water shortages due to the dry climate, Israel developed new technology, which later became popular in various developed countries around the world. This technology was further developed in other countries, including the United States, Australia, the Netherlands, China, and Japan.

## Working method of automated irrigation system

The automated irrigation system is mainly operated with the combination of modern technology. Its working steps are given below

- **Sensor data collection:** Soil moisture, temperature and ambient humidity are monitored.
- **Data analysis:** Microcontroller and software analyze the collected data.

- **Irrigation requirement determination:** When the soil moisture decreases, the system automatically starts the irrigation pump.
- **Automatic shutdown process:** When the soil moisture reaches a certain limit, the irrigation pump is turned off.
- **Remote control and monitoring**: Farmers can control irrigation remotely through a smartphone or computer

## Use of Automated Irrigation Systems in Developed Countries

Automated irrigation is being widely used in countries such as the United States, Australia, the Netherlands, China, Japan, and Israel. There, drip irrigation, sprinkler irrigation, and center pivot irrigation methods are operated automatically. Farmers in the United States and Australia follow Precision Agriculture techniques, where water flow is controlled through smart sensors and IoT

technology. The use of automated irrigat farming in the Netherlands and Israel. ms can be seen in sophisticated greenhouse

## Benefits in Developed Countries for using automated irrigation system

In developed countries, the use of this technology has yielded several important benefits

- Water wastage has been reduced by 30-50%.
- Crop production has increased by 20-25%.
- Labor costs have been reduced, as farmers do not have to be directly present in the field.
- Through technology, it is becoming possible to control irrigation from smartphones.

## Introduction and current use of automated irrigation systems in Bangladesh

The use of this technology is still limited in Bangladesh. Currently, most farmers depend on conventional irrigation methods, where irrigation is provided manually by shallow machines or deep tube wells. However, some government and private initiatives have started experimental implementation of drip irrigation and smart irrigation systems. Bangladesh Agricultural Research Institute (BARI) and Bangladesh Agricultural University (BAU) are conducting research on this.

## How capable are Bangladeshi farmers of using this technology

Most of the farmers in Bangladesh are still not familiar with this technology It is not easily accessible to farmers due to some challenges

- High initial cost, which is difficult for ordinary farmers
- Lack of training and awareness, as a result, farmers are reluctant to adopt new technology.
- Limited electricity and internet connectivity, which hinders the use of smart irrigation technology.

## Potential Benefits for Bangladeshi Farmers

- Water wastage will be reduced, which will help conserve groundwater.
- Crop yields could increase by 20-30%
- Farmers will spend less on labor and time
- Reducing dependence on electricity through the use of solar-powered irrigation.

## Comparison of Automated Irrigation Systems: Bangladesh vs. Developed Countries

| Sl No. | Aspect | Developed Countries (USA, Japan, China) | Bangladesh |
|---|---|---|---|
| 01 | Technology Usage | Widespread use of loT, Al, and sensor-based irrigation systems | Limited use of lot and sensor-based systems, mainly in research projects |
| 02 | Water Efficiency | Highly efficient systems with automated water distribution | Traditional flood irrigation still dominates, leading to water wastage |
| 03 | Farmer Awareness | Farmers are well-trained in modern irrigation technology | Most farmers lack knowledge and access to advanced irrigation methods |
| 04 | Government Support | Strong policies and subsidies for smart irrigation | Limited government initiatives and financial support for automation |
| 05 | Implementation Cost | High initial investment but long-term benefits | High cost remains a major barrier for widespread adoption |

## Conclusion

Automated irrigation can transform Bangladesh's agriculture by enhancing water efficiency, increasing yields, and reducing labor. Despite challenges like high costs and limited awareness, smart irrigation technologies offer significant benefits. Government support, financial aid, and farmer training are essential. Investments in IoT, solar-powered irrigation, and AI-driven farming can drive sustainable, climate-resilient agriculture. Strategic adoption will ensure food security, water conservation, and long-term agricultural sustainability in Bangladesh.

## Potential of Automated Irrigation System Technology in Bangladesh Agriculture

The automated irrigation system is vital for enhancing agricultural productivity and managing water efficiently in Bangladesh. Water wastage, a major issue in the country, can be reduced by 30-50% using this system, which ensures precise water use. It also boosts crop production by 20-30% and helps reduce costs associated with electric or diesel-powered pumps by utilizing solar power. The system allows farmers to remotely control irrigation schedules, saving time and reducing labor. With the ability to adjust water supply based on crop needs, it creates optimal growing conditions. Additionally, it helps mitigate climate change impacts by reducing crop losses.

However, widespread adoption requires increasing awareness, training, and government support for effective implementation in sustainable agriculture.

## Challenges of automated irrigation system in Bangladesh

1. **High Cost –** Expensive setup.
2. **Technical Gap –** Farmers lack skills.
3. **Power & Internet –** Requires stable supply.
4. **Frequent Maintenance –** Prone to issues.
5. **Limited Access –** Rare in remote areas.
6. **Water Dependency –** Affected by groundwater levels.
7. **Policy Support –** Needs government backing.

# Tears of the Tea Workers

## Origin and History

The word "tea" comes from the Amoy word te which comes from the Hokkien dialect of the Chinese language. The Dutch East India Company introduced the word to English and other European languages.

