

2023-2024

# ANNUAL REPORT

Towards building advanced  
intelligent system for agriculture



**BANGLADESH AGRICULTURAL RESEARCH COUNCIL**

Farmgate, Dhaka-1215, Bangladesh  
[www.barc.gov.bd](http://www.barc.gov.bd)



## National Agricultural Research System (NARS)

Institute	Ministry	Areas of Research
Bangladesh Agricultural Research Council (BARC), Dhaka www.barc.gov.bd	Agriculture	Strengthen the national agricultural research capability through research planning, coordination, integration and resource allocation
Bangladesh Agricultural Research Institute (BARI), Joydebpur, Gazipur www.bari.gov.bd	Agriculture	Basic, applied and adaptive research on cereals (other than rice), pulses, oilseeds, vegetables, horticultural crops etc.
Bangladesh Rice Research Institute (BRRI), Joydebpur, Gazipur www.brri.gov.bd	Agriculture	Basic, applied and adaptive research on rice
Bangladesh Jute Research Institute (BJRI), Sher-e-Bangla Nagar, Dhaka www.bjri.gov.bd	Agriculture	Basic, applied and adaptive research on jute production and utilization
Bangladesh Institute of Nuclear Agriculture (BINA), Mymensingh www.bina.gov.bd	Agriculture	Application on nuclear technology in agriculture
Bangladesh Sugarcrop Research Institute (BSRI), Ishurdi, Pabna www.bsri.gov.bd	Agriculture	Applied and adaptive research on sugarcrops
Soil Resource Development Institute (SRDI), Farmgate, Dhaka www.srdi.gov.bd	Agriculture	Soil survey, soil classification and soil characterization
Cotton Development Board (CDB), Khamarbari, Farmgate, Dhaka www.cdb.gov.bd	Agriculture	Cotton production and research
Bangladesh Wheat and Maize Research Institute (BWMRI), www.bwmri.gov.bd	Agriculture	Basic, applied and adaptive research on wheat and Maize
Bangladesh Fisheries Research Institute (BFRI), Mymensingh www.fri.gov.bd	Fisheries and Livestock	Marine and freshwater fisheries research
Bangladesh Livestock Research Institute (BLRI), Savar, Dhaka www.blri.gov.bd	Fisheries and Livestock	Basic and applied research on cattle, buffalo, sheep, goats, poultry, duck, etc.
Bangladesh Forest Research Institute (BFRI), Sholashahar, Chittagong www.bfri.gov.bd	Environment Forest and Climate Change	Forestry and agroforestry research
Bangladesh Tea Research Institute (BTRI), Srimangal, Moulvibazar www.btri.gov.bd	Commerce	Applied and adaptive research on tea
Bangladesh Sericulture Research and Training Institute (BSRTI), Baliapukur, Rajshahi www.bsrti.gov.bd	Textiles and Jute	Research and training on sericulture

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[www.barc.gov.bd](http://www.barc.gov.bd)



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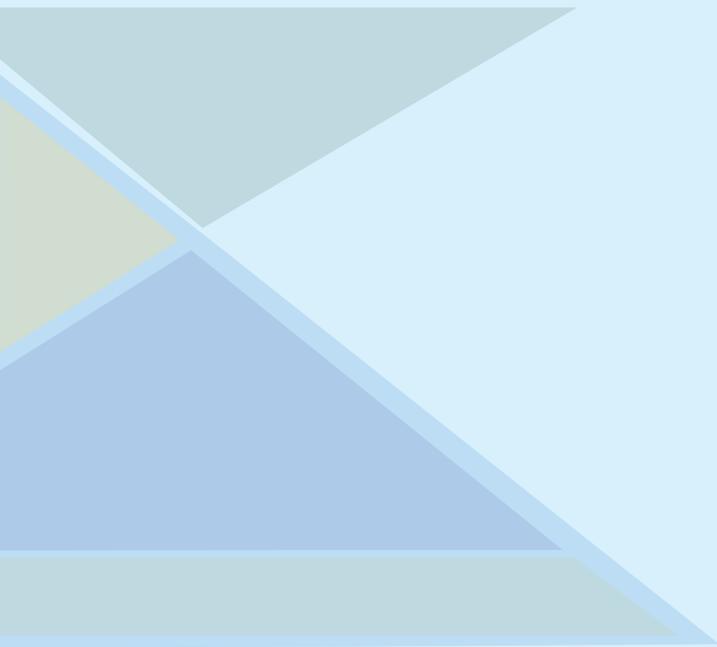
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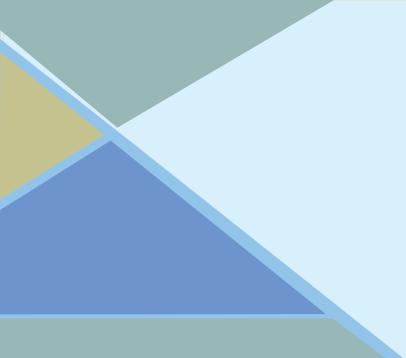
## Foreword

I am pleased that we are able to publish the Annual Report of the Bangladesh Agricultural Research Council (BARC) for 2023-2024. As the apex body overseeing agricultural research within the National Agricultural Research System (NARS), BARC is continuing dedicated efforts to strengthen agricultural innovation, technology diffusion, sustainability, and food security in Bangladesh.

During this reporting period, BARC has made significant strides in various research and development initiatives. Our participation in international forums, such as the Tenth Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) in Rome, meters our commitment to global agricultural development. At home, formulation of the 'National Seed Vision 2041' will contribute to the long-term agricultural productivity of Bangladesh.

Key achievements include the completion of crop zoning for 420 out of 495 upazilas, finalizing crop suitability assessments for 55 upazilas, and the development and approval of eight Good Agricultural Practices (GAP) protocols for crops such as mango, jackfruit, and brinjal. Furthermore, BARC ranked second in 2022-23 Annual Performance Agreement (APA) evaluation which is a testament to our pledge to excellence in agricultural research. The council's efforts also extends to addressing the pressing challenges of modern agriculture. Workshops efforts on the SDG Action Plan and 4IR Action Plan brought together experts and stakeholders to ensure alignment with national and global priorities. BARC also collaborated with the University of Twente to develop a training proposal on 'Multimodal Remote Sensing for Climate-Smart Agriculture Applications,' ensuring that we remain at the forefront of technological innovation in agriculture.

We are particularly proud of the coordinated efforts to develop the National Soil Map and Soil Information Systems in partnership with SRDI. These resources will serve as invaluable tools for policymakers, farmers, and researchers. Additionally, our participation in international symposiums and the signing of an MoU with the International Water Management Institute (IWMI) reflects BARC's proactive approach to addressing critical issues such as water management and salinity challenges. With significant funding allocated for research and technology transfer, and the successful recruitment of new officers through. BARC has strengthened its capacity to support country's agricultural sector.



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As we look ahead, BARC remains steadfast to accelerate agricultural innovation, promoting sustainable practices, and contributing to food security and agricultural resilience.

I would like to extend my heartfelt gratitude to our stakeholders, partners, and the dedicated team of BARC for their tireless support and collaboration in achieving these milestones. I congratulate and thank to the scientists, officers and staff for their whole-hearted cooperation and activities carried during the reporting period. Finally, I thank those associated with compiling and editing the annual report 2023-2024.

I believe, together, we will build a sustainable and food-reliant future for Bangladesh.



**Dr. Nazmun Nahar Karim**

Executive Chairman

Bangladesh Agricultural Research Council

# Executive Summary



The Annual Report, 2023-24 is presenting the activities of Bangladesh Agricultural Research Council (BARC) associated with coordination, management and development of research programs of the National Agricultural Research System (NARS) Institutes. The highlights of the different progress activities during the period have been focused in this report.

The Annual Report of the Bangladesh Agricultural Research Council (BARC) for 2023-2024 highlights the council's governance, management, and development of research programs. As the national apex body for agricultural research, BARC consistently participates in international programs. Notably, a Member Director (crops) attended the Tenth Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) in Rome, along 151 participating countries.

Following the 99<sup>th</sup> meeting of the National Seed Board, a 17-member committee was formed to develop the 'National Seed Vision 2041'; enhancing Bangladesh's long-term agricultural strategy. During the reporting period, BARC completed crop zoning for 420 out of 495 upazilas, with detailed assessments of crop suitability for 55 upazilas finalized during July 2023 to June 2024.

BARC developed and approved eight Good Agricultural Practices (GAP) protocols based on local standards for crops such as mango, jackfruit, and brinjal, promoting sustainable agricultural practices. The council ranked second among 17 MoA institutions in 2022-23 APA evaluation, landmarked as the Executive Chairman received a crest and certificate of recognition.

A good number of workshops were organized, including a national workshop on the SDG Action

Plan, with 95 participants, and a review of the 4IR Action Plan that attended over 100 participants. In collaboration with the University of Twente, A training proposal on 'Multimodal Remote Sensing for Climate Smart Agriculture Applications' was developed.

BARC coordinated the development of the National Soil Map and Soil Information Systems as part of an ongoing project with SRDI.

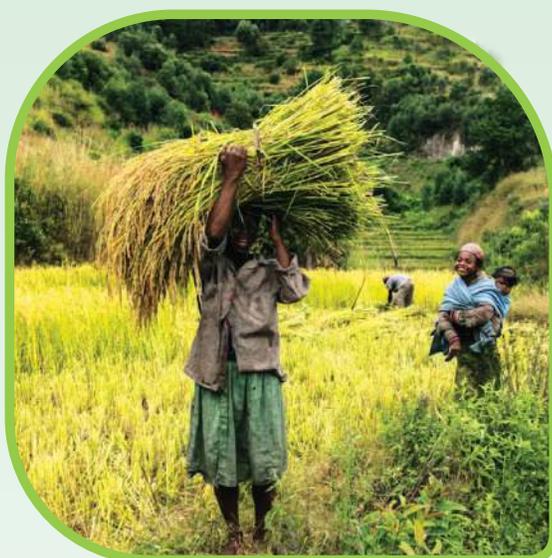
One Member Director (Crops) participated an international symposium addressing salinity challenges and signed an MoU with the International Water Management Institute (IWMI) to tackle water management issues. A workshop on the Draft Dairy Breeding Roadmap was conducted, culminating in the completion of a comprehensive roadmap financed by the Ministry of Agriculture.

Additionally, a project was designed to assess health risks associated with pesticide residues in foods in collaboration with Moulana Bhashani Science and Technology University. The institute's innovative "Newspaper Clipping" initiative received a second award among 17 organizations for its effective dissemination of agricultural news.

In 2023-24, BARC received Tk. 3414.73 lakh for various operational needs, including salaries, research, and technology transfer. Eight DPC-2 meetings were held, facilitating recruitment of ten officers.

These activities reflect BARC's commitment to advancing agricultural research, promoting sustainable practices, and enhancing food security in Bangladesh.

# CROPS DIVISION



## CROPS DIVISION

The Crops Division is a vital part of the organization, carrying out a wide range of functions and responsibilities aimed at ensuring food security, improving livelihoods, generating employment, and promoting equitable natural resource management. In addition, the division oversees the NARS institutes' research progress and programs on a routine basis. Furthermore, it also pays its utmost and sincere efforts in formulating various national policies and providing inputs and comments on similar documents compiled by other organizations. It is exerting its duties with the following professionals-

Name of Professionals	
Name	Designation
Dr. Md. Abdus Salam	Member Director
Dr. Md. Harunur Rashid	Chief Scientific Officer
Dr. Shah Md. Monir Hossain	Chief Scientific Officer
Dr. Md. Mahfuz Alam	Principal Scientific Officer
Dr. Md. Rezwan Molla	Principal Scientific Officer
Dr. Md. Jamal Uddin	Principal Scientific Officer
Dr. Md. Jahirul Islam	Principal Scientific Officer

### 1. Review and Evaluation of Research Programs

#### a) Annual Research Progress and Programs

The Crops Division Provided technical support through arranging research progress review, 2022-23 and program planning, 2023-24 workshop on (i) Crop Improvement, (ii) Crop Production, (iii) Disease Management, (iv) Insect Management, and (v) Biotechnological research program based on National Agriculture Policy 2018, 8<sup>th</sup> FYP and SDG's towards climate resilient technology development. Member Director (Crops), Chief Scientific Officer, and Principal Scientific Officers participated different programs as an expert member in the Central Review of BARI and Annual Review of BRRI and opined their technical suggestion.

