



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

4th issue  
( June 2019' )

## ASSAM AGRIBUSINESS AND RURAL TRANSFORMATION PROJECT (APART)

### WOMEN'S PARTICIPATION IN PARTICIPATORY VARIETAL SELECTION (PVS) : EFFORTS OF INTERNATIONAL POTATO CENTRE (CIP)

The Participatory Varietal Selection (PVS) approach of the International Potato Centre (CIP) lays emphasis on gender and adopts inclusion and participation of women farmers in the implementation of the various project activities. It is ensured that gender balance is maintained in all the selection processes, so as to get the involvement of both men and women. Thus, enabling to capture and document the perception of both men and women in different aspects of potato cultivation. So far, 150 women farmers have participated in various PVS workshops held at Barpeta, Sonitpur, and Nagaon.

#### SPECIFIC OBJECTIVES OF PVS :

1. To obtain systematic feedback into the breeding program based on end-user desired key traits, features, and preferences.
2. To improve the distribution of genetic material based on end-user assessment.
3. To gain efficiency in the breeding process by increasing the likelihood of end-user adoption and diffusion, and reducing the time required for variety release (3-5 years).

#### APPROACH FOR PVS

**Mother and baby trial approach:** Mother trial is placed at the research station where the trial is undertaken under the constant management and supervision of researcher. Baby trials are planted in the farmer fields under farmers managed conditions, wherein the real genetic potential of the cultivar is captured. Therefore, yield evaluations and PVS selections are done under both the contrasting management situations to capture the true potential of the given cultivar.

So far, two workshops one at the vegetative stage and another one at the harvest stage have been conducted. During the vegetative stage, farmers were asked to select the best clones during that crop growth period along with three main important selection criteria like virus resistance, late blight resistance, and plant vigor. During the workshop, the farmers selected Kufri Chipsona-3 as the best clone all across three districts with virus being the major problem during vegetative crop period that hinders the crop growth.

During harvest stage, both the baby and mother trial crops were harvested one day before the workshop and kept it for final evaluation. On the day of the workshop, the evaluations of all these three types were conducted.

**Free listing group discussion by gender disaggregate approach:** This approach helps to understand the farmer's perception regarding the different criteria involved during the harvest stage evaluation. The group was disaggregated gender wise and had about an hour-long discussion pertaining to visual selection of traits in relation to skin color, size of the tuber, flesh color, depth of the eyes, number of eyes etc., Farmers perception were captured on different aspects of end user traits.

**Participatory varietal selection:** Farmers were asked to select the best performing clones according to their preference. Women farmers were asked to go for selection before men to reduce the gender influence. Six bean kernels were given to women, whereas six corn kernels were given to men for selecting the best clones. Farmers placed three kernels for the top clone, two seeds for the second-best clones, and one seed for the third ranked clone. The farmers selected Kufri Surya as the best clone followed by Kufri Chipsona-3, and Kufri Himalini. Medium sized potatoes with yellow skin color and oblong shape tubers, were the most preferred variety from the rest.

**Organoleptic evaluation:** Taste, texture and appearance of the PVS clones were evaluated after boiling. Farmers were asked to give their opinion. For each category, three evaluation scales were considered. Excellent means 5, fair means 3, and poor means 1. The mean rankings of each category were considered for final selection. Documentation based on gender wise preference of a particular variety was done and it was found that they liked the taste of Kufri Khyati followed by Kufri Chipsona-3, and Kufri Himalini.



*Participatory Varietal Selection Workshop at Vegetative and Harvest Stages involving key-stakeholders*



*Experience and Knowledge sharing of the farmers*

## PILOT LAUNCH OF WEATHER INTELLIGENCE SERVICES

The pilot launch of ‘Weather Intelligence Services’ to be provided by ‘Skymet Weather Services Private Limited’ was held on 2nd May 2019. The service was planned to be provided on pro bono basis for a period of two months i.e. from 2nd May, 2019 to 1st July, 2019 evaluate its utility to Assam.