The origin of tea (*Camellia sinensis)* cultivation dates back to ancient China, with its discovery often attributed to Emperor Shen Nong around 2737 BCE. According to legend, Shen Nong, a scholar and herbalist, accidentally discovered tea when leaves from a nearby wild tree fell into boiling water. Fascinated by its refreshing aroma and taste, he began exploring its medicinal properties. This marked the beginning of tea's journey from a medicinal herb to a beloved beverage.

Their production process is different from each. Da Hong Pao is the most expensive tea in the world, valued at around $1.2 million per kilogram. It's a type of oolong tea from the Wuyi Mountains in China.the 7 Color Tea of Sreemangal, located in the Moulvibazar district of Bangladesh, is famous worldwide for its unique appearance and taste. This iconic beverage was invented by Ramesh Ram Gour, a local tea maker, who mastered the technique of layering different types of tea in a single glass.

The tea industry in Bangladesh, a major contributor to the national economy, is built on the labor of thousands of workers, the majority of whom are women. Despite their essential role, female tea workers face severe socio-economic hardships, including low wages, poor working conditions, gender discrimination, and lack of access to education and healthcare.

Tea production has a long-standing history in Bangladesh that dates

back to the British colonial period. Malnicherra Tea Estate in Sylhet, the first commercial tea plantation, was established in 1854, making it an important agricultural industry. Our fertile soil and humid climate make it suitable for producing tea, which is grown primarily in Sylhet,

Moulvibazar and Chattogram. Bangladesh produces 90-108 million kilograms of tea annually from 167 tea gardens, with an additional 17.95 million kilograms from northern plain land cultivation in 2023. Hoy rising domestic consumption, increasing from 58 thousand tons to 90 thousand tons in 2022.

# Challenges Faced by Female Tea Workers

## 1. Low Wages and Economic Exploitation

Despite their labor-intensive work, female tea workers earn far below the national minimum wage. They are often paid on a piece-rate system, meaning their earnings depend on how much tea they can pick, which places additional physical strain on them.Bangladesh's per capita income is $2,784, yet a tea worker earns only Tk170 per day. But they did not get a proper salary. This is not enough for survival. Where 1 kg rice price is more than 60 tk. How they will fulfill their basic needs. They suffer from lack of food. They even could not take a meal 2 times a day. They used to take cold tea for breakfast And in lunch they eat smashed new leaves from the tea plant.

| District | Number of tea garden | Cultivated land (Acres) | Production (Kg) |
|---|---|---|---|
| Moulvibazar | 92 | 85140 | 4,48,01,103 |
| Habiganj | 25 | 54166 | 1,47,00,572 |
| Sylhet | 19 | 28936 | 58,10,724 |

## 2. Poor Working Conditions and Health Risks

Tea plantations provide inadequate healthcare facilities, forcing workers to rely on expensive private treatment. Prolonged

Prolonged exposure to pesticides, lack of proper nutrition, and strenuous physical labor contribute to chronic health issues. Their working hours are more than 12 hours. They do not get any maternity leave due to their crisis moment. They have high health risk,

they don't have any hygienic facilities. Even they don't have any sanitization system. They do not get any maternity leave in their crisis moment. Many pregnant women have to work for 12 hours like others. Overcrowded and unhygienic housing provided by tea garden owners offers minimal facilities. Limited access to clean water, sanitation, and electricity affects their quality of life.

### 3. Gender inequality and Harassment

Women in the tea industry face discrimination in promotions, wage negotiations, and workplace decision-making. Cases of sexual harassment and abuse are often ignored due to fear of job loss and social stigma. Societal norms restrict their decision-making power within families and communities.

### 4.Lack of Education and Social Mobility

The children of tea workers, especially girls, have limited access to education due to financial constraints and cultural expectations that they join the workforce early. This perpetuates the cycle of poverty and exploitation. They have a serious lack of education and they suffer from many social problems. They are not aware of it. Early marriages and child labor are common due to financial struggles.

## Struggle of Female Tea Workers :

Tea is known as green gold because it is considered very precious and is exported to many other countries around the world. Most of the workers are female but they do not get proper salary from it.

Female tea workers in Bangladesh face persistent socio-economic challenges despite being the backbone of the country's tea industry. Low wages, poor living conditions, limited access to healthcare, and gender-based discrimination are common struggles. Many work long hours with minimal labor rights and inadequate social protection. They are trapped into a vicious cycle. Tea workers in the neighbouring Indian state of Assam earn Tk330, or 250 Indian Rupees, while in Sri Lanka, workers receive 1700 Sri Lankan Rupees, equivalent to Tk674. Bangladesh's per capita income is $2,784, yet a tea worker earns only Tk170 per day, or $1.43.Insufficient income forces many into debt, struggling to afford basic necessities. Lack of proper healthcare services leads to high rates of malnutrition, maternal mortality, and chronic illnesses.

Between August 9-27, 2022, nearly 150,000 tea workers across 160 plantations in Bangladesh went on a wildcat strike. Their demands were simple to raise their paltry daily wages to a living wage adjusted to the rate of inflation. But their action was unprecedented. Tea workers, the poorest paid workers in country, continued their strike in defiance of their union leaders, government officials and agencies and the plantation owners. The strike forced the Prime Minister of the country to negotiate on behalf of the tea workers. On behalf of Jamhoor, Chaumtoli Huq.