#### b) Formulation of National Seed Vision 2041

According to the decision of the 99<sup>th</sup> meeting of the National Seed Board, a 17-member committee was formed with Executive Chairman, BARC as Convener and General Manager (Seed), BADC as Member-Secretary for the formulation of 'National Seed Vision 2030. In the 4<sup>th</sup> meeting of the committee, it was decided to formulate 'National Seed Vision 2041 through an expert considering the national importance. In this regard, the former Executive Chairman of BARC, Dr. Mohammad Jalal Uddin was selected and the information collected from various organizations was sent to him. He prepared an initial draft of 'National Seed Vision 2041' and sent it to BARC. He also said in his speech that the summary table provided by BADC should be

sent as a model to other institutions so that all institutions can add to the draft table regarding the projection of their seed vision.

The coordinator, PI, and expert reviewed other countries' seed vision. They collected secondary data from all of the stakeholders' institutes viz. NARS, BADC, DAE, agricultural universities, and private seed organizations. A series of Seed Vision meetings held on BARC with participations of all stakeholders. A draft of National seed vision 2041 was presented in the stakeholders' meeting and their feedbacks were integrated. The technical committee meeting and workshop was arranged and finalized National Seed Vision 2041. The final draft "National Seed Vision 2041" was sent to the Ministry of Agriculture.

Implementation of National Seed Vision 2041 will contribute to seed security, increase crop productivity and production, increase farmers' income, seed import substitution and export promotion, increase quality seed substitution rate to food insecurity, new employment generation, biodiversity conservation, climate change adaptation, and gender equality.

### **c) 'Development of Upazila Land Suitability Assessment and Crop Zoning System of Bangladesh' Project**

The crops division has been coordinating the project titled "Development of Upazila Land Suitability Assessment and Crop Zoning System of Bangladesh" (in short Crop Zoning) with financial support of Krishi Gobeshona Foundation (KGF) since June 2017. The first phase of the project ended in January 2022 and the second phase initiated in February 2022. The main purpose of this project is to develop an online crop zoning application system using geospatial technology (GIS, RS, GPS) to deliver necessary information for maintaining a sustainable agricultural production system to ensure long-term food security. The crop zoning application system consists of a Crop Zoning Information System (CZIS), Crop zoning dashboard, 'Khamari' mobile app and agri-advisory portal ([www.cropzoning.gov.bd](http://www.cropzoning.gov.bd)).

The CZIS software is developed for maintaining and processing agro-edaphic and agro-climatic information related to crop suitability assessment and zoning. The 'Khamari' mobile app is developed for the dissemination of land parcel level information on suitable crops, crop varieties with their yield and duration, soil nutrient-based fertilizer recommendation, land and soil characteristics, etc. to the farmers, extension workers, and other stakeholders in agriculture. It is developed in Bangla and can be downloaded from the Google Play Store and Mac App Store. On the other hand, the crop zoning dashboard is specifically developed for planners and policymakers for drawing up agricultural land use and production planning.

During the period, July 2023 - June 2024, crop suitability assessment and zoning have been completed for 55 upazilas. In the meanwhile, 420 out of 495 upazilas have been completed. The major activities performed during the period are as follows:

- I. The agro-edaphic data i.e. landform, soil association, land type, land relief, soil texture, soil consistency, soil drainage, soil moisture, water recession, soil salinity, and soil pH required for suitability assessment of crop(s) have been completed for 55 upazilas.
- II. The soil nutrient status data i.e. Nitrogen (N), Phosphorus (P), Potassium (K), Sulphur (S), Zinc (Zn), Boron (B), Calcium (Ca), Magnesium (Mg), Ferus (Fe), Copper (Cu), Manganese (Mn), soil reaction (pH), Organic matter (OM) have been compiled and edited for 55 upazilas. This data is required for formulating fertilizer recommendations for crops and cropping patterns.

- III. The agro-climatic map layers required for the suitability assessment of crop(s) have been prepared for 55 upazilas.
- IV. The updating of upazila soil and landform map has been completed for 55 upazilas. The updated upazila soil and landform map and relevant data are used for preparing individual map layers of land and soil factors i.e. land type, land relief, soil texture, soil consistency, soil drainage, soil moisture, water recession, soil salinity and soil pH required for edaphic suitability assessment of crops. The upazila soil sample location map has also been created to provide fertilizer recommendations for crops. During the reporting period, these activities have been completed for 55 upazilas.
- V. During the reporting period demonstration trials were carried out by NARS institutes in 12 locations and DAE in 22 locations for T. Aman rice for validation of fertilizer recommendations provided through the 'Khamari' mobile app. The results of the T. Aman rice demonstration trials conducted in those 34 locations revealed that farmers could benefit from a minimum of 2090 Taka per 33 decimal following fertilizer doses recommended by the 'Khamari' app.
- VI. Coordinated activities related to demonstration trials conducted for Boro rice by DAE in 60 Upazilas using the 'Khamari' mobile app for fertilizer recommendations and water-saving AWD technology. For AWD technology, the DAE conducted demonstration trials at 48 locations, and the International Rice Research Institute (IRRI) at 12 locations.  
  
Using the 'Khamari' app's recommendations led to an 18.2% reduction in fertilizer costs and a 5.6% increase in yield per hectare. Farmers could benefit by at least Taka 16,206 per hectare by following the fertilizer doses recommended by the 'Khamari' app. The results of 60 trials showed that AWD technology saved 29.1% on average in irrigation and increased yield per hectare by 5.35%. Financially, adopting AWD for irrigation resulted in a profit of Taka 17,778 per hectare.
- VII. Training on 'Khamari' mobile app was conducted at 70 upazilas for agriculture extension officers, farmers, and input providers. In total 3045 persons were trained of which 2590 were male and 455 were female participants. Many important improvements on CZIS and 'Khamari' apps have taken place based on the user feedback.
- VIII. The updated land use map for 54 upazilas has been prepared using satellite imagery during the reporting period. The information is very crucial for land use planning as it provides the actual extent of cultivable land and miscellaneous land area by upazila.
- IX. The updating of pourashava (ward), union, and mauza boundary has been carried out for 7 (seven) upazilas using small area atlas maps of BBS, BBS Geocodes, National Window Portal, and LGED Digital Maps.
- X. The geocode and name of division, district, upazila, union, and mouza both in Bangla Unicode and English have been updated as required for the crop zoning study. During the reporting period, updating has been done for 283 upazila.
- XI. The information related to crop varieties, crop management, production technology, etc. required for the crop zoning study has been gathered, compiled, edited, and documented both in Bangla and English. The information is available through 'Khamari' app.

- XII. During the period daily maximum and minimum temperature, rainfall, relative humidity, bright sunshine hour, cloud coverage, and wind data have been extracted for each of the 64 districts for the period of 1981-2022.
- XIII. Socio-economic data editing and economic profitability analysis in terms of gross margin and BCR of cropping patterns have been completed for 10 Upazila. Till now cropping pattern-wise profitability analysis for 442 upazila has been completed.
- XIV. The compilation and uploading of upazila-wise dominant cropping patterns into the crop zoning database were done for 491 upazilas. It serves the vital purpose of providing cropping pattern-based fertilizer recommendations to farmers.
- XV. During this period, many features were added to 'Khamari' mobile app. Some of the features are (1) Cropping pattern-based fertilizer recommendation; (2) Save searched outputs for offline access and share; (3) "Soil properties" for displaying important soil characteristics and nutrient status information for the land parcel; (4) Links to websites, videos, call center, infographics related to different useful agricultural services.
- XVI. During the reporting period, the crop zoning dashboard has been overhauled. The dashboard of the crop zoning system has been developed for quick and easy access to information. The users will be able to access information on crop suitability, land use, cropping pattern with profitability, crop zone, etc. in the form of a map, table, and chart instantly by upazila, district, division, country.
- XVII. The development of CZIS software, crop zoning dashboard, 'Khamari' mobile app, and agri-advisory portal in terms of adding new features, enhancement of existing features, improvement of the user interface, fixing bugs, etc. is ongoing.
- XVIII. During the reporting period, 8 (eight) workshops were conducted. A total of 803 participants participated the workshops, of which 695 were male and 108 were female participants. One workshop is organized to review the results of the demonstration set up on 'Khamari' mobile app for balanced fertilizer use and extension of water saving (AWD) technology in Boro rice 2023-24. The Honorable Secretary, Ministry of Agriculture was present as a Chief Guest of the workshop.
- XIX. Prepared Half Yearly Report for February 2023 to July 2023 and submitted to KGF.

**d) CGIAR Genebank Initiatives, Working together to support the Global System for PGRFA**

The call for expression of interest by the one CGIAR through the gene bank initiative of ITPGRFR secretariat in response to address SDG 2.5 and conservation of more genetic diversity.

One of the countries selected and participated in the call is Bangladesh

First Submission: 13 March 2023

Decision Received: Impressed with 'Bangladesh expression of interest' on 12 May 2023

IRRI as a member of the CGIAR consortium follow-up for further activities

Award Notification: 18 July 2023

**Project Duration:** 1 July 2023 to 31 December 2024

**Institutes involved:**

**IRRI:** Leads the coordination between the project proponents from Bangladesh and the Genebank Initiative team.

**BARC:** Coordination among the project proponents from Bangladesh and IRRI team.

**PGRC, BARI:** Implementing organization

**GRSD, BRRI:** Implementing organization

**Progress:**

Germplasm Collection: A total of 49 germplasm of Cucurbits and 4 chili have been collected from 4 districts of Bangladesh.

Characterization of germplasm to identify salient features: Rice: 80, Brinjal: 100

Viability and quantity of conserved seeds: Sweet gourd: 100, Chilli: 100, Pea: 100, Chickpea: 100

**Develop a Quality Management System (QMS) or Standard Operating Procedure (SOP):**

Draft Standard Operating Procedures (SOP) for Regeneration, Characterization, and Preliminary Evaluation of Six Agri-Horticultural Crops' Germplasm in Bangladesh has been prepared.

**Strengthened computerized data management system in gene bank operation:** A review of previously recorded PGR information has been started. At first passport information is arranged in format using a computerized data management system. Previously it was maintained in hard copy.

**e) Developing Export-Competitiveness of Selected Horticultural Crops in Bangladesh Project**

Ministry of Agriculture, Government of Bangladesh, and Wageningen University and Research, The Netherlands signed a Memorandum of Understanding (MoU)/Framework of Agreement on 25 June 2023. Under this MoU, the Ministry of Agriculture, the Government of Bangladesh, Wageningen University, and Research of the Netherlands are entering into a Bilateral Agreement on three work packages:

- a. Crop and Market diversification through Smart Agriculture on vegetable production systems;
- b. Developing Export-Competitiveness of Selected Horticultural Crops in Bangladesh;
- c. Strategy for Dairy Cattle Breeding in Bangladesh.

Crops Division of Bangladesh Agricultural Research Council coordinated the work package 'Developing Export-Competitiveness of Selected Horticultural Crops in Bangladesh' project. Under the project Scientist of Wageningen Food & Biobased Research, Wageningen University and Research prepared Export market studies and Post-harvest Standard Operating Procedures (SOPs) for exporting different Horticultural Crops like Mango, Jackfruit and Guava.

**f) Progress activities of Innovative Research (8.1.3.5), PARTNER**

Packaging and Refinement of Agro-technologies for Stress Prone Areas (Exp. Set up in Drought and Salinity prone areas to Validate and refinement of promising technologies are packaged for that area and transfer based on available farm resources and requirements, and also to increase farm productivity and income through efficient resource management.

**g) Asia regional FAW and BPH diagnostics and monitoring and surveillance program (PMP+)**

Two workshops titled "Asia Regional FAW and BPH Diagnostics and Monitoring and Surveillance Program (PMP+)" December 4-6, 2023, held at Ha Noi, Viet Nam and Inception Workshop on "Asia Regional Fall Armyworm (FAW) and Brown Plant Hopper (BPH) Diagnostics and Monitoring and Surveillance Program " at BARC, Dhaka, Bangladesh. The related experiments were ongoing at BRRI, BWMRI, and BRRI.

**2. Research Projects Monitoring and Evaluation**

Scientists of the Crops Division monitored the research activities implemented by the NARS institutes.

