

33rd ISSUE
SEPTEMBER 2023

KRISHI RUPANTAR

Doubling Farm Income through Fertilizer Deep Placement (FDP) in Tomato Crop in Assam

Using the Fertilizer Deep Placement (FDP) technology along with the best management practises, Mohammad Ali of Dhemaji Koiborto village in Kakodanga block in the Golaghat district of Assam earned Rs 104,566 (\$1308), which is 124% higher than his previous income INR 46,530 (\$582), from his 1 ha of land.

Ali's decision to adopt an innovative method of fertilizer application led to this achievement. He switched to FDP from his traditional fertilizer application method. Based on the data in his soil health card, Ali made a change that involves mechanically placing (5 cm depth) the nitrogen, phosphorus, potash, and zinc fertilizer briquettes or

tablets close to the plant root zone in order to prevent fertilizer losses and ensure better uptake by tomato plant roots.

The FDP technology was introduced by Krishi Vigyan Kendra (KVK)-Golaghat and State Agriculture Department with technical backstopping of

International Fertilizer Development Center (IFDC), under the world bank funded APART project in the state of Assam.

Ali's innovative FDP method led to a bumper tomato crop yield of 21.5 t/ha, a growth of 115%, that came close to the national average of 25 t/ha, made him thrilled. He was excited to share this information with farmers

The Intervention

As per Ali's account, he was one of the few farmers shortlisted by Krishi Vigyan Kendra (KVK)-Golaghat to adopt and demonstrate the enhanced fertilizer management practices in the tomato crop, assisted technically by IFDC. He was enthusiastic about innovating these new technologies and testing them against the existing nutrient



Farmer Md. Ali proudly flaunting his achievement

in the neighboring village, resulted in them making a beeline to his field to witness the yield. Ali soon became the talk of the agricultural fraternity in his vicinity.

Farmer Ali narrated his innovative intervention efforts he put in the cultivation of the tomato crop, and the support he received from various agencies.

management technology on his farm. His eagerness to "learn by doing" led him to experiment with three different nutrient management technologies on his farm - FDP, Nano-urea, and traditional practice.

He shared his initial reservations about using FDP and nano-urea in tomato crops, as his ancestors traditionally relied on broadcasting fertilizers on the soil. However, the subsequent events



IFDC's training program on nursery raising in pro-tray

filled him with confidence. A training event was organized on November 21, 2023, with the support of IFDC. The event imparted necessary knowledge and skills to Ali on the concept of growing tomato seedlings in pro-trays with use of cocopeat, including the cultivation aspects such as land preparation, transplanting of seedling, etc. He was raring to go.

Soon after the training, Ali, armed with the knowledge and skills, initiated the innovative process on November 24, 2023. By the mid-December 2023, he could grow healthy saplings in the pro-trays, which were for transplanting in the main field.

According to Ali, he used hired labor to cultivate his land and form the



Demo Plots: FDP | Nano-Urea | Farmer's Usual Practice



Crop growth at different stages

beds, as demonstrated in the training program. The field was almost ready for transplantation by the third week of December 2022. The tilled land was left to solarize for a week. On January 03, 2023, about 1000 saplings grown in the pro-tray were transplanted with a spacing of 120 x 90 into each of the three demonstration plots, where FDP, nano-urea, and the farmer's usual practice are applied for tomato cultivation. The transplantation process was witnessed

and guided by the visiting officials from the Department of Agriculture, KVK and IFDC's team of scientists.

With the assistance of the scientists from the supporting agencies-KVK and IFDC, who visited from time to time to his field to monitor the crop growth, Ali provided proper maintenance to the crop through timely irrigation, weeding, and plant protection. As the crop exhibited robust growth at various stages, fellow farmers



Rich harvest of tomato

acknowledged his diligent efforts in preserving its health.

When the crop was ripe for harvest, Ali obtained a total yield of about 21.5 t/ha over a series of 12 pickings, starting

from the first on March 28, 2023, to until the end of the first week of May 2023. He achieved approximately 110% of the production increase compared to the previous season's 10+ t/ha.

The Cost Benefit Analysis

SN	Cost Heads	Cost Under Each Practice (Rounded Off) (\$ = INR 80)					
		Farmer Practice		Nano		FDP	
		INR	\$	INR	\$	INR	\$
1	Field Preparation	3000	37.5	3000	37.5	3000	37.5
2	Seed Purchase	500	6.25	500	6.25	500	6.25
3	Nursery Raising	2000	25	2000	25	2000	25
4	Transplanting	1000	12.5	1000	12.5	1000	12.5
5	Fencing	3000	37.5	3000	37.5	3000	37.5
6	Fertilizers Basal Dose	3210	40	3210	40	2752	34.4
7	Briquette Making	-	-	-	-	282	3.5
8	Fertilizer Application	100	1.25	100	1.25	500	6.25
9	Earthing, Sticking, Weeding	10000	125	10000	125	10000	125
10	Irrigation (2 times)	500	6.25	500	6.25	500	6.25
11	Plant Protection	4000	50	4000	50	4000	50
12	Fertilizer Purchase (Topdressing)	1420	17.75	1370	17.12	-	-
13	Fertilizer Application (Topdressing)	100	1.25	200	2.5	-	-
14	Picking/Harvest	2640	33	2200	27.5	4400	55
Cost of Cultivation		31470	393	31080	388.5	31934	399.17
1	Yield (Kg)	6000 kg	-	5000 kg	-	10500 kg	--
2	Average Selling Price	13	0.16	13	0.16	13	0.16
Gross Return		78000	975	65000	812.5	136500	1706
Net Return= Gross Return- Cost of Cultivation		46530	581.62	33920	424	104566	1307.75

