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KRISHI RUPANTAR



DIRECT SEEDING OF RICE: A CASE STUDY FROM BARPETA

– Contributed by: Mridupaban Mudoj, JR, IRRI and Vipin Kumar, Specialist, IRRI

The conventional practice of puddle transplanting of rice (PTR) has many issues relating to labour and water scarcity. Direct seeded rice (DSR) is one of the alternatives which can save water as well as labour. The productivity of DSR is almost at par with the puddled transplanting of rice if cultivated as per the recommended package of practices. For the promotion of this resource-efficient technology, the initiative has been taken by the Government and non-government organizations in recent times. Under the World Bank-financed APART, Krishi Vigyan

Kendra, Barpeta demonstrated wet direct-seeded rice in Muguria village, under Bajali block of undivided Barpeta. A total of 2 ha of land was taken up under this demonstration with Ranjit-Sub1 variety by one of the APART beneficiaries, Mr Bikash Patgiri. The variety was sown on June 20, 2021, in the farmer's field with technical support from International Rice Research Institute (IRRI).

As the district had experienced severe flood damage during 2019 and 2020, hence submergence tolerant rice variety Ranjit-Sub1 was



Interaction at Cluster level

selected for this demonstration which was distributed under the project. The seed cleaning process was adopted using salt solution followed by seed treatment using carbox in fungicides for control of seed-borne fungal diseases. The land was prepared and levelled after 4 ploughings using a cultivator

followed by a rotavator. The land was puddled a day before the sowing to allow the water to drain out from the field. Basal fertilizers were applied before the last ploughing and pre-germinated seeds were sown using drum seeder in the puddled soil.

Practical Advantages Experienced in the Field:

» DSR crop generally flowers early leading to shorter crop duration and this has been practically observed in the field. Seeds were sown on June 20, 2021, and harvested on November

9, 2021. The duration of the crop was shortened by almost 15 days as the normal duration of the Ranjit-Sub1 variety is 150-155 days.

- » DSR is a cost-effective method of cultivation and a less labour-intensive approach as well. The traditional method of rice cultivation needs more labour starting from nursery raising to transplanting. It requires 7-8 labours/bigha till the transplanting operation (uprooting from the nursery and transplanting in the main field) whereas, direct seeding of rice involves 4-5 number of human power for one hectare. As it consumes fewer resources, it results in curtailing the cost of cultivation. Based on the field experience, it has been observed that in PTR the total cost involved in the process of nursery raising to transplanting (including the uprooting of seedling) is around Rs 2100-2400/- per bigha requiring 7-8 labours in total, whereas, on the other hand, the DSR crop entails a total cost of Rs 1200-1500 per/ha (7.5 bighas).
- » Generally, the data reveals that the grain yield recorded in the DSR crop is comparatively less than the PTR. But upon cultivation with good management practices, it results in higher grain yield or at par grain yield over PTR. The same has been experienced as the crop was raised following proper management of weed, water and fertilizer. The grain yield recorded at the time of crop cutting was 5.3 tonne/ha. This proves that the DSR crop produces a good yield with a reduced cost which ultimately increases the net income of the farmers.

Other parameters recorded at the time of crop cutting are as follows:

	R1	R2	R3
Effective tiller/hill	16	22	22
Hill/5m ²	112	141	138
Panicle/m ²	386	448	428
Height (cm)	159	161	153
Grain/panicle	286	281	396
Biomass/5m ²	17.8	18.9	18.4
Grain wt./5m ²	2.60	2.78	2.71

Challenges:

Although DSR holds several advantages, it has been seen that due to many underlying challenges such as weed infestation, insect pests and diseases and water management, the approach is yet to gain popularity amongst the farmers.

- » High weed infestation is the major challenge experienced in the cultivation of direct-seeded rice. In direct-seeded rice, it is observed that more weed infestation occurs as the weed seeds grow along with growing rice seedlings as there is negligible standing water to suppress the weeds at an early phase of crop growth. Proper management of weed includes application of both pre-and post-emergence herbicides along with manual weeding which helps in limiting the weed infestation. In the case of DSR, the weeds were manually removed 2 times, besides the application of post-emergence herbicides which helped in controlling the infestation and ultimately resulted in obtaining a good return.
- » Incidence of pests and disease is quite common in rice crops. It has been reported by many scientists

that the water limitation favours the development of blast disease in the crop. Contrary to this, the practical field demonstration shows less blast and other diseases infestation. Minor infestation of rice stem borer and leaf folder was observed but with negligible impact on the yield.

- » Water management can be a challenge in the case of DSR if not managed well. First irrigation should be provided to the crop three days after sowing without disturbing the seed placement. This is to be followed till the crop attains good growth. The remaining schedule of irrigation is similar to PTR.

Labour scarcity is a big problem in the state of Assam. DSR is a good alternative to solve the labour issue. The challenges can be converted into opportunities if properly planned and managed well. The happy farmer while harvesting the bumper yield said, *"Nowadays labour scarcity and less income from rice have been threatening our sole source of livelihood. Wet direct seeding of rice has emerged as the most suitable option for us to save our livelihood."*

A POSITIVE VIBE FOR COMMERCIAL PRODUCTION OF BLACK RICE IN ASSAM

– Jyoti Bikash Nath, IRRI

If you believe that rice comes in shades of only white, you are wrong! The shades may be red, black, or even green. It may not be regularly used in your kitchen but there is the possibility that you will have the opportunity to taste it in the coming days. Black rice, the black gold of agriculture also called forbidden rice, is medium-grained, non-glutinous heirloom rice and now becoming a common name for the farmers of Assam. It is suitable for preparing

kheer (desert, pitha, cake, flakes, etc. Black rice is known for its high nutritional value and is a source of iron, vitamin E, antioxidants, calcium, magnesium, and zinc. Goalpara of Assam is now a production hub of black rice though the volume of production is comparatively small. The farmers in the area have been cultivating black rice varieties with the support of Mr Upendra Rabha, who is the pioneer of black rice cultivation in Assam. He is taking a proactive



Black Rice variety



Black Rice launch programme

role in motivating the farmers and facilitating the marketing of black rice outside the state. Of late, farmers from other parts of the state also have collected seeds from him. He has named the varieties that he grows in his field as Upendra Rice. Of course, the black rice farmers are always open to cultivating new varieties that can provide them with a better yield and which will be pure to its origin. International Rice Research Institute (IRRI), the global leader of rice research and training well understood the potentiality of black rice production in the state. Hence, IRRI in collaboration with Govt. of Assam under the World Bank-funded Assam Agribusiness and Rural Transformation Project (APART) has taken a revolutionary step by introducing a few black rice varieties in Assam during Sali

season 2021. IRRI introduced three new black rice varieties viz. Manipuri black rice, Kalamalifula and Kalavati from different states of India in the farmers' field of Assam. The seeds of the Manipuri Black Rice variety were collected from Manipur and other two black rice varieties namely Kalamalifula and Kalavati from Odisha. The seeds were distributed among a few selected farmers of the Goalpara district. At the same time Horticultural Research Centre, Kahikuchi of Assam Agricultural University with the technical support from IRRI under APART conducted a Rice Variety Cafeteria in Goalpara with the inclusion of the premium quality rice varieties to understand the most preferred varieties by different farmers, millers, consumers and research and extension organizations in the area.