**a. Research activities implemented by the NARS institutes**

The team evaluated two division viz., Plant Pathology division of BARI and Entomology division of BRRI. The members of the team were Dr. Md. Iqbal Hosen, Principal Scientific Officer, Planning and Evaluation Division, Dr. Md. Shahzad Kuli Khan Principal Scientific Officer, Fisheries Division and Dr. Md. Mahfuz Alam, Principal Scientific Officer, Crops Division, BARC. The team visited to Entomology Division of BRRI and Plant Pathology Division and The recommendation and observations as follows:

**Plant Pathology Division, BARI**

- They have taken experiments on survey and identification of diseases of six hot spot areas viz., char land, barind area, haor and wetland basin, urban and coastal areas. The disease management program should be taken after the survey.
- A research program should be taken on disease management for roof top gardening and vertical farming.
- They have included different varieties to test against Nalanthamala psidii. Research program shall be taken on its management.
- For artificial inoculation, dormant stage of Ralstonia bacterium is to be considered.
- The commercial bio-pesticides received this year were tested for the presence of prescribed microorganisms.
- Depending on the DAE personnel demands, controlling the bacterial wilt of tomatoes in Sitakunda Upazila had been conducted successfully. In the previous year, this area was affected seriously. They collected rhizosphere soil and calculated much gram-negative microbial consortium converted CFU/g in the plot.
- Etiological studies and management of yellowing disease complex including citrus greening are in progress.
- They conducted morphological, biochemical, physiological, and DNA-based techniques including DNA-DNA hybridization and fatty acid profiling analyses for the case of Bacillus lallie YC7007 which is our US Patent (<https://patents.google.com/patent/US9862955B2/en>). But in the case of Bacillus velezensis GL6, we conducted 16 sRNA gene sequencing, phylogenetic analyses, EZclouds bioinformatics analyses, physiological test in plate bioassay, some biochemical tests, PGPR test, and antagonistic test. DNA-DNA hybridization and fatty acid profiling analyses were not conducted, requiring support and facilities.
- Mechanical transmission of RNA viruses is in routine work in Plant Pathology Division and a research program on seed transmission of important viruses shall be undertaken.

- Emphasis has been given to the management of viral diseases using Biotechnology intervention for example: identification of Geminivirus (ToLCV) resistant genes (ty1, Ty2, Ty3, Ty4, Ty 5 and Ty 6) in tomatoes is in progress.
- The compatibility study of respective bioagents/bio-pesticide and chemical nematicide used for nematode disease management was done.
- For disease management in floating agricultural systems (FAS) mostly bio pesticides are used to avoid possible water and environmental pollution.
- Soil solarisation methods have already been developed for disease management especially soil-borne diseases but difficult to implementation in Bangladesh. A research program shall be taken for plant disease management using nanotechnology and genome-edited-based technology. However, it is necessary to develop manpower regarding nanotechnology and genome-edited techniques.

### **Entomology Division, BRRI**

- The resistance level of BRRI dhan89 was screened against BPH and WBPH and found susceptible to against both insects (SES score 7).
- The division has a regular survey program using sweep net and visual count methods for pest and natural enemies in different AEZ. Also taken a programme on 'Survey and monitoring of rice arthropods in different crop zones'. The division has regular pest monitoring and surveillance systems using light traps in 11 regional stations.
- The highest beneficial insects, predators, and parasitoid were observed in rice fields with nectar-rich flowering plants on bunds (Eco-engineering). However, the least natural enemies and parasitism were found in farmers' practice rice fields where four times insecticides were applied. Moreover, there was no yield reduction observed in the eco-engineering field compared to the farmers' practice field (insecticide application). So, growing nectar-rich flowering plants on the bunds of rice crops is being used in the IPM programme.
- We identified six chemical pesticides and recommended registration to control storage rice insect pests. Also identified the fumigation of mahogany oil is effective in controlling angoumois grain moth. At present, the division has taken experiments to control rice weevil with indigenous botanicals.
- It has taken an experiment titled 'Study on entomogenous fungi to control BPH' in the programme year 2023-24.
- Both molecular and morphological approaches are in use to identify newly introduced pests. For example, they identified and characterized coffee spotted grasshopper using molecular characterization for the first time found in Cox's Bazar in 2020.
- Multiple pesticide residues (chlorpyrifos, chlorantraniliprole, carbofuran, thiamethoxam, and imidacloprid) determination method has been developed according to the international guideline for analysis of different pesticide residues in rice samples by coupling a modified QuEChERS extraction method with LC-MS/MS.

#### **b. Monitoring Field trial of Khamari mobile Apps and AWD research activities**

Scientists of Crops Division monitored and evaluated a field trial of Khamari mobile Apps and AWD research activities 2023-24 implemented by DAE in Aman and Boro season.

### 3. Policy Documents and Inputs Preparation

#### Policy Documents

During the reporting year, the following policy documents either have been prepared or reviewed or provided comments/inputs:

- Standard Operating Procedures for Research and Release of Genome Edited Plants of Categories SDN-1 and SDN-2 in Bangladesh
- Drafting National Seed Vision 2041.
- Drafting Plant Varieties Preservation Rules, 2024.
- Drafting Bangladesh Plant Genetic Resources Institute Act 2024.
- Giving opinion on the draft of 'National Gene Bank Management Policy'.
- Giving opinion on the draft of National Biosafety Policy 2024.
- Prepare a Plan of Action on Strengthening BIMSTEC Agricultural Cooperation Matrix of Implementation Plan (2023-2027) from BARC.
- Giving opinion on the draft of the National Biotechnology Project, 2024.
- Giving opinion on the draft of the National Biotechnology Policy, 2024.
- Giving opinion on the policies, laws, and rules related to logistics in agriculture and ways to overcome the problems.
- Giving opinion on the draft of the Insecticides Rules 2024

#### Inputs/Talking points

- Dispatch of information for the preparation of the annual report on the activities of the Ministry of Agriculture for the fiscal year 2022-23.
- The establishment of an Agricultural Research Center under the Bangladesh Agricultural Research Institute in Manda Upazila, Naogaon District.
- Following the National Biotechnology Policy 2012, a comprehensive report on long-term biotechnology research activities has been prepared by the Institute of Plant Biotechnology.
- After evaluating 68 registered varieties of potato as a non-notified crop, a report was sent to the Ministry of Agriculture.
- Extension of sustainable and resilient farming practices (development of salinity/flood/drought tolerant food management) and the implementation of food silos at the household level.
- Feedback has been sent regarding the inclusion of tea in the agricultural sector to secure a lower interest rate.
- A recommendation, adopted from the roundtable discussion titled 'Possibilities of Good Agricultural Practices in Fruit and Vegetable Export Growth,' has been sent.
- Dispatch of the letter providing information for the re-evaluation of potato varieties registered as non-notified crops (established at the field level during the 2023-24 Rabi season).
- To discuss the agenda of the 1st meeting of the Sub-Committee on "Science, Technology and Innovation and Space and Geo-Strategic Technology", the opinion of the Bangladesh Agricultural Research Council was sent to the Ministry of Agriculture
- Information about the ongoing and future research plans, facilities, and human resource development of NARS-affiliated institutes was sent.

- Comments on the draft protocol titled 'Phytosanitary Requirements for Exporting Fresh Mangoes were passed from Bangladesh to China.
- The implementation progress report for the 1<sup>st</sup> quarter of key activities/programs declared in the budget from the 2009-10 to 2023-24 fiscal years was sent for the formulation of the budget's progress report.
- A report was sent detailing the progress of implementing key decisions made at the Secretary Meeting.
- Progress in the implementation of the Honorable Prime Minister's directives for building a developed, prosperous, and smart Bangladesh has been sent.

#### 4. National and International Linkage and Cooperation

##### **Linkage with International Organizations and Development Partners in Bangladesh**

##### **Tenth Session of the Governing Body Meeting of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)**

Dr. Md. Abdus Salam, Member Director (Crops), Bangladesh Agricultural Research Council and National Focal Point (NFP) of International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), Bangladesh attended the Tenth Session of the Governing Body meeting of International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) held in Rome, Italy during 18-24 November 2023. A total of 151 contracting parties attended the meeting. The session was preceded by two days of regional and inter-regional consultations. The GB-10 theme was "From Seeds to Solutions Safe Guarding our Future: Working together with the Global Biodiversity Framework for Sustainable Food Systems. Dr. Salam made a regional statement on behalf of the Asia Region on the Chairperson report. Besides, Bangladesh attended the Budget Committee meeting as a member of the Asia region and was also selected as a member of "Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture".



*Dr. Salam Delivered the Statement on the Chairperson's Report*

## Regional Workshop on Taking Action on Biodiversity for Food and Agriculture in Asia and the Pacific

Dr. Md. Abdus Salam, Member Director (Crops), Bangladesh Agricultural Research Council and National Focal Point (NFP) of ITPGRFA, Bangladesh attended the Regional Workshop on Taking Action on Biodiversity for Food and Agriculture in Asia and the Pacific during February 27-29, 2024, held at the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) at Los Baños, Philippines. The workshop was organized by the Commission on Genetic Resources for Food and Agriculture (CGRFA) of the Food and Agriculture Organisation of the United Nations (FAO) and the Apimondia Federation.

The workshop aimed to enhance the capacity of National Focal Points (NFPs) in the region implementing the Framework for Action on Biodiversity for Food and Agriculture (BFA), a global instrument adopted by FAO for the sustainable management of biological diversity and maintenance of the ecosystem services related to and impacting the food and agriculture sectors. The workshop also served as an opportunity for the Commission's NFPs to share best practices in their respective countries and the invaluable lessons they learned in their commitment to achieving the goals set forth by the framework.



*Regional Workshop on Taking Action on Biodiversity for Food and Agriculture in Asia and the Pacific*

Representatives from countries of Asia and the Pacific, including Bangladesh, Bhutan, Cook Islands, Fiji, Laos, Malaysia, Maldives, Nepal, Papua New Guinea, the Philippines, Samoa, Sri Lanka, Vanuatu, and Vietnam, actively participated in the workshop.

During the workshop, NFPs provided updates on the current status of their countries' efforts in addressing the three strategic priority areas identified in the framework: characterization, assessment, and monitoring of BFA; management of BFA; and institutional frameworks for BFA. The output of the Workshop, in particular, its working groups focusing on the three strategic priority areas of the Framework for Action on Biodiversity for Food and Agriculture that will be synthesized in a final report for consideration by the Commission in March 2025.

## The Asia and the Pacific Food Security Forum 2024

The Asia and the Pacific Food Security Forum 2024 was held during 9-12 April 2024 in Manila, Philippines to discuss actions to ease a worsening food crisis in the region, and to improve long-term food security by strengthening food systems against the impacts of climate change and biodiversity loss.

The forum serves as a milestone event to take stock of the interim performance of the Asian Development Bank's (ADB) commitment to provide at least \$14 billion of its resources to support food security over 2022–2025 and to outline ADB's program on food security in partnerships with a diversity of stakeholders in Asia and the Pacific.

The forum extends an opportunity for partners in both the public and private sectors to showcase their thought and initiatives in building more sustainable and resilient food systems in the region for the future of climate, food, and nature. The forum also provides opportunities for engaging with policymakers, government officials, development practitioners, food system and climate change experts, and ADB staff to build strong partnerships in policies, project implementation and research, to accelerate food systems transformation in the region.

Dr. Md. Abdus Salam, Member Director (Crops), Bangladesh Agricultural Research Council attended the program as a Panelist in Deep Dive Session 2.3: Food Security with Low-Carbon Rice in Asia: Government Pilot Projects. Some other meetings the attendences are as follows.



