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## **CHITRALEKHA FARMER INTEREST GROUP (FIG): A TRANSFORMATIONAL JOURNEY UNDER APART**

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Ericulture has been a traditional practice since time immemorial to the indigenous communities of Assam, which suits perfectly to the daily household chores of women folk. That's the main reason as involvement of women is found more than 60% across different activities of the value chain. This is evident in case of Chitralekha Farmer Interest Group (FIG) formed by 10 (ten) women Eri farmers from Kamdewal village, Gohpur, which exemplifies the power of collective action and the impact of timely support. Before the intervention of APART in 2019-20, the women Eri-farmers faced numerous challenges that hindered their sericulture practices and limited their income potential. These challenges included a lack of proper facilities for silkworm rearing, insufficient silkworm food plants leaves for rearing, limited financial resources, and irregular income due to low productivity and distress selling. This made it difficult for the members to sustain their families and improve their quality of life.



Chitralekha FIG was established on March 15, 2022, focusing primarily to unite the like-minded women practicing Ericulture in the village for collaboratively addressing their needs, particularly regarding Eri silkworm egg production and challenges related to silkworm rearing, such as disease management and the availability of quality leaves. The group aimed to tackle the issue of distress selling of Eri products by promoting collective marketing. They also planned to add value to their production by transforming Eri cocoons into raw silk and subsequently into Eri fabric. The FIG envisioned enhancing the financial well-being of each member through sustainable Ericulture practices that ensure high-quality products.

## APART Intervention: Building a Foundation for Growth

The members of Chitralekha FIG were selected as beneficiaries under APART in 2019-20 that marked a turning point for the members as for the first time they were organized for common interest on a single platform. The district sericulture officials facilitated the members to form the FIG as per the guidelines. APART's comprehensive support program provided the necessary resources like Eri silkworm food plant plantation, Eri rearing houses, rearing equipments and skill trainings as well as timely on field guidance to empower the group and unlock their full potential in Eri culture sector.

This approach ensured consistent silkworm-rearing cycles, resulting in higher yields and improved silk quality.

## After APART: Transforming Lives

APART's interventions have had a profound impact on the members of Chitralekha FIG, transforming their lives and creating a sustainable and profitable livelihood. The group's productivity and income levels dramatically improved, making sericulture a reliable source of income. The members of Chitralekha FIG are involved in the following activities:

- *Eri Seed Cocoon and Disease Free Laying (DFL) or egg production*
- *Production of Eri Cut cocoon & Eri pupa*
- *Production of Eri spun yarn*
- *Production of Eri fabrics*



**Production trends of the FIG members together for last 2 financial years are as follows-**

Sl	Activity	2022-23		2023-24	
		Production	Income	Production	Income
1	DFL production (own use)	1200 gm	-	1400 gm	-
2	Cut cocoon production	95 kg (sold 80 kg & rest used for spinning in the FIG)	Rs.56,000/-	135 kg (sold 120 kg & rest used for spinning in the FIG)	Rs.84,000/-
3	Eri pupa production	330 kg (surplus 240 kg sold)	Rs. 72,000/-	400 kg (surplus 360 kg sold)	Rs.108,000/-
4	Seed cocoon production	-	-	5000 nos.	Rs.5,000/-
5	Eri Raw silk production	12 kg (sold 8 kg & rest used for fabric production in the FIG)	Rs.17,600/-	12 kg (sold 8 kg & rest used for fabric production in the FIG)	Rs.17,600/-
6	Eri fabrics (Shawl, mekhla chadar)		Rs. 28,000/-		Rs.30,000/-
		<b>Total Income</b>	<b>Rs.173,600/-</b>	<b>Total Income</b>	<b>Rs.2,44,600/-</b>



## Impact of APART

APART's support has not only boosted productivity but also empowered the members of Chitralekha FIG in several ways. The program's interventions have fostered sustainable practices, empowered communities, and enhanced livelihoods.