Associate Professor of Law at CUNY, interviewed Khairun Akhtar, a rank-and-file tea worker, a leader of the wildcat strike, and a long time activist. The interview was conducted in Bengali you can listen to it below. The translation and transcription has been edited for clarity. In response to the tea workers' movement, the pay was raised by Tk50, making it Tk168-170.First-class, second-class, and third-class tea garden labourers now receive pay of Tk170, Tk169, and Tk168 consecutively

## Efforts towards Change

**1. Fair Wages and Economic Empowerment:** Ensuring a living wage that reflects the cost of living and inflation.

**2. Improved Healthcare and Working Conditions:** Establishing mandatory health and safety regulations on plantations.

**3. Stronger Legal Protections:** Enforcing labor laws with stricter monitoring and penalties for non-compliance.

**4. Education and Skill Development:** Expanding access to education for workers and their children to break the cycle of poverty.

**5. Gender Inclusion in Leadership:** Encouraging female participation in decision-making bodies within the industry.

Tea workers in Bangladesh strike for living wages after turning down tea plantation owners offers for a 25-cent raise. The slogan on the worker's body reads "Give me a 300 taka raise or give me bullets". Image: Mamun Hossain/AFP/Al Jazeera

## Conclusion

The struggles of female tea workers in Bangladesh highlight deep-rooted socio-economic and labor rig9hts issues. Despite their crucial role in the tea industry, they face low wages, harsh working conditions, inadequate healthcare, and gender discrimination. Limited access to education and social protection further exacerbates their challenges. Addressing these issues requires collaborative efforts from the government, NGOs, INGOs, and international organizations. Implementing fair wages, better working conditions, healthcare access, and education programs can empower these women and break the cycle of poverty. Ensuring their rights and well-being is essential for a sustainable and ethical tea industry in Bangladesh. We need to increase the awareness of tea workers and raise the voice for them so they can achieve their rights.

# THE FORBIDDEN RICE

## Scientific classification

| | |
|---|---|
| **Kingdom** | Plantae |
| **Clade** | Angiosperms |
| **Clade** | Monocots |
| **Order** | Poales |
| **Family** | Poaceae |
| **Genus** | *Oryza* |
| **Species** | *Oryza sativa (Asian rice)* |
| **Variety** | *Oryza sativa var. japonica (short-grain aromatic rice)* |

## Origin and History

The history of forbidden rice can be traced back thousands of years to ancient China. Historical records suggest that black rice was exclusively grown for Chinese royalty and the noble class. Due to its limited availability and perceived health benefits, it was reserved for emperors and high-ranking officials, leading to its name —"**Forbidden Rice**." The common people were prohibited from consuming it, reinforcing its association with wealth and privilege. Beyond China, black rice became popular in Korea and Japan, used in traditional dishes and special occasions. Though not as restricted, it remained a premium grain. In recent years, its high nutritional value has led to a global revival. Now cultivated in countries like Thailand, India, and Indonesia,

## Variety

Chandan binni (চন্দন বিন্নি),Modhu binni ( মধু বিন্নি), Khora Binni ( খড়া বিন্নি), Bangla binni (বাংলা বিন্নি), Sada binni ( সাদা বিন্নি), Pora Binni ( পড়া বিন্নি), Hul Binni(হুল বিন্নি), Kaisha binni ( কাঁশিয়া বিন্নি), Shem binni ( শ্যাম বিন্নি), Mou binni ( মৌ বিন্নি), Ranga Binni ( রাঙা বিন্নি), Agunia binni( আগুনিয়া বিন্নি), Kakkua binni ( কাক্কুয়া বিন্নি), Barma Binni ( বার্মা বিন্নি), Khochia binni ( কচিয়া বিন্নি), Gedar binni ( গেদার বিন্নি), Lal binni ( লাল বিন্নি), Dudh binni ( দুধ বিন্নি), Geng gong binni ( গ্যাং গং বিন্নি), Baish binni ( বাইশ বিন্নি), Nedra binni ( নিদ্রা বিন্নি) Khoar binni ( খোয়ার বিন্নি).

# Binni Rice in Tribal Communities of Bangladesh: A Cultural Lifeline

For Bangladesh's indigenous communities, Binni Rice is far more than sustenance—it is a sacred grain, a cultural emblem, and a living archive of ancestral wisdom. Grown in the Haor wetlands, Chittagong Hill Tracts (CHT), and Sylhet's highlands, this aromatic rice variety sustains tribal identities through rituals, agro-ecology, and collective memory.

## 1. Sacred Grain in Tribal Cosmology

**Divine Gift:** The Marma, Tripura, and Khasi believe Binni Rice was bestowed by nature spirits (bongas) or ancestral deities as a blessing for fertility.

Ranga Binni (রাঙা বিন্নি)

**Ritual Offerings:**

**First Harvest Ceremonies:** Tribes like the Garo and Santal offer cooked Binni Rice to "Saljong" (Sun God) or "Marang Buru" (Mountain Spirit) during Wangala/Baisabi festivals.

Sada Binni (সাদা বিন্নি)

**Ancestral Altars:** The Tripura place unhusked Binni Rice on "Khuluma" (household shrines)* to honor forefathers.

**Taboos & Beliefs:** Some communities forbid selling ritual Binni Rice, reserving it only for healers (Ojha) and shamans.

Kala Binni (কালা বিন্নি)

## 2. Indigenous Cultivation: Jhum & Haor Wisdom

Jhum (Shifting Cultivation): In the CHT, tribes like the Chakma and Marma grow Binni Rice in cyclical forest plots, using zero chemicals.

The rice's resilience suits Jhum's biodiversity.