Photograph of Moderator, Speaker and Panelist

- Organize First virtual meeting with Integrated Breeding Program (IBP) held on 07 September 2023
- Organize ITPGRFA Project meeting with BARI and BRRI on 12<sup>th</sup> September
- Attend SAARC Charter Day held on 10 December 2023
- Attended High-Level Policy Dialogue on Gene Editing for Sustainable Agriculture and Food Security in Asia Pacific Region during 11-12 December 2023, Bangkok, Thailand.
- Attended workshop on "Asia Regional BPH and FAW monitoring and surveillance program (PMP+)" during 04-06 December 2023, Ha Noi, Vietnam
- Attend the South-South Cooperation Program of FAO on Millets Value Chain Capacity Development Initiatives in cooperation with India held on 11-21 December 2023.
- Attend ADB Food Security Forum 2024 in Manila, Philippines on 7-13 April
- Attend the South Asia regional Forum on Climate Action and Food System transformation at Dhaka on 16-18 April.
- Attend APSA (Asia & Pacific Seed Alliance) Regional Expert Consultation on Plant Variety Protection and Biodiversity (24-25 April 2024, Bangkok, Thailand)
- Submission of a draft proposal on the introduction of contract farming in Turkey.
- Implementation of Framework of agreement between Ministry of Agriculture, Bangladesh, and Wageningen University & Research, the Netherlands

The Crops Division Provided inputs for Bilateral Meetings and Foreign Office Consultation (FOC) as below:

- Inputs for '78<sup>th</sup> United General Assembly 2023'
- Inputs for 'First United Nations Food Systems 2023 Stocking Moment'
- Inputs for Visit of Hon'ble Prime Minister to India
- Inputs for High-Level Ministerial Event to attend the 'International Conference on Food Security' held in Uzbekistan
- Inputs for Hon'ble Minister of Agriculture '16<sup>th</sup> Global Forum for Food and Agriculture'
- Inputs for Hon'ble Prime Minister's visit to India for participation in the G-20 Summit
- Inputs for Visit of Hon'ble Prime Minister to Thailand
- Inputs for the 7<sup>th</sup> Trade and Investment Cooperation Forum Agreement (TICFA) Meeting
- Inputs to attend the Conference on Food and Agricultural Development (9<sup>th</sup> MCFSD)
- Inputs for Bangladesh delegation visited ADB headquarters, International Rice Research Institute, and High Commission of Bangladesh in Sri Lanka
- Joint Agricultural Working Group meeting between Bangladesh and Brunei
- Probable agenda setting in 1<sup>st</sup> Joint Agriculture Working Group (JAWG) meeting between Bangladesh and Japan
- Updated information and inputs for the Implementation Plan for the Plan of Action on Strengthening BIMSTEC Agricultural Cooperation (2023-2027)
- Talking points for participation in the 16<sup>th</sup> Global Forum for Food Agriculture (GFFA) held in Berlin, Germany
- Inputs for inclusion in the OIC Program of Action for the next decade (years 2026-2035).
- Inputs for the preparation of 5<sup>th</sup> Senior Official Talks held in Canberra, Australia
- Inputs for presentation at "Roundtable discussion on the Diplomatic Conference on Genetic Resources (GR) and Associated Traditional Knowledge (TK)" held in Geneva

- Inputs for the preparation of the "13<sup>th</sup> round of Bangladesh China Diplomatic Consultation" to be held in Beijing
- Inputs on bilateral issues on the occasion of Hon'ble Prime Minister's visit to Brazil
- Opinions on import of mini tuber seed potatoes produced by Aeroponics method from India.
- FOC between Bangladesh and Maldives
- FOC between Bangladesh and Canada
- FOC between Bangladesh and Singapore
- FOC between Bangladesh and Brazil
- 5th FOC between Bangladesh and Belarus
- FOC between Bangladesh and Azerbaijan
- FOC between Bangladesh and Kenya
- FOC between Bangladesh and Oman
- FOC between Bangladesh and Singapore
- Opinions on the Draft Memorandum of Understanding (MoU) on Food Security between Bangladesh and the United Arab Emirates
- Opinions to attend Bangladesh in the 1<sup>st</sup> International Expo of Agriculture and Technological Innovation in Dakar, Senegal
- Opinions on the proposed Memorandum of Understanding for Bilateral Cooperation in Agriculture between Bangladesh and Indonesia.
- Opinions to attend Bangladesh in the 9th Sichuan Agricultural Expo (SAE), 2023 in Chengdu, Sichuan, China
- Opinions on the proposal of the Joint Cooperation Protocol aimed at Jute Cultivation and Production in Egypt.
- Sending views on the agriculture-related part of the joint action plan for presentation to the Partnership Dialogue on Bilateral Cooperation between Bangladesh and the GCC.
- Opinions on Bilateral Cooperation on the occasion of Political Dialogue between Bangladesh and Saudi Arabia
- Sending updated information on the overall situation of cooperation between UAE and Bangladesh in various fields
- Opinions on seed Trade between Bangladesh and India
- Talking Points on Support from IRRI to Increase Food Production and Achieve Food Sufficiency from BARC for Cooperation in the Field of Agriculture between Bangladesh and the Philippines
- Comments on 10<sup>th</sup> Meeting of the BIMSTEC Expert Group on Agricultural Cooperation (Held in virtual mode, 18-19 December 2023, Kathmandu, Nepal).
- Inputs for how Consultative Group on International Agricultural Research (CGIAR) could Contribute Better to Agriculture and Food Systems Transformation through Research in Bangladesh (14 February 2024, IRRI Conference Room, Banani, Dhaka).
- Inputs for 5th Senior Official Talks between Bangladesh and Australia in the Agriculture Sector
- Inputs for 13<sup>th</sup> Round of Bangladesh China Diplomatic Consultation Field of Agriculture
- Comments on Protocol of phytosanitary requirements for Export of fresh mangoes from Bangladesh to China between the general administration of customs of the people's republic of China and the ministry of agriculture of the people's republic of Bangladesh.

## 5. Workshop/Meeting/Seminar

### (a) Annual Research Review Workshop on Crop Improvement Program of NARS Institutes: Research Progress, 2022-2023 and Research Program, 2023-2024

A review workshop on the Crop Improvement Program of NARS Institutes was held at BARC auditorium during 22-23 August 2023. The objectives of the workshop were to review the research progress, 2022-23 and research programs, 2023-24 of nine NARS institutes viz., BARI, BRRI, BINA, BJRI, BSRI, BSRTI, BTRI, BWMRI, and CDB to avoid duplication of research after appraising proposed programs aligning various national policy documents and research priority. Scientists and academia of the relevant fields of the research institutes and Faculty members of different Agricultural Universities attended the workshop as expert members and provided various remarks and suggestions for improvement to be incorporated while planning future research programs.

Executive Chairman, BARC was present as chief guest in the inaugural session. He applauded scientists for their outstanding work towards present agricultural achievement especially in rice self-sufficiency and high production rate for other crops compared to previous production. He encouraged scientists to publish their research articles in reputed journals to build their careers as well as international exposure. He stressed concentrating on promoting commercial agriculture and aspects of advanced technology including 4IR in the context of climate vulnerability and increased demand for nutrition-rich high-value crops. All concerned are, therefore, requested to take challenges of increased food demand due to increasing population from a declining natural resource base as he further added.

Six expert members viz., Dr. Shahabuddin Ahmed, Former Director (HRC), BARI; Dr. Aziz Zilani Chowdhury, Former Member Director (Crops) BARC; Dr. Md. Abdul Latif Akanda, Former Director (ORC), BARI; Prof. Dr. Gazi Md. Mohsin, Department of Agriculture, NSTU; Prof. Dr. Naheed Zeba, Department of GPB, SAU and Prof. Dr. A.K.M. Aminul Islam; Department of GPB, BSMRAU attended the technical sessions for overviewing and providing appropriate suggestions for further improvement. There were four technical sessions chaired by Prof. Dr. Lutfur Rahman, Former Dean of the Faculty of Agriculture, BAU; Dr. Md. Matiur Rahman, Former Director General, BARI; Dr. Bhagya Rani Banik, Former Executive Chairman, BARC; and Dr. Md. Abdus Salam, Member Director (Crops), BARC, respectively. The opinions of the invited experts were integrated in the proceeding and forwarded to the respective institutes for necessary action.

### (b) Annual Review Workshop on Crop Production Program of NARS Institutes: Research Progress (2022-2023) & Research Program (2023-2024)

The annual review workshop on the Crop Production Program of NARS Institutes was held at BARC during 27-28 August, 2023. The workshop aimed to review the research progress for 2022-23 and the research program for 2023-24 of eight NARS institutes: BARI, BRRI, BINA, BJRI, BSRI, BWMRI, BTRI, and CDB. The objectives included discussing achievements, avoiding duplication of research, and aligning proposed programs with national vision documents and research priorities. Scientists and academics from relevant research institutes and agricultural universities attended as expert members, offering remarks and suggestions for research planning. Dr. Md. Abdus Salam, Member Director of Crops at BARC, welcomed the participants and emphasized active participation to improve the crop production future program.

Six expert members Prof. Dr. Solaiman Ali Fakir (Department of Crop Botany, BAU), Dr. Mian Syeed Hassan (Former Member Director, NRM, BARC), Prof. Dr. Tuhin Suvra Roy (Department of Agronomy, SAU), Dr. Rina Rani Saha (Former Director, Planning and Evaluation Wing, BARI), Dr. Md. Akkas Ali (Director, Crops and Natural Resources, KGF), and Dr. Shahabuddin Ahmad (Former Director, HRC, BARI) attended the technical sessions to provide an overview and offer suggestions for annual research progress and future program improvements of the NARS Institutes. The workshop featured four technical sessions chaired by Dr. Md. Abdur Razzak (Former Executive Chairman, BARC), Dr. Rafiqul Islam Modal (Former DG, BARI), Dr. Mian Sayeed Hasan (Former Member Director, NRM, BARC), and Prof. Dr. Abdul Hamid (Department of Agronomy, BSMRAU). Valued experts and participants provided a good number of opinions and recommendations, which were forwarded through a proceedings to the concerned institutes for consideration.

**(c) Annual Review Workshop on Insect Management Program: Progress, 2022-2023 and Research Program, 2024-2024**

The annual review workshop on Insect Management Program of NARS Institutes was held at BARC on 31 August 2023. The workshop aimed to review the research progress (2022-23) and research program (2023-24) of seven NARS institutes such as BARI, BINA, BRRI, BTRI, BWMRI, BJRI, and BSRI. The objectives included discussing achievements, avoiding duplication of research, and aligning proposed programs with national vision documents and research priorities. Scientists and academics from relevant research institutes and agricultural universities attended as expert members, offering remarks and suggestions for future research planning. Dr. Md. Abdus Salam, Member Director (Crops), BARC welcomed the participants and expected active participation to improve the Program.

Six expert members namely Prof. Dr. Md. Mahbubur Rahman, Former VC, BSMRAU, Salna, Gazipur; Dr. Khandakar Shariful Islam, Retired Professor, Department of Entomology, BAU, Mymensingh; Dr. Md. Ramiz Uddin Miah, Professor, Department of Entomology, BSMRAU, Salna, Gazipur; Dr. Syed Nurul Alam, Former Director, Planning and Evaluation Wing, BARI, Gazipur; Dr. Md. Mainul Haque, Ex-CSO and Head, Entomology Division, BRRI, Gazipur, and 6. Dr. Md. Ruhul Amin, Professor, Department of Entomology, BSMRAU, Salna, Gazipur attended the technical sessions to provide an overview and offer suggestions for annual research progress and future program improvements of the NARS Institutes. There were featured four technical sessions chaired by Dr. Debasish Sarker, Director General, BARI, Gazipur, and Dr. Md. Abdus Salam, Member Director (Crops), BARC, Dhaka. Valued experts and participants provided several opinions and recommendations, which were forwarded to the concerned institutes for consideration.

**(d) Annual Review Workshop on Disease Management Program of NARS Institutes: Research Progress, 2022-2023 and Research Program, 2023-2024**

The annual review workshop on the Disease Management Program of NARS institutes viz., BARI, BRRI, BINA, BJRI, BSRI, BWMRI, CDB, and BTRI was held at BARC on 30 August 2023. The purpose of the workshop was to review the research progress for 2022-23 and the research program 2023-24 of NARS institutes to avoid duplication of research, and need-based research due to climate change issues and to take initiatives for future research programs in alliance with various vision documents and research priority. Scientists and academia of the relevant fields of

research institutes and Agricultural Universities were present as expert members who provided their valuable remarks and suggestions to follow in formulating future research programs. Dr. Md. Abdus Salam, Member Director, Crops, BARC welcomed the participants and requested their active participation for the improvement of the disease management program.

Six expert members, namely, Prof. Dr. Ismail Hossain, Department of Plant Pathology, BAU, Dr. Tapan Kumer Dey, former Director, BARI; Dr. Md. Ansar Ali, former Director, BRRI, Dr. Abu Taher Mia, Former Chief Scientific Officer, Plant Pathology Division, BRRI, Dr. Salina Parvin Banu, Former Chief Scientific Officer, Plant Pathology Division, BARI and Prof. Dr. Md. Atikur Rahman Khokon, Dept. of Plant Pathology, BAU were present in the day long workshop. There were two technical sessions chaired by Prof. Dr. Md. Ismail Hossain Mian, Dept. of Plant Pathology, Bangabandhu Sheikh Muzibur Rahman Agricultural University, and Dr. Md. Abdus Salam, Member Director (Crops), BARC. In the recommendation session Executive Chairman, BARC graces the session as chief guest. All the events of the day-long workshop were lively and highly participated. The discussion part was well participated emphasizing the improvement of further research programs in some areas of specific crops. The suggestions were related to quality research, need-based research, and strengthening research activities towards the demand of specific regions of the country e.g. saline, and drought areas should be represented as priority research in 'plan of action for implementation of National Agriculture Policy-2018. However, distinguished experts and participants provided several opinions and recommendations to incorporate into future research programs for further improvement.