- **Sustainable Practices:** Rearing techniques introduced under APART had empowered them to produce their own required silkworm eggs, enhanced the quality and yield of cocoon & raw silk, ensuring a sustainable and environment friendly approach to sericulture. Kesseru (a perennial Eri silkworm food plant) plantation of around 3000 plants also helped in increasing green canopy cover in the village as well as addressing the shortage of leaves for silkworm rearing.



**Empowered Communities:** Members have become role models in their village, inspiring others to take up sericulture and contribute to the local economy. This has fostered a sense of community pride and encouraged knowledge sharing. Coming together of individual woman Eri farmer on a single platform has also enhanced cohesiveness among the members which proved to be the greatest strength of the FIG to tackle issues collectively.

**Enhanced Livelihoods :** Financial stability has allowed the group to invest further in their craft, purchase new equipments and support their families more effectively. This has improved their overall well-being and created a brighter future for their families.

### Conclusion

Chitralekha FIG's journey is a testament to the potential of community-driven initiatives and the impact of targeted interventions. The group's success story highlights the importance of empowering rural communities and providing them with the resources and knowledge they need to thrive. As the group continues to grow and expand its reach, it serves as an inspiration to other communities seeking to improve their livelihoods and contribute to the economic development of their regions. APART's support has enabled the group to overcome challenges, improve their sericulture practices, and create a sustainable and profitable livelihood.



# FRESH WATER PRAWN FISH FARMING: THE STORY OF SHAMBHU HALOI

-OPIU -FISHERIES

## Background

Fish culture is undoubtedly one of the major economic activities and sources of livelihood for rural communities in Assam. Although diversifying fish culture practices is often discussed to improve productivity, income, and sustainability, most fish culture in the state rely on traditional species, primarily Indian major carps and some exotic & minor carps.

**A notable success story is that of Shambhu Haloi, son of the late Dhiren Haloi, of village Khatkatara, P.O. Barkhanajan, Nalbari district, Assam. He successfully increased his income nearly twofold by introducing the high-value giant freshwater prawn (*Macrobrachium rosenbergii*) into his carp polyculture system under the Assam Agribusiness and Rural Transformation Project (APART).**



His achievements in freshwater prawn polyculture, adapted to the agro-climatic conditions of Assam, have sent a positive message to other fish farmers. His success also boosts the confidence of rural youths, particularly educated young people who lost their jobs due to the COVID-19 pandemic and are eager to engage in freshwater prawn-fish polyculture for earning opportunities.

## Intervention

Shambhu Haloi, a 42-year-old farmer, owned two ponds and practiced traditional fish farming. In the year 2020-21, he was selected as a beneficiary for polyculture with carps and freshwater prawns under the World Bank-funded Assam Agri-Business and Rural Transformation Project (APART). Through this scheme, Shambhu received various inputs, including freshwater prawn seeds, prawn feed, quality carp seeds, fish feed, lime, zeolite, and fertilizers, as well as technical support for freshwater prawn farming from WorldFish and the Department of Fisheries.



With this support, Shambhu adopted a scientific approach for farming both freshwater prawns and carps, leading to flourishing pond stocks. The new technology involved replacing low-value bottom-dwelling fish like Common Carp, which yields low prices, and Mrigal, which has a slow growth rate, with freshwater prawns. ***This change proved profitable, as he sold 87 kg of freshwater prawns, earning him Rs. 52,200 from the pond. In addition to prawns, he also produced 876 kg of carps, which brought him additional Rs. 1,31,400.***

Eager to increase his earnings, Shambhu invested in the construction of five additional ponds with nursery rearing facilities on his family land, receiving proper guidance from the officers of the District Fishery Development Office in Nalbari. He enthusiastically began fish culture in these new ponds. Beyond the project support, Shambhu has also worked to promote freshwater prawn farming in the greater Nalbari District, inspiring a total of 21 other farmers to start this activity with great enthusiasm.