The yield of newly introduced varieties was quite satisfactory in the farmers' field ultimately indicating its suitability in the soil and weather of the state. The varieties got an overwhelming response from both the farmers and consumers. Therefore, for creating large scale awareness and promotion of these varieties a daylong black rice launch program was organised at Goalpara district on January 5, 2022, by the District Agriculture Office, Goalpara in collaboration with IRRI, ARIAS Society and HRS, Kahikuchi under the APART.

The launch ceremony involved farmers and participants from

different like-minded organizations. The journey has just started!! The introduction of new varieties by IRRI is one of the pioneering moves for sustainable black rice production in the state. Nevertheless, to make the commercial black rice cultivation flourish in the state, some priority areas to work on are strengthening of the seed system, standard organic cultivation practices, mechanization, value addition and market. In the coming days, it is expected that with the combined effort of farmers, IRRI, Department of Agriculture, APART, AAU and all other like-minded organizations, the black rice will in a true sense transform into black gold.

A LEAP TOWARDS MECHANIZATION

- Contributors: Dr Kasturi Goswami, Junior Researcher, IRRI and Ms Binita Barman, Senior ADO, DAO, Morigaon

Assam being an agricultural dependent state has a maximum area under paddy cultivation which is grown throughout the year in three different growing seasons. About 70% of the state's population is dependent on agriculture as it is their primary source of income. But in recent times, the paddy farmers are becoming unenthusiastic towards

its cultivation due to certain reasons like its labour-intensive nature, high cost of cultivation, low market price and less remuneration. Also, poor storage facilities compel the farmers to sell their produce at a very minimal price. Due to the increasing cost of cultivation and reducing net returns, the farmers are disappointed and they urge to leave paddy cultivation.



Farmers at their paddy nursery

To address this problem, the promotion of mechanization has been advocated for paddy cultivation through different projects. The major activities of paddy cultivation like land preparation, transplanting, harvesting and threshing are very labour and cost-intensive. The alternatives for land preparation using machinery has already been taken care of by tractor and power tillers replacing desi plough which considerably reduced the time and labour consumption for land preparation. For threshing, power threshers have also made their place almost in every village of Assam.

The transplanting of rice is another labour-intensive work that is mainly done by the women members of the farm family. Women in Assam play a significant role in paddy cultivation

and transplanting is one of the major activities. Before transplanting, the seedlings are uprooted and carried to the main field. The uprooting of these seedlings is one of the activities which are mostly done by the female farmers. Transplanting the uprooted seedlings in the muddy field is drudgery to these female farmers. Apart from their land many women transplant paddy in others farmers fields on a daily wage basis and add to their living. Continuous bending throughout the days for months leads to many physical and other health-related issues in women.

Since 2018, International Rice Research Institute (IRRI) is working as a technical partner under Assam Agribusiness and Rural Transformation Project (APART) and promoting farm mechanization



Women participating in paddy transplantation

through the creation of Custom Hiring Centers (CHCs) with Assam Agricultural University and the Department of Agriculture. IRRI has helped in introducing machines like mechanical transplanter for rice transplanting, seed cum fertilizer drill and drum seeder for dry and wet direct seeding office (DSR), respectively, power weeder for weeding, reaper for harvesting, combine harvester for harvesting and threshing clubbed together with a single machine and many more machines related to the rice value chain. These machineries are given to KVKs of each district which they later gave to a registered farmer's group to create Custom Hiring Centers (CHC).

CHC is a new concept initiated under APART, where a set of

farm machinery, implements, and equipment are given to the registered farmer's group like FPCs. Farmers can hire these machines at minimal rental charges from these centres for their field operations, starting from land preparation to the post-harvest rice value chain. CHCs have been established in almost all APART districts, either through KVK/ RARS or by District Agriculture Offices (DAO). In Morigaon district, CHCs have been created with FPCs named Poohar Agro Producer Company by KVK and Yangli producer company by DAO. Yangli Producer Company Limited is women based FPC with 992 female farmers and 8 male farmers as members. The group is mainly associated with vermicompost production along with rice cultivation.



Mat type nursery taken up by the farmers

In this season, i.e, boro 2021-22, IRRI with the help of the District Agricultural Office (DAO) and Krishi Vigyan Kendra (KVK), Morigaon have planned about 100 bighas under mechanically transplanted rice. About 80 bighas are planned with Yangli Producer Company Limited and 20 bighas with PooharAgro Producer Company Limited. MTR is a women-friendly technology and the members of Yangli are actively participating in nursery preparation and other activities. Mat-type nursery of BINA Dhan 11 for about 80 bighas has

already been laid out in Duimari village under Bhurbandha block of Morigaon district. The technical training for raising the mat-type nursery is provided by scientists and technicians of IRRI with the support of DAO Morigaon officials. The first nursery for 30 bighas was laid on January 11, 2022, and the second for 50 bighas was laid on January 20, 2022. The members of the group are enthusiastic to learn about this new technology and are hopeful that this technology will reduce their cost of cultivation to a great extent.

APART INITIATES TO MAKE AVAILABILITY OF HIGH YIELDING VARIETY OF FISH SEED IN ASSAM

The genetically improved fish seed is the main input for fish farming practices which determine the overall production scenario of fish. The growth of such kinds of fish is higher than the ordinary fish strain. Production of fish seed depends on the scientific rearing practices followed in preparation and management of broodstock pond, and to make availability of quality fish seed in the State, the new concept of development of high yielding quality fish seed is promoted in the State. Farmers Producers Groups (FPGs) are adopting the new techniques introduced through

APART. In these lines, a group of trained fish farmers are involved in the production of quality fish seeds of various cultivable fish species such as Jayanti Rohu, Amur carp and improved Catla and cater to the needs of themselves, fellow farmers, and also those of neighbouring villages at affordable cost and appropriate time. This effort targets to increase the quantity of fish seed production to meet the local demand, timely supply with reasonable cost and self-reliance of quality fish seed at the extended culture area.



