

## ASSAM AGRIBUSINESS AND RURAL TRANSFORMATION PROJECT (APART)

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## SUCCESS THROUGH HARD WORK AND DETERMINATION



*Ramu Medhi using mechanized transplanter in his paddy field*

In India, one of the much-talked issues during these years is the growing lackadaisical attitude of the rural youths towards agriculture. In Assam, of late, many youths have migrated to different states searching for non-farm jobs. Due to the recent COVID 19 pandemic and lockdown, many of these youths have to return to their native villages. Most of them are not sure about their future and at the same time, they seek to be self-employed with agriculture and allied sources with their existing resources in their villages.

This is a story of a young man Ramu Medhi, a 29-year old youth from Manaha Kacharigaon under Mayong block of Morigaon district, who against the present

trend, is working for non-farm employment. It may be a path-breaking story for those who have the inner zeal to do something by themselves.

Ramu Medhi's family-own around 30 bighas of cultivable land, where he along with his uncles used to grow paddy in a traditional way of cultivation. But every year, they were not able to harvest their produce due to the devastating flood that occurred quite frequently in their field. The high investment in the paddy field and the risk of flood every year discouraged him from farming. So, after completing his higher secondary education, he joined an NGO that worked for disaster management in his village to earn his livelihood.

*"I have seen my grandfather's struggle as a farmer and my heart sank when his smile faded away every year after the floodwater entered our field. That made me feel how hard it is to be a farmer. I understood that there is great risk in agriculture and I am not ready to carry this risk throughout my life" said Ramu emotionally.*



*Dr.Gerd Müller, Federal Minister for Economic Development, Germany visiting the paddy field of Ramu Medhi*

In 2018, KVK had organized an awareness meeting among the farmers on the submergence-tolerant rice varieties that had been introduced in the state, especially for the flood-affected areas like theirs. Ramu met the scientists from Krishi Vigyan Kendra (KVK), Morigaon and expressed his interest to be a part of the awareness training programme that was organized under APART. Team from the International Rice Research Institute (IRRI) undertook the training as resource persons and explained about the three newly introduced flood-tolerant varieties viz., Ranjit-Sub1, Bahadur-Sub1 and Swarna-Sub1 that possessed the special quality of survival under complete submergence up to 14 days. The KVK also selected the farmers to take part in demonstrations under APART. In the training, Ramu, being a part of the NGO also learnt about the high yielding characteristics of these varieties over the traditional varieties that his grandfather had been cultivating since years. This

attracted him towards these varieties. With his renewed interest, the KVK on his request provided 30 kg of the seed of Bahadur-Sub1 variety to two of his uncles to grow in their fields. He decided to closely monitor the growth of the paddy in the fields to see the performance of this new variety. During the crop growth stages, they faced few problems related to pests and diseases, which were timely, monitored and managed by preventive measures suggested by IRRI and KVK personnel, which helped boosting his confidence. During harvesting, he was amazed to see that the variety gave a yield of 15.5mon/bigha(46.5q/ha) at his uncle's field, whereas the traditional varieties yielded 9 mon/bigha(27 q/ha).

*"It's just amazing! I never thought that a small step will help me to mitigate the biggest challenge that I was afraid of. Every year, we have flood and the labour problems to handle. The varieties can tolerate complete flash water submergence for two weeks, which is more than sufficient for us. At the same time, we have agricultural labour problem, which can be effectively solved by using a machine for performing different agricultural activities. I have never thought to get such strong support from IRRI and KVK in my life. Today I feel the happiness that a farmer carries throughout his life. It's the need of the hour to have more young and enthusiastic farmers who dare to grab the knowledge to take up agriculture as a lucrative profession" says Medhi.*