The pro-bono weather intelligence services provided by Skymet Weather Services Private Limited as a part of pilot, inter alia include live weather, weather alerts, weather forecasts and basic crop advisory services for identified blocks of the state. The programme was attended by Shri Rajesh Prasad, IAS, Agriculture Production Commissioner, Govt of Assam and Chairman, ARIAS Society, Shri Vinod Seshan, IAS, State Project Director, ARIAS Society, Dr Ashok Bhattacharya, Director Research (Agri), AAU, Shri Jatin Singh, MD, Skymet, APART team along with farmers (including traders, processors) from Pachim Kaliabor block (Nagaon), Bhawanipur block (Barpeta), Borsola block (Sonitpur), Lala block (Hailankandi), Rongkhong block (Karbi Anglong), Ujani Majuli Block (Majuli) and Bokakhat block (Golaghat) and ATMA officials associated with APART.

Shri Rajesh Prasad, launching the programme, addressed the gathering and said that this pilot initiative, if proved beneficial for the farmers will be a major breakthrough for the farming communities to keep track of the weather forecasts and its implications. He encouraged the farmers to use the technology that Skymet will be providing to prepare and plan their farming activities.

Skymet conducted Weather Intelligence trainings and also installed automated weather stations in these selected blocks. As the project is piloted for two months, the Skymet team met the farmers to evaluate and review the impact of the Weather Intelligence services.



*APC addressing the gathering*



*Automatic Weather stations being set up in the blocks*

## REVIEW MEETING OF THE AGRICULTURAL TECHNOLOGY MANAGEMENT AGENCY (ATMA)

As part of the state level monitoring and reviewing of the progress of the field activities of APART done by ATMAs, a series of review meetings was held in the month of May 2019. The first review meeting was held on 13th May, 2019, where 5 ATMAs (districts) viz. Nagaon, Darrang, Nalbari, Barpeta and Morigaon participated and on 14th May, 2019, the second review meeting was held where Kamrup ATMA participated and on 28th May, 2019 another 5 ATMAs viz. Golaghat, Goalpara, Dhubri, Cachar and Sonitpur were reviewed. The review meetings were chaired by Mr. Vinod Seshan, IAS, State Project Director (SPD) of ARIAS Society. During the review meetings, while progress made by most ATMAs was appreciated, SPD emphasized for timely utilization of funds and submission of Utilization Certificates (UCs) by ATMAs to ARIAS Society. He also instructed the ATMA teams to start the procurement process of Sali Paddy seeds, so that timely transplanting can be accomplished by the farmers.



*Review of ATMAs in progress*

## FINANCIAL EDUCATION AND COUNSELLING CAMPS

Financial Education and Counseling Camps were designed to bring the Bankers/Insurance Companies closer to the Farmers. The Camps are designed to facilitate access to and responsible use of financial services by Farmers, Farmers Groups and Project beneficiaries and thereby help them better manage their cash flow, make productivity enhancing investments and better manage their business and non-business risks. The objectives of these camps are: (1) Create awareness on Financial Products available with the Banks for the Farmers, Farmer Groups (2) Create awareness on Governments sponsored schemes like KCC (Kisan Credit Cards) loans, PMFBY (Pradhan Mantri Fasal Bima Yojana), Livestock Insurance Services, Pension services etc (3) The risk management of the Farmers/Farmer Group's business to better manage their enterprises for profit and eliminate the loan default by on-time repayment to Banks.



***Financial Education and Counseling Camps in progress***

## STAKEHOLDER CONSULTATION OF FARMER PRODUCER ORGANISATIONS (FPOs)

The World Bank financed Assam Agribusiness and Rural Transformation Project (APART) is mandated with formation of about 100 Farmer Producer Organizations/Companies (FPOs)/ (FPCs) and establishment of same nos. of Common Service Centres (CSCs) on different Value Chains covering all APART districts with the help of hired Consultancy Firm or Service Provider (SP). In this connection, the APART districts have been divided into 3 zones for formation of FPOs/FPCs. For zone-2, activities such as baseline survey, mobilizations etc. have already been started by SP in five undivided districts.