Quality fish seed production under APART

Departmental hatcheries in Kamrup, Goalpara, Sivsagar, Nagaon, Cachar and Lakhimpur District have been upgraded and out of these four Fish seed Multiplication Centre is established to make availability of quality and high yielding variety of fish seed available throughout the year. In addition, ten Fish Farmers Producers Companies (FPCs) under APART are actively associated in rearing high-yielding fish varieties from the National Freshwater Brood Bank, Odisha particularly Amur Carp, Jayanti Rohu and improved Catla. To make it more sustainable, the FPCs also plan to raise the brood fish in their farm by replenishing the old broodstock periodically as per existing norms.

Jayanti Rohu: The high yielding fish variety "Jayanti Rohu" is a genetically improved strain with higher growth efficiency developed through selective breeding. Morphologically. Jayanti Rohu is similar to normal Rohu but its growth rate is approximate 20 per cent higher than normal Rohu with the same inputs. As big sized fish have a good market demand and consumer preference, the

Jayanti Rohu fetches higher prices than the normal Rohu. It grows up to two kg in a year. The original strain of Jayanti Rohu is available in ICAR-CIFA, Bhubaneswar.

There are three recognised Breeding Centres of Jayanti Rohu in Assam, ie Debajit Barman Fish Seed Farm, Nalbari, TATA Tea Amalgamated Plantation, Kaziranga and Kalong Kapili, NGO, Kamrup (M). These Fishery FPCs are also bringing the fish seeds from National Freshwater Brood Bank, Bhubaneswar to meet up the demand of the farmers.

Amur Carp: The Amur carp is also a genetically improved strain which is similar to Common carp, where the growth of Amur Carp is approximately 30-50 per cent higher than normal Common Carp with good market demand and price as well. It grows up to 2.5 kg in a year. The original strains of Amur carp were brought in from the National Freshwater Brood Bank, Bhubaneswar, annually by FPCs and progressive farmers to meet up the demand. Few Amur carp Breeding Centres are also developed in Assam under the guidance of ICAR- CIFA.

Improved Catla: The Improved Catla is also morphologically similar to normal Catla. It is improved through selective breeding and its growth rate is approximately 30 per cent higher than the normal Catla. It grows up to three kg in a year. The original seeds of Improved Catla are available at ICAR-CIFA, Bhubaneswar and National Freshwater Brood Bank, Bhubaneswar.



Quality fish seed production under APART

High-yielding fish seed village:

Adapting the concept of fish seed village under APART, improvement of fish seed production system in an organized manner and a compact area, is carried forward. Besides, replacing poor quality seeds with new high yielding varieties, it also aims to increase the quantity of fish seed production to meet the local demand. Timely supply at reasonable costs and self-reliance of quality fish seed is the main objective of the

initiative. Another important feature of fish seed village is that it unites the farmers for a common cause, enhance confidence in marketing and understanding the concept of quality fish seed among the farmers as per norms laid down under the Assam Fish Seed Rule, 2010. Because of the known source of fish seeds, the producers will be able to grow big fish within a specific period and at the same time, consumers will be benefited.

FISH NUTRITION AWARENESS CAMPAIGN AT COMMUNITY LEVEL

WorldFish is promoting consumption of small fish among the vulnerable groups of women and children in Assam and is providing technical support for demonstrating nutrition sensitive aquaculture and for promoting fish in human nutrition. Making the small fishes available, accessible and affordable for the reach of target groups is the major intervention planned under the project towards nutritional security of the local communities.

Nutrition expert from WorldFish, Odisha, Dr. Baishnaba Charan Ratha, WorldFish Resident Consultant, Dr. Suresh and WorldFish Assam team conducted Fish Nutrition awareness campaign at the Community level in Bogibari Cluster in Kamrup district on 20th of January, 2022 to bring awareness to the community regarding the nutritional importance of fish required and the role of small fish consumption in nutritional security of the local communities.



Interaction of WorldFish team with the Community people of Bogibari cluster in Kamrup District on the importance of Fish Nutrition

A total of 46 women participants attended the nutritional awareness campaign including pregnant and lactating women, adolescent girls and children. WorldFish team discussed the importance of consumption of fish particularly Mola and Small Indigenous Fishes, importance of micronutrients in fishes such as iron, zinc, calcium, iodine, Vitamins A, Vitamins B12,

vitamins D, and omega-3 fatty acids and their health benefits, etc. The team also explained the importance of the first 1000 days of a Childs development and advised the pregnant and lactating women towards consuming adequate nutrients to sustain their pregnancy and to ensure healthy child development.

WORLD FISH TEAM VISIT TO APART INTERVENTIONS IN KAMRUP AND DARRANG DISTRICTS

WorldFish Team under the leadership of Dr. Bikram Baliarsingh, Sr. Aquaculture Expert from WorldFish Odisha and WorldFish Assam team visited Assam Agri-Business and Rural Transformation Project (APART) intervention clusters in Kamrup and Darrang districts in the month of January, 2022 with the purpose of observing the various WorldFish activities particularly adoption of BMP practices by the beneficiaries of the project.



Interaction with Paddy cum Fish intervention Beneficiary of Darrang District



Discussion with the Beneficiaries of Kamrup District regarding the adaptation of Better Management Practices (BMP)

From 18.01.2022 to 25.01.2022, the team visited Kamrup and Darrang districts, covering six clusters in each, including Dimoria, Hajo, and Rangia in Kamrup and DalgaonSialmari, Kalaigaon, and Bechimari in Darrang. The team interacted with APART beneficiaries of Paddy Fish Integrated Farming, Carp Polyculture, Polyculture of carps with mola and Polyculture of carp with Freshwater Prawn interventions from Matchyamitra FPG, MatchyaGandha FPG, Kolong FPG, Khopinikuchinizarapar Krisi meenpalansamiti FPG, Barallya Matchya Palan, Alok FPG, Kahinor FPG, Milijuli FPG, Bherlabari FPG, Hampriti FPG and Sonali FPG.

WorldFish team interacted with

the beneficiaries and observed the practices followed in various interventions and provided technical guidance to farmers on better management practices in order to reduce losses and increase benefits, as well as for sustainability and environmental safety. The team explained the importance of adopting the better management practices (BMP) provided by WorldFish under APART.

The team also gathered baseline and endline data of Carp-polyculture, Paddy cum fish, Carp polyculture with mola, and Carp Polyculture with Freshwater Prawn demonstrations using Kobo data collection tool developed by WorldFish to understand the adoption of BMPs.