The performance of the variety relieved him of all his worries that he carried from his childhood. He decided to grow the variety in his field in the next season. In the meantime, he attended IRRI supported training on mechanization in paddy field organized by KVK Morigaon. This drew his interest to try machine transplanting in his field. Looking at his enthusiasm, in Boro season 2020, KVK Morigaon allotted him one IRRI supported MTR demonstration on 1 ha area. He was also provided with seeds of BINA Dhan 11, a high yielding STRV introduced by IRRI. Additionally, he also brought 40kg seed of Tripura Sekon from KVK Morigaon. With the help of KVK and IRRI field staff, he raised mat nursery for 2 ha of land. To encourage him further, on February 27, 2020, IRRI organized a visit of German Delegates comprising of the Federal Minister for Economic Cooperation and Development, Dr.Gerd Müller, to his field on the day of transplanting. The minister visited his mat-type nursery, interacted and appreciated his efforts and interest, and asked him to engage in the field with more innovative technologies. The paddy in his field is now ready for harvesting. He is expecting a bumper yield this time.

## FILLING THE SPATIO-TEMPORAL GAP

In the present scenario, development in agricultural mechanization can contribute to the improvement of agricultural practices, as well as help in improving the sustainability of the entire agricultural system. This is a much-needed input in the existing agricultural system of Assam. Every year, many farmers are compelled to keep their fertile land unproductive after harvesting of one crop, mainly the Sali paddy, because of unavailability of labour, time management, climatic challenges, etc. Keeping in mind the problems faced by the farmers of Assam, a great emphasis on agricultural farm mechanization, across the prioritized districts in Assam, was given by the Assam Agribusiness and Rural Transformation Project (APART), a Govt of Assam and World Bank-funded project. The Assam Agricultural University (AAU) together with the technical knowledge partner, International Rice Research Institute (IRRI) identified rice-fallow areas using GIS and remote sensing

extrapolation domain maps. It was observed that black gram could be cultivated in these fallow areas using a seed-cum-fertilizer drill.



*Debojit Kaman in his black gram plantation site*



Debojit Kaman, a farmer from Golaghat district is a beneficiary for the black gram demonstration under APART. He was provided with IPU 02-43 variety of black gram, from KVK Golaghat, which he cultivated in his 2 hectare field. This area was usually left fallow during the previous Boro seasons but now he cultivated black-gram crop using a seed-cum-fertilizer drill, which

helped him save time and labour cost. He was happy that he could cultivate a good crop in the fallow land at a minimal cost. Kaman was active in adopting the technology as well as the machinery.

***"I am happy that I got the help from KVK Golaghat and IRRI. I'll try to disseminate the knowledge that I have gained to my fellow farmers so that they can also get the benefit from this. This year, I have cultivated 2ha of land, but next year I'll try to shift to a larger area. The variety IPU 02-43 is good and currently, the crop is in the pod formation stage, I hope to get a good yield as well" says Kaman.***

## HOPE TO POTATO FARMERS THROUGH POST HARVEST MANAGEMENT PRACTICES

Potato is an important cash crop grown in Sonitpur district of Assam. The total cultivated area of potato in Sonitpur district is 4950 hectares. However, farmers face several challenges as far as Potato is concerned. A brief interaction with Potato farmers revealed that they face issues like unavailability of quality seeds, high cost of seeds, unavailability of quality pesticides, lack of post-harvest management knowledge, and minimal availability of Cold storage units. Also, some farmers informed that every year market price fluctuates and it varies from minimum Rs. 7/kg to maximum Rs. 14/kg from farm gate while the cost of cultivation is approx Rs. 6/ kg.

District Agriculture Office (DAO), Sonitpur organized a buyer-seller meet, where around 54 buyers and key farmers of the district participated. The Proprietor of M D Foods, a well-known food processor of the district requested the farmers to cultivate the Chipsona variety of Potato, which is a better variety for processing. The Gabharu block, which consists of seven villages namely: Kalibarichuk, Bhojkhowa, Bhomoraguri, 4 No. Sirowani, 1 No. Sirowani, Rajbharal, Jorgarh was identified by the DAO, as a Potato production cluster for implementing the interventions of the World Bank-financed Assam Agribusiness and Rural Transformation Project (APART). These seven villages had been cultivating table potato varieties in 578 hectares area. For the FY 2019-20, DAO, Sonitpur allotted six Lady

Rosetta and one Chipsona-4 variety of potato for demonstration under APART in Gabharu block. The planting (processing variety) was done in November-December, which was monitored and visited by the APART and ATMA time to time to check the crop growth and advisory on scientific crop management practices in consultation with the International Potato Centre (CIP) . Most of the farmers were happy with the yield of the potato (average 3 ton/ bigha) but marketing and storage were again a challenge for them.