Table: Cost vs Returns

CULTIVATING PROSPERITY THROUGH STRV

- Akhoy Bharadwaj and Jyoti Bikash Nath, IRRI

Kaimari, a small village located in the Bilashipara block of the Dhubri district, is swiftly emerging as a beacon of inspiration for the adoption of climate-resilient modern technology. The man behind the transformation is Abdul Rafique, a progressive farmer from the village. His story exemplifies how an individual's untiring effort and willingness to adopt modern technologies can provide the solution to a perennial problem in an area.

Agriculture serves as the primary livelihood for the villagers, yet they constantly grapple with recurrent flooding. In the midst of these challenges, Abdul Rafik was searching for technology to bring about a positive change in the existing situation. The availability of stress-tolerant rice varieties appears to be a boon to him. He acquired details about the rice variety Ranjit-Sub 1, which has high yield potential and is capable of withstanding submergence for up to 14 days, from the expert of the International Rice Research Institute (IRRI) working in the district.

His journey took a pivotal turn in *Sali* season 2018 when he was provided a Learning Center Demonstration (LCD) with Ranjit-Sub 1 by the Krishi Vigyan Kendra (KVK), Dhubri, with the technical support of the International Rice Research Institute (IRRI) under



Abdul Rafique

the Assam Agribusiness and Rural Transformation Project (APART).

The demonstration marked a turning point for Abdul Rafique. The knowledge he gained about STRVs (Ranjit-Sub 1) resonated deeply with his aspirations. During the *Sali* season of 2018, the paddy fields were completely submerged between 30 and 60 days after transplanting. But to his utmost surprise, the crop survived after 7- and 10-day submergence, and he did not realize any yield penalty after harvesting.

Upon the success of the variety, he realized that the technology could hold the key to enhancing both production and income in his village. He committed himself to growing only the Ranjit-Sub 1 variety exclusively in his own fields.

During the flood most of the farmer's

field were submerged and they had to face more than 80 % loss in their field. However, they got the opportunity to see the performance of the variety grown by Mr. Abdul Rafique as he invited them to visit his plot, where they could witness firsthand results, he had achieved through STRV cultivation.

Mr. Abdul Rafique took the initiative to generously distribute Ranjit-Sub 1 seeds among the local farmers in his village. From his own field, he began the distribution of seeds to his fellow farmers. His unwavering commitment led to a positive change in the village. The outcomes of Abdul Rafique persistent dedication and willingness to go together were truly remarkable. Presently, 70% of the paddy fields in Kaimari Village are under STRV cultivation. This shift led to a substantial increase in both production and income for the villagers. In contrast to the usual yield losses caused by regular floods, the village is now experiencing a bumper harvest from their paddy fields. Abdul Rafique untiring effort not only disseminated the most needed technology but also nurtured a sense of togetherness among the villagers.

As Abdul Rafique success grew, so did his role in the community. He underwent a remarkable transformation, transitioning from his role as a mere farmer to that of an input dealer, facilitating fellow farmers' access to essential resources for their flourishing. This transition allowed him to not only contribute to the betterment of the community but also to deepen his own knowledge and understanding of modern agricultural practices.



He exhibited unwavering determination, continuing his endeavors. He initiated millet cultivation in his rice fallow area, setting a precedent for fellow farmers to make use of their untapped rice fallow areas. This practice served as a model in the village to significantly enhance cropping intensity.

Abdul Rafique's vision extended beyond the borders of his village. His success story with STRVs inspired him to reach out to neighboring villages too. He set his sights on the village Tarangaon, where he was able to scale up STRV adoption by 60% in the paddy area. Most of the farmers were included in the STRV demonstrations of KVK under APART.

Abdul Rafique's journey from a progressive farmer to a community leader is a testament to the impact that an individual can have on an entire village's prosperity. Through his dedication, knowledge-seeking spirit, and collaborative approach, he transformed Kaimari into a shining example of the potential of modern agricultural practices.

RICE FIELDS TO POTATO ABUNDANCE: THE REMARKABLE TRANSFORMATION OF BARBHUYAN GAON, SONITPUR DISTRICT

- **Pankaj Baruah, Research Technician,**
District Agriculture Office, Sonitpur

Barbhuyan Gaon is located in the Sootea development block of the Sonitpur district of Assam. For generations, this idyllic hamlet has been a testament to the enduring rhythms of rural life, its landscape dominated by the lush green expanses of rice paddy that stretched as far as the eye could see. However, in the past three years, Barbhuyan Gaon has undergone a profound agricultural transformation through the introduction of the rice-potato cropping system approach.