TRAINING FOR MILK PRODUCERS AT KAMRUP & BARPETA DISTRICTS UNDER INFORMAL DAIRY SECTOR

To improve the milk quality and safety in the existing informal milk value chain, a training programme for milk producers was conducted by the District Coordinator, Kamrup, APART, Dairy Development, at Balikuchi, under Rangia Subdivision from 17th to 21st January 2022 with technical guidance from ILRI.

Vety Deptt, and Dairy Development Deptt.

In connection with the training, a vaccination programme was also arranged for Foot and Mouth Disease (FMD), covering 140 cattle including calves by the District Coordinator, APART, Kamrup District



Participants during the training programme on milk quality and safety at Kamrup district

The programme was inaugurated by SDVO, A.H.& Vety. Deptt. Rangia subdivision. A total of 30 participants (26 Male & 4 female) attended the 5 days training programme. The training topics were delivered by trained master trainers of A.H.&

in association with A.H. & Vety Deptt. in the nearby 7 villages namely Pachimpar Bhagbari, Balikuchi, Sundhia, Barmura, Kanikuchi, Mahakhali and Chapaniya of Rangia Subdivision.



Vaccination programme for Foot and Mouth disease in cattle at Kamrup district

Similarly, a training programme for milk producers was conducted by the District Coordinator, Barpeta, APART, Dairy Development, at Lechera, Bajali of undivided Barpeta District from 7th to 11th January 2022 with the technical guidance from

ILRI. A total of 32 participants (19 Male & 13 female) attended the 5 days training programme. The training topics were delivered by trained master trainers of A.H.& Vety Deptt, and Dairy Development Deptt.



Training programme for milk producers at Bajali district

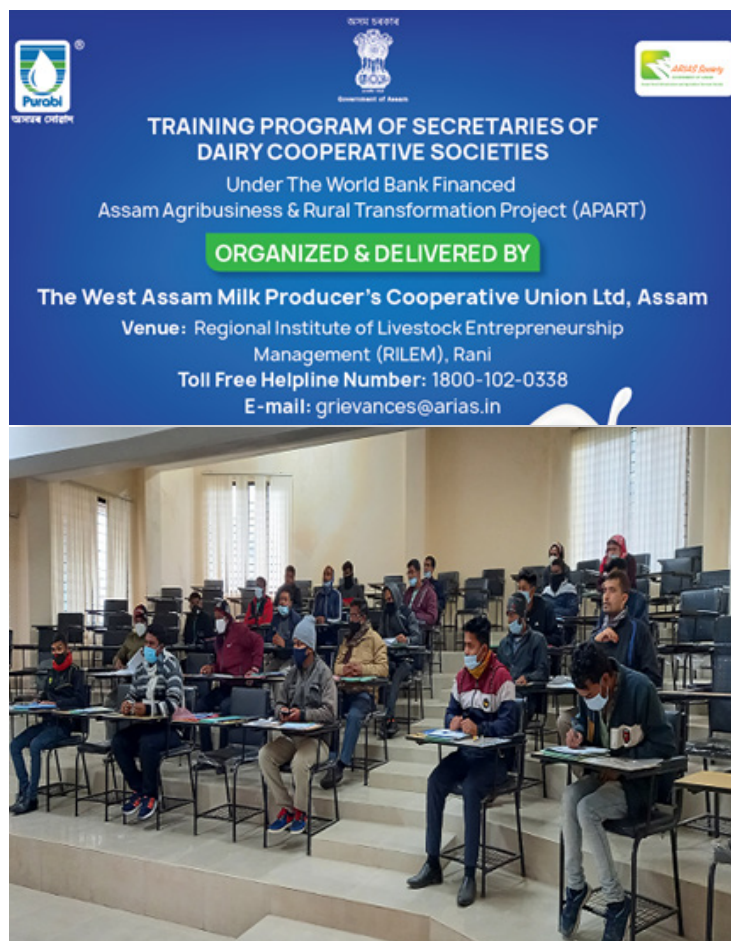
CAPACITY BUILDING OF DAIRY FARMERS BY WAMUL

WAMUL participates in enhancing the knowledge and awareness among its producers through its customized training programmes. The residential programs are conducted at NDDDB, Anand and Eastern Regional Demonstration and Training Centre (ERDTC) Siliguri, where the staffs of WAMUL including farmers take up training on different aspects of dairying, besides getting an opportunity on enhancing dairy knowledge and skill. On the other hand, there are training programs that are organized and conducted here at WAMUL, HO. The training programs cover a wide variety of subjects and are designed to update the skill and knowledge of those involved directly in the dairy sector. These training programs are evaluated through feedback from the participants.

WAMUL mainly focuses on encouraging women participation in farmer-based training programs. The training programs are designed

in such a way so that it suits the timing of the female participants and does not hamper their day to day domestic work.

Recently, a training program of the Secretaries of the Dairy Cooperative Societies (DCSSs), under APART was organised by WAMUL at the Regional Institute of Livestock Entrepreneurship Management (RILEM), Rani.



Training programme of Dairy Cooperative Societies

FIRST-OF-ITS-KIND 'FISHWAALE APP LAUNCHED IN ASSAM', THE FIRST E-FISH MARKET IN INDIA

Aqua Blue Group, an APART backed AAGL enterprise, provides a one-stop solution for aquaculture which includes consultancy, quality seeds, feed, medicine and equipment.

The widespread fisheries and a vibrant fish market in Jagiroad inspired Razaqul Islam to start Aqua Blue Group as a private limited company in 2018. With a plethora of specialized and tailored services and products, the business successfully expanded all over the North East in states like Meghalaya, Arunachal Pradesh, Nagaland and Tripura. Soon after its access to the existing markets, the enterprise introduced the Recirculatory Aquaculture System in 2019, a purely technology-intensive

high-density culture of various species of fish utilizing minimum land area and water resources. This technology boosted the production capacity 10 times the normal capacity in the same space.

Eventually, with a spurt in the demand for indigenous freshwater fishes among the consumers, on 5th November 2021, Razaqul introduced Fishwaale, India's first online fish market platform to help farmers connect directly with the consumers without interference from the middlemen. The Honorable Minister for Fisheries, Environment, Forest and Excise, Govt of Assam, Sri. Parimal Suklavaidya ceremonially launched the App at an official function at



Fish wale App: FIRST E-FISH MARKET IN INDIA

Dispur. Aqua Blue Group developed the app in collaboration with the Department of Fisheries, Govt. of Assam. Sri. Suklabaidya stated that the App is a one-stop solution for Aquaculture, will help the buyers and sellers to place orders and sell fish online. He exuded the optimism that it will help the fish farming community

to get reasonable prices for their produce and lead to the elimination of middlemen. Suklabaidya also added that never before fish has been accorded the recognition of an asset by any government other than the Modi Government through the Pradhan Mantri Matsya Sampada Yojana.