**Haor Wetlands:** The Hajong and Manipuri communities cultivate flood-resistant Binni Rice in natural basins, synchronizing with monsoon rhythms.

**Seed Sovereignty:** Tribal women preserve heirloom seeds as a generational duty, often storing them in bamboo tubes or clay pots with neem leaves.

## 3. Social Fabric & Resistance

**Labor Exchange (Dang/Dharma):** Tribal farmers plant/harvest Binni Rice collectively, reinforcing kinship. Songs ("Jhumur" in Santal culture) accompany the work.

**Market Resistance:** Unlike commercial rice, Binni is rarely sold in bulk—it's bartered during festivals or gifted as a token of trust.

**Climate Resilience:** Indigenous cultivation methods (e.g.,floating seedbeds in Haors**) protect Binni Rice from extreme weather, serving as a climate-adaptive model.

## 4. Health Benefits of Binni Rice

Red rice is highly nutritious, with strong immunity-boosting and disease-fighting properties. Black rice, rich in antioxidants like anthocyanins, helps prevent cancer, heart disease, and diabetes.

According to Dr. Zhimin Zhu, red rice bran contains more anthocyanins than blueberry juice, with higher fiber and fewer sugars. Research shows that black rice improves blood flow, reducing high blood pressure and heart attack risks. Binni rice, rich in iron and fiber but low in carbohydrates, is ideal for diabetics and promotes overall health.

## 5. Tribal Cuisine: From Ritual to Daily Nourishment

**Bamboo Rice (Tong Binni):** The Mro and Khumi stuff rice into green bamboo stems, roast it over fire, and eat it during communal hunts.

**Fermented Rice Beer (Chu/Handia):** Used in social bonding and rituals, this mildly alcoholic brew made from Binni Rice is central to Marma and Oraon weddings.

**Healing Foods:**

**Postpartum Care:** Garo mother eat Binni Rice with black sesame for strength.

**Sick Diets:** The Santal prepare "Binni Khichuri" (rice-lentil porridge) for the ill, believing it purifies the body.

## 6. Threats & Revival

Corporate agriculture and rubber plantations are displacing tribal Binni fields, threatening traditional farming. In response, NGO-community partnerships, such as UBINIG and SHISUK, support tribes by providing training in organic certification and niche marketing, promoting brands like "Hill Binni Rice." Additionally, initiatives like the Marma Oral History Project document rice-related folklore to preserve the cultural heritage linked to Binni rice cultivation.

**Conclusion:** More Than a Crop For Bangladesh's tribes, Binni Rice is **seed, song, and spirit—a thread connecting the living to their land and ancestors. Its survival hinges on recognizing indigenous land rights and valuing traditional agro-ecology as national heritage.

# CAUSES OF RISING Watermelon

## Prices and How to Make Them Affordable

## Introduction

The modern watermelon, *Citrullus fanatus*, is believed to have originated in northeastern Africa, specifically the Kordofan region of Sudan, 4,000 years ago.

Watermelon are also shown in fruit and vegetable fair.In 2021, Food King in Lubbock, Texas, constructed a display featuring 12,825 watermelons, totaling approximately 199,000 pounds, surpassing previous records.

Watermelon cultivation in Bangladesh has become a profitable crop for farmers in the southern region. In Bangladesh, several types of watermelons are cultivated such as, Shweety, BARI Watermelon 1&2, black beauty, crimson sweet etc.

Farmers have grown more watermelon but the prices have still gone up.

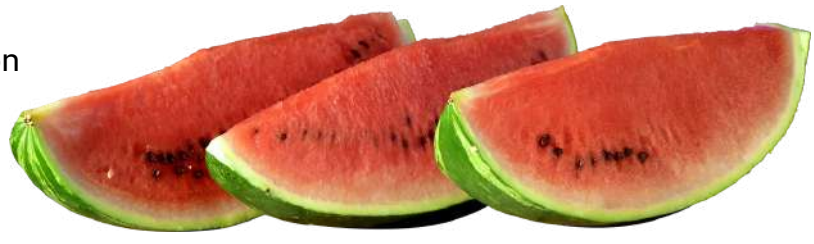
## Reason of rising price of Watermelon

### 1. Syndicate Activities

A small group of wholesalers often controls the watermelon market,

influencing prices. These syndicates manipulate supply and demand by hoarding stock, which leads to price hikes. Due to market manipulation, prices can increase significantly during peak demand season.

In 2023, wholesale prices of watermelons in regions like Patuakhali and Bhola raised to Tk 240-300 per piece, nearly three times the usual price during harvest seasons.



### 2. Increased Production Costs :

The cost of inputs like seeds, fertilizers, and labor has been rising. This increase in the cost of production is passed on to consumers in the form of higher prices. the cost of fertilizers has risen by 20-30% in the past years.In districts like Bhola, the cost of production per hectare has risen to approximately Tk 80,000-90,000 due to increased prices of inputs like fertilizers and labor. These costs are passed down the value chain, leading to higher retail prices.

### 3. Inadequate Storage Facilities :

Bangladesh faces inadequate storage infrastructure, leading to significant post-harvest losses. Watermelons are perishable, and without proper storage, a large portion of the harvest rotes before it reaches consumers. Every year Bangladesh loses up to 30% of its watermelon production due to improper storage and handling.