#### **(e) Annual Review Workshop on Biotechnological Program: Progress, 2022-2023 and Research Program, 2023-2024**

The annual review workshop on Biotechnology Program of NARS Institutes was held at BARC auditorium on 24 August 2023. The objectives of the workshop were to review the research progress 2022-23 and research programs 2023-24 of NARS institutes viz., BARI, BRRI, BINA, BJRI, BSRI, BWMRI, CDB & Agricultural Universities viz., BAU, BSMRAU and SAU; National Institute of Biotechnology (NIB) and private sectors viz., BRAC & ACI to avoid duplication of research through appraisal of proposed programs aligning various national vision documents and research priority. The inaugural session was graced by the Executive Chairman, Bangladesh Agricultural Research Council as chief guest while, Dr. Md. Abdus Salam, Member Director (Crops), BARC chaired the session. Scientists and academia of the relevant fields of research institutes and agri-universities attended the workshop as expert members. Professor Dr. Rakha Hari Sarker, Department of Botany, Dhaka University; Dr. Md. Aziz Zilani Chowdhury, former Member Director (Crops), BARC; Dr. Md. Shamsher Ali, former DG, BINA and Prof. Dr. Shahidul Haque, Dept. of Biotechnology, Bangladesh Agricultural University; attended the workshop as expert members. Dr. Shah Md. Monir Hossain, Chief Scientific Officer, Crops Division, BARC welcomed the participants and briefed last year's recommendation.

There were two technical sessions which were chaired by Dr. Mirza Mofazzal Islam, Director General, BINA, and Dr. Md. Abdus Salam, Member Director (Crops), BARC, respectively. However, a good number of recommendations and opinions were forwarded by four expert members and the audience for integration into the future research programs of respective institutes.

#### **(f) Workshop on Biotechnology Research Based on Biotechnology Policy 2012**

Two Progress Review Workshop on Biotechnology Research based on the Biotechnology Policy 2012 was held at BARC on 15 January 2024 and 29 May 2024. Under the guidance of the Plant Biotechnology Technical Committee, the crop-related NARS institutes, agricultural universities, and private sector have prepared a short-term (2017-2019), mid (2017-2022) and long-term (2017-2027) biotechnology research plan based on Biotechnology Policy 2012.

The research areas of the time-bound plan are i) Developing standard of tissue culture/micropropagation method for the prompt production of high quality and disease-free seed/ sapling of important plants crops, bamboo, and timber, ii) Selection/ reproduction of very important crops (paddy, wheat, pulse, oilseed, etc.) by the marker for a specific use, iii) Developing nutritional value of crops; producing transgenic plants which are resistant to insects and diseases, abiotic stress-tolerant and harmonious to climate change, iv) Identification and characterization of important genes to develop plant variety by transferring genes, v) Determination and conservation of molecular characteristics of the plant (including medicinal plants) genetic resources and necessary microorganisms in agriculture sector, vi) Revealing genome of important crops and forest plants for specific use, vii) Introduction, evaluation and testing of transgenic crops and viii) Identification of plant diseases at the molecular level. The progress of mid and long-term activities was presented in the workshop. The compiled report was sent to the ministry of agriculture for necessary action.

#### **(g) Conference on Genome Editing for Agriculture in Bangladesh**

An International Conference on Genome Editing for Agriculture in Bangladesh was held on 11 February 2024 at BARC, jointly organized by Bangladesh Agricultural Research Council (BARC) and South Asia Biosafety Program (SABP). In the inaugural Executive Chairman, BARC was present as chief guest, and Dr. Zahurul Karim, Vice-President, Bangladesh Academy of Sciences (BAS), and Rehana Yasmin, Joint Secretary (Research), Ministry of Agriculture attend as special guests, respectively. Dr. Md. Abdus Salam, Member Director (Crops), BARC presided over the session. Dr. Rakha Hari Sarker, Country Coordinator, SABP & Professor, Department of Botany, University of Dhaka was present as a welcome speaker in the workshop. Apart from this, in total 80 participants including delegates from abroad eminent experts of the country, university teachers, scientists, and officials of the NARS, NIB, and other public and private institutions related to agriculture were present in the conference.

#### **(h) Consultative Workshop on Plant Variety Protection Rules, 2024 (Draft)**

Consultative Workshop on Plant variety Protection Rules, 2024 (Draft) was held on 11 February 2024 at BARC. In the inaugural session Dr. Md. Shahidur Rashid Bhuiyan, Vice Chancellor, SAU was present as chief guest. Dr. Md. Abdus Salam, Member Director (Crops), BARC presided over the session. Dr. Md. Rezwan Molla, Principal Scientific Officer (Crops), BARC was present as key note speaker in the workshop. Apart from this, in total 30 participants including MoA, university teachers, scientists, and officials of the NARS and other public and private institutions were present as distinguished participants in the conference.

**(i) Inception Workshop on "Asia Regional Fall Armyworm (FAW) and Brown Plant Hopper (BPH) Diagnostics and Monitoring and Surveillance Program"**

An inception workshop on "Asia FAW and BPH Diagnostics and Monitoring and Surveillance Program" was held at Bangladesh Agricultural Research Council (BARC), conference room 2 on 28 December 2023. The workshop aimed to assess FAW and BPH research project plans and activities during 2023-2027 of Asian Food & Agriculture Cooperation Initiative (AFACI), Rural Development Administration (RDA) in the Republic of Korea, funded the program. The objectives of the workshop were to share the proposed plan of activities with different stakeholders. The workshop featured the participation of scientists from Bangladesh Agricultural Research Institute (BARI), Bangladesh Rice Research Institute (BRRI), Bangladesh Wheat and Maize Research Institute (BWMRI), academicians from Bangladesh Agricultural University (BAU), Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU), Sher-e-Bangla Agricultural University (SAU), Patuakhali Science and Technology University (PSTU), and high officials from Department of Agricultural Extension (DAE). They opined valuable insights and suggestions to guide the formulation of future research activities. The session was graced by the Executive Chairman, BARC as Chief Guest. Dr. Md. Abdus Salam, Member Director (Crops), BARC, chaired the session. Dr. Md. Mahfuz Alam, Principal Scientific Officer (Crops), BARC, and principal investigator, "Asia FAW and BPH Diagnostics and Monitoring and Surveillance Program" Bangladesh part welcomed the participants and provided an overview of the project. Under the BARC coordination and BRRI, BARI, and BWMRI will implement the project.

**j) Pesticide Technical Advisory Committee (PTAC) and Sub PTAC Meeting**

Dr. Md. Abdus Salam, MD (Crops), Bangladesh Agricultural Research Council participated in PTAC Committee Meeting. Dr. Shah Md. Monir Hossain, CSO (Crops), Bangladesh Agricultural Research Council participated in Sub-PTAC Committee Meeting.

**k) National Technical Committee on Crop Biotechnology (NTCCB) Core Committee Meeting**

- Sent to the MoA comments on the evaluation and recommendation of Contained Trail (CT) and Confined Trail (CFT)

**(l) Training Program**

- Awareness Building on Act and Policies of Bangladesh Agriculture (3 days);
- Conservation and management of Plant Genetic Resources (3 days);
- Phytosanitary Measures in Bangladesh (3 days);
- Mass Production and Quality Control of Biopesticides (3 days)
- Genome Editing for Agricultural Research (5 days)
- Climate Adaptation for Sustainable Crop Production (3 days)

**(m) Other Activities**

**Preparation of technical reports, comments, inputs, and talking points for MoA**

**Organize meeting/ workshop**

- Organized World Food Day 2023

- Organized National Fruit Fair 2024
- Organized a meeting with concerned agricultural research institutes, in coordination with BARC, to discuss plant breeding research proposals from the Integrated Breeding Platform (IBP).
- Conducted inspection, monitoring, and evaluation of hybrid rice seed production activities and organized meetings to determine the quantity of seed to be imported from abroad.
- Organized a meeting with the committee members for the re-evaluation of potato varieties registered as non-notified crops (established during the 2023-24 Rabi season at the field level)
- Organized meetings to finalize the field-level evaluation report of potato varieties registered as unregulated crops
- Organized a progress review meeting for the project titled 'Working Together to Support the Global System for PGRFA,' funded by CGIAR and IRRI.
- Organized a review meeting to finalize the draft of the 'National Seed Vision 2041'.
- The Plant Biotechnology Technical Committee (Crops and Non-Crops) organized a meeting to present the draft work plan, including time-bound and specific targets, following the National Biotechnology Policy 2012.
- The National Technical Committee on Crop Biotechnology (NTCCB) Core Committee Meeting was organized to approve the NSB's authorization for Contained Trials (CT) and Confined Trials (CFT) of transgenic Golden Rice with provitamin-rich events.
- Organized a discussion meeting with BARC and Madina Tech Limited to enhance the capacity of Khamari App by integrating AI and ML solutions.
- A joint workshop between BARC and Solidaridad was organized on "Water and Climate Smart Agriculture in Local Landscape of Southwest Bangladesh-Understanding the Research Need and Policy Implications for Resilient Agriculture"
- A joint workshop was organized between BARC and BARI on Research and Technology Dissemination of Horticultural Crops.
- Attended KGF Inception Workshop
- Organized Seed Vision meeting
- Organized FAO ATP Workshop
- Organized Crop Improvement Review Workshop of NARS
- Organized Biotechnology Review Workshop of NARS
- Visited Chapai Rafiq mango orchard with WUR, Netherlands
- Organized Crop Production Review Workshop of NARS
- Organized Disease Management Review Workshop of NARS
- Organized Insect Management Review Workshop of NARS
- Attended SAU Research activities monitoring
- Attended MoA meeting on Rabi, Kharif-1, and 2 demonstration
- Meeting with EPE
- Organized ITPGRFA Project meeting with BARI and BRRI
- Attended MoA meeting on Agriculture land use
- Attended MoA meeting on BPGRI act
- Attended GAP technical Committee meeting
- Attended PARTNER project Coastal Program
- Attended sea weed coordination meeting

- Attended NSB technical Meeting
- Attended Khamari Aps training for SA agriculture officer for Boro trial
- Attended Khamari Aps training for Upazilla agriculture officer for Boro trial
- Organized Workshop on Horticultural Research and Development in Bangladesh
- Attended Technology Adoption Workshop at Jashore
- Monitoring Aman Khamari Aps at Chandina
- Organized Workshop on Development of Khamari Aps based on FRG-2023
- Attended PARTNER inception Workshop
- Attended Forest Review Workshop of NARS at BARC
- National Validation Workshop on National Adaptation Plan
- Attended Agri. Eng. Review Workshop of NARS at BARC
- Attended External Panel meeting at BARC
- Attended Livestock Review Workshop of NARS at BARC
- Organized SOP meeting at BARC
- Attend EPE meeting at BARC
- Organized Dr. Chashi Aps meeting at BARC
- Organized CGIAR Genebank Initiative Project Coordination meeting
- Attended PARTNER Project Recruitment Project meeting
- Attended Preparatory meeting for World Soil day
- Attended Inception Workshop at Food Ministry
- Organized GAP Protocol Development Preparatory meeting
- Attended World Soil Day
- Attended TTMU Review Workshop at BARC
- Attended BJRI Review Workshop
- Attended SAARC charter Day
- Organized GAP pack house Tender Committee meeting
- Organized Khamari Aps National Technical Committee meeting at BARC
- Attended GRS training
- Organized GAP Protocol meeting
- Organized GAP Protocol (Pack house) meeting
- Organized GAP input cost meeting
- Attended as Resource Person of GAP ToT at DAE
- Organized Biotechnology Program Planning Workshop for short, medium, and long-term
- Organized GAP Packhouse design Finalization meeting
- Participated PARTNER Project -Technology Validation Project Meeting
- Organized Training on AWD for DAE, Agriculture Officer
- Organized a meeting on PARTNER Project at Khulna
- Attended PARTNER project meeting at BARC
- Attended IFDC Climate Smart Agriculture (CSA) Workshop
- Attend KGF Progress Review Workshop
- Attended Nursery Guide line meeting at MoA
- Attended the meeting at Cabinet division on BPGRI act
- Attended Crop Zoning Recruitment meeting on
- Attended crop zoning project Monitoring meeting Attend as a Resource Person of PDM

training at BARC on 4<sup>th</sup> February GAP Packhouse selection at Jessore.