A KSHYAMATA INITIATIVE: ARUNUDAY FOOD PRODUCTS

Harmohan Barman was running a grocery shop in his native village small village, Paikarkuchi, Nalbari District. The shop was doing well, but Barman realized, that in the long run that it might not be able to sustain him. So, in 2019, he shut down the shop and started a mustard mill with his savings. The set-up was running well; he would purchase mustard seeds from nearby villages, mill and sell the oil in the local market. But when the COVID pandemic started, his unit suffered, and this was when he felt that to sustain and establish his business; he needed professional support.

Through his friends' circle, Barman came to know regarding the initiatives of the Govt of Assam to provide support to upcoming entrepreneurs. He visited the District Industries and Commerce Centre (DICC), Nalbari, and met the General Manager and



Harmohan in his mustard oil milling unit

the District Enterprise Development Coordinator, APART. Barman enrolled himself under the Kshyamata program of APART and soon started getting guidance and support for establishing his mustard milling unit. He registered his unit under sole proprietorship and obtained an FSSAI license and GSTIN Number etc.

With the support of the Kshyamata team Nalbari, Barman established the ARUNUDAY FOOD PRODUCTS as the sole proprietorship enterprise. He was able to pool in Rs. 16.60 Lakhs for his venture under the PMFME scheme. Now, Barman procures the inputs from the various suppliers from Barpeta, Chirang etc. He updated his unit with better facilities

and upgraded technology and now sells mustard oil to retail outlets in the local markets. He also took up manufacturing packaged oil cakes which are being sold within the Pub-Nalbari Block of the District. Barman plans to increase his production capacity and take forward his business-to-consumer (B2C) enterprise online.

LAUNCH OF XAMAHAR APART Challenge Fund for Innovative Finance in Agriculture (ACFIFA)

Assam Agribusiness and Rural Transformation Project (APART) has come up with a competitive funding mechanism for supporting innovative approaches to deliver financial services at a scale in the agribusiness sector in the state. The Challenge Fund for Innovative Finance in Agriculture (ACFIFA) "Xamahar" under APART was launched on 9th December 2021 by the Minister of Agriculture, Govt of Assam, Shri Atul Bora at the function held at the Veterinary Science Auditorium, Khanapara, Guwahati.

APART has established the first of its kind initiative, the Assam AgriFin

Xamahar Challenge fund, which is designed to support ecosystem/mechanisms in the agricultural domain of the state. This fund has been conceptualised by the Assam Agribusiness and Rural Transformation Project (APART), a World Bank-financed project of the Assam Government under the ARIAS Society.

Through this initiative, the project intends to partner with select 8 to 12 sub-projects from the financial services sector directly benefitting 125,000 beneficiaries of which 30% will be women.



Launch of Assam AgriFin 'Xamahar'



Launch of Assam AgriFin Xamahar

ক'লা ধান

ড° হৰিচৰণ কলিতা
কৃষি বিশেষজ্ঞ (শস্য বিভাগ), কৃষি বিজ্ঞান কেন্দ্ৰ

ড° সন্তোষ কুমাৰ বৈশ্য
মুখ্য বিজ্ঞানী

ভাৰতীয় কৃষি আনুসন্ধান পৰিষদ
দুধনৈ, গোৱালপাৰা, ফোন নং - ৯৭০৬৩১৪৪৫৯

পৃথিৱীৰ প্ৰায় সংখ্যক মানুহৰ প্ৰধান খাদ্য ভাত অৰ্থাৎ প্ৰধান শক্তিৰ উৎস। প্ৰায় ৩ বিলিয়ন মানুহৰ শক্তিৰ উৎস ধান যদিও এছিয়া মহাদেশত ২ বিলিয়নতকৈ বেছি জনতাই ইয়াক প্ৰধান খাদ্য হিচাপে ৬০ বৰ্ষৰ ৭০ শতাংশ কেলৰি শক্তি প্ৰতিদিনে চাউলৰ পৰা আহৰণ কৰে। ধান খেতি পৃথিৱীত ১০০ খনতকৈ বেছি দেশত কৰা হয়। উল্লেখযোগ্য যে, এইবিধ শস্য এণ্টাৰ্কটিকা মহাদেশৰ বাহিৰে পৃথিৱীৰ সকলো ঠাইতে পোৱা যায়। দেখা যায় যে, এইবিধ শস্য উৎপাদন কৰা স্থানৰ ১০ মাইল ব্যাসাৰ্দ্ধতে প্ৰায় আধা অংশ উৎপাদিত চাউল ব্যৱহাৰ হয়। পৃথিৱীৰ এক বৃহৎ সংখ্যক মানুহে তেওঁলোকৰ ৩/৪ অংশ আয় ধান অৰ্থাৎ চাউল কিনোতে খৰছ কৰা দেখা যায়। উৎপাদনৰ ফালৰ ইয়াক বিশ্লেষণ কৰিলে, ইয়াৰ স্থান মাকৈ শস্যৰ পিছতে দ্বিতীয় স্থানত। উল্লেখযোগ্য এই যে, এটা ধানৰ বীজে ৩০০০ তকৈও বেছি বীজ উৎপাদন কৰিব পৰা ক্ষমতা থাকে। প্ৰাধান্য যে, পৃথিৱীত প্ৰায় ৪০,০০০ তকৈ বেছি জাত আৰু ২০ টাতকৈ বেছি প্ৰজাতিৰ ধান

পোৱা যায়। ইয়াৰ বেছিভাগ প্ৰজাতি ইণ্ডিকা, জাপোনিকা আৰু জাভানিকা। ইয়াৰ উপৰিও খুব কম পৰিমাণে গ্লেবেৰিয়া প্ৰজাতিৰ ধান আফ্ৰিকা মহাদেশত আৰু বনৰীয়া ধান আমেৰিকা মহাদেশত কৰা দেখা যায়।