#### **Support and Encouragement:**

*"The World Bank-aided APART scheme has been a turning point in my life. Freshwater prawn farming was entirely new to me, but with the continuous support, encouragement and guidance from officials in the Fisheries Department, I could successfully cultivate and produce both freshwater prawns and carp in the same pond. As a result, my income has doubled. I am confident that introducing freshwater prawns into the traditional culture system will significantly increase farmers' incomes, and I plan to continue using this new farming method," says Shambhu.*

## RUHUL AMIN'S STORY OF SUCCESS UNDER APART

- OPIU- FISHERIES



**Ruhul Amin is a youthful and energetic fish farmer from the Darrang district of Assam. Initially, his father worked in agriculture, focusing on paddy cultivation. Due to financial constraints, however, he had to mortgage the farm to private money lenders, despite having substantial land resources. Out of approximately 20 bighas of agricultural land, only about 2 bighas were left for the family, with the rest mortgaged. During this challenging time, Ruhul was still a school student.**

After graduating, he considered building a fish pond on the family's remaining two bighas of land. However, his father opposed the idea of digging a pond in the paddy field, fearing it would damage the crops. Nevertheless, Ruhul was determined to create a fish pond and eventually convinced his father to allow him to excavate a 1 bigha pond in 2015.

In his first year, Ruhul started by raising fish seed spawns, converting them into fry and fingerlings. He purchased 400,000 spawns from Barpeta through a middleman. From his new pond, he was able to produce three quintals (300 kg) of fish fry and fingerlings, yielding an annual profit of Rs. 60,000. The following year, he doubled the size of his pond from one to two bighas and achieved a profit of Rs. 300,000 in his second year through fish seed cultivation.

In 2018, he decided to start producing his own fish spawn, which led him to begin “hapa breeding” on his own property. He learned the hapa breeding technique from experienced fish seed breeders in Nagaon district. Once he started, there was no turning back. Over time, he was able to repay his loans with the profits from his fish farm, allowing him to reclaim all the land he had previously mortgaged. He gradually expanded the size of his fish farm to 20 bighas.

Inspired by his success, his father also took up fish farming and is now a full-time fish farmer. In 2018, Ruhul Amin was appointed as a Clearing and Forwarding (C&F) Agent for Nexture Feeds Pvt. Ltd. in Andhra Pradesh. He is responsible for supplying fish feed to other states, including Manipur. Additionally, he works as a distributor for several manufacturers of fish prophylactic products. His annual earnings from the fish feed trade amount to approximately Rs. 500,000/-.



During the year 2019-20, one of Ruhul's fishery pond was selected for polyculture demonstration by the Darrang District Fishery Development Office as part of the Assam Agri-Business and Rural Transformation Project (APART) under World Bank. Ruhul's father, who manages the fish farm in his absence and now a full-time fish farmer, was chosen as a beneficiary of the project. *"APART has opened a new dimension in fish farming. My father and I have learned new scientific practices for Carp-Mola farming,"* Rubul adds.

After being selected as a beneficiary under the APART scheme, Ruhul stocked 20 kg of Mola (Moah) fish along with carps in a 0.5-hectare area in July 2020. Three months after stocking, he began harvesting approximately 10 kg of fish per month. The Better Management Practices (BMP) prepared by WorldFish also boosted his confidence in enhancing Carp-Mola farming. During the lockdown period, he started selling Mola door-to-door in small packages of 250 grams and 500 grams.



*Ruhul and his father sold 1,960 kg of Carp and 167 kg of Mola, earning approximately Rs 3,07,400. This amount was nearly double his previous earnings of Rs 1,69,250 from traditional Carp farming. Given the market demand and the profitability of carp-mola farming, Ruhul decided to start mola monoculture (Mola fish is known for being a highly prolific breed with a high return on investment).*

This year, they started mola monoculture in a 0.1 bigha pond area, stocking it with 20 kg of Mola seeds. After two months of stocking, he harvested 5-8 kg of Mola, selling it at prices ranging from Rs 150 to Rs 180 per kilogram.