To ensure better success of the initiative and to remove duplicity of farmers and areas for FPOs/FPCs to be formed under APART as well as to explore a common strategy for the FPOs/FPCs of Assam, a stakeholder consultation on FPOs was organized by ARIAS Society on 4th May, 2019 at IIBM, Khanapara. The programme was addressed by Shri Vinod Seshan, IAS, State Project Director (SPD), ARIAS Society, Director, Horticulture & Food Processing (DoHFP), DGM, NABARD and also Consultancies/Organisations who are involved in the process of FPO/FPC formation and handholding across the state. Representatives of different FPOs/FPCs from different parts of Assam formed under different schemes were present in the programme. The representatives' from the FPOs/FPCs made presentations on their success stories as well as problems faced by them.

SPD, ARIAS Society interacted with the different stakeholders and urged the Consultancies/Organisations those are involved in FPO/FPC formation to develop proper Market Linkages for each FPO/FPC so that they can sell their produce and earn profit and become sustainable. He said that the FPOs/FPCs planned to be formed through APART, should have a proper plan of action for the different activities that they plan to take up. Service Provider (SP) should ensure that the farmers are benefitted to the maximum.

DGM, NABARD informed the participants that through NABARD, there are different schemes that are available for the new FPOs/FPCs and he encouraged the farmers to avail those schemes and facilities, so that the FPOs/FPCs become sustainable in the long run.

During the presentations made by different FPOs/FPCs, it was observed that as a beginning, some of the FPOs/FPCs are doing well and they are producing good quality value added products with proper food safety measures and are getting market also. In future, they can become good example for other FPOs/FPCs.



DGM, NABARD addressing the gathering



SPD ARIASS interacting with the FPOs



FPOs interacting during the Workshop

## IMPROVED TOMATO PRODUCTION BRINGS HAPPINESS THROUGH INCREASED INCOME TO FARMERS

*Applying improved cropping techniques makes a tomato farmer in Cachar, Assam a role model for other local tomato producers*

Since October 2018, the ATMA Cachar with the technical support of World Vegetable Center (WorldVeg) has been carrying out climate resilient production demonstrations under the World Bank financed Assam Agribusiness and Rural Transformation Project (APART) which gave encouraging results and other farmers were also inspired to take up tomato cultivation in that area. This is the success story of Mr. Puspa Ranjan Dhar of Cachar district of Assam and the APART demonstration conducted under the technical supervision of Mr. Souradeep Acharjee, Technical Officer (Cachar), World Vegetable Center (Guwahati).

Mr. Dhar, 52, lives in Kalain block of Cachar, with his wife and two children; and has been farming vegetables for the past three decades. Demonstrations in Kalain were administered by Mr. Nikubur Jaman, the Agriculture Development Officer (ADO) for the area.

The demonstration aimed to show differences between various agricultural practices promoted by WorldVeg, and the usual methods farmers practice in their fields. The set of improved cropping practices, based on scientific package of practices (PoP) led to better plant growth, improved plant health and higher yield—all of which increased Mr. Dhar's income.

The demonstration was conducted on an area of 0.125 ha. The locally popular variety “Victor” (F1 hybrid) from Crystal Seeds was selected based on market preference. The same variety was used in the treatment plot and the control plot to effectively display the outcomes from adopting improved agricultural practices such as proper fertilizer dose, healthy nursery, proper plant spacing, proper weed management, proper irrigation and plant protection, staking of the plants, etc.

### First key to success: Improved nursery management

A good transplanted vegetable crop always starts with a good nursery. Under the guidance of WorldVeg, a semi-protected tunnel nursery with a raised bed was established with polyethylene sheets and locally sourced materials such as bamboo. These low-cost, simple structures protect seedlings from intense radiation, strong rainfall and other detrimental environmental impacts. Improved pest and disease management methods, such as following a recommended schedule of pesticide spraying, make small tunnels even more effective. The healthier and stronger seedlings produced in the tunnel (Figure 1) meant the tomato plants in the demo plots had a head start, compared with plants produced with the usual farmer's practices.



Figure-1: Well managed tomato nursery (Rabi 2018-19)

## Active participation of women farmers

Women farmers were encouraged to participate in the operations of all aspects of the WorldVeg supported demonstration plots. Women worked together with men to establish a seedling nursery. They sowed seed, transplanted, weeded, applied top dressing, harvested, graded, sorted, and packed the tomato fruits. The activities empowered women, strengthened their position in the family as well as in the local community, and inspired other women in the village. With women working side-by-side with male family members, farm families were able to reduce external labor costs.