ক'লা ধানো এবিধ আঠা জাতীয়, পুষ্টি মৌলৰে পৰিপূৰ্ণ ইণ্ডিকা প্ৰজাতিৰ ধান যাক প্ৰধানত এছিয়া মহাদেশত পোৱা যায়। এই ধানৰ গোটেই বীজটো (চাউল) ক'লা ৰঙৰ হয়। প্ৰচুৰ পৰিমাণে এণ্ঠোচাইনিৰ নামৰ গ্ৰন্থি জমা কৰি ৰাখিব পৰা এই জাতৰ ধানক নিষিদ্ধ ধান, স্বৰ্গীয় ধান, ৰাজকীয়া ধান বা বহুমূলীয়া ধান বুলি জনা যায়।

পৌৰাণিক উপাখ্যান মতে এই বিধ খাদ্য অকল চীনৰ ৰাজকীয় পৰিয়ালৰ সদস্যইহে ব্যৱহাৰ কৰিব পাৰিছিল। সাধাৰণ মানুহে বিনা অনুমতিত ইয়াক ভক্ষণ কৰিলে ফাঁচিদিও দিয়া হৈছিল। সেই কাৰণে ইয়াক নিষিদ্ধ ধান বুলি জনাজাত। অতি পুৰণি কালৰ পৰা এইবিধ শস্য প্ৰধানত এছিয়ান দেশে যেনে- চীন, ভাৰত আৰু থাইলেণ্ডত বিভিন্ন জাতৰ খেতি কৰি আহিছে। পৃথিৱীত ২০০ বিধতকৈও বেছি ক'লা ধানৰ জাত পোৱা যায়। বৰ্তমান এইবিধ শস্য উৎপাদনৰ ফালৰ পৰা একাধিক্ৰমে দেশবোৰ হ'ল- চীন, শ্ৰীলংকা, ইণ্ডোনেছিয়া, ভাৰত, ফিলিপাইনচ, বাংলাদেশ, থাইলেণ্ড ইত্যাদি। উল্লেখ কৰিব পাৰি যে, পৃথিৱীৰ সৰ্বমুঠ ক'লা ধানৰ উৎপাদনৰ ৬২ শতাংশই চীন দেশে উৎপাদন কৰে আৰু ৫৪ বিধতকৈ বেছি আধুনিক উন্নত জাতৰ ক'লা ধানৰ বীজ চীনা বৈজ্ঞানিক সকলে প্ৰস্তুত কৰি উলিয়াইছে। জাপানীজ গৱেষক সকলৰ মতে (ডিপ্লেন্ট চেল ২০১৫ প্ৰকাশিত) এণ্টোচাইনি অৰ্থাৎ ক'লা বৰণৰ চাউলৰ আনুৰংশীক (Genetic) কাৰক হৈছে “কালা ৪” (Kala 4) নামৰ জীন।

উত্তৰ পূৱ ভাৰতৰ সাধাৰণতে মণিপুৰত এই বিধ ধান বিশেষ ভাৱে ব্যৱহাৰ কৰে যাক “চাক-হাও” (Chak-hao) বুলি জনা যায়। ভাৰতবৰ্ষত এইবিধ ধানৰ খেতি বেছিকৈ কৰা ৰাজ্যবোৰ হ'ল- মণিপুৰ, উৰিষ্যা, পশ্চিমবংগ আৰু ঝাৰখণ্ড। পুৰণিকালত ইয়াক আচলতে

একাষৰীয়া কৰি বেলেগ ধানৰ জাতৰ লগত সংমিশ্ৰণ নোহোৱাকৈ একেটা অঞ্চলত কৰিছিল। সেয়েহে আধুনিক কৃষি পদ্ধতিত ইয়াক বিস্তৃৰ্ণ এলেকাত কৰা দেখা নাযায়। কম উৎপাদনক্ষম হোৱা হেতুকে বৰ্তমান মণিপুৰত সৰ্বমুঠ ধান খেতিৰ মাটিকালিৰ মাত্ৰা ১০ শতাংশ মাটিতহে ক'লা ধান কৰা দেখা যায়। লক্ষণীয় কথা এই যে, মণিপুৰত ক'লা চাউলৰ সুস্বাদু অবিহনে পৰম্পৰাগত ভাৱে উৎপাদন কৰা সামাজিক অনুষ্ঠান অসম্ভৱ। অসমতো এইবিধ শস্যৰ ওপৰত প্ৰৱণতা ক্ৰমশঃ বহিছে। কৃষি বিজ্ঞান কেন্দ্ৰ, দুধনৈৰ কৃষি বিজ্ঞানী সকলৰ তত্ত্বাবধানত ২০১১ চনৰ পৰা বিশেষকৈ গোৱালপাৰা জিলাৰ কৃষক ৰাইজ ক'লা ধানৰ জাতৰ প্ৰদৰ্শনীমূলক কাৰ্যসূচী গ্ৰহণ কৰিছে।

বৰ্তমান যুগত প্ৰধানতঃ খাদ্য হিচাপে চাউল ব্যৱহাৰ কৰা দেশবোৰত স্বাস্থ্য আৰু যোগ্যতা সজাগ মানুহবোৰৰ এক বিশেষ হ'ল- “স্বাস্থ্য আৰু খাদ্য হিচাপে ভাত”। পুষ্টি বিশেষজ্ঞ সকলৰ মতে ভাল স্বাস্থ্য আৰু যোগ্যতা লাভ কৰিবলৈ হ'লে স্বাস্থ্যৱান খাদ্য গ্ৰহণ কৰিব লাগিব। পৰীক্ষাগাৰত দেখা গৈছে যে ক'লা চাউলত বেলেগ চাউলতকৈ কম শৰ্কৰাযুক্ত, কম লৱনযুক্ত আৰু কম চৰ্বিযুক্ত। আনহাতে ইয়াত অত্যাধিক পৰিমাণৰ আহ জাতীয় দ্ৰব্য, এণ্টোচাইনি, ভিটামিন বি আৰু ই, থাইমিন, মেগনেছিয়াম, নিত্ৰচিন আৰু ফচফৰাচ পূৰ্ণ যায়। সেয়েহে পুষ্টিবিদ সকলৰ মতে ক'লা

চাউল ভক্ষণে মগজুৰ বিকাশ ঘটায় আৰু ই ডাইবেটিক, হৃদৰোগী আনকি কৰ্কট ৰোগীৰ বাবেও উত্তম আহাৰ। অন্যহাতে দেখা যায় যে ক'লা আৰু অন্য চাউলত মুখ্য মৌলৰ

পৰিমাণ যদিও প্ৰায় সমান (তালিকা ১) তথাপি গৌণ মৌলৰ পৰিমাণ ক'লা চাউলত বহুত বেছি।

তালিকা ১ : একাপৰ চতুৰ্থংশ চাউলত থকা শক্তি (গড় পৰিমাণ)