### 4. Transportation Challenges :

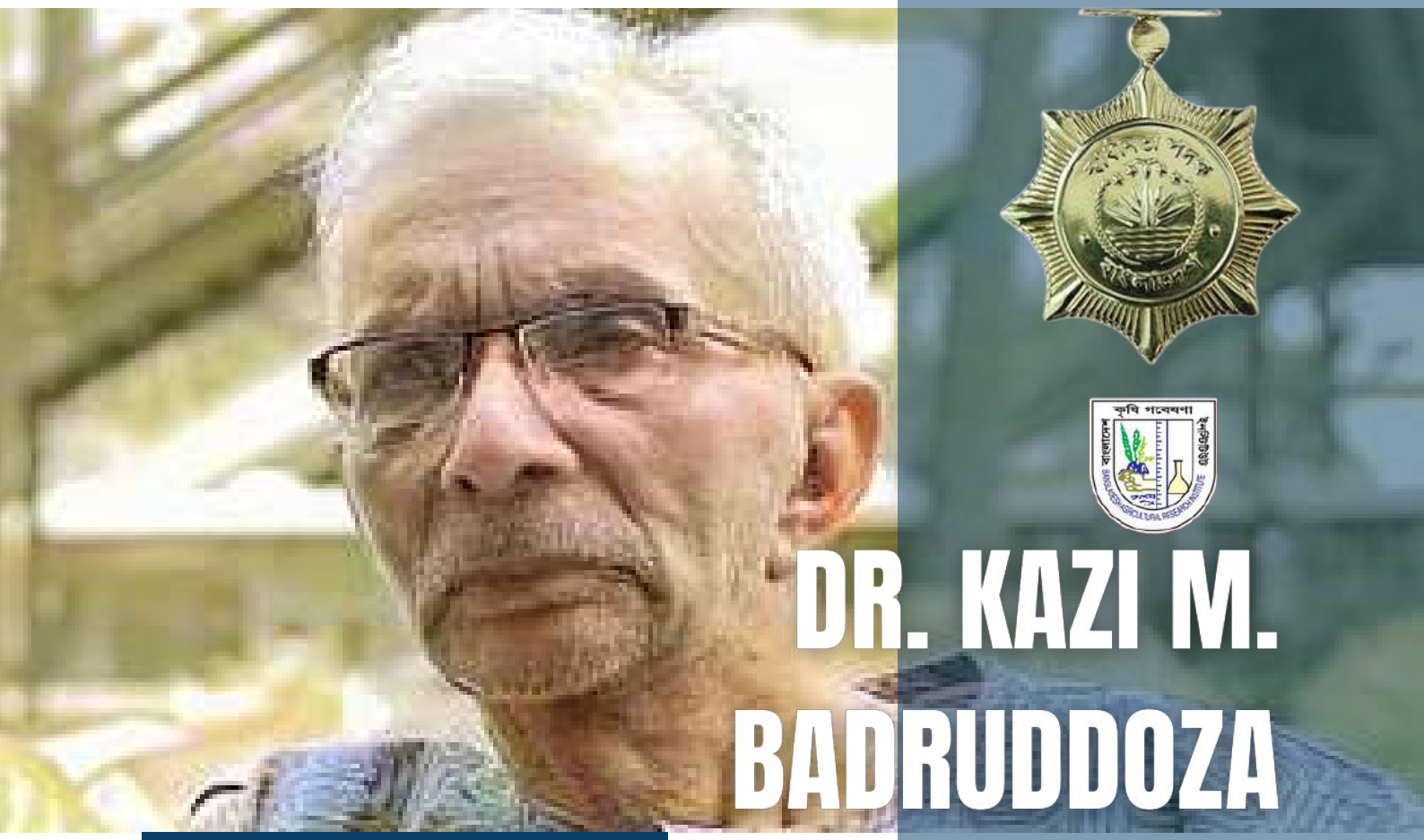
Inadequate transportation infrastructure in rural areas hampers the efficient movement of watermelons from farms to markets, leading to spoilage and inflated prices. Poor road conditions and traffic congestion have led to a 15-20% increase in transportation costs for watermelon farmers.

## Solution for remove the Inflation :

By implementing some solutions, Bangladesh can stabilize watermelon prices and improve farmer livelihoods. They are -

1. **Syndicate Control:** Strengthen market regulation and implement policies to prevent price manipulation by wholesalers. Government intervention to regulate the market and ensure fair pricing can curb such manipulation. If they monitor the market the wholesalers will be more concerned about any corporations.
2. **Rising Production Costs:** Subsidize agricultural inputs (seeds, fertilizers) and provide financial support to farmers. Government subsidies for fertilizers and improved farming techniques can help reduce costs. If the government provides subsidies to the farmers the production cost Will be decreased and farmers will earn more profit.
3. **Storage Facilities:** Invest in cold storage infrastructure to reduce post-harvest losses. Building and promoting cold storage units can preserve the harvest and stabilize prices. We have to raise awareness about cold storage.
4. **Transportation Challenges:** Improve rural transportation infrastructure and logistics.Investment in roads and transportation systems can help reduce transportation costs, ensuring efficient delivery to markets. Government should pay attention to the roads. of rural areas.

Watermelon is a highly demanded fruit in Bangladesh, but despite high production, its price remains unaffordable for many. Removing market inflation could help meet consumer demand. Raising awareness among farmers and providing them with better solutions is essential. Government intervention and support can help stabilize prices and ensure affordability.