Starting from a small scale, Rubul successfully established himself as a fishery farmer and has improved his family's income level through sustainable fish seed production practices.

## **KSHYAMATA: EMPOWERING ENTREPRENEURS WITH SKILLS AND SUPPORT FOR SUSTAINABLE ECONOMIC GROWTH**

### **• FINANCIAL SERVICES TEAM - APART**

APART has developed an engaging in-house program dedicated to nurturing entrepreneurship, known as Kshyamata. This program is specifically designed to assist individuals in envisioning, structuring, and launching enterprises within the agriculture and allied sectors. Kshyamata offers a variety of invaluable support services, including comprehensive training sessions that cover essential business skills, capacity-building workshops that enhance entrepreneurial acumen, and tailored business development assistance. By being a part of the Kshyamata initiative, aspiring entrepreneurs gained knowledge, skills, and confidence needed to transform their innovative ideas into thriving businesses, thereby contributing to a sustainable economic growth in the community.

### **MAPITA BANANA CHIPS :**

Nabankur Patowary, an engineering graduate with over five years of experience in the corporate sector, decided to explore entrepreneurship in 2017. Initially, he aimed to develop a UV sterilizer for fruits and vegetables but faced challenges in bringing this idea to fruition. After the untimely passing of his mother due to Covid, he recognized the importance of good health and shifted his focus towards adopting a healthier lifestyle. In his search for healthier snack options, he conceived the idea of introducing affordable banana chips under the brand name "Mr. Banana Chips." He opted to prepare the chips in a unique way, using local bananas and sunflower oil.



With assistance from the Kshyamata team, Tezpur, he was able to prepare a project report, obtain packaging solutions, and establish marketing links. In October 2022, he secured a loan of ₹14 lakhs under the Ministry of Food Processing Industries (MoFPI). He now markets his product across Sonitpur in attractive packaging.



Nabankur plans to launch his product across the state Assam and is currently focused on hiring an influencer to promote the product and introduce it to potential customers.

He credits his success to the team at the District Industries Centre (DICC) and expressed, "Without the help and constant support from the Kshyamata team in Tezpur, I would not have been able to launch MAPITA." Nabankur has also received accolades for his innovation during the MSME Conclave 2023.

### **M/S T.A RICE MILL & N.C.A BHANDAR**



Napser Ali established M/S T. A. Rice Mill in 1997, making it the first rice mill in the Loharghat area of Kamrup Rural, with an initial investment of Rs. 8,000. At that time, due to the lack of electricity, he operated the mill using a diesel engine. Although he continued to run the mill over the years, his profits did not increase significantly. He actively sought ways to improve the mill's efficiency.



In 2022, he was introduced to the Kshyamata team at DICC, Kamrup Rural. With their assistance, he improved his packaging and labeling processes. The team also helped him secure a loan of Rs. 25,24,062 from Indian Bank, Bijoynagar, for capacity enhancement. Now, the mill operates at full capacity, leading to increased profits. He supplies rice to the Food Corporation of India (FCI) and various retailers, and he has also contributed to providing employment opportunities for the rural youth in his area.



# INTEGRATED PEST MANAGEMENT (IPM) PRACTICES BENEFITS FARMERS IN BARPETA

**Dr Minsura Begum**  
**District Horticulture Coordinator**  
**APART, Barpeta**

Shafur Rahman, a progressive farmer from Gandharipara in the Barpeta district, was selected as a beneficiary of the Integrated Pest Management (IPM) demonstration under the Assam Agribusiness and Rural Transformation (APART) project. With 13 years of farming experience, Shafur has leased 17 bighas of land in Kabari, where he cultivates a variety of crops, including paddy, tomatoes, ash gourd, and pumpkin. For the demonstration, the Directorate of Horticulture provided seeds, fertilizers, and all necessary inputs through the APART initiative. Regular monitoring and guidance were offered to ensure the demonstration's success.