People of this area are traditionally engaged in *Sali* rice cultivation, leaving the majority of land fallow in Rabi season. With limited access to modern farming techniques, farmers are met with formidable challenges for growing the second crop in the rice fallow.

The winds of change started with the implementation of the World Bank-funded Assam Agribusiness and Rural Transformation Project (APART) in the area by the Department of Agriculture, Govt. of Assam. The inception of the APART marked the dawning of a new era for Barbhuyan Gaon.

With the active involvement of APART team and with the help of Bharatiya Krishak Sangha, the Farmer Producer



Company (FPC) in Jeutia A Garoka Farmers' Producer Company, was registered with the aim of initiating collective farming and providing better market opportunities to the farmers of the area.

Under the CEO of FPC, Mr. Pranab Bhuyan's steadfast leadership, the village embraced a bold action plan to alter its agricultural landscape by double cropping and utilizing the rice fallow. Potatoes, with their adaptability to diverse soil conditions and the robust demand in the market, presented an opportunity too promising to ignore. During this period, the FPC members attended various training sessions on rice production: use of quality seed, use of machinery in paddy cultivation, value chain management, and optimal utilization of fallow lands, organized by the DoA, Sonitpur, with the technical support of IRRI under APART.

Equipped with new knowledge and a move towards agricultural productivity, the people in the area began to cultivate potato and pumpkin after sali rice. In the inaugural year of this transformative shift, Barbhuyan Gaon cultivated 170 bighas of land in partnership with PepsiCo in 2020–21 as contract farming. With 57 farmers involved in this farming, it marked a new era in farming in this area. This move was successful, as 16 of these farmers, who availed of a loan from KCC for potato cultivation, were able to repay the loan within the year from the profit made from potato and pumpkin cultivation. A total of 300 MT of pumpkin was sent to Agartala, Kolkata, and Orissa with the help of market linkage initiative of APART. The once-familiar rice fallow areas was transformed into a vibrant potato field, symbolizing a significant change in the mindsets of the people and their resilience.

In 2022–23, under the seed production



program of paddy variety Ranjit–Sub 1, undertaken with the support of DoA, ASCL, and IRRI, the FPC was able to get a bumper harvest. They sold 150 qt of seed at Rs 35/kg back to ASCL. An additional 2 q at Rs 42/kg was also sold to a fellow FPC in Sootea. As they reaped the benefits of



paddy, they became more enthusiastic about growing more crops in their field. The year bore witness to exponential growth as the community expanded its potato cultivation to an astonishing 300 bighas. In the forthcoming year, the community set its sights on an ambitious goal—more than 500 bighas dedicated to potato cultivation, carving a flourishing path within the former rice-fallow areas. Though they were successful in utilizing the rice fallow, they experienced more time requirements in transplanting and harvesting the crops, which led to an increased cost of production. Hence, they decided to go for mechanizing the whole cultivation process from next season onward.

In the next year, 2023–24, the FPC was also provided with a Custom Hiring Center (CHC) from DoA with 2 combine harvesters, 1 mechanical transplanter, 1 reaper, 1 potato planter, and 1 potato harvester. During *Sali* 2023–24, the FPC transplanted Ranjit–sub 1 1000 bighas of land for seed production. Out of these 1000 bighas, 300 bighas are transplanted mechanically.

With DoA and IRRI's team of experts providing regular assistance and

knowledge, the FPC has now achieved self-sufficiency in paddy cultivation and aims to expand its horizons in the coming days. The FPC has successfully converted their fallow lands into double cropping with the use of machines, thereby increasing the productivity of the farmers in the area.

"We have realized that using machines in paddy cultivation saves both time and money, leading to a reduced cost of cultivation and allowing sufficient time to grow the second crop. Hence, we are

planning to maximize the use of machinery in our field." Said the BoD members.

This success story, which continues to evolve, transcends the boundaries of Barbhuyan Gaon. It stands as a symbol of rural resurgence, innovation, and the incredible potential that lies within every community. The transformation from rice fallow fields to potato fields reflects the resilience and adaptability of the farm community.

GIS FACILITIES SET UP UNDER APART IN AAU-AFFILIATED COLLEGES AT BISWANATH, DHUBRI, AND NALBARI.

- Suranjana B. Borah, IRRI

Three new GIS data processing facilities have been set up under the Assam Agribusiness and Rural Transformation Project (APART) by Assam Agricultural University (AAU) with the technical support of IRRI at three colleges under AAU: Sarat Chandra Sinha College of Agriculture (SCSCA), Dhubri; Biswanath College of Agriculture (BNCA); and College of Horticulture and Farming System Research (CHFSR), Nalbari. These facilities are fully equipped with high-performance computing work stations and associated hardware, storage, image processing, and GIS software, as well as manpower (assistant project scientists). These GIS facilities are established as sub-units of the main GIS

facility at AAU, Jorhat, in the hub-and-spoke model. Target-oriented tasks planned to be completed during the APART extended phase will be distributed and coordinated to these sub-units through the existing GIS lab at AAU Jorhat to cover the surrounding areas and assist in generating required products such as data collation, pre-processing of satellite images, supporting the development of customized agro-advisories, etc.