# DR. KAZI M. BADRUDDOZA

## EARLY LIFE & EDUCATION

Dr. Kazi M. Badruddoza was born on January 1, 1927, in Gaibandha, Bangladesh. He completed his secondary education in 1942 and higher secondary in 1944 before enrolling in Bengal Agricultural Institute (now Sher-e-Bangla Agricultural University). He earned his BAg degree in 1948 and MAg in 1952. With a passion for agricultural research, Dr. Badruddoza pursued higher studies in the United States under the prestigious Fulbright Scholarship. He completed his Ph.D. from Louisiana State University, specializing in plant breeding and genetics.

## CONTRIBUTIONS TO AGRICULTURAL RESEARCH

Dr. Kazi M. Badruddoza was a pioneering agricultural scientist who modernized Bangladesh's agricultural research. He founded BARI and played a key role in establishing BARC, BLRI, BFRI, and IPSA (later BSMRAU).

His efforts also strengthened BINA and BARC, shaping the National Agricultural Research System (NARS) and advancing agricultural innovation.

## Awards and Honors

Dr. Kazi M. Badruddoza received numerous prestigious awards, including Pakistan's Tamgha-i-Pakistan and Tamgha-i-Imtiaz, the Begum Zebunnesa and Kazi Mahbub Ullah Welfare Trust Award (1982), and Bangladesh's Emeritus Scientist Award (1985). He earned the Agriculturist Institute Gold Medal (1991), special recognition from CGIAR and the World Bank (1999), and an honorary doctorate from India's World Development Parliament. His contributions were further honored with multiple gold medals from research organizations and Bangladesh's highest civilian honor, the Independence Award (2012).

## International Recognition and Global Contributions

Dr. Badruddoza's influence extended beyond Bangladesh, as he played a major role in global agricultural research. His key international contributions include:

Being a founding member of the International Service for National Agricultural Research (ISNAR), where he served as a Governing Board member.

Assisting in the establishment of Vietnam's Genetics Institute and Pakistan's Arid Zone Research Institute.

Collaborating with Nobel Laureate Dr. Norman E. Borlaug, India's Green Revolution pioneer Dr. M. S. Swaminathan, and other world-renowned scientists.

Representing Bangladesh in agricultural conferences, training programs, and research collaborations across the United States, the United Kingdom, China, Japan, Brazil, Egypt, Malaysia, Mexico, Nigeria, Pakistan, South Korea, Thailand, Vietnam, and many other countries.

## Personal Life and Legacy

Dr. Kazi M. Badruddoza revolutionized Bangladesh's agricultural sector, leaving a lasting legacy as the Father of Kazi Peyara and a pioneer of modern research. His leadership continues to inspire sustainable agriculture and food security efforts.

# From Dreams to Reality: How to Study Abroad in Japan

## 1. Benefits of Choosing Japan for Higher Education

Japan offers a world-class education system with top universities and English-taught programs. Scholarships like MEXT and JASSO help ease financial burdens, while affordable living costs make studying more accessible. As a leader in research and innovation, Japan provides cutting-edge facilities in technology and science. Students experience a rich cultural blend of tradition and modernity in a safe and efficient society with excellent infrastructure. With strong career prospects and work visa opportunities, graduates can build successful careers. Additionally, learning Japanese enhances global job opportunities.

## Overview of Studying in Japan

Japan is a popular destination for international students due to its high-quality education system, advanced technology, and unique cultural experiences. With world-renowned universities, diverse academic programs, and strong government support for foreign students, Japan offers an excellent environment for higher education. Whether pursuing undergraduate, graduate, or specialized research programs, students can benefit from Japan's emphasis on innovation, discipline, and global collaboration.

## 2. Choosing a University for Agriculture Studies in Japan

Japan offers excellent opportunities for agricultural studies, with universities specializing in advanced research, sustainable farming, biotechnology, and agribusiness. When selecting an agricultural university, students should consider factors like academic programs, research facilities, tuition costs, and location.

### A. Agricultural Universities in Japan

**University of Tokyo (Graduate School of Agricultural and Life Sciences) –**

- One of Japan's leading institutions, offering cutting-edge research in biotechnology, environmental sciences, and sustainable agriculture.

**Kyoto University (Faculty of Agriculture) –**

- Known for its strong focus on agro-environmental sciences, food production, and rural development.

**Hokkaido University (School of Agriculture) –**

- Specializes in cold-region agriculture, livestock management, and dairy science, with extensive research in sustainable farming.

**Tokyo University of Agriculture and Technology (TUAT) –**

- A top choice for agricultural engineering, plant sciences, and agribusiness management.

- **Nagoya University (Graduate School of Bioagricultural Sciences) –** Offers strong programs in plant biology, soil science, and environmental conservation.

**Tohoku University (Faculty of Agriculture) –**

- Focuses on advanced research in plant biotechnology, agroecology, and food science.

**Okayama University (Faculty of Agriculture) –**

- Known for research in organic farming, soil fertility, and climate-smart agriculture.

**Kagoshima University (Faculty of Agriculture) –**

- Excels in tropical agriculture, livestock science, and aquaculture.


### B. Best Cities for Agricultural Studies in Japan

- **Tokyo –** Home to TUAT and NODAI, with strong agribusiness networks and research centers.
- **Sapporo (Hokkaido) –** Ideal for cold-climate agriculture, dairy farming, and sustainability.
- **Kyoto –** Focuses on agroforestry, organic farming, and rural development.
- **Nagoya –** A center for bioagriculture and agribusiness innovation.
- **Kagoshima –** Specializes in tropical agriculture, aquaculture, and livestock sciences.

