



## ASSAM AGRIBUSINESS AND RURAL TRANSFORMATION PROJECT (APART) E-newsletter

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### ASSAM AGRIBUSINESS AND RURAL TRANSFORMATION PROJECT (APART)

#### EMPIRICAL PLANTATION IN MAJULI

As an initiative for a better and cleaner surrounding, the Environmental Safeguard team of APART took up “**Empirical Plantation under APART**” with a wider objective for bringing about immediate as well as long term benefits for the communities and additionally balancing the ecosystem. The first pilot activity was initiated at Bokora-Chitador Road under APART in Majuli under Jorhat division involving local communities and project officials to commemorate the international “**World Environment Day**” 5th, June 2019. Around 200 saplings of “*Triphala*” species like *Embelica officialis*, *Terminalia bellirica* and *Terminalia chebula* were planted along the road. The local communities were motivated with this kind of initiative and came forward to take up the maintenance responsibilities of these plants in the long run. The saplings for the event were provided by CAMPA Nursery, Divisional Forest Office, Jorhat. This initiative of plantation in the rural roads aims towards:

- I. Ecological benefit like – protection of soil erosion, road embankment protection, balanced local environment
- II. Economic empowerment of community by providing Fund for community
- III. Strengthening the social bonding and the program can be demonstrated as Model of Community Plantation for self-sufficiency



Plantation in the Bokora-Chitador Road under APART in Majuli on the occasion of World Environment Day

## A LETTER OF THANKFULNESS



সোণ-অনুভব-

অসমৰ 'বিশ্বকৰ্ম' কৃষিৰ জিৰাজিৰা অঞ্চলৰ গাওঁ গুৰিগাঁওত  
গাওঁ, আছিল নৱাৰ ১৯/১০ বছৰ আগত নৱাৰ এই অঞ্চলত  
কৃষক সকলে বিভিন্ন খেতিৰ লগত কৃষি (২) আছে,  
আম- ৬০/৬৫ বছৰ আগত নৱাৰ এই অঞ্চলত কৃষক আছিল  
আম খেতি কৰি জীৱিকা- নিৰ্বাহ কৰি আছিল, বৰ্তমান  
অসমৰ ডিউ চাও জিৰাজিৰা অঞ্চলত অধিক আম খেতি  
কৰা হয় মূলি যোগ বিক্ৰম,

এই অঞ্চলত কৃষকে পুৰণি পদ্ধতিৰে চৈৱৰি চৈৱৰি খেতি  
কৰি আহিছিল, বৰ্তমান কৃষি বিজ্ঞানৰ অধিক বিজ্ঞান, যন্ত্ৰপাতি,  
বিভিন্ন চাইৰ আভিৰ খেতি কৰা নৱাৰ পৰামৰ্শ লাভ কৰি আধুনিক  
পদ্ধতিৰে খেতি কৰি কৃষক সকলে যন্ত্ৰপাতি লাভ কৰিছে,

বিশেষকৈ আম খেতি কৰিছে এই অঞ্চলত হাজাৰ  
হাজাৰ আমৰ বনুৱাৰ কৰ্ম-সংস্থান দিয়া হৈছে, আম খেতি  
সংস্থান লাভ হৈছে সকলো মিত্ৰ মিত্ৰ পৰিচালনা লগত লগ  
পাতিছে। সদা কৰ্ম কৰা গৈছে বৰ্তমান জিৰাজিৰা অঞ্চলত  
মি অৰ্থনৈতিক অৱস্থা, জৰিয়ত-আমিত্ৰ আদি সকলো এই  
আম খেতিয়েই মূল আৰ্থিক ধৰ্ম,

মই এই অঞ্চলত পুৰণি আম চাইৰা আছিল।  
সোণৰ চাইৰাৰ আগত নৱাৰ পিছত পুৰণি ও বিজ্ঞানৰ পিছত  
পুৰণি আম খেতি কৰা চাইৰা এই খেতিৰ পৰি পুৰণি  
২৫, ২৫০০ আম খেতি বৰ্ষত মই APART ৰ খেতি  
মই এই নকৰাকৈ (বিজ্ঞান) আম খেতি অঞ্চলত লগ  
কৰিলো, মই লগ নকৰাকৈ খেতি কৰি খেতি উৎপাদন  
লগ আম ২৫% আহি ২৫%