- Attended GAP Coordination meeting and Farmers Training at Jessore
- Organized Conference on Genome Editing for Agriculture in Bangladesh
- Developed Quick Win Smart Action plan on 13th February 2024
- Attended As Resource Person of PDM Training at BJRI on 13th February 2024
- Attended the meeting on National Biosafety Policy 2024 at MoEFC on 14th February 2024
- Attended as a chair in LiDAR Technology Inception Workshop on 22nd February 2024
- Attended Phytosanitary Training Program at BARC as a Resource Person
- Organized Khamari Aps Monitoring Workshop
- Organized draft GAP Protocol Finalization Workshop
- Attended PARTNER Project PhD selection meeting
- Arranged Khamari Aps Field day at Tungipara
- Attended BSHS Seminar on Decade of Horticulture Research and Development in Bangladesh
- Attended NCB meeting
- Arranged SDG Indicator 2.5.1germplasm meeting
- Arranged Review Workshop on the long-term Action Plan of Biotechnology
- Arranged Seed Vision Workshop
- Arranged Khamari Aps training for SAAO
- Arranged Khamari Aps training for UAO
- Attended Khamari Aps Focal point meeting
- Arranged Progress Review on Khamari Aps and AWD performance at Boro Season  
Organized diplomat visit to Bangladesh GAP validation trial orchard at Chapainawabganj

## 6. Publications

### a) Annual Report Preparation and Newsletter Write Up

Prepared annual report, 2023-24 and newsletter 2023-24

### b) Scientific Article/ Books/ Popular Article

- I. Bokhtiar, S.M., **Islam, M.J.**, Samsuzzaman, S., Jahiruddin, M., Panaullah, G.M., Salam, M.A. and Hossain, M.A., 2024. Constraints and Opportunities of Agricultural Development in Haor Ecosystem of Bangladesh. *Ecologies*, 5(2), pp.256-278. [Impact Factor: 1.7]
- II. Rahman, M.H., **Islam, M.J.**, Mumu, U.H., Ryu, B.R., Lim, J.D., Azad, M.O.K., Cheong, E.J. and Lim, Y.S., 2024. The Growth and Tuber Yield of Potatoes (*Solanum tuberosum* L.) under Varying LED Light Spectrums in Controlled Greenhouse Conditions. *Horticulturae*, 10(3), p.254. [Impact Factor: 3.1]
- III. Rahman, **M.H.**, **Islam, M.J.**, Mumu, U.H., Ryu, B.R., Lim, J.D., Azad, M.O.K., Cheong, E.J. and Lim, Y.S., 2024. Effect of Light Quality on Seed Potato (*Solanum tuberosum* L.) Tuberization When Aeroponically Grown in a Controlled Greenhouse. *Plants*, 13(5), p.737. [Impact Factor: 4.0]
- IV. Ahmed, I, Islam N, Ahmed QM, Rahman S, **Molla M.R.** and Attaluri S. 2023. Genetic diversity of cucumber germplasm collected and conserved at the Plant Genetic Resources Centre of the Bangladesh Agricultural Research Institute. *Acta Scientific Nutritional Health*, 7(10): 37-47. DOI: 10.31080/ASNH.2023.07.1309

- V. Rahman S, Islam N, **Molla M.R.**, Ahmed QM, Ahmed, I., Chowdhury MAZ and Attaluri S. 2024. Agro-morphological characterization and genotypic diversity of chilli (*Capsicum frutescens*) landraces of Bangladesh. *International Journal of Science and Research Archive*, 11(02): 421–435. DOI: <https://doi.org/10.30574/ijrsra.2024.11.2.0265>
- VI. Khan MAH, Rahim MA, Robbani M, Hasan F, **Molla M.R.**, Akter S, Ahsan AFMS, Zakaria Alam Z. 2024. Genotypic selection and trait variation in sweet orange (*Citrus sinensis* L. Osbeck) dataset of Bangladesh. *Data in Brief*, 54: 1-9 110333, DOI: <https://doi.org/10.1016/j.dib.2024.110333>
- VII. **Uddin, M. J.**, Huang, X., Lu, X. and Li, S. 2023. Increased conidia production and germination in vitro correlate with virulence enhancement in *Fusarium oxysporum* f. sp. *cucumerinum*. *Journal of Fungi*, 9(8): 847. DOI: 10.3390/jof9080847. [Impact Factor: 4.7]
- VIII. **Alam, M. M.**, Alam K. M., Momotaz R., Arifunnahar, M., Apu, M. M. R. B. and Siddique, S. S. 2024. Botrytis gray mold of *Lilium* in Bangladesh: Diagnosis, basic study and control. *Heliyon*. 10(12). <https://doi.org/10.1016/j.heliyon.2024.e33165> [Impact Factor: 3.9]
- IX. **Alam, M. M.**, Alam, K. M., Arifunnahar, M., Karim, M. R. and S. S. Siddique. 2024. Assessing seed health and resistance traits in Watermelon against gummy stem blight. *Bangladesh Journal of Agriculture* 49(1): 71-88. DOI:<https://doi.org/10.3329/bjagri.v49i1.74061>

## 7. Regular/Routine Activities

### Scientists of Crops division actively worked in the following committees:

- Member Secretary of NTCCB
- Member Secretary of Seed Regulatory Reform Committee
- Convener and Member Secretary, Plant Variety Protection Rules Committee-2019
- Member, National Seed Vision Committee-2030
- Member of BINA recruitment committee -2
- Member, Pesticide Technical Advisory Committee Meeting (PTAC )
- Member, National Seed Board (NSB) Technical Committee
- Member, GAP unit, BARC
- Member, National Taskforce on Fall Armyworm Management
- Alternate focal point, SDG, BARC
- Member, 4IR
- Alternate focal point, NIS
- Focal point and Alternate focal point, Smart Bangladesh
- Focal person for the preparatory work of the Investment Forum (IF)-2024

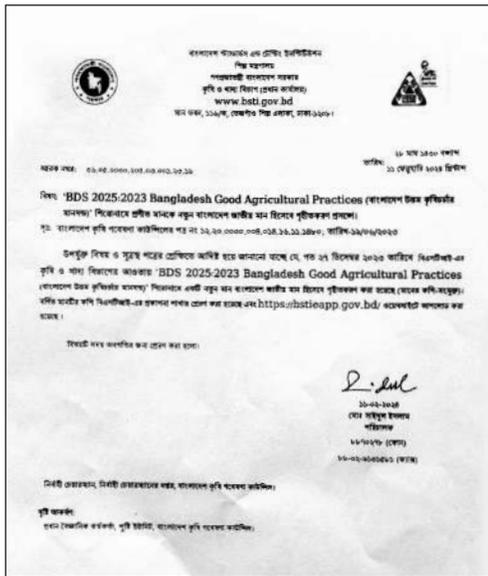
### Following regular/routine activities are performed by the scientists:

- Compiled technical reports, comments, inputs, and talking points for Ministry of Agriculture and other Ministries.
- Commenting on MoUs and bilateral agreements with different countries, and national, regional, and international organizations.
- Speech preparation for different national and international events for high officials.
- Acted as a member/member secretary in different committees formed for observing national and international days.
- Prepared proceedings of different meetings and seminars.

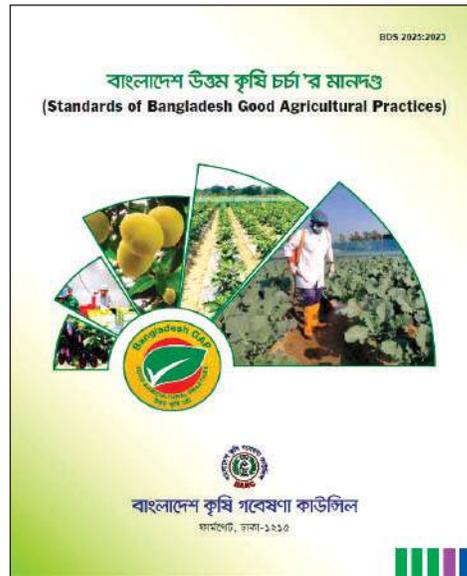
# GAP UNIT

## 1. Development of Bangladesh GAP-Standard and Approved by BSTI

GAP unit, BARC developed Bangladesh GAP standard which comprises of 5 modules viz., (i) Food Safety Module; Produce Quality Module; (ii) Environment Management Module; (iii) Workers Health Safety (iv) Welfare Module and (v) General Requirement Module. BSTI printed (BDS No. 2025:2023) after adopting the GAP standard as a national standard. This GAP standard was published with funding from PARTNER.

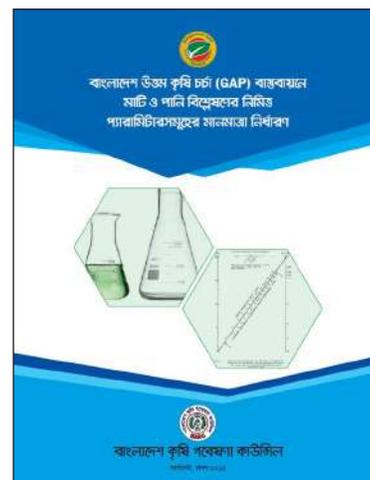


Published Bangladesh GAP Standard



## 2. Determination of Acceptable Parameter Values for Soil and Water Testing in Implementation of GAP

Analyzing soil and water samples is one of the crucial requirements for implementing GAP. As scheme owner (SO), BARC has mandated to develop all the required documents to carry out for GAP scheme. In order to ensure safe and high-quality produces, two separate technical committees were formed. These committees examined and prepared a report on acceptable parameter values for soil and water testing in order to implement GAP at field level.



Published Soil and Water Quality Parameter

### 3. Development of GAP Protocol

As scheme owner of Bangladesh GAP, GAP protocol of 8 crops based on Bangladesh GAP standard has been developed by GAP Unit, BARC. Eight GAP protocols of eight crops viz., mango, jackfruit, guava, brinjal, papaya, bottle gourd, pointed gourd and green papaya have been approved at 6th steering committee meeting. For developing GAP protocol 10 BARI scientists including pathologist and entomologist have been nominated. For developing GAP protocols four technical meeting with BARI nominated scientists and GAP Unit, BARC were organized. Draft protocols were shared in the two stakeholders' workshop and from the workshop recommendations were obtained and a review committee was formed for final editing based on the suggestions from stakeholder workshop. Two meetings of review committee were arranged for final editing. Afterword's those draft protocols were presented in the technical committee meeting and after recommend of technical committee protocols have been submitted to the 6th steering committee meeting held on 12 June 2024 at Ministry of Agriculture. Besides, some more coordination committee meetings were organized for preparing GAP protocols of 8 nominated crops during this financial year (2023-24). Finally, 8 GAP protocols were approved by issuing Circular (Poripotra) from MoA on 30 June 2024.



GAP Protocol of Eight Different Crops

#### 4. GAP Field Validation Trial

GAP field validation trials have been conducted in eight districts at eight selected crops. Initially DAE selected the Upazilla under particular district approved by technical and steering committee. One coordination meeting was conducted with DAE, BARI, DAE officers including districts level officers of DAE. Scientist of BARI also attended the coordinated meeting. Nominated scientists of BARI were conducted the validation trail by the full support from the SAAO of DAE of that block. Soil and water sample were analyzed and finally pesticide residues were also analyzed by SGS. Crop wise location of the validation trial (Upazilla and district) as follows:

S.N.	Crop under validation trail	Location of the validation trial
i.	Yardlong bean	Chandina, Cumilla
ii.	Bottle gourd	Dhamrai, Dhaka
iii.	Pointed gourd	Jashore Sadar
iv.	Jackfruit	Valuka, Mymensingh
v.	Guava	Godagari, Rajshahi
vi.	Green Papaya	Atghoria, Pabna
vii.	Brinjal	Shibpur, Narsingdhi
viii.	Mango	Nachole, Chapainawbabganj

#### 5. Finalization of Deign of GAP Facility Development

GAP production system needs some specific requirements. Sorting, grading, packaging and storage are the important activities in terms of production following GAP. Besides, farmers hygiene needs to be properly maintained in GAP. Organized pack house is the recommended structure for GAP. The packhouse consists of sorting, grading, water cleaning, precooling, cool chamber for short storage and rest room for farmers. A committee was formed comprising representatives from BARI, DAE, Hortex Foundation, BARC for the development of design including all sorts of facilities. Three meetings (Dated on 13 Dec. 23, 2 & 13 Jan 2024) have been arranged by the formulated committee and structural drawing has been prepared. Due to difficulties funding modality the pack house was not developed is not conducted this financial year.

#### 6. Capacity Development (Training)

Capacity Development is the most important task for GAP implementation. Considering the fact GAP unit BARC under took training programme for farmer, Staff (SAAO) and officers (DAE/BADC/DAM and NARS scientists). GAP is new in Bangladesh and it is urgently needed to learn the GAP in field implementation. GAP Unit, BARC has taken initiative to training farmers on GAP. In font eight training and one of each validation trial has conducted. Mainly day-long in-house training has been conducted. In the training GAP concept, GAP standard (modules) and production technolgy of respective crop has been included. A considerable number of female farmers were attended the training. Participating farmers showed keen interest on GAP.