Additionally, regular monitoring and expert guidance were provided to ensure its success, showcasing the commitment to sustainable farming practices and the potential for improved yields.

## Implemented IPM Strategies :

- 1. Border Crop :** Maize was planted around the field to prevent the migration of pests.
- 2. Intercropping :** Amaranthus was cultivated alongside the main crop to increase overall yield by utilizing resources that may go unexploited by a single crop.
- 3. Trap Crop :** Marigold was used as a trap crop to attract pests away from the main crop.
- 4. Sticky Traps :** Blue and yellow sticky cards were deployed to control pest populations effectively.
- 5. Pheromone Traps :** Male moths were attracted to pheromone lures and subsequently trapped.
- 6. Biocontrol Agents :** These were utilized in the Integrated Pest Management (IPM) to control pests and diseases in a sustainable and environment friendly manner.

For the demonstration, tomato seedlings were raised in pro trays, which increased germination rates and improved seedling quality. Shafur's tomato crop yielded a bountiful harvest, allowing him to generate significant income. The yield from the demonstration plot, covering an area of 1 hectare, was 46.2 metric tons, while the control plot—cultivated using the farmers' traditional practices on an area of 0.5 hectares—produced only 18.1 metric tons. *His net income by selling his tomato was 4.21 Lakh.* With the profits from his tomato sales, Shafur purchased an electric vehicle, marking a significant milestone in his farming journey.





## BEFORE APART INTERVENTION

- Not aware about the IPM practices
- Yield was low
- Heavy dependence on chemical uses for pest and disease control as a result cost of production was higher

## AFTER APART INTERVENTION

- Aware about IPM practices
- Yield has increased substantially
- Dependence on chemical is low and cost of production reduced

Shafur Rahman's success story highlights the potential of integrated pest management (IPM) in tomato cultivation to improve farmers' livelihoods and promote sustainable agricultural practices. His achievement serves as a model for other farmers, inspiring them to adopt environmental friendly and economically viable farming systems.

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## MOIRABARI BIWEEKLY AGRICULTURAL MARKET: A CATALYST FOR RURAL GROWTH IN MORIGAON, ASSAM

*APART Team,  
Dist Agriculture Office, Morlgaon*

***The Moirabari biweekly agricultural market, situated in the fertile Brahmaputra Valley within Morigaon district, Assam, serves as a cornerstone of the region's agricultural economy. This market stands as a testament to the resilience and entrepreneurial spirit of the local farming community. It functions as a pivotal trading hub for fruits, vegetables, fish, agricultural inputs, nurseries, poultry, and livestock, contributing significantly to the rural economy.***

### Market Dynamics and Role in the Agricultural Value Chain:

A market study conducted under the World Bank-funded Assam Agribusiness and Rural Transformation Project (APART) underscored the intricate dynamics and vital role of the Moirabari market within the regional agricultural value chain.



**Consumer Behavior and Trading Patterns:** The market operates with an 80% wholesale and 20% retail composition, focusing primarily on vegetables such as tomatoes, chilies, cabbages, and brinjals. Wholesalers serve as key intermediaries, sourcing produce like pumpkins, capsicums, and watermelons directly from farmers. This produce is further distributed to markets across Upper Assam, Arunachal Pradesh, Nagaland, Shillong, Guwahati, and Silchar. Cash remains the dominant mode of payment, indicative of traders' risk adverse nature. Seasonal cropping patterns prevail, with minimal emphasis on off-season production planning.