এই চাইৰা খেতি কৰি আম উৎপাদন খেতি ২৫%  
(খেতি কৰা- উৎপাদন আম ২৫% লগত, কিন্তু খেতি  
কৰা ২৫% আম- অৰ্থাৎ ২৫%

এই এই নতুন পদ্ধতিত KUFRI POKHRAJ আৰু KUFRI  
JYOTI বীজৰ জোপৰ কৰিছিলো, লগত আম উৎপাদন  
খেতিৰ পৰি আম ২৫% অধিক লাভ হৈছে, মই এই নতুন  
পদ্ধতিত খেতি কৰি ২৫% উৎপাদন আম ২৫% আম লাভো,

এই নকৰাকৈ আম খেতি কৰি মই উৎপাদিত অধিক আৰ্থিক  
মৰ্কাৎ কৰিছিলো,

- ১) উৎপাদন লগ আম ২৫% আহি
- ২) এই Zero Tillage আম খেতিৰ পদ্ধতিত,
- ৩) খেতিৰ জোপৰ লগত লগত আম উৎপাদিত আম লাভ হৈছে,
- ৪) জোপৰ লগত কীৰ্ত্তি লগত আম উৎপাদিত আম লাভ হৈছে,
- ৫) অধিক দি এৰাৰ জাতি মৰ (Straw) লাভ,

খাতিৰে মই খেতি কৰিছো আম আৰু খেতি বৰ্ষত আম  
২৫% আম লাভ এই পদ্ধতিত খেতি কৰিছিলো,

এই অসমৰ কৃষক আৰ্থিক আৰ্থিক লগত আম সকলো  
কৃষকে এই নতুন পদ্ধতিত খেতি কৰি উৎপাদন লগত আম  
কৰা ও লাভ কৰিছে ২৫%

মই সোণৰ আম এই Zero Tillage পদ্ধতিত খেতি  
কৰিছিলো আৰ্থিক কৰা লগত আম-সংস্থান লগত আম  
কৰা আম কৰিছিলো,

কৃষকৰ খেতি :- ১) Sat Bhumi Potato Comp- Gingia.

২) APART ৩) ARIAS

৪) C.I.P ৫) Dr. Brinjeet Kumar.

৬) C.S.A. ৭) Bing Kong dei Bodo.

খিৰ :- ১) কৰা- আম  
২) আম- আম

৩) আম- আম

৪) আম- আম

৫) আম- আম

৬) আম- আম

৭) আম- আম

৮) আম- আম

## Success story on Zero Tillage potato cultivation

Mrs Reema Das, a potato farmer shares her experience of the Zero Tillage potato cultivation introduced by the International Potato Centre (CIP) through APART. She adds that this innovative form of cultivation has impressed her and many farmers around her, in Gingia village, Biswanath district. She had cultivated Kufri Pokhraj and Kufri Jyoti varieties of potato using the Zero Tillage technology and could harvest ten percent more than the other varieties. She also adds on and says that the harvested potatoes are of better quality and also taste good. Moreover, the variety is not infested with any kind of disease and has a better self life.

She further expresses that with the Zero tillage technology being adopted by the potato farmers, there is a revolution in potato farming in and around her village.



## BUYER AND SELLER MEET AT KAMRUP AND NAGAON

The Agricultural Technology Management Agency (ATMA) of Kamrup and Nagaon organised a “Buyer and Seller Meet”, i.e., on 19th and 20th June 2019, at Guwahati and Nagaon, respectively, under the Assam Agribusiness and Rural Transformation Project (APART). The main objective of the meet was to provide a platform to the farmers to directly interact with the buyers and increase their access to the market. For this occasion, innovative and progressive farmers were invited from the two districts to represent themselves in the meet. The turnout of farmers in both districts was satisfactory. In the meet, various stakeholders of ATMA and APART were also present. At the Kamrup meet, farmers from various parts of the state like Baksa, Boko, Udalguri, Baihata Chariali, Rangia, Sonapur, Khetri, Chandrapur, Hajo, Sualkuchi, Dharapur and Mirza participated in the meet and farmers from Nagaon and Hojai districts participated in the Nagaon meet. The farmers were actively taking part during the interactive sessions and had queries relating to farming and market, which were clarified by representatives from different agencies and also by officials from the Agriculture department and APART. Various marketing agencies like Pepsico, Reliance Market, Mohit Marketing, Green Cover Overseas, GSB Process Food Export Pvt. Ltd., Spice Board, SS Biotech took part in the meet. The representatives of these agencies oriented the farmers on the knowledge required for selling their produce to the larger market. The farmers were made aware of the immense scope that comes with direct selling to large corporates, these days. Moreover, the Assam Seed Certification Agency (ASCA) and Assam State Agricultural Marketing Board (ASAMB) were also invited to inform the farmers about the various criteria of cultivation, certification and marketing. The agencies also suggested new techniques and tools of farming and recommended the farmers to adopt them to make the best of the present agriculture scenario. At the end of the meet, the direct deal was signed on the purchase of a hundred tons of commodities between farmers and buyers at the Buyer and Seller meet, Nagaon.