The list of farmer attended the training are as follows:

### A. Farmer's Training

S. N.	Title of the Training	Location	Date	Participants	
				Male	Eemale
1.	Farmers training on Good Agricultural Practices (GAP) and production technology of <b>Yard long bean.</b>	Chandina, Cumilla	18 Jan 2024	21	4
2.	Farmers training on Good Agricultural Practices (GAP) and production technology of <b>Bottle gourd.</b>	Dhamrai, Dhaka	20 Jan 2024	21	4
3.	Farmers training on Good Agricultural Practices (GAP) and production technology of <b>Pointed gourd.</b>	Jashore Sadar	10 Feb 2024	21	4
4.	Farmers training on Good Agricultural Practices (GAP) and production technology of <b>Jackfruit.</b>	Valuka, Mymensingh	19 Jan 2024	23	2
5.	Farmers training on Good Agricultural Practices (GAP) and production technology of <b>Guava.</b>	Godagari, Rajshahi	15 May 2024	24	1
6.	Farmers training on Good Agricultural Practices (GAP) and production technology of <b>Green Papaya.</b>	Atghoria, Pabna	16 May 2024	24	1
7.	Farmers training on Good Agricultural Practices (GAP) and production technology of <b>Brinjal.</b>	Shibpur, Norsingdhi	30 Jan 2024	24	1
8.	Farmers training on Good Agricultural Practices (GAP) and production technology of <b>Mango.</b>	Nachole, Chapainawbabganj	28 Dec 2023	25	0

### B. Staff Training

GAP will be implemented in the field. Sub assistant Agricultural officer ais main strength of field implementation. Three batches of three day-long staff training were conducted with concern SAAO of concern Upazilla and district. Scientific Assistant of BARI also included in the training programme. Twenty-five participants were consisted in each batch of training. The training before are as follows:

S. N.	Title of the Training	Location	Date	Participants	
				Male	Eemale
1	Training on Good Agricultural Practices (GAP) for Safe Fruits and Vegetables Production (1 <sup>st</sup> batch)	BARC	13-15 Feb 2024	22	3
2	Training on Good Agricultural Practices (GAP) for Safe Fruits and Vegetables Production (2&3 <sup>rd</sup> batch)	Mushroom dev. Institute, Savar, Dhaka	28-30 May 2024	23	2
3	Training on Good Agricultural Practices (GAP) for Safe Fruits and Vegetables Production (2&3 <sup>rd</sup> batch)	Mushroom dev. Institute, Savar, Dhaka	28-30 May 2024	25	0



Picture of Staff Training

### C. Officer's Training

Department of Agricultural Extension (DAE) officer will play key role in the GAP implementation and certification process. Besides, Scientists and other relevant officers like DAM are the important stakeholder for GAP. Thus, GAP Unit, BARC organized 5 batches of GAP training of officers TOT in this fiscal year. Each of the officers' training was 5 days long with 25 lectures. In the training participants was from DAE, DAM, BARC, BARI, BRRI, BINA, SRDI, Hortex foundation and AR Mallick seeds. The profile of the officers training organized are as follows:



Picture of Officer's Training

S. N.	Title of the Training	Location	Date	Participants		
				Male	Eemale	Total
1.	Training of Trainer (ToT) on 'Good Agricultural Practices (GAP) for Safe Fruits and Vegetables' Production	BARC	3-7 March 2024	5	20	25
2.	Training of Trainer (ToT) on 'Good Agricultural Practices (GAP) for Safe Fruits and Vegetables' Production	BARC	21-25 April 2024	16	9	25
3.	Training of Trainer (ToT) on 'Good Agricultural Practices (GAP) for Safe Fruits and Vegetables' Production	BARC	5-9 May 2024	17	8	25
4.	Training of Trainer (ToT) on 'Good Agricultural Practices (GAP) for Safe Fruits and Vegetables' Production	BARC	23-27 June 2024	20	5	25
5.	Training of Trainer (ToT) on 'Good Agricultural Practices (GAP) for Safe Fruits and Vegetables' Production	BARC	23-27 June 2024	15	10	25

## 7. Monitoring

Monitoring is the important part of GAP field implementation. As already discussed, 8 GAP validation trails have been organized in 8 different districts. Members from GAP Unit, BARC, BARI scientists, PARTNER-APCU-BARC and DAE frequently visited the different validation trails. As GAP is new in Bangladesh farmers, SAAO and also scientists are learning every day about GAP. Monitoring team gave advises and guide lines for proper implementation of GAP in the field, consisting of scientists of BARI, BARC, DAE.

## 8. Arrange Meeting

BARC as SO of Bangladesh GAP has been putting continuous effort into establishing GAP in Bangladesh. Steering committee and Technical Committee are the governing structure of Bangladesh GAP. In the 3<sup>rd</sup> GAP Technical Committee meeting held on 17 September 2023 decided that BARC as SO will develop 15 GAP protocols in corroboration with DAE and BARI under PARTNER project. Steering Committee is the highest platform for approval GAP documents and issues. Accordingly, GAP Unit, BARC developed GAP protocols and conducted field validation trial with financial support from PARTNER. Finally, eight GAP protocols of eight crops (mango, jackfruit, guava, brinjal, papaya, bottle gourd, pointed gourd and green papaya) have been approved in 6<sup>th</sup> steering committee meeting held on 12 June 2024 at Ministry of Agriculture.

S. N.	Description	Date	Location / Venue
1	5 <sup>th</sup> Steering Committee meeting	30 Oct 2023	MoA
2	6 <sup>th</sup> Steering Committee meeting	12 Jun 2024	MoA
3	3 <sup>rd</sup> Technical Committee meeting	17 Sep 2023	BARC
4	4 <sup>th</sup> Technical Committee meeting	11 May 2024	BARC

In addition of technical and steering committee meeting, GAP Unit BARC conducted a good number of coordination meeting that support GAP validation trial and protocol development as follows:

**Table 2: Meeting conducted during 2023-24, GAP Unit, BARC**

S. N.	Description	Date	Location / Venue
1	Coordination meeting for GAP protocol field validation of Brinjal	30 Dec 2023	Norsingdhi
2.	Coordination meeting for GAP protocol development	1 Jan 2024	BARC
3.	Meeting for pack house design development	2 Jan 2024	BARC
4.	Meeting for GAP protocol development of Mango, Guava, Jackfruit, Brinjal	3 Jan 2024	BARC
5.	Meeting for GAP protocol development of yardlong bean, Pointed gourd, Bottle gourd & Green papaya	4 Jan 2024	BARC
6.	Coordination meeting for GAP validation trial of Jackfruit at Valuka	11 Jan 2024	Valuka, Mymensingh
7.	Coordination meeting for GAP validation trial of Jackfruit	17 Jan 2024	Chandina, Cumilla
8.	Coordination meeting for GAP validation on Bottle gourd field validation	19 Jan 2024	Dhamrai, Dhaka
9.	Coordination meeting with BARI Scientist for discussing stakeholder workshop to GAP Protocol PPT related	20 Feb 2024	BARC
12.	Meeting with review committee for GAP Protocol Development	25 Mar 2024	BARC
13.	Meeting with review committee for GAP Protocol Development	6 Apr 2024	BARC
15.	Technical Committee meeting	11 May 2024	BARC
16.	Meeting for market linkage of GAP followed produces	16 May 2024	BARC
17.	GAP coordination meeting	19 May 2024	BARC
18.	Steering Committee meeting	12 Jun 2024	MoA

## 9. Workshop

Two Stakeholder consultation workshops were organized during 11-12 March, 2024 on GAP Protocol Development at BARC. One hundred stakeholders from different organizations participated the workshops. Executive Chairman, BARC was present as chief guest, Joint Secretary (PPC wing), Ministry of Agriculture, & Project Coordinator (PC), RARTNER was present as special guest while Dr. Md. Abdus Salam, Member Director (Crops) & Convener, GAP unit, BARC was in the chair in the inaugural session. Dr. Md Asraful Alam, APD, PARTNER, APCU, BARC delivered welcome address and Dr. Zakiah Rahman Moni, PSO (Nutrition) and Member secretary, GAP unit, BARC presented a brief presentation on the process of GAP Protocol Development. She stressed that Implementation of GAP will speed up commercialization along with production of safe food for the nation. After presenting the eight protocols (5 vegetables and 3 fruits) based on stakeholders' recommendations.



Stakeholder Workshop

## 10. Diplomats' Visit of Mango Heartland: Fostering the Sweetness and Flavor of Bangladeshi Mangoes Across the Borders

The Government of Bangladesh has adopted 'Bangladesh Good Agricultural Practices Policy-2020' with the highest priority for safe food production, by which sustainable economic, social, and environmental development, including safe and healthy food production, will be accelerated. GAP protocols have been developed for eight crops (mango, jackfruit, guava, brinjal, papaya, bottle gourd, pointed gourd, and green papaya) in current financial year by the PARTNER project based on Bangladesh GAP standards. Among those, mango (*Mangifera indica* L.) is one of the most important and delicious fruits of the tropics. Bangladesh will ensure safe and quality mango production by following the 'Bangladesh GAP Protocol: Mango' formulated in light of GAP standards. Mango from Bangladesh is in huge demand in the world market as it is very tasty. To familiarize our mangoes globally, a visit was paid to GAP followed mango production at Kendubona, Nachole, Chapai Nawabganj by the Honorable Ambassadors and Heads of Missions of Australia, Brunei, Russia, the Netherlands, Indonesia, FAO, BIMSTEC, Malaysia, the Philippines, Pakistan, Nepal, Bhutan, Myanmar, Thailand, Singapore, Sri Lanka, and Libya on June 27, 2024. The visitors were highly impressed after observing field-level GAP implementation. This visit is jointly organized by MoA and MoFA in collaboration of BARC, BARI and DAE. It is expected that the export market for mango produced following Bangladesh GAP will be expanded, and the mango export trend will be increased to a great extent after the visit paid by the honorable ambassadors and heads of missions of foreign embassies.



*Diplomats Visit the Mango Heartland*

## 11. Marketing of GAP followed produced

Marketing is one of the major challenges of GAP implementation. From the validation trail some of samples of GAP followed produced like jackfruit, bottle gourd, brinjal and mango were distributed to some selected super shop for awareness development and sensitization among the consumers.



*GAP Product Handing Over to Super Shop*

## TECHNOLOGY TRANSFER AND MONITORING UNIT

Technology Transfer and Monitoring Unit (TTMU) is working to facilitate the prompt transfer of technologies generated by the National Agricultural Research System (NARS) to Extension agencies viz. Department of Agriculture Extension (DAE), Department of Fisheries (DoF), Department of Livestock (DLS), Private and Public Organizations. TTMU is also coordinating to strengthen the linkages among research, extension, and farmers through organizing workshops, training, meetings, seminars, etc. During the reporting period (July 2023-June 2024) TTMU organized two ToT training programs, one Review Workshop and two Agricultural Technology Extension Coordination Committee (ATECC) Meetings. The following table underlined the responsible professionals--- in the unit activities:

### Name of Professionals

Name	Designation
Dr. Suraya Parvin	Director (C.C.) and Principal Scientific Officer
Dr. Md. Iqbal Hosen	Senior Scientific Officer
Md. Anowarul Haque	Senior Scientific Officer

A brief description of those activities is furnished below:

### 1. Project Implementation

#### a) Improving Research Qualities of ARIs through Review and Evaluation by an External Panel of Experts.

- The third year's plan of activities targeted the holding of 8 regional workshops in collaboration with the DAE officials to map out the farm-level adoption of crop varieties and production technologies released by six ARIs.
- The Panel raised and visited outlying Regional Stations of the Institutes to understand the quality and quantum of research work the stations performing. Two Regional Uptake Workshops were held in Chattogram and Khulna where the DAE and representatives of NARS institutes, actively cooperated NGOs, agribusiness companies, and farmers in the regions also participated.
- In the Chattogram region, the overall adoption rate of newly released vegetable varieties (2017-22) of BARI is 0.03%. Adoption of newly released fruit varieties is however 0.1%. The area of boro and aman rice covers over 90% of the total rice crop area in the region. Overall coverage of BINA-released varieties (2017-21) in the region is meager (73 ha). Adoption of BINA lebu-2 was reported as good. The region has a wide diversity in cropping patterns and a sizeable portion of land remains fallow after boro harvest in Laxmipur and Noakhali districts. Soybean has gained ground as a major cropping pattern in these two districts. In Cox's Bazar district, however, spices are an important component in a leading cropping pattern.
- In the Khulna region, out of 4 districts in the region, farmers of 2 districts (Bagerhat and Satkhira) have not adopted any BARI technologies released during the past 5 years (2017-21). The adoption of BARI technologies in other two districts (Khulna and Narail) is

also very poor. No varieties of spices and flowers have been adopted in any district of the region. BARI-released fruits and vegetable varieties are, however, adopted in Khulna and Narail districts but the rate of adoption is 0.04.