A series of trainings were organized at AAU, Jorhat (where previously a GIS lab was established), and the three new locations to train the in-house faculty, project staff, research scholars, and students of AAU and colleges affiliated with AAU



GIS facility established at the College of Horticulture and Farming System Research, Nalbari

in the use of remote sensing (RS) and geographic information systems (GIS) for geospatial analysis and mapping so that the GIS facilities established under APART are sustainable and aptly utilized after project completion. A total of 107 participants were trained on the basics of remote sensing and GIS in these trainings. Participants from different departments, including soil science, agrometeorology, water management, plant pathology, agronomy, horticulture, and extension education, were trained. The training module comprised a basic understanding of geospatial technologies, satellite data interpretation, and analysis supported by hands-on practical sessions on GIS data visualization and analysis using the open-source GIS software QGIS. Based on feedback collected during these trainings, the participants

appreciated and enjoyed the practical-oriented course design, with most of the participants acknowledging the fact that they understood the technology better after attending the training but pointing out the need to organize trainings of longer duration.



2-day training on Introduction to Remote Sensing and GIS was organized at Biswanath College of Agriculture on July 25–26, 2023

PROGRESS ON TRAINING AND CAPACITY BUILDING OF FARMERS COLLECTIVES VIZ FARMER PRODUCER COMPANIES PROMOTED UNDER APART

*Compiled by : Mrinalinee Khanikar,
Financial Services Specialist/ Horticulture Coordinator i/c*

Journey so far...

Introduction

The underlying rationale for the development of FPOs is the typical fragmented and small land holdings of farmers in India. With typical holdings of less than 1 hectare, farmers cannot individually enjoy economies of scale and afford to invest in farm mechanization and technology for enhancing farm productivity, optimally procure inputs, or directly access buyers.

Aggregation through FPOs is the only feasible option left for farmers to enhance their bargaining power and farm-related value accruals, as has also been established through various programs. The collectivization of producers, especially small and marginal farmers, into producer organizations has globally emerged as one of the most effective pathways to address various challenges in agriculture and enable improved access to investments, technology, inputs, credit, and markets.

The Department of Agriculture, Cooperation & Farmers' Welfare, Ministry of Agriculture & Farmers' Welfare, Govt. of India has identified Farmer Producer Organisations registered under the



special provisions of the Companies Act, 1956 as the most appropriate institutional form around which to mobilise farmers and build their capacity to collectively leverage their production and marketing strengths. In this scenario, Farmer Producer Organisations are typically defined as "membership-based organisations or federations of organisations with elected leaders accountable to their constituents" with an objective to develop and deploy the aggregation mechanism of farmers, wherein farmers/producers with common interest agree to pool their resources together to form a group, jointly deal with various issues of farming; be it credit, input sourcing, deployment of farm technology and good agricultural practices, post-harvest handling or onward sale of agricultural produce". [1]

What are FPOs and FPCs? Legal compliances

In India, the legal constitution of FPOs typically comprises societies and trusts, cooperatives, mutually aided cooperative societies, and farmer-producer companies (FPCs). Arguably, in the country, two types of legally registered FPOs are typically in vogue: farmer-producer companies (FPCs) and cooperatives.

The instrument of FPOs, registered under the Companies Act 2013, is emerging as one of the most effective tools of aggregation. These producer companies are designed in such a manner that they are professionally managed and are able to take care of the agricultural supply chain.

A producer company is basically a corporate body registered as a private limited company under Part IX-A of the Companies Act 1956, now 2013 (as amended in 2002). An amendment to the Companies Act 2002 was done on the basis of the recommendation of the Y. K. Alagh Committee (1998) to add corporate muscle to cooperatives so that they can provide effective management and good governance. The same provisions have been retained for FPCs after revisiting the Companies Act in 2013.

The main objective of the formation of FPC is not only to help in doubling farmers' income but also to establish basic business principles within farming communities, to bring industry and Agriculture closer and to boost rural



development by collectivisation of farmers, especially small and marginal farmers. The FPC model essentially focuses on common interest groups as the basic unit for aggregation, with neither a limit on the size of membership nor on the extent of the operational area. The FPCs typically break the producer organization free of the typically inefficient and politicized image of cooperatives, with scant focus on principles of democratic management and free enterprise. The FPC structure is a distinct improvement over the existing legislation on cooperatives, which can accommodate non-farmers and producers as members. To the contrary, FPCs can accommodate only primary producers to participate in the ownership and management of FPCs, i.e., the members (individuals or FIGs, FPGs, or SHGs) necessarily have to be "primary producers—persons engaged in any activity connected with or related to primary produce. With regard to cooperatives, their architecture allows scope for political and government interference and control in management.