Under APART, 16 districts (undivided districts as on 1st April 2016) are been covered and the project is being implemented since 2018, with the project development objective “add value and improve the resilience of selected agriculture value chains, focusing on smallholder farmers and agro-entrepreneurs in targeted districts of the State of Assam”. The buyer-seller meet is aligned towards achieving the project objective and is planned to be organised in the remaining 14 APART districts of Assam very soon.



*Buyer sellers meet in Kamrup and Nagaon respectively*

**SELECTION OF ROADS UNDER APART FOR 2019-20 IN PROJECT DISTRICTS**

Development of a country depends on the connectivity between different places with adequate road networks. Roads are major channels of transportation for carrying goods and passengers; they play a significant role in improving the socio-economic standards of a region. Road constitutes the most important mode of communication in an area and forms the basic infrastructure for the development of the economic growth of the country. APART project has also emphasized this fact and higher priority has been given for construction of rural access roads.

As per the requirement of APART project, the 2nd phase of road selection in 16 project districts was started with the help of the district level officials. District Road Selection Committees in all project districts took the lead role and showed tremendous effort for the selection of feasible interior roads. The Road Selection Committee under the Chairmanship of District Agriculture Officer and officials from other line departments as members conducted several district-level meetings with various stakeholders, villagers and line departments for an effective road selection process. Members of the District Road Selection Committee also conducted site visits to the selected roads. The selected list of roads by the district committee was sent to Deputy Commissioner of concerned districts, to carry out the due diligence for land ownership.

Almost all the districts have successfully completed the road selection process and proposed approx. 49 nos. of roads, under various revenue circles of the district. This consists of 97.6 km approx. of road lengths that are proposed during the 2nd phase of road selection. Sonitpur district has proposed the highest nos. by selecting 6 nos. of roads. Meanwhile, Golaghat district has proposed highest road lengths by proposing 14.8 km of roads.



*Preliminary survey of the selected roads by the district Road Selection Committees*

**SHOWCASE ON FARM MECHANIZATION AND POST-HARVEST TECHNOLOGIES**

A technical showcase on Farm-Mechanization and Post-Harvest Technologies was organized by Krishi Vigyan Kendra (KVK), Nagaon in collaboration of Assam Agricultural University (AAU), Jorhat and International Rice Research Institute (IRRI) at Borkacharigaon village, Nagaon on 27th of June, 2019. The day-long programme also included a field demonstration session.

Dr. Kanwar Singh, Resident Consultant, IRRI highlighted the objective of the program and its expected outcomes, focusing on how mechanization in farming helps the farmers discover the scope of cultivating paddy and other crops in two seasons, thus paving the way towards doubling their conventional income. He also explained that post-harvest management of farm outputs is equally important for a better market price. Dr Singh further explained the positive points of the newly introduced paddy variety Bina 11 and urged the farmers to adopt the cultivation of the same, if they find it suitable. Dr Prasanna Kumar Pathak, Director of Extension Education and Dr.Mrinal Saikia, Associate Director of Research, AAU, Jorhat focused on increasing mechanization in the field to reduce labour costs and better time management to increase in the yield. Dr Anil Kumar Tripathi, Director, Indian Council of Agricultural Research-Agricultural Technology Application Research Institute (ICAR-ATARI) in his speech provided suggestions to carry out a market demand analysis on the types of different rice varieties being introduced through APART and get feedback from the farmers. He also requested everyone to work on strengthening the seed system for paddy in Assam. Shri Ashok Khound, District Agriculture Officer, Nagaon, stressed on the scope of various schemes which can be converged with APART to offer wholesome and integrated benefits to farmers, he also appreciated the farmers of the area for being exceptionally proactive. Shri Harin Ch. Baishya, Agriculture Coordinator, APART, briefed about APART activities and highlighted that the project is primarily focused on post-harvest activities and successful market-industry linkages of Agri-Horti produces.

Shri Jadav Basumatary, a leading and progressive local farmer was also invited to share his experiences on the initiatives of the project. Expressing his gratitude to the Project, Shri Basumatary said that practical exposure on farm machinery have helped the farmers to gain knowledge and access to improved farming technologies. Shri Jadav Saikia, Deputy Commissioner, Nagaon, appreciated the practical exposure programs initiated by the Project and added that these type of demonstrations help in boosting the farmer's faith on mechanization. He also thanked the farmers for their interest in the program and encouraged them to continue farming by adopting the methods and techniques towards progressive and sustainable farming.

The second part of the program, the technical showcase of the farm machinery was conducted in fields with a practical demonstration of the following machines:

1. Sprayer cum Fertilizer Spreader
2. PTO Mounted Portable Rice Mill
3. Solar Bubble Dryer
4. Axial Flow Thresher
5. Wet Drum Seeder
6. Power Weeder



## 7. Mechanical Rice Transplanter

## 8. Crop Harvester

This user-friendly and affordable machinery were appreciated by everyone present. Farmer Minu Bordoloi from Bebeja village expressed herself and said that the portable rice mill that was showcased has helped in reducing the time taken for the milling rice and added that if provision for polishing the rice was also added in it, it will be more beneficial for the farmers. Bina Basumatary and Sunita Basumatary from Kandali village showed interest in the solar bubble dryer and mentioned that through community procurement via Self Help Groups (SHGs) or through community hiring, they are interested in availing the dryer. Meghali Baglari from Borkacharigaon village gave a suggestion to put the banners in vernacular language (Assamese) for better understanding of the local farmers, which was readily accepted by the organizers. Junbai Gara of Naharbari village, who harvests her fields manually, was enthusiastic about the crop harvester and added that its portable nature is very woman user-friendly and she would like to acquire the same through proper facilitation. Thaleswar Basumatary from Borkacharigaon village showed enthusiasm in using the mechanical rice transplanter as he feels it would lessen the labour cost and time required for transplanting. The program ended with feedbacks from officials and farmers.



*Crop Harvester*



*Mechanical Transplanter*



*Sprayer cum fertilizer spreader*



*Wet Drum seeder*

**WORLD ENVIRONMENT DAY**

World Environment Day 2019, with the theme of “Air Pollution” was observed by ARIAS Society in a meaningful way. The Environmental Safeguards team of ARIAS Society organized the programme of the World Environment Day to set aside not just as a public education effort, but also a way to celebrate the hard work and successes over the year. It calls for action from people from different disciplines in society to do something for the environment so that their collective efforts can have a positive impact on the environment.

This tree plantation drive was initiated with an aim to combat the ever-increasing environmental issues, besides enhancing the beauty and balance of the local environment. Since the theme for this year was ‘Air pollution’; and in an effort to contribute towards a better quality of air that we breathe, and to commemorate the World Environment Day (WED) 2019, ARIASS environment team planted and distributed around 70 saplings and also seeds in and around the office campus. Trees absorb harmful gases and emit oxygen resulting in increase in oxygen supply. On average, a single tree emits 118 kg of oxygen annually. Similarly, a fully-grown tree is sufficient for 18 human beings in one acre of land in one year stressing the importance of tree plantation for mankind.



*World Environment Day being celebrated at ARIAS Society*

**6TH SPCC MEETING**

The 6th meeting of SPCC for APART has been held on 26th June 2019, under the chairmanship of Shri Vinod Seshan, IAS, State Project Director (SPD), ARIAS Society. The meeting was attended by representatives from the OPIUs, Heads of the Departments (HoDs), Nodal Officers (NOs) of the Commissionerates/Directorates/Agencies of APART, and International Agencies, key Consultancy Agencies hired under the project and officials from the Project Coordination Unit (PCU), ARIAS Society. Matters relating to the expenditure of the Project till 30th June 2019 were discussed besides proposal for additional manpower requirement, submission of proposal for Biosecurity measures, fodder demonstration, vaccination under AHVD, matters related to financial and procurement management, and matters related to the implementing agencies were discussed. The progress made by the Project during 2018-19 was appreciated.



*SPCC meeting in progress*



## WORKSHOP ON ASSESSMENT OF ACCEPTANCE LEVEL OF MACHINES INTRODUCED IN APART CROP VALUE CHAINS

A workshop on Assessment of Acceptance level of machines introduced in APART crop value chains was held on 10th June 2019 at the Conference Hall of the Chief Engineer (Agri), Agri Campus, Khanapara, Guwahati. The programme was attended by representatives from IRRI, CIP, NERIWALAM and officials from PCU.

Dr Pankaj Baruah, Director, NERIWALAM, presented on the Agri mechanization scenario in Assam and highlighted that direct-seeded rice (DSR) may be more profitable than the transplanted rice, as far as mechanization is a concern.

Representative from IRRI also presented on the initiatives taken up by APART by introducing different types of machinery for paddy like (i) seed cum fertilizer drill (ii) mechanical transplanter (iii) drum seeder (iv) sprayer cum spreader (v) power weeder (vi) combine harvester. During the harvest stage, the machines being introduced include combine harvester and reaper. Post-harvest phase machineries include (i) axial flow thresher (ii) open drum thresher (iii) solar bubble drier (iv) re-circulating batch drier (v) Super bag (vi) RCC ring bin while in the rice (processing) value chain, the machines being introduced include (i) portable rice mill (ii) indent cylinder separator (iii) dry grinding machine (iv) rice puffing machine (v) rice flake machine. CIP presented the mechanization initiatives taken up for potato farming under APART like (i) two-row potato planter and (ii) two-row potato digger (harvester).

IRRI and CIP presented their findings from the field and the results were encouraging as the machinery introduced were farmer-friendly and were well accepted by the women farmers as well.



*Workshop on assessment level of farm machineries in progress*

## Disease Preparedness Workshop

A stakeholder Workshop on Disease Preparedness for Agriculture & Horticulture crops was organized by APART on 7th June 2019 and was attended by officials from ARIAS Society, Assam Agricultural University, Jorhat, ATMA Kamrup, ATMA Morigaon, Directorate of Agriculture, International Agencies (IRRI, World Veg, CIP), Skymet, and farmers from Kamrup, Morigaon, Nagaon, Nalbari & Barpeta districts. Discussions were held on Disease identification of each crop in the field; Pre-emptive management strategies; Cultural Strategies; Control Strategies; Suggested varieties; Organic way of disease management etc. Experts shared few readily available solutions for crop protection and suggested that any other issues, farmers can directly report and also submit a specimen of the diseased crop to the nearest KVK centre for further investigation. The Skymet weather service was requested to integrate pest and disease prediction mechanism within weather intelligence & crop advisory system for betterment of local farmers.



## SUCCESS STORIES

## BINA DHAN 11 IMPRESSES RICE FARMERS

The paddy farmers of Mukalmua village, under Borkhetri Development Block, Nalbari district, with the initiative of the International Rice Research Institute (IRRI) through the Assam Agribusiness and Rural Transformation Project (APART) cultivated the newly introduced BINA DHAN 11 variety of paddy for the very first time. Around 15 paddy farmers of the village took up the demonstration of Bina Dhan 11 in their plots of land, measuring a total of 3 ha. Traditionally these farmers cultivated paddy varieties like Chinese Boro, JK, Indam, Advanta and others, and this was the first time that they were motivated to try the new variety of BINA Dhan 11, a flood-tolerant variety.

The farmers followed the guidelines provided to them by IRRI and ATMA, Nalbari district and prepared the nursery bed, which was ready to be transplanted within 21-25 days. After the plantation, it took exactly 120 days for the paddy to be ready for harvest. The farmers observed that within 21 days the crop started sprouting, where other varieties take a longer time. The harvest was very good with less labour intensity and less water and manure inputs and they harvested around 23 maunds/bigha (approx) in the 3 ha paddy cultivation area. Shri Aminur Rahman, a progressive paddy farmer who has been cultivating paddy for last 25 years, has been a pioneer in motivating his fellow farmers to take up cultivation of Bina Dhan 11, for demonstration in the Sali season. He was confident that this flood resilient variety of paddy will give them a good harvest, which proved right. Aminur cultivated 7 kg/bigha of Bina Dhan 11 in his total area of 3 bighas. He expressed that Bina Dhan 11 has impressed the farmers in his village and also that of the neighbouring villages. Even before the paddy was harvested; he was receiving queries from other farmers for seeds in the next Sali season. Aminur added and said, “cultivating the Bina Dhan 11 variety was less labour intensive and did not need constant watering besides fewer fertilizer inputs”. Aminur did not use any pesticides in the paddy, but yet the vegetative growth of the paddy was impressive as compared with the other crops. In his individual land of 3 bighas, he harvested around 25 maunds/bigha, substantially higher, as compared to his previous yields of other varieties. As a progressive farmer who has been cultivating paddy for many years, Aminur is happy with the variety and the harvest and says that he will extend his paddy cultivation area for Bina Dhan 11 in the coming Sali season. With marketing support extended from APART, the farmers are happy that the post-harvest responsibilities of the paddy are taken care of by the Project.

With a good harvest from their demo plots this Sali season, the farmers of Mukalmua village are ready to adopt the Bina Dhan 11 variety for the next Sali season. They are confident that the new variety of paddy will also be palatable and accepted well by the people of the region.



*Aminur harvesting his Bina Dhan 11*



*Bina Dhan 11 crop with good yield*

### POTATO CULTIVATION IN MAYONG AREA, MORIGAON

Mayong area in Morigaon district is predominantly favourable for potato cultivation. About 465 numbers of farm families are involved in potato cultivation. Through the World Bank Financed, Assam Agribusiness and Rural Transformation Project (APART) introduced new technology along with machinery, such as potato planter and potato harvester (Mechanised farming ) for the cultivation of potato in Raja Mayong area and farmers have come forward to adopt this new technology. Among them a progressive farmer, Sri Jayguram Nath adopted the new method of mechanized farming and gained a good profit as compared to traditional practices that he used to practice earlier. Now he is even more interested to adopt the mechanized farming in the next season.

Sri Jayguram Nath hailing from Morigaon cultivated the Kufri Pukhraj variety in an area of 0.25 ha the last Rabi season (2018-19) of. He started sowing the variety on the 21st of November, 2018 and harvested on 5th of February, 2019 and got a yield of 255, Quintal,/ ha. He used the machinery like a potato planter and potato harvester introduced through APART. According to Jayguram, using these new technologies helped him in reducing labour, saving time and money and thereby reducing the overall cost of cultivation. After harvesting, as a post-harvest management practice, he and his fellow farmers took the following steps: they kept the potato mixed with dry sand for 3 to 4 months and made beds of 2 feet height above the ground level, with bamboo and wood, and uniformly laid the potato over the beds.

#### Comparative production statement of Mechanized farming and Traditional farming of Kufri Pukhraj

	Mechanized farming(ctl/ha)	Traditional farming (ctl/ha)	Sale price(ctl)	Additional income over traditional farming(ha)
Productivity	255ctl/ha	210 ctl/ha	Rs.700/ctl	
Gross income	Rs.1,78,500/-	Rs.1,47,000		31,500/-
Cost Benefit Ratio(C.B.R.)	1:3.3	1:1.7		

After seeing the success of cultivation of potatoes using farm mechanization and new techniques, more than 50 farmers from Mayong and neighboring villages have come forward to adopt the new technologies in their farming practices. All the machines are presently available with KVK, Morigaon , for demonstration as well as for renting out to the farmers.



Potato harvest from the cultivation of Shri Jayguram Nath



**ASSAM STATE WAREHOUSING CORPORATION (ASWC): EXPOSURE VISIT**

A six-day exposure visit was arranged by the Assam State Warehousing Corporation (ASWC) under APART from 9th to 14th of June, 2019. A team of 11 officials from ASWC, Dept of Agriculture, Assam Agriculture University and APART visited the National Commodity and Derivatives Exchange (NCDEX), National E-Repository Limited (NERL ) and Maharashtra State Warehousing Corporation (MSWC) and also Sahyadri Farms [a successful Farmer Producer Organisation (FPO) based in Nashik]. The core objective of the tour was to gain knowledge on the warehousing systems of Maharashtra and their adoptions of the upgraded activities.

The exposure visit was informative and several vivid scopes for adaptabilities in Assam scenario were also observed. It was observed that the current nationwide system of Electronic Negotiable Warehouse Receipt (eNWR) issued under Warehousing Development and Regulatory Authority (WDRA) act through NERL is an immediate scope that can be implemented by ASWC, where the stored commodities of Assam can have a national acceptance and recognition. This facility will also provide proper quality checking procedures which can be achieved through aligning certified laboratories into the warehousing network of Assam. eNWR is a better management system that helps in better tracking and checking of availability of products, besides helping in linking with Govt. agencies like Assam State Agricultural Marketing Board (ASAMB) as well as private parties. The NCDEX system of Warehouse Service Providers stores 15-20 non-perishable commodities with stringent quality parameters for the trading of commodities at current or future dates. A future contract is signed, which is an agreement between the buyer and the seller, wherein the buyer promises to pay the agreed-upon amount at the moment of a transaction and the seller delivers the commodity at a pre-decided date. The price of the commodities listed in the NCDEX site is updated at regular intervals. Each commodity has a base price i.e. the price prevalent in the district, and it is determined by collecting the data for the spot price of that commodity from the markets of that particular district. The price in other areas is calculated by adding or deducting a premium on the base price. As an online market for crops, NCDEX has increased market transparency and price discovery. NCDEX warehouses have high-level maintenances through stacking system, sampling system for quality testing, housekeeping, stock audit, fumigation, aeration, manpower training, stack sealing, Radio Frequency Identification tags in spices and customer grievance management. During their visit to MSWC warehouses, the officials observed that the process was streamlined through conversion to electronic versions, besides their widespread use of the cold chain system.

The team later visited the successfully run Farmer Producer Company named Sahyadri Farms based in Nashik, founded in 2011 and now has 11 Farmer Producer Companies (FPCs) operating under it with 623 individual shareholders. The organization supports 6610 farmers who produce different commodities like grapes, banana, mango, pomegranate, guava, etc. The 11 FPCs handhold farmers with quality input supply, custom hiring centre, buy-back of the outputs and other social activities. The uniqueness of this farm is its exceptionally smooth and planned out working system, and its QR code-based labelling system which upon scanning through any smartphone gives details of the farmer who had produced the commodity, GPS location of the growing area, date of plantation and harvesting. This not only restores the faith of consumers towards believing the produce but also gives satisfaction through knowledge sharing. Sahyadri Farms is an ideal model for replicating towards the upcoming 100 Farmer Producer Organizations (FPO) to be formed under APART project.



## QUALITY FISH SEED PRODUCTION UNDER APART AT DEPARTMENTAL FISH FARM

The Department of Fishery under APART initiative has taken up the process of up-gradation of hatcheries & establishment of seed multiplication centers at different departmental Govt. fish farms. As availability of quality seed of different species at desirable time, is an important element in aquaculture practices, the hatcheries play a significant role in sustainable aquaculture production system. Fish breeding expert, WorldFish, Dr. Trong, along with Mr. Padma Nath Das, Director of Fisheries, Assam, Dr. Sanjay Sarma, Project Coordinator cum Nodal officer, APART and Dr. R. Suresh, Project Coordinator, Assam WorldFish Project visited the Upahupar fish seed farm, Darrang and Rangia fish farm, Rangia and different fish farms in Goalpara and Nalbari districts from the 17th to 20th June, 2019. They surveyed these farms and interacted with the farm in charges on the technical problems, advantages and feasibilities of the farm for up-gradation and infrastructural modifications required for establishing the multiplication centre. The team also interacted to understand the functioning and management process of the private seed producer sectors. On the 21st of June 2019, Dr. Trong attended the interactive meet with the Engineering Consultants, Fisheries, project officials of APART, and DoF Officials and discussed on the Hatchery up-gradation & Seed multiplication, at Meen Bhawan, Guwahati.



*Quality fish seed production under APART*

**ARIAS Society**

(An Autonomous Body under Govt. of Assam)

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

Tel: +91 361-2332125; Fax: +91 361-2332564;

email: [spd@arias.in](mailto:spd@arias.in), Website: [www.arias.in](http://www.arias.in) For any grievance, you may email at [grievances@arias.in](mailto:grievances@arias.in)