**Product Variety and Availability:** The market handles 50 to 100 metric tons of vegetables on trading days. Freshness is prioritized, although residue testing is absent. Seasonal supply fluctuations affect availability, with prices largely influenced by demand from neighboring states. Fruits such as lemons, bananas, and ber are sourced locally, while other fruits are procured from outside Assam. The wholesalers controls price determination. An open auction system is yet to be introduced, resulting in limited price discovery. Certain commodities, including red pumpkin, capsicum, and watermelon, are sourced directly from farmers. Seasonal variations and post-flood cultivation cycles often cause price volatility. Farmers frequently rely on advance payments or input credit arrangements with traders, which restricts their bargaining power.

**Supply Chain and Logistics:** Vegetables are primarily sourced from around 10 neighboring villages, encompassing approximately 350 hectares of farmland. Red pumpkins, watermelons, tomatoes, brinjals, chilies, capsicums, cabbages, and cauliflowers are key products. During market days, 100-150 metric tons of fresh produces are transported to markets as far as Upper Assam, Arunachal Pradesh, Meghalaya, Nagaland, and Siliguri (300-500 kilometers away). However, poor internal roads and the lack of storage facilities present notable challenges.



**Trader and Wholesaler Ecosystem:** The market supports 40-50 wholesalers and 300-400 retailers on peak trading days. Wholesale operations heavily influence market dynamics. Staple products like onions, garlic, and potatoes exhibit price stability. Retailers remain reliant on wholesalers due to the lack of storage and auction facilities, reducing their negotiation leverage.



**Infrastructure and Facilities:** While basic infrastructure is available, sanitation remains a concern. Under the APART initiative, infrastructure improvements included the construction of four raised platforms, a fish retail shed, a pucca yard, a 900-meter approach road, brick and RCC drains, a garbage pit, 16 solar lights, and water platforms, with an investment of Rs. 3.45 Crore. Digital transactions are gradually gaining traction among retailers, although adoption is still in its early stages.





**Market Footfall and Demographics :** Over 5,000 farmers, traders, and local residents engage in market activities throughout the year. Market days witness bustling trade, underscoring the market's role as a linchpin of the local economy. Consumer purchasing patterns align with the biweekly trading schedule.

**Market Competition and Influence :** Moirabari market enjoys a relatively monopolistic position, with wholesalers wielding significant influence. Its reputation as a dependable supplier of bulk, fresh vegetables bolsters its competitive standing.

**Socio-Economic Contributions :** The market sustains over 1,000 livelihoods, including those of farmers, traders, laborers, and intermediaries. Vegetable sales drive agricultural production and enhance rural incomes. However, women's participation remains low at approximately 5-10%.

**Cultural and Traditional Importance :** Beyond its commercial significance, the market upholds local agricultural traditions and ensures a consistent supply of fresh produce. Fish, both fresh and dried, is particularly valued by consumers.

**Government Policies and Institutional Support :** Following the deregulation of fruit and vegetable markets by the Government of India, infrastructural support from APART and Zilla Parishad funds has driven notable improvements. However, policy gaps persist, necessitating more robust regulatory oversight to optimize market performance.

**Technology Adoption and Innovation:** Digital payment systems are gradually gaining traction, though online trading platforms remain absent. Wider use of electronic weighing scales by traders and retailers is warranted. Farmers are increasingly adopting hybrid seeds and chemical fertilizers, reflecting a shift towards commercialized agriculture. Local agri-input suppliers report an overall annual turnover exceeding Rs. 100 crore.

**Challenges and Growth Prospects :** Key challenges include inadequate storage infrastructure, non-transparent pricing practices, and low farm-gate prices. Opportunities exist in diversifying product offerings, improving transport networks, and adopting digital platforms to enhance market efficiency. Additionally, the current market space is inadequate to meet growing demand.



- Muga silk, renowned for its golden shine, is exclusive to Assam and holds significant cultural importance. It is traditionally used in garments such as the Mekhela Chador. The industry provides employment opportunities for thousands of rural families, particularly women, promoting their livelihoods through sericulture and weaving. Furthermore, Assam's silk products are in high demand both domestically and internationally, helping to strengthen the region's economy and support sustainable development