Advantages of FPOs:

Numerous reports and studies have clearly captured and established the positive role of FPOs. Some of the important benefits ascribed to FPOs are as follows:

- » Cost of production or cultivation may be reduced by procuring all necessary inputs in bulk at wholesale rates, as well as use of custom hiring services of farm equipment.
- » Aggregation of produce and bulk transport reduce marketing cost, therefore, enhancing the net value accruals to the producer.
- » Building scale through aggregation of commodities lends advantage of economies of scale and attracts traders, processors, and retailers to the farm gate.
- » Access to modern technology, extension services and joint training on Good Agricultural Practices (GAP) and ensuring traceability of agriculture produce.
- » Post-harvest losses can be minimised through joint storage and value addition facilities.
- » Adverse price fluctuations and distress sale can be managed or avoided; if good practices are imbibed. These include contract farming agreements, stocking in own common facilities or leased storage facilities with credit support, etc.
- » Ease in communication for dissemination of information about prices and volumes in different locations and other farming-related advisories thereby reducing information asymmetries.
- » Access to institutional credit against

stock, without collateral by virtue of joint liability implicit in the FPO framework.

- » Movement up the value chain and graduation into primary and secondary processing will be possible as minimum scale economies are reaped.
- » Greater bargaining power to farmers and greater quality orientation in production and processing activities

The present scenario of FPOs in the country:

SFAC (Small Farmers Agribusiness Consortium) has been designated by the Department of Agriculture, Cooperation, and Farmers' Welfare and the Ministry of Agriculture and Farmers' Welfare as the nodal agency for promoting FPOs across the country. FPOs have been promoted in the country under various schemes and programs of the central government, state governments, and other agencies since 2011.

Presently, around 5000 FPOs (including FPCs) exist in the country. These were formed under various initiatives of the Govt. of India (including SFAC), state governments, NABARD, and other organizations over the last 8–10 years.

The vast majority of these FPOs are in their nascent stages and are still in the early growth phase of their life cycle. [2] It is estimated that at best, 30% of these FPCs are currently operating viably, and around 20% are still struggling to survive. Around 50% are still in the phases of mobilization, equity collection, business planning, and other management-related developmental stages.

This is quite comparable to the success rate of new enterprise start-ups in the industrial and processing sectors in India. The number of FPO promoters is numerous, and hence a representative listing of larger promoters is given here:

Sl.	Promoting Agency	Nos
1	SFAC	902
2	NABARD	2086
3	State Govt. (Funded by leveraging RKVY or the World Bank funds)	510
4	NRLM Programme (MoRD)	131
5	Other Organisations/Trust/Foundation**	1371
		5000

**Other Organisations like - Bill & Melinda Gates Foundation, TATA Trust, Reliance Foundation, Ambuja Cement Foundation, HDFC Foundation, C&A Foundation, HSBC CSR, Axis Bank and Syngenta foundation.

In Assam, the status of FPCs as on June 2023 except APART promoted FPCs are as below:

Name of the Implementing Agencies	IA wise FPCs/FPCs registered as on June 2023
NABARD	66
NCDC	17
SFAC	96
NERAMAC	31
NAFED	42

Impact of FPO/FPC Promotion:

In order to enhance farmers' income and empower small and marginal farmers, promotion of FPOs has evolved as an intervention strategy in India. The impact of related initiatives may be summarily considered as follows: -

» Through operating inputs shops, FPOs are successfully reducing their procurement

cost of insecticides, pesticides, fertiliser as well as seeds.

» Through providing custom hiring services in terms of farm equipment and machines like tractors, tillers, and harvesters, savings are made in production and cultivation costs.

» By operating common facilities for primary and secondary processing and direct sale, FPOs are enabling higher

value of accruals to farmers.

- » Being able to offer volumes, they are even able to directly negotiate with and sell to large buyers and retailers.
- » Through hedging initiative and leveraging on the NCDEX platform, they are able to hedge against possible commodity price falls during harvest.
- » Through availing the e-NAM platform, FPOs are able to reach out to large number of buyers competitively.
- » The market for organically farmed commodities is being exploited through collective farming practices, in turn, enabling supply of necessary volumes so as to access related markets.

APART (Assam Agribusiness and Rural Transformation Project) funded by World Bank has been promoting FPCs since 2019. There are 125 FPCs under APART in 23 districts of which Agri-Horti- 87, Fisheries -25 and Silk - 13.

3 (three) Consultancy agencies (Service Providers) namely ICCOA, PwCL, GT LLP, SIMFED were engaged for providing handholding support to FPCs for the purpose . Total Farmer Interest Groups -3071, Total Shareholders – 59576 (Male- 39958, Female- 19618) as on July 2023.

There is a need for developing hard skills and soft skills of FPC personnel on a continuous basis for sustainability of the institutions. The Service Providers have prepared training modules for strengthening the FPCs, however, the TMs require detailed discussions on further capacity building of the FPCs.