During the period under review, BRRI has released 29 new varieties and hybrids and farmers have adopted all the BRRI varieties although the rate of adoption (8.5%) varied greatly across the country. BJRI's newly released BJRI Pat-8 variety occupies about 5% of the jute area and boro-jute-T. Aman cropping pattern in 9279 ha (24.42%) in the region. Sugarcane, not a major crop in Khulna region, BSRI Akh 47 released during the period has covered 3 ha only. Farmers in the region have not yet adopted the four varieties BINA developed during 2017-21 (BINA Lebu 1 & 2, BINA Sharisha 11, BINA Soybean 4). Adoption of the other three varieties is also not appreciably high (BINA dhan 24, 26 ha; BINA til 3- 40 ha; BINA til 4 – 389 ha).

- The panel visited the Regional and Substations of BARI, BRRI, and BINA all located in the same place each separated by common walls at Benerpota, Satkhira. Overall, all three stations are understaffed and ill-equipped to serve the purpose. Salinity being the major problem in crop production in the southern districts and most acute in the south-western part, the major research activities of these three stations should have addressed the salinity issue. However, the facilities and programs of the stations are too inadequate to address the issues the region facing.
- A Meeting on local agriculture machinery producers and importers, and local seed producers and importers with EPE members was conducted on 12/11/2023 at BARC. Participants from ARI institutes, DAE, private organizations, and EPE Members attended the meeting.
- Panel members attended the meeting on the actionable areas of concern (sent from BARC) of BARI, BRRI, BINA, and BJRI.

**(b) “Improvement of Rural Agricultural Technology Extension System in Asia (RATES) Project” Funded by Asian Food & Agriculture Cooperation Initiative (AFACI), Korea.**

- This project led by the Bangladesh Agricultural Research Council (BARC) in collaboration with BARI and DAE aims to disseminate high-yielding varieties and associated packages of practices developed by BARI in 5 crops namely Onion, Chilly, Garlic, Turmeric, and Mustard through field demonstrations, training of field extension staff and farmers and organizing field days. The salient featured of the project are as follows:
- Through research trials, the project will also identify the yield gap between farmer fields and research fields.
- All these are expected to enhance linkages between agricultural research and extension in the country.
- Training for Sub-Assistant Agricultural Officers (SAAOs) and farmers is organized at three crop stages, namely the initial demonstration stage, field management phase, and harvest stage. 2 Field days have already been organized.
- The project already developed technology 3 technology manuals. For each crop, a group comprising 30 farmers has been formed. Trial plots in the research field and demonstration plots for 5 crops in the farmers' field have already been initiated.
- 2<sup>nd</sup> year Country report and Annual report on the Improvement of Rural Agricultural Technology Extension System in Asia were submitted.

## 2. Training, Workshop, Meeting, Seminar

### A. Training (TOT): 2

#### (i) Training of Trainer's (ToT) Program on Oil Seed Crops Technology

BARC and BARI have arranged a trainer's training on the Technology of Oil Seed Crops at the seminar room of the BARI, Gazipur on 22 November 2023. Thirty Upazila Agriculture Officers from the Department of Agricultural Extension (DAE) and BARI Participated the day-long training program.

Dr. Debashish Sarker, Director General, BARI inaugurated the trainer's training as Chief Guest; while Dr. Md. Tariqul Islam, Director (Training and Communication) BARI presided over the session. Dr. Suraya Parvin, Director (Technology Transfer and Monitoring Unit, BARC welcomed the participants. The resource speakers of this training program were the scientists of BARI. A fruitful discussion happened between participants and researchers. The participants expressed different problems of Oil seed cultivation and suggested that BARI technologies should be disseminated addressing different AEZ. This type of training program helps to disseminate technologies as a means of two-way communication. The participants also suggested that new climate-resilient and promising technologies could be refined to adopt the farmers' level. The participants also opined that this sort of training could be arranged in another region to strengthen the linkage between research and extension.

The training focused to transfer the following technologies:

1. Current status of Oilseed crop production in Bangladesh, research achievements, and plans.
2. Introduction of Short-duration and Canola mustard varieties and their production technology.
3. Production technology of Oil seed crops.
4. Major diseases of Oil seed crops and their remedies.
5. Pests of oilseeds, spiders, and their integrated control management.



*Training of Trainer's (ToT) Program on Oil Seed Crops Technologies*

## **(ii) Training of Trainers (ToT) on Matured Technologies Developed by Bangladesh Institute of Nuclear Agriculture (BINA).**

A three-day-long Training of Trainers (ToT) on 'Matured Technologies Developed by Bangladesh Institute of Nuclear Agriculture (BINA)' was organized by Technology Transfer and Monitoring Unit (TTMU) BARC, Dhaka during 25-27 May 2024. Honourable Executive Chairman, BARC was the Chief Guest, and Dr. Md. Abdus Salam, Member Director (Crops) chaired the inaugural session. Twenty five Upazila Agriculture Officers/Upazila Extension Officers attended as trainees. The Resource Speakers were senior scientists from BINA, Mymensingh. The objective of the training programme was to update Upazila Agriculture Officer/ Agriculture Extension Officer's knowledge regarding agricultural technology generated by BINA and transfer those to the framers' field. Dr. Suraya Parvin, Director, TTMU offered the welcome address and highlighted the objectives of the training programme as the Course Director and Md. Anowarul Haque, SSO, BARC acted as Course Coordinator of the training course. Finally, EC, and BARC graced the training programme as Chief Guests in the closing ceremony and handed over the certificates among the participants.

### **The focused technologies are as followed in the training session:**

- BINA Generated Recent Crops Technologies by Entomology Division.
- Irrigation and Water Management related Technologies Developed by BINA.
- BINA Generated Technologies related to Increase Soil Fertility and Crop Productivity.
- BINA Developed Technologies for Plant Pathology Division.
- Technology Developed for Crop Management by Crop Physiology Division, BINA. Economic Potential of BINA Released Varieties/Technologies.
- Production & Conservation of Rice Seeds and Introduction of the Technology Developed by the Agronomy division of BINA.
- Introduction to BINA Developed Adaptive Technologies & their Extension at the Field level. BINA Generated Technologies for Plant Breeding Division.
- Cultivation and Production Technologies of Ground Nuts and Jute varieties generated by BINA.
- Introduction of BINA Released Horticultural Crops Technologies.

## **(b) Review Workshop on Matured Technology Developed by NARS Institutes (2020-21 to 2022-23)**

Technology Transfer and Monitoring Unit (TTMU), BARC organized a review workshop on Matured Technology Developed by NARS Institutes (2020-21 to 2022-23) held during 6-7 December 2023 at BARC auditorium, Dhaka. Expert, representatives from NARS institutes, extension organizations viz. DAE, DoF, DLS, BADC participated in the workshop. The inaugural session was chaired by Dr. Md. Abdus Salam, Member Director (Crops). Dr. Suraya Parvin, Director, TTMU, BARC delivered a welcome address. Executive Chairman, BARC the chief guest of the inaugural session, extended his warm wishes to all the guests and participants of the workshop. He stressed the unprecedented success of agricultural production in the country due to technological innovation and dissemination to the farmers. He also highlighted the agricultural researches that need immediate attention in research for the food security of the country.

In total 302 matured technologies were bought before the participants divided by 13 NARS institutes. Dr. Md. Abdur Razzaque, Former Executive Chairman, BARC was the Chairperson of the Technical Session I & II. On the first day (06.12.23) BARI, BINA, BWMRI, BSRI, and on the next day (07.12.2023) BRRI, CDB, SRDI, BFRI (Fisheries), BFRI (Forest), BLRI, BSRTI, BFRI, BJRI representatives presented their technologies in technical session I & II respectively. Expert members provided their valuable remarks on the presented technology.



*Review Workshop on Matured Technology Developed by NARS Institutes*

### **(C) Agricultural Technology Extension Coordination Committee (ATECC) 15<sup>th</sup> Meeting on Robi Season/2023**

A meeting of ATECC (Agricultural Technology Extension Coordination Committee) was held at BARC on 11 October 2023 for Robi Season/2023. Executive Chairman, BARC chaired the meeting with Mr. Badal Chandra Biswas, Director General, DAE as the Co-Chairman of this committee. The meeting graced the participation of Director Generals of BRRI, BJRI, BWMRI, and Director of SCA. Mr. Md. Tajul Islam Patwary, Director, Field Service wing was also present. Through power point presentation, Mr. Patwary presented the work plan for the Robi crop demo during 2023-24. He highlighted the implementation of Shomoloy crop cultivation in the upcoming boro season using Alternative Wetting and Drying (AWD) technology and Khamari Mobile Apps in 61 districts.

It was decided that a central committee comprising representatives from DAE, BRRI, and BADC needs to be formed. Additionally, a regional committee will also need to be formed comprising members from these three institutes. The participants were from various institutions under the National Agricultural Research System (NARS), such as BARC, BARI, BINA, BSRI, BJRI, CDB, and SRDI, as well as stakeholders from DAE, DAM, BADC, AIS, BIRTAN, SCA and Hortex Foundation.

#### **Decisions were undertaken in this meeting:**

- Alternative Wet and Drying (AWD) Technology should be practiced/ transferred in farmers' fields in the upcoming Boro season 2023.
- Farmers will use Khamari Mobile App for the production of Boro dhan (Agronomic Management) in the field. DAE will ensure the use of this App in the farmers' demo field.

#### **(d) Agricultural Technology Extension Coordination Committee (ATECC) 16<sup>th</sup> Meeting on Kharif-1/2024**

A meeting of ATECC (Agricultural Technology Extension Coordination Committee) was held at BARC on 20 March 2024 for Kharif-1 Season/2024. Executive Chairman, BARC chaired the meeting with Mr. Badal Chandra Biswas, Director General, DAE as the Co-Chairman of this committee. The meeting included the participation of Director Generals of BRRI, BJRI, BWMRI, and Director of SCA. Mr. Md. Tajul Islam Patwary, Director, Field Service wing was also present. Through power point presentation, Mr. Patwary presented the work plan for the demo of Kharif-1 2023-24 through a powerpoint presentation. He presented the progress of Shomoloy crop cultivation using Alternative Wetting and Drying (AWD) technology and Khamari Mobile Apps in 61 districts in the Boro season.

##### **Major decisions were undertaken in these meetings:**

- Alternative Wet and Drying (AWD) Technology demo fields should be intensively monitored by the regional AD and DD in farmers' fields during the running Boro season.
- The technological know-how of AWD and Khamari Mobile App should be shared with the ATECC members for proper implementation of these technologies.

### **3. Policy Level Contribution**

#### **A. Inputs/Comments: Attended Workshop in Zoom Platform (Foreign):**

- 2024 WTO Workshop on the Implementation of the TRIPS Article 66.6 on 23-25 April/2024 in Geneva, Switzerland.
- Presented two papers in this workshop. 1st paper titled: LDC's priority needs for technology transfer: National Experiences and Challenges in Undertaking Needs Assessment 2nd Paper: LDC Members' feedback on the actions taken or planned by developed country Members in pursuance of their commitment under Article 66.

### **4. Workshops, Seminars, Training, and Meetings**

Officers of TTMU have attended a good number of workshops, seminars, training, and meetings.

### **5. Other activities**

#### **Linkage:**

- i) Maintained linkage with MoA, DAE, DoF, DLS, BADDC, HORTEX Foundation, KGF, FAO, etc.
- ii) Maintained ICT-based Office Management, as a part of establishing Digital Bangladesh.
- iii) Coordinated and cooperated with the activities of the Executive Chairman, BARC, and successfully carried out the various tasks.

### **6. Routine works**

The unit was involved for Work-plan preparation, divisional Annual progress report preparation, budget preparation for future training and workshop, Ministry Report, Newsletter, APA, Citizen charter, Different report preparation, etc.

## 7. Publication(s) by the division/section in different journals/media

i) Training Manuals: 3

- Training Manual on Oilseed Technology developed by BARI
- BINA recently developed a technology training document.

ii) Progress and work-plan report: 2

iii) Annual Report: 2

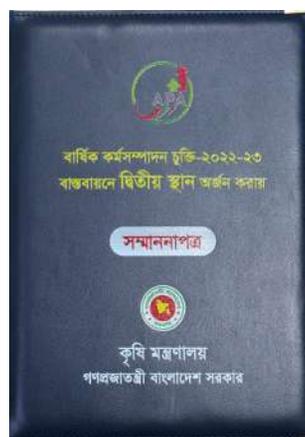
iv) Country Report: 1

### Annual Performance Agreement (APA)

- BARC stood second out of 17 Ministry of Agriculture institutions for the fiscal year 2022