বিষয়	ক'লা চাউল	মুগা চাউল	বগা চাউল
শক্তি	১৬০ কেলৰি	১৭০ কেলৰি	১৮০ কেলৰি
কাৰ্বোহাইড্ৰেড	১৬০ কেলৰি	১৭০ কেলৰি	১৮০ কেলৰি
প্ৰটিন	৫ গ্ৰাম	৪ গ্ৰাম	৩ গ্ৰাম

উৎস : <https://legionathletics.com>

ক'লা চাউলত অত্যাধিক আহ জাতীয় দ্ৰব্য থকা হেতুকে ই মানুহৰ অতিৰিক্ত ওজন কোমোৰাত সহায় কৰে। কোৰিয়াৰ হানইংয়ঙ বিশ্ববিদ্যালয়ৰ খাদ্য আৰু পৰিপুষ্টি বিভাগত ২০০৮ চনত চলোৱা এক গৱেষণা পত্ৰ (নিউট্ৰিচন ৰিচাৰ্ছ, ২০০৮) সিদ্ধান্তত কয় যে, ক'লা আৰু ৰঙা চাউল ভক্ষণ কৰিলে শৰীৰৰ বৰ্দ্ধিত অতিৰিক্ত ওজন কমে। অন্য এক গৱেষণাত (জাৰনেল অৱ নিউট্ৰিচন, ২০০১ নামৰ গৱেষণা পুথিত প্ৰকাশিত) পোৱা তথ্যমতে ৰঙা আৰু ক'লা চাউল হৃদৰোগত আক্ৰান্ত মানুহে আহাৰ হিচাপে গ্ৰহণ কৰিলে ভাল ফল লাভ কৰিব পাৰে। এনেল অৱ নিউট্ৰোলজি নামৰ গৱেষণা পুথিত ২০১২ চনত প্ৰকাশিত এলিজাবেথ ডি ডেভৰ আৰু সতীৰ্থ গৱেষক সকলৰ পত্ৰ মতে উচ্চ এণ্টোচাইনি যুক্ত খাদ্যই মানুহৰ

মানসিক বৃদ্ধতা কমাই আনে। আনকি এই খাদ্যই মানুহৰ শিকা আৰু মনত ৰাখিব পৰা শক্তিও বৃদ্ধি কৰে। পুষ্টি বিশেষজ্ঞৰ মতে ক'লা চাউলৰ গ্লাইচেমিক হৈছে ৪২, যি অন্য চাউলৰ তুলনাত বহুত বেছি আৰু সেই কাৰণে ই ডাইবেটিক ৰোগী সকলৰ কাৰণে অতি উত্তম আহাৰ।

ক'লা চাউলৰ বাহিৰভাগ অন্য চাউলৰ তুলনাত ওখৰা মোখৰা কিন্তু ই প্ৰাকৃতিকভাৱে মিঠা আৰু সুগন্ধি যুক্ত। অন্য চাউলৰ তুলনাত ইয়াক বেছিকৈ সিজাব লাগে যদিও চাউলখিনি গোটেই ৰাতি বিশুদ্ধ পানীত তিয়াই থলে পিছদিনা কম সময়তে ই সিদ্ধ হয়। ওপৰত বাখ্যা কৰাৰ দৰে ক'লা চাউলবোৰত এণ্টোচাইনি গ্ৰন্থি থকা হেতুকে ই বন্ধাৰ পিছত বেঙুনীয়া বা কজলা বৰণ হৈ পৰে

যিয়ে দেহত এন্টিঅক্সিডেন্টৰ কাম কৰে। উল্লেখযোগ্য এই যে ইয়াক পায়খ, পুডিং, কেক, ইউৰোপীয়ান চালাদ “ৰিচোটো” খিৰ ইত্যাদি তৈয়াৰ কৰি ফ্রীজত কেইবাদিনো ৰাখিব পাৰি। উপযুক্ত ক’লা চাউলৰ জাত

যেনে : লং জেছমিন, গ্লুটিনাচ থাই সৰু চাউল ইত্যাদিবোৰ সুস্বাদু খাদ্য বনাবলৈ উত্তম। তীক্ষ্ণ ক’লা আৰু দীঘলীয়া আকৃতিৰ ধানহে আচলতে সঁচা অৰ্থত নিষিদ্ধ ক’লা ধান আৰু ই চালাদৰ বাবে অতি উপযুক্ত।

নাৰ্ছাৰী ব্যৱসায়ী গীতাঞ্জলী শইকীয়াৰ সলতাৰ কাহিনী...

ভাস্কৰ পাঠক
জিলা উদ্যানশস্য সমন্বয়ক
এপাৰ্ট, গোলাঘাট

বৰ্তমানৰ সময়ত অনেক শিক্ষিত যুৱক-যুৱতীয়ে তেওঁলোকৰ পেছা হিচাপে গঢ়ি তুলিছে নাৰ্ছাৰী। কম পুঁজি আৰু কম ঠাইত কৰিব পৰা এক লাভজনক ব্যৱসায় হোৱা হেতুকে আজিৰ যুৱ প্ৰজন্মৰ বহুতেই এই নাৰ্ছাৰী বৃত্তিটোৰ সৈতে জড়িত হৈ পৰা দেখা পোৱা গৈছে। তেনে এগৰাকী শিক্ষিত যুৱতীৰ নাম হ’ল গীতাঞ্জলী শইকীয়া। গোলাঘাট জিলাৰ মেৰাপানী অঞ্চলৰ ৪ নং টেঙানি, কল্যাণপুৰ গাঁওৰ নিৰ্বাসী আদিত্য শইকীয়া আৰু মমী শইকীয়াৰ ২২ বছৰীয়া জ্যেষ্ঠ কন্যা গীতাঞ্জলীয়ে নাৰ্ছাৰী ব্যৱসায় কৰি নিজকে আত্মপ্ৰতিষ্ঠা কৰিবলৈ সক্ষম হৈছে। উল্লেখযোগ্য যে, ২০২১