The following Training Modules may be adopted based on experience of APART with different service providers.

Training Module - 1: Organizational Management (FPC Concept; Legal Compliances; Soft Skills; Performance Assessment Tools, Session 1 : Incorporation of FPCs , Session 2 : Good Governance Session.

Training Module - 2: Statutory Compliance and Record Keeping, Session 1: Meetings and Maintaining Records, Session 2 : Registration , License requirement /statutory compliances

Training Module - 3: Session 1: Possible Interventions for the self-sustenance of the FPCs , Input Business Management, Session 2: CHC Management, CSC Management, Marketing Management

Training Module - 4: Financial Management and Business Plan, Session 1: Financial Management, Book Keeping; Session 2: Business Plan Preparation, Credit Linkage Financial and Accounting Literacy, Session 3 : Concepts of Financial Management , Session 4: Books of Accounts and Financial Statements Session 5: Financial Analysis , Session 6: Audit Session 7 : Tax Compliances

Training Module - 5: Convergence and Partnership Building for the FPCs Convergence and Partnership , Session 1: Government Programmes supporting FPO promotion and related Agri-value Chain activities

OPIU-Horticulture has been entrusted with Training and Capacity building for strengthening the FPCs on Organizational Management for strengthening FPC

Governance, Financial Management, Legal Compliances and Business plan preparation and CSC establishment. OPIU-Horticulture plans for exposure visits to successful FPCs in other states of India for building the capacity of the FPCs.

As on date, OPIU-Horticulture has completed the Training programme as below:

Total batches	:	30 Nos
Total Trainees	:	682
CEOs	:	97
BOD/Promoters	:	541
Accountant	:	15
Members	:	23
Community Organizers of Service Providers	:	6



During the quarter July-September 2023 OPIU-Horticulture completed 4 batches training for BoDs/ CEOs of 14 FPCs (first batch : 10-11 July 2023 , second batch: 12-13 July 2023, third batch: 14-15 July 2023, fourth batch : 24th -25th August 2023) for APART promoted 14 FPCs (Farmer Producer Company) from Nagaon, Dhubri, Morigaon and Golaghat districts at Extension Education Institute, AAU,

Khanapara. The training programme covered Legal Compliances, FPC Operational Management, Business Planning and management etc.

In addition 28 nos of CEOs of FPCs were sent to Sahaydri Farms, Nasik, Maharashtra (a leading FPC in fresh Fruits and Vegetables sector in India) during 14th September to 18th September 2023 to have an exposure on growth of FPCs focussing on Business development, Marketing and Financial Management.

.....
 Strategy Paper for promotion of 10,000 Farmer Producer Organisations (FPOs) Small Farmers Agribusiness Consortium (SFAC)†
 MANAGE Report, 2019†

SUCCESS STORY OF AMIYA BARMAN

- Submitted by Uttaran FPC

This is the story of a hardworking woman farmer, Amiya Barman, from Kaniha, Rangia. Barman grew up thinking she was going to do farming differently from what her forefathers did. Initially, she started farming with a very low investment. She purchased 4 piglets and kept them in a room. With her hard work, she skilled herself in the basics of health care by attending training programs frequently organized at UTTARAN KRISHI PRODUCER COMPANY under the supervision of Dr. Ilakshy Deka, Animal Science, and KVK Kamrup, Expert Director (UKPCL). Last year, she sold 25 pigs, making 3 lakh from selling pigs only. She plans to focus on the breeder facility, where she makes more money. As we all know, pig farming is one of the most lucrative and profitable animal enterprises in India. She has also involved herself in breeding poultry. Under the KVK FLD Program, she got



have been giving her paddy seeds and gram seeds under APART. She was also trained with some machinery, like a mini combine harvester, a reaper, and others.

She also encouraged her graduate sons to get involved with her, and now they too have started working with their mother in farming. They own one fishery with a variety of fish like common carp, grass carp, silver carp, Rohu, and many more.



poultry. She earns about Rs. 5,000 in net profit from poultry in a month. In addition, she also has paddy, mustard, a variety of pulses, and other crops. We

They have also ventured into rearing goats by making a goaterly. Moreover, they have an apiculture.

Thus, by adopting agriculture and animal husbandry, Mrs. Amiya Barman has produced an example of farming by earning about Rs. 5,00,000.00 in net profit annually.

We, UTTARAN family is always there to help her in various ways and we're hopeful that she'll grow more if more proper facilities/ trainings provided to her in future.

PRECISION SEEDING FOR HIGH PRODUCTION

- *Dr. Abhinav Jain, Seed Multiplication Expert*
Assam Agribusiness & Rural Transformation Project

Seed placement is a crucial factor for satisfactory germination and uniform seedling emergence. For instance the rate of germination and emergence time is affected by the seed placement depth. Placing the seed too deep or too shallow may affect germination and plant stand. The appropriate seeding depth ensures good germination and ultimately contributes to healthy crop growth and production. Generally for most of the crops, planting seed at a depth of 2-5 cm within the soil ensures high germination rate and healthy seedlings. At this depth, seeds have access to appropriate aeration, temperature, light and moisture required for the germination.

As seeding is affected by several factors like seed type, soils, seeding conditions, placement method etc, therefore, these factors must be taken into consideration for good seed germination and yield.

1. Seeding methods

The seed germination and seedlings emergence is influenced by the seeding technique and seed placement methods. Generally seed sowing can be done either manually or by mechanical methods. The proper placement of seed in the soil either mechanically or manually ensures good germination

and crop growth.

i) Dry direct seeding by mechanical method

Placement of seed in the soil by mechanical method, if done appropriately, than adequate germination with good crop establishment can be observed easily in the field. Direct seeding of crops mechanically by tractor drawn seed drill is time saving. Seeds are also sown mechanically by drilling (dropping the seeds in furrow lines in a continuous flow and covering them with soil) through bullock drawn seed drills. In lowland areas encountered with frequent shortage of water and labour, paddy can be taken up through dry direct seeding method instead of transplanting. Dry direct seeding of paddy is very common in upland rainfed regions. The seeding depth for placement of seed in the soil through tractor drawn seed drill should be adjusted carefully according to the crop taken for direct seeding.

ii) Manual seeding

Manual seed sowing can be done either by scattering of seed (broadcasting), by placing the seeds at a fixed spacing through making holes at an appropriate depth (dibbling) or by sowing the seed behind the plough (drilling). Manual

seed sowing is generally practiced in small size farm lands. Good germination is observed when seeds are placed uniformly at right depth in the well ploughed soil. Generally, when seed are broadcasted manually, uniformity of seed placement is difficult to maintain and therefore, usually requires higher seed rate and non uniform emergence of seedling may be observed.

iii) Seeding depth

Germination is affected by way of seed placement in the soil. Very deep seeding result in greater energy utilization by seed to come out of the soil surface and may exhibit poor germination. Seed sown at a much deeper depth may tend to be less vigorous owing to consumption of more stored energy. Hence, planting too deep in the soil may exhibit low or delayed germination due to presence of low soil temperature and more energy consumption by the seed. Therefore, for most seed crops ranging from small size to medium size, seed can be placed between 2 to 5 cm in well prepared and perforated soil for good germination. The seeds if sown too shallow can be prone to bird picking or being washed away or blown away by wind, though there are some crop seeds which require shallow planting for receiving proper aeration and sunlight for germination. Seeds sown up to 5 cm depth may take 5-7 days while seeds sown below 5 cm may require 7-10 or more days for emergence.

2. Seed type

Seeding is also influenced by seed size.

Large seed size crop varieties can be seeded deeper than small seeded ones. Generally small size seed when placed too deep in the soil may show poor germination as small size seed has to consume more energy in coming out of the soil surface compared to large bold size seeds. Sowing depth can be varied with seed size; in general it can range from 3-4 cm for small size seed and 4-5 cm for large size seed.

3. Soil moisture content & soil texture

The soil moisture content and soil texture affects the seed germination. Placement of seed in the ample soil moisture zone, but not so deep enough ensures good germination and rapid seedlings emergence. The higher the soil moisture, the shallower is the seed placement. For dry soil surface, deeper planting depth can be taken, though due to low moisture content in the soil, the rate of germination may get reduced. Hence, planting the seed little deeper than usual is desirable, if the soil moisture condition at the seeding depth is below field capacity. The soil moisture content at field capacity is high, medium and low for clay, loam and sandy soils respectively. Depending on the moisture condition of the soil, seeding depth can be shallower in fine textured soil than in sandy soil. As sandy soil has less moisture retention capacity, it heats up faster on the surface and easily washed away by water, so seeds may need to be planted a little deeper compared to heavier soils. Silt soils consist of fine particles with high moisture retention capacity and seeds for most crops



can be placed safely within 2-5 cm for good germination. Loam soils are good soil to plant most crop seeds at depth of 2-5 cm as it has appropriate mix of sand, silt and clay. Placement of seed in the well humus loamy soil having high organic carbon status results in good germination. Similarly, a poorly ploughed cloddy soil results in poor seed germination.

4. Sowing season

As seed is influenced by the macro and micro climate, conditions like temperature, relative humidity, soil moisture content etc affects the seed germination and emergence Hence,

the seed sowing operations are seasons specific. Many seeds are conducive for sowing in winter requiring cool and dry weather conditions (crops like wheat, mustard, chickpea, lentil, linseed etc), while many grows well during monsoon season requiring warm and humid weather conditions (paddy, maize, arhar, groundnut, soybean, jute etc). Some short duration crops can also be taken during dry warm season (like summer moong (green gram), summer rice, urd (black gram), hybrid maize, etc). Thus, appropriate seeding in the appropriate season is one of the contributing factors for good production.

MBS-ASSAM XAMAHAR'S SUCCESS STORY: KHALANI DUSS

A brief introduction:

Khalani DUSS, a WAMUL-affiliated DUSS registered under the Assistant Registrar of Cooperative Societies (ARCS) on January 1, 2017, started its operations from Jhargaon Village, situated in Mayong Block of Morigaon district in Assam. Currently, the society has 235 total members, 30 active dairy farmers, and produces an average daily milk supply of 300 liters that is consistently supplied to the WAMUL-run Purabi Dairy. With a population of approximately 1.5 lakh people, Mayong was not financially inclusive before the launch of MBS-promoted SahiBnk, an innovative fintech solution supported by World Bank-financed APART under its flagship initiative Assam Xamahar.

Problem-Statement:

The block is 10 kilometers away from the nearest SBI bank or ATM branch, posing a big challenge for the community members to do banking transactions and avail other financial services. Despite the presence of 10 different CSPs from multiple banks, the people of Mayong had no access to value-added financial services. Every time the farmers did banking and other financial transactions from these CSPs, they were charged Rs. 10 per transaction of Rs. 1000, be it cash withdrawal, money transfer, utility payments, etc. Moreover, it was never convenient for a farmer from the adjoining villages to travel 10 to 14 kilometers every day to the nearest



SBI branch or ATM for cash withdrawal or deposit transactions, not to mention other banking facilities. This means skipping a day's wage and suffering losses in their dairy business. Therefore, owing to the above-mentioned difficulties, the block was not financially included in the government's digitization plan until recently. But with the timely advent of SahiBnk as an AEPS platform and the setting up of a branch at Khalani DUSS, providing free and fair financial solutions to the people, DUSS did a great service to the farmers of Mayong.

Initiation of SahiBnk:

The SahiBnk at Khalani DUSS was established on February 2, 2023, and actively started its operations on February 20, 2023. This SahiBnk branch has shown incremental growth within a span of 5 months. From a meager total business of Rs. 20,000 in the first month of initiation, this SahiBnk has

done a business of Rs. 28,00,000 till date. Khalani's daily business is an average of Rs. 50,000 to Rs. 60,000. This branch has managed to create approximately 450 beneficiaries since its inception.

Challenges and Solutions:

There were myriad challenges faced by the SahiBnk merchant when it was first started. Amalesh Das, the SahiBnk merchant, is a member of the Khalani DUSS. Apart from being a dairy farmer, he has a graduation degree with a PGDCA diploma. A young man of 24, he has the ability to navigate some of the complex digital issues on his own and is instrumental in the smooth functioning of the SahiBnk branch at Khalani DUSS. Some of the challenges faced by the branch are mentioned below, along with their solutions.

1. Device-related network issue: The merchant could resolve the network issue after taking self-tutorials from YouTube. He cleaned the software embedded in the PoS device and got it up and running after rebooting the device.

2. Failure of Fino Bank payment cards: As Fino Bank cards do not work on the PoS device, he urged those customers to migrate their accounts to other banks, whose cards easily work on the SahiBnk Coral-K device.

Outcomes:

One of the tangible outcomes of this SahiBnk is that it assisted in the cattle loan disbursement for two (2) of its dairy farmers to the tune of Rs. 3.75 lakh

while getting one (1) more case of loan sanctioned, which will be disbursed shortly. The branch has also facilitated the account opening of two farmers with HDFC Bank, delivering a wide range of financial services and tools for the farmers in the area.

Socio-economic Impact:

The SahiBnk has brought about a drastic change in the banking behavior of the farmers of Mayong in Morigaon district of Assam. The people of the area have come to trust the government's initiatives and have become fully aware of financial inclusion. Some of the visible socio-economic impacts are:

1. This APART-led initiative is a massive financial revolution in the nondescript village of Jhargaon, where previously people had never heard of door-step banking, that is, one-stop financial services at the click of a finger, which is convenient, trustworthy, and hassle-free.
2. Upon SahiBnk's launch, 85% of the beneficiaries were women. Now, the womenfolk of the adjoining villages of Mayong can easily withdraw money, pay their utility service bills, deposit EMIs and LIC premiums, and avail loans. This could have never been possible had there been no SahiBnk at Mayong.
3. The SahiBnk merchant sees this as a huge livelihood opportunity. After passing out of school, Amalesh is now able to earn an average of Rs. 1200 to Rs. 1500 per day by making an enormous number of transactions.

4. The SahiBnk has also initiated social inclusion by extending its services to all sections of society. The women, the old gentry, the differently-abled, the destitute—every segment of society has come forward to take advantage of the SahiBnk at Khalani DUSS, thereby ensuring all-round social inclusion apart from the mandated financial inclusion of the last mile.



33rd ISSUE
SEPTEMBER 2023



KRISHI RUPANTAR

ARIAS SOCIETY

(An Autonomous Body of the Govt of Assam)

Agriculture Complex, Khanapara, G.S Road, Guwahati -781022 (Assam, India)

Tel: +91 361-2332125 | Email: spd@arias.in | Web site: www.arias.in

Grievance Redressal : grievances@arias.in | Toll Free : 1800-102-0338

(10 a.m – 5 p.m- excluding holidays)

Design by - Insight Brandcom Pvt. Ltd.