# 3. Admission Process for Bangladeshi Students

## A. Eligibility Requirements

**Academic Qualification –**
Bangladeshi students applying for a master's program in Japan must have a bachelor's degree (honors) or equivalent from a recognized university. Most universities require a minimum GPA of 2.5–3.0 (on a 4.0 scale) or higher. Some programs may also expect research experience or a thesis from undergraduate studies.

**Language Proficiency –**
Programs in Japanese require JLPT (N2 or N1), while English-taught programs may require TOEFL or IELTS scores.

**Financial Proof –**
Students must provide bank statements or scholarship confirmation to show they can cover tuition and living expenses.

**Student Visa Requirements –**
A valid Certificate of Eligibility (COE) from the Japanese university is needed to apply for a visa.

## B. Entrance Exams (EJU, JLPT, TOEFL/IELTS)

**EJU (Examination for Japanese University Admission for International Students) –** Required for Japanese-taught undergraduate programs, covering subjects like Japanese, Mathematics, Science, and General Studies.

**TOEFL/IELTS –** Required for English-taught programs, with minimum score requirements depending on the university.

JLPT (Japanese-Language Proficiency Test)

## C. Application Deadlines and Procedures

**University Intake –**
Most Japanese universities have two intakes: April (Spring) and October (Fall). Some institutions may also offer a September intake.

**Application Timeline :**

- Research universities and scholarships: 12–18 months before intake
- Prepare required documents: 6–12 months before intake
- Submit applications: 6–9 months before intake
- Receive admission results: 3–6 months before intake
- Apply for a student visa: 2–3 months before intake

**Required Documents :**
Academic transcripts, recommendation letters, statement of purpose (SOP), passport copy, language proficiency test scores, and financial proof.

# 4. Scholarships for Higher Studies in Japan

### 1. MEXT Scholarship (Monbukagakusho)

**What It Covers:** Full tuition, monthly stipend, airfare.

**Eligibility :**

- Good academic record.
- Age below 35 (for graduate programs).
- Research or undergraduate programs available.

**Application Process :**

**Embassy Track :** Apply through the Japanese Embassy in Dhaka. Includes a written test and interview.

**University Track :** Apply directly to the university offering the MEXT scholarship.

**Website :** *Study in Japan - MEXT Scholarship*

### 2. JASSO Scholarship

**What It Covers :** Monthly stipend (usually partial funding).

**Eligibility** :
Self-financed students demonstrating financial need and academic excellence.

**How to Apply :** Application is made through the university after admission

### 3. University Scholarships

Many universities in Japan offer scholarships to international students. Examples:

- University of Tokyo Special Scholarship for International Students.
- Kyoto University Scholarships.
- Hokkaido University President's Fellowship.

### 4. Rotary Yoneyama Scholarship

**What It Covers :** Monthly stipend of ¥100,000-140,000.

**Eligibility :** Academic excellence and acceptance into a Japanese university.

**Website :** *https://www.rotary-yoneyama.or.jp/english*

### 5. Private and Organization Scholarships

Scholarships like the Ajinomoto Scholarship or the Otsuka Toshimi Scholarship Foundation support agriculture students.

## 6. Prepare Documents

### A. Academic Documents

**Transcripts and Certificates :** Collect your academic records (SSC, HSC, Bachelor's degree if applicable).

**Statement of Purpose (SOP) :** Write a compelling SOP explaining your interest in agriculture and why you chose Japan.

**Recommendation Letters :** Obtain letters from professors or professionals in your field.

**Research Proposal :** Prepare if applying for a research-based master's or doctoral program.

### B. Obtain a Student Visa

**Certificate of Eligibility (CoE) :** Once admitted, the university will provide a CoE, required for a visa application.

**Apply for Visa :** Submit the CoE, admission letter, and other documents to the Japanese Embassy in Dhaka.

## 7. Top 5 Universities Best for Agricultural Students

### 1. University of Tokyo

**Programs :** Agricultural and Environmental Biology, Agricultural Economics.

**Features :** One of the most prestigious universities in Japan with a focus on advanced research.

**Website:** *University of Tokyo*

### 2. Kyoto University

**Programs :** Forest and Biomaterials Science, Agronomy and Horticulture.

**Features :** World-class research facilities and faculty in agriculture and related fields.

**Website :** *Kyoto University*

### 3. Hokkaido University

**Programs :** Environmental Agriculture, Bioengineering.

**Features :** Located in a region known for agricultural innovation and research.

**Website :** *Hokkaido University*

### 4. Nagoya University

**Programs :** Applied Biosciences, Agro-environmental Sciences.

**Features :** Strong focus on sustainability and cutting-edge agricultural research.

**Website :** *Nagoya University*

### 5. Tokyo University of Agriculture and Technology (TUAT)

**Programs:** Agricultural Engineering Food and Nutritional Sciences.

**Features:** Specialized in agriculture and technology.

**Website :** *TUAT*

### A. How to Find the Right University

1. Visit *Japan Study Support* to search for universities by program.

2. Check global rankings for agriculture programs (e.g., QS World University Rankings).

3. Attend educational fairs or webinars organized by the Japanese Embassy in Dhaka.

## 8. Cost of Living and Budgeting

**Tuition fees for different programs:** Tuition fees vary depending on the university and program of study.

**Accommodation options and costs:** On-campus dormitories, off-campus apartments, and guesthouses are available.

On average, university cost: **535,800 JPY**

On average, students should budget between **¥120,000** to **¥150,000** per month.