চনৰ অক্টোবৰ মাহৰপৰা এতিয়ালৈ তেওঁ নিজৰ নাৰ্ছাৰীত উৎপাদন কৰা বিভিন্ন ধৰণৰ ফলমূল, ফুল আৰু শাক-পাচলিৰ পুলি বিক্ৰী কৰি ৬ লক্ষাধিক টকা উপাৰ্জন কৰিছে। গীতাঞ্জলীয়ে নিজৰ নাৰ্ছাৰীৰ পুলিবোৰ দুচকীয়া বাহনত লৈ নিজে গোলাঘাট জিলাৰ বিভিন্ন হাট বজাৰত বহি বিক্ৰী কৰে, যি দৃশ্য সচৰাচৰ আমাৰ ৰাজ্যত দেখা পোৱা নাযায়। আপুনি যদি অক্টোবৰ মাহৰ পৰা মাৰ্চ মাহৰ ভিতৰত গোলাঘাট জিলাত দেওবাৰে বৰহোলা আৰু ওৱাটিংলৈ, সোমবাৰে মেৰাপানী ৰতনপুৰলৈ, মঙলবাৰে গমাৰিগুৰিলৈ, বৃহস্পতিবাৰে বৰপথাৰলৈ আৰু শনিবাৰে



জামুগুৰিত বহা সাপ্তাহিক বজাৰলৈ আহে, তেন্তে দেখিব গীতাঞ্জলীয়ে বন্ধাকবি, ফুলকবি, উলকবি, ব্রোকলি, জলকীয়া, বেঙেনা, ভোট-জলকীয়া, কেপচিকাম, কেৰেলা আদি নানা ধৰণৰ নিজৰ নাৰ্ছাৰীত উৎপাদন কৰা পুলিৰ লগতে বিভিন্ন ধৰণৰ ফুল আৰু শাক-পাচলিৰ পুলি বিক্ৰী কৰে। অলপতে মেৰাপানী ৰতনপুৰত অনুষ্ঠিত হোৱা বড়ো সাহিত্য সভাৰ অধিবেশনত বিপণী পাতি গীতাঞ্জলীয়ে প্ৰায় ৬০,০০০ টকা মূল্যৰ পুলি বিক্ৰী কৰিবলৈ সক্ষম হৈছিল। এগৰাকী ভাল মহিলা ব্যৱসায়ী হিচাপে প্ৰতিষ্ঠা লাভ কৰিবলৈ হ'লে সততা, আত্মবিশ্বাস আৰু দৃঢ়তা আদিৰ দৰে গুণৰ অধিকাৰী হ'ব লাগিব। গোলাঘাটৰ হেমপ্ৰভা বৰবৰা ছোৱালী মহাবিদ্যালয়ৰ পৰা এইবাৰ স্নাতক চূড়ান্ত পৰীক্ষাত অৱতীৰ্ণ হৈছে গীতাঞ্জলীয়ে। পিতৃ আদিত্য শইকীয়া ২০০৫ চনৰ পৰাই নাৰ্ছাৰী ব্যৱসায়ৰ সৈতে জড়িত আছিল। ২০১৮ চনৰ নৱেম্বৰ মাহত দুৰ্ভাগ্যবশত আদিত্য শইকীয়া হাড়ৰ বেমাৰত আক্ৰমণ হৈ নৰিয়া পাটীত পৰে আৰু সেইবাবে গীতাঞ্জলীয়ে নাৰ্ছাৰীখনৰ সমস্ত দায়িত্ব ল'বলগীয়া হয়। প্ৰথম অৱস্থাত মাক আৰু খুড়াকৰ সৈতে মিলি তেঁও নাৰ্ছাৰীখনৰ প্ৰতিটো দিশতে নিজকে আত্মনিয়োগ কৰে। বজাৰখন চম্ভলাৰ পিছত ২০১৮ চনত ২ লাখ, ২০১৯ চনত ২,৫০,০০০, ২০২০ চনত ৩,০০,০০০ আৰু ২০২১ চনত গীতাঞ্জলীয়ে ৬ লাখ টকা উপাৰ্জন কৰিবলৈ সক্ষম হৈছে। তেঁও নিজৰ মৰমৰ পুলি বাৰীখনৰ নাম ৰাখিছে “নাইট কুইন নাৰ্ছাৰী”।

অসম চৰকাৰৰ বৰ্তমানৰ কৃষিমন্ত্ৰী মাননীয় অতুল বৰাদেৱৰ পত্নী আৰু গোলাঘাটৰ হেমপ্ৰভা বৰবৰাৰ ছোৱালী মহাবিদ্যালয়ৰ ৰাজনীতি বিজ্ঞান বিভাগৰ জ্যেষ্ঠ প্ৰবক্তা শ্ৰীমতী বুলবুলি বৰা বাইদেৱে সময়ে সময়ে গীতাঞ্জলীক আৰ্থিক আৰু মানসিকভাৱে সহায় সহযোগ কৰি থাকে। “অসম কৃষি বাণিজ্য আৰু গ্ৰাম্য ৰূপান্তৰকৰণ প্ৰকল্প” চমুকৈ এপাৰ্ট’ৰ অধীনত ২০২০-২০২১ চনৰ অধীনত গীতাঞ্জলী শইকীয়াক ৫০% ৰেহাই মূল্যত নাৰ্ছাৰী স্থাপন কৰিবৰ বাবে গোলাঘাট জিলাৰ পৰা এগৰাকী হিতাধিকাৰী ৰূপে নিৰ্বাচিত কৰা হয়। উক্ত আঁচনিৰ অধীনত গীতাঞ্জলীয়ে কামৰূপ জিলাৰ সোণাপুৰত অৱস্থিত ডেফোডিল

কৃষি উদ্যান মহাবিদ্যালয়ত নাৰ্ছাৰীৰ বিষয়ে পূৰ্ণকালীন প্ৰশিক্ষণ লাভ কৰিছে। লগতে প্ৰশিক্ষণ পাইছে অসম কৃষি বিশ্ববিদ্যালয়ত থকা এপাৰ্ট’ৰ জৰিয়তে আয়োজিত নাৰ্ছাৰীৰ বিষয়ে পতা কাৰ্যক্ৰমবোৰত।

অসমৰ গ্ৰাম্য অৰ্থনীতিত মহিলাসকলৰ সম্পূৰ্ণ অন্তৰ্ভুক্তিৰে অৰ্থনৈতিক, সামাজিক, সংস্কৃতিক আৰু ৰাজনৈতিক প্ৰতিবন্ধকতা দূৰ কৰিব পাৰিলেহে আমাৰ ৰাজ্যখনৰ অৰ্থনীতিৰ সামগ্ৰিক দিশত কিছু বিকাশ সাধন হ’ব। গীতাঞ্জলীৰ দৰে যুৱতীসকলক আৰু সমৃদ্ধিৰ পথত আগবঢ়াই নিয়াটোৱে এপাৰ্ট প্ৰকল্পৰ আন এক অন্যতম লক্ষ্য আৰু উদ্দেশ্য।

KRISHI RUPANTAR

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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

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