Figure 2: Men and Women working side-by-side on WorldVeg demo plots (Rabi 2018-19)

## Improved field management

WorldVeg supported tomato demonstrations established enhanced plant fitness through proper staking (Figure 3). Staking improves aeration within the field, reducing fungal disease pressure, while allowing crop plants to better explore the available space and avoid contact of fruits with the soil. In the demo plots, staking prolonged crop duration and produced disease-free and mud-free tomatoes, thus improving yield and fruit quality. For the farmers, better fruit quality translates to better market acceptance and prices for their produce. These differences were clearly observable.



Figure-3: Staking in tomato plants (Rabi 2018-19)

*"After learning protected nursery management and staking from WorldVeg, I was able to grow disease-free plants, achieve higher yields and better market acceptability."*

-- Mr. Puspa Ranjan Dhar, tomato farmer

## Success in the field pays off!

Figure 4 shows the differences in yield. Mr. Dhar harvested 23 quintals (2.3 t) of marketable tomatoes from the WorldVeg supported demo plot, which resulted in revenue of ₹ 40,000 from sales at a price of ₹ 15 per kg. On the other hand, only 19 quintals (1.9 t) of marketable tomatoes were harvested from the control plot, which sold for ₹ 29,000. The difference in revenues was more than ₹ 11,000, which in terms of 1 hectare area is ₹88,000.

### Applying the techniques recommended in the PoP incurred some additional costs (Table 1):

- Seedlings grown in the low tunnel were used in both the demo and control plots. So, costs associated with the low tunnel were not taken into consideration.
- Bamboo for staking was available on the farm. The estimated cost taken was ₹ 1,000.
- Staking required additional labor of 3 worker-days at an average cost of ₹ 300 per worker-day.
- The farmer purchased pesticides as recommended in the PoP for an additional ₹ 1,500.
- No additional fertilizer was used in either the demo or control plot. Low tunnels were fertilized at the time of land preparation with cowdung available from farmer's own farm.
- The demo plot was hand-weeded three times and the control plot was weeded only once. Each weeding required approximately 4 worker-days.

type of additional cost	unit	unit cost	amount	additional cost
bamboo	lump sum	₹ 1,000.00	1	₹ 1,000.00
Staking	man*days	₹ 300.00	3	₹ 900.00
Pesticides according to PoP	lump sum	₹ 1,500.00	1	₹ 1,500.00
weeding	man*days	₹ 300.00	8	₹ 2,400.00
<b>Total additional cost</b>				<b>₹ 5,800.00</b>

Table 1: Additional cost to follow PoP

Figure-4

Total harvest WorldVeg (kg)	2668
Total harvest control (kg)	1920
Difference (kg)	748
Tomato price (/kg)	₹ 15.00
Additional revenues from tomato sale	₹ 11,220.00
<b>Increase in farmer's income</b>	<b>₹ 5,420.00</b>

Table 2: Income components

Taking in account the additional cost, the higher tomato yields generated a plus in income to the farmer of more than ₹ 5,400 on the demo plot as compared to the farmer's practice. This translates into a potential increase in income of ₹ 43,360 per hectare (Table 2).

## Postharvest techniques

Harvesting is an important part of crop production. WorldVeg has introduced grading, sorting, washing and packaging to meet consumer demand for quality vegetables. Mr. Dhar improved the marketability of his produce by following these good agricultural practices; he obtained a higher price for his tomatoes and increased his income. Other farmers in the village took note of his success, and are now planning to adopt the demonstrated good agriculture practices for tomato in their own fields.



Figure 5: Post-harvest grading, sorting, washing and packaging for better market preference (Rabi 2018-19)

## Multiplication and Training

The major reason WorldVeg supports demonstrations under APART is to show farmers how to improve their cropping practices. But the good practices must go beyond the demo field; training and extension services are very important to reach more farmers. WorldVeg has conducted training programs for tomato-growing farmers to teach them about the PoP techniques, and specific good agriculture practices for tomato.