## 9. Cultural Adaptation and Language

Learning Japanese for academic and daily life: Learning Japanese is highly recommended for a more immersive experience.

Cultural etiquette and social norms: Understanding Japanese customs and etiquette will help you navigate daily life and build relationships.

Support systems for international students: Universities offer support services for international students, including language classes, cultural orientation, and counseling.

## 10. Cultural Adaptation and Language

Rules for working as a student: Obtain permission from the immigration authorities before working part-time.

Popular part-time jobs for foreigners: English teaching, restaurant work, and tutoring are common options.

Internship opportunities and career prospects: Internships can provide valuable work experience and enhance career prospects.

## 11. Student Life in Japan

Campus life and extracurricular activities: Universities offer a wide range of clubs, activities, and events.

Food, entertainment, and travel opportunities: Japan is a culinary paradise, and there are countless opportunities for travel and exploration

## 12. Helpful Resources

**Japanese Embassy in Bangladesh:** Check their website for updated information on scholarships and visas.

**Study in Japan Official Website:** Provides details on universities, scholarships, and life in Japan.

Here's detailed information about scholarships and universities in Japan for studying Agriculture:

# Contact Information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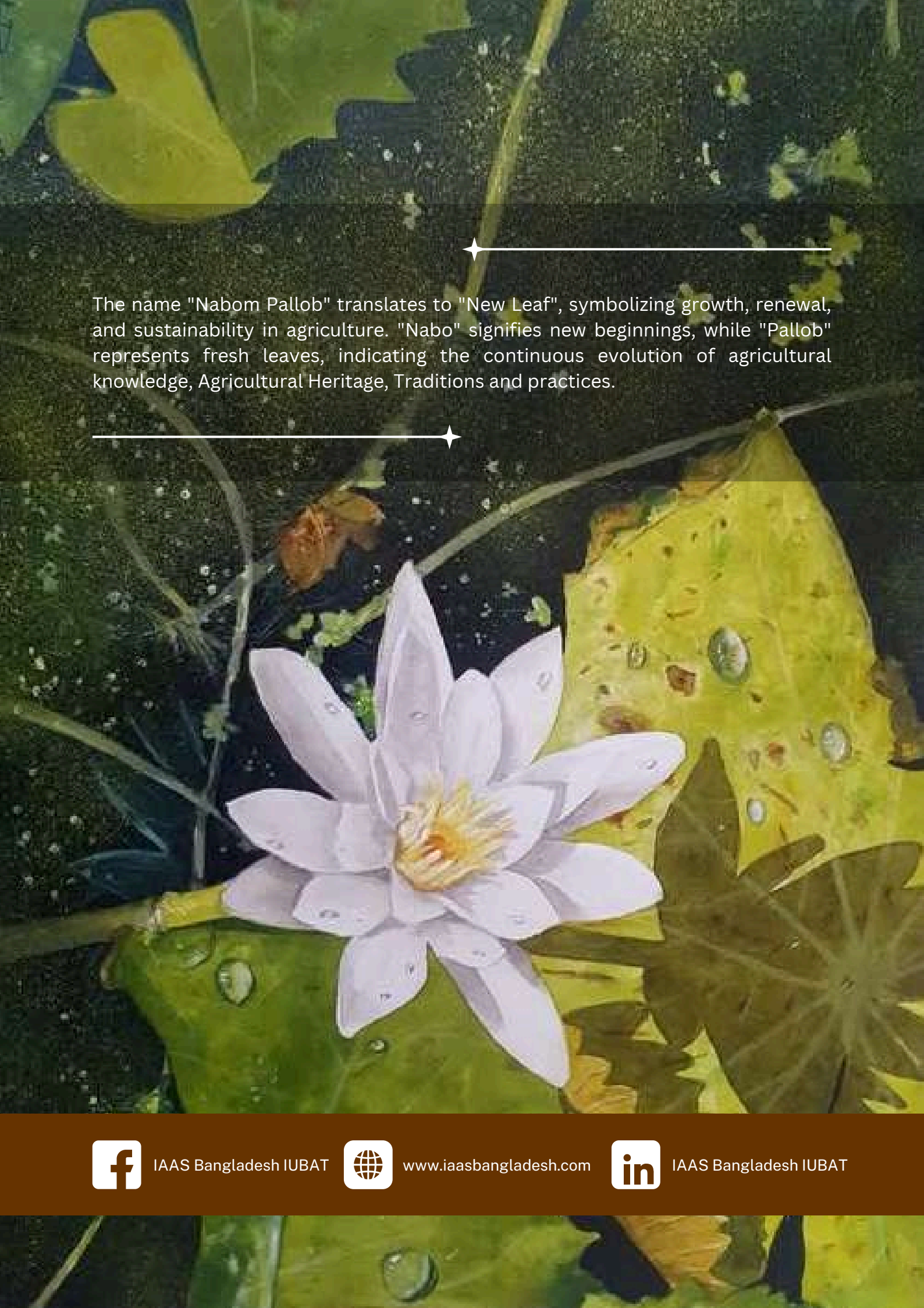

The name "Nabom Pallob" translates to "New Leaf", symbolizing growth, renewal, and sustainability in agriculture. "Nabo" signifies new beginnings, while "Pallob" represents fresh leaves, indicating the continuous evolution of agricultural knowledge, Agricultural Heritage, Traditions and practices.