A market survey was taken up by the district ATMA along with the participants of the potato Value Chain School (VCS), organized by CIP and APART. The survey was conducted to make the participants understand the potato supply chain, where they also got the opportunity to interact with the potato traders and processors of the district.

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CIP is a knowledge partners in APART on potato value chain. CIP is headquartered in Lima, Peru, has a country office in New Delhi, India. CIP also has an APART office in Guwahati and operates with full time team in Assam

An important finding from the survey was that the local potato is not graded, which was the main reason why the farmers were not getting a good price, even though the local prices are influenced by the price in the national market. The traders also informed the availability of only two cold storage units in the district, but only one was functional, which was yet another challenge for the potato farmers. To overcome the storage issues related to post-harvest management (PHM) of the produces, a demonstration for horticulture crops under APART,

was organized in Gabharu block, where a total of forty participants attended the programme, including the district ATMA officials. The district representative of Cluster Development Technical Agency (CDTA) i.e. M/s Grant Thornton, Sonitpur, M/S M.D Foods, Inspector from Regulated Market Committee (RMC), officials from Project Coordination Unit (PCU) attended the demonstration programme. The participants were trained by experts from APART.



*Potato market survey by APART team*



*Post Harvest Training in progress*

The Proprietor of M.D Foods desired to have a sample of Lady Rosetta variety of Potato to confirm procurement from the APART demo farmers. He informed that he was planning to buy potatoes from other states which had to be done through bulk purchase and long-distance transportation, incurring high running capital investment and also cold storage facilities, which in the long run minimizes the profit margin. The unavailability of cold storage facilities, also adds to the challenges. Therefore, procuring locally grown potato supply is an advantage of sequential buying and also reduces storage time and costs in the cold storage drastically. A 2 kg sample of the variety was sent to M/S M D Foods by the District Agriculture Office, Sonitpur with help of BTM, Gabharu and Team leader of CDTA, Sonitpur.

The specifications and quality of the potato met the requirements and M/D Foods confirmed their procurement of the potatoes and an MOU was signed between the farmer group and M/s M D Foods for finalizing the Potato procurement, where it is stated

that M/s M D Foods will initially procure 100 kg of Lady Rosetta variety of Potato at a price of Rs.18/kg excluding transportation charges and after the response from the market on they will place their next demand, which was accepted by the farmers. The MoU also stated that the quantity will be increased in the coming years.

While the market linkage has been initiated this year, the plan is to have a sustainable integration with the industry over the years and even after the exit of the Project. As learning from the PH demonstration, farmers have kept the potatoes in bamboo racks for few days and it was found that that the quality was maintained at the time of sell and they were confident that this type of storage (for approx. three months) will help them maintain the quality as required by the processors.





*Mou signed between the farmers and M/S M D Foods for purchase of potato*

## REAPER: A GAME-CHANGER FOR HARVESTING PADDY IN CACHAR

Harvesting is an important phase and the farming community in Assam practice manual harvesting using a sickle, which is time-consuming and labour intensive. It takes around 28-30 labours to harvest 1 hectare of paddy land, with high drudgery and cost for those who need to harvest large fields in a limited period. Labour shortage is a major challenge during the peak harvesting time. To overcome these challenges in harvesting, the use of mechanized machines was considered as a good option. Taking forward the introduction of mechanized

machines, paddy reaper was introduced in 9 districts of Assam including Cachar.

In the first year of the implementation under APART, Krishi Vigyan Kendra (KVK) Cachar with technical support from IRRI, organized the demonstration of harvesting with reaper to the farmers. The demonstration of the machine was quite effective and motivating, Abu Bakkar Barbhuiya of Barik Nagar (Part II), Cachar came forward to procure a reaper with an investment of INR 1, 75,000, in November 2019.



*User friendly Reaper being used in the paddy fields to harvest paddy*

Besides using the reaper to harvest paddy in his field, Abu took the business advantage and started to lend the reaper on a hire basis to others as well. He charged INR 400 per bigha as a service fee. But initially, it was not easy, as the operator for handling the reaper was hired on a daily wage basis and he could harvest only 2-3 bighas of paddy in a day, which was not viable. Later, he changed the hiring charge of the reaper to INR 500/- per bigha and also the payment structure of the operator and fixed the payment based on the area harvested i.e. on a commission basis. It was mutually agreed at INR100/bigha of the harvested area. The arrangement worked and also increased the efficiency of the operator. He started harvesting 10-12 bighas of paddy in a day also with good coverage. According to the GIS data, in 2019, the total paddy grown area was 61.0 ha (458 bighas) in Barik Nagar (Part II) in the Sali season, out of which the reaper harvested 250 bighas of paddy, that is 54.6% of total paddy area. Immediately after completion of harvesting in his village, Abu shifted the reaping machine to the nearby village and harvested

160 bighas of paddy. In 2019 Sali season, he could harvest a total of 410 bighas within 45 days and earned INR 2,05,000, which was a good turnover as compared to his initial investment.

*Abu expressed, "In my area, due to limited labour, harvesting starts usually late. It starts in December and goes up to February. This time, with the help of the reaper, we could complete the harvesting of paddy within December. Reaper saved my time and became a source of income for me. In this season my net profit is INR 30,000. I thank IRRI and KVK Cachar for giving me the opportunity to the illustrious training on postharvest mechanisation."*

## GOOD ENVIRONMENTAL PRACTICES ADOPTED BY FARMERS UNDER APART

### *ALTERNATE WETTING AND DRYING (AWD) - A TECHNIQUE FOR PRECISION MANAGEMENT OF IRRIGATION WATER*

The Alternate Wetting and Drying (AWD) technique for irrigation was shared by IRRI to the farmers of Gabharu block (cluster), Sonitpur district, the farmers came forward and adopted the technique. Jaher Ali a farmer from Koroini Bengali Gaon started using the technique in his plot for Bodo paddy, Bina Dhan-11. It was observed by the farmers that it helped in the management of irrigation and was cost-effective. It also helped in reducing the fuel cost without affecting the yield. Several studies have also indicated that AWD reduces the emission of methane (CH<sub>4</sub>), a potent GHG from the rice field.



*AWD technique for management of irrigation water*



***SAFE HANDLING OF PESTICIDES UNDER APART HORTICULTURE DEMONSTRATION***

During the environmental monitoring, it was observed that in the potato demonstration plots (Variety-Kufri Surya) in Golaghat district of the Project, that protective clothing was not being used by the farmers during the application of pesticide. It was also observed that the farmers were seen to make pesticide dilutions beside the demonstration plots during afternoon hours and with bare hands, which made them vulnerable to pesticide exposure. With the intervention of the District

Environment Coordinator, considerable changes were adopted by the farmers and they have started following proper pesticide handling methods like use of mask, gloves and shoes while handling pesticides, applying insecticides or pesticides in the direction of the wind besides using only the recommended dose.



***INTEGRATED PEST MANAGEMENT ADOPTION IN CABBAGE DEMONSTRATION PLOT AT GABHARU BLOCK, SONITPUR***

Muslem Uddin, a farmer from Gabhuru block in Sonitpur district used homemade farmyard manure (FYM), vermicompost and cocopit as an organic manure for maintaining the soil health management. As a component of Integrated Pest Management (IPM), he used Blue sticky traps (mechanical control) and mustard as a trap crop (cultural control) for management of polyphagous insect pests. This innovative method helped in reducing the use of pesticide in his field but also in maintaining healthy agro-ecosystem. He converted his ideas and efforts into wealth with the adoption of integrated pest management practices.



*Homemade farmyard manure (FYM) being used in Cabbage plantation*



**SALE OF FISHES BY FARMERS SUPPORTED BY THE APART DURING THE LOCKDOWN PERIOD**



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