For the field day, participating farmers came from tomato cluster villages and ADO Kalian, Mr. Nikubur Jaman, was present, too. During the field day, Mr. Dhar shared his happiness with the crop and better yield he obtained by employing the improved practices (Figure 6). "After learning protected nursery management and staking from WorldVeg, I was able to grow disease-free plants, achieve higher yields and better market acceptability," he said. Those good practices are bringing in more income for his family. Mr. Dhar plans to invest his family's additional income towards an irrigation pump.



Figure-6: During a Tomato Field Day, a farmer shares his experience with other farmers.

## 34th GOVERNING BODY MEETING OF ARIAS SOCIETY

The 34th Meeting of the Governing Body (GB) of ARIAS Society was chaired by Shri Rajesh Prasad, IAS, Principal Secretary to the Govt. of Assam (Agriculture Department), Agriculture Production Commissioner (APC) and Chairman, ARIAS Society in the presence of members of GB and other Officials of the Govt. of Assam.

The Principal Secretary (Agri.), APC & Chairman, ARIAS Society welcomed all the members & officials present and then requested the State Project Director (SPD), ARIAS Society to proceed as per the Agenda.

APC & Chairman, ARIAS Society informed that many of the Consultants/ contractual staff are being used for purposes other than intended purposes for which they were hired. PCU shall provide a status of all contractual staff on board in the Project as on date. Further, a system for their appraisal needs to be devised and in cases of prolonged non-performance disciplinary action (including termination) shall be initiated. Further, the updated HR Policy of ARIAS Society shall be placed in the upcoming PGC Meeting.

APC & Chairman, ARIAS Society noted and praised the substantial improvement in the performance of the Project since last GB Meeting. He also appreciated the efforts of the International agencies, who are taking these innovative practices to the farmers. However, he insisted that implementation pace of the project should further hastened. The meeting ended with a vote of thanks from the Chair.



34th Meeting of the Governing Body (GB) of ARIAS Society

### MR. HIRA BHAJANI : A SUCCESSFUL FARMER

Block: Baginadi,  
Lakhimpur District

Will power and a scientific mind along with innovative ideas and knowledge is a big asset for anyone. In this success story, Mr. Hira Bhajani, a dynamic rural farmer from an interior Baginadi Development Block under Lakhimpur District, converts his ideas and efforts into wealth with adoption of improved crop management practices.

Mr. Hira Bhajani, 45 years old farmer of Jaradhara Village of Lakhimpur took up agriculture and allied activities as his profession and livelihood after completing his senior secondary school, and has now become an inspiration for others in that locality. In early years, he took up paddy cultivation with low yielding local varieties. In 2010, in consultation with the officers of Department of Agriculture and ATMA personnel he started cultivating high yielding varieties of rice such as Ranjit, Bahadur and also hybrid varieties and extended

his paddy cultivation area to 2.94 hac from 1.6 hac. He has increased his income from Rs. 36000/- (during 1990s) to Rs. 1,95,000/- in 2018 with benefit : cost ratio of 1.9:1. He cultivated "Swarna Sub-1" rice variety in the Sali season under APART project in his low-lying areas. With this stress tolerant rice variety which is able to survive for 10-14 days during flood, the yield obtained was very good (5.6 t/ha).

For soil health management, Mr Bhajani used homemade farmyard manure (FYM), vermi compost and grows Dhaincha as green manuring crop. As a component of Integrated Pest Management (IPM), he used bird perches for management of insect pests, which not only reduce the pesticide use in his field but also helps in maintaining healthy agro-ecosystem. Use of fresh cow dung solution against bacterial leaf blight, broadcasting of rind of citrus fruit in the standing water of paddy field to manage case worm are some of the Indigenous Traditional Knowledge (ITKs) he has been practicing since last five years.

Mr. Bhajani also visited many institutions and research stations related to agriculture for capacity building through the exposure visit conducted by APART, Lakhimpur.

With different successful ventures, Mr. Bhajani is now become not only a progressive farmer but also an upcoming entrepreneur of the locality. With his dedication, hard work, positive thinking and innovative ideas, he became an ideal farm entrepreneur and has inspired many rural youths to take up farming as profession and solve the problem of unemployment, which in turn will help to create a positive environment for socio-economic development of the society.



Paddy field of Hira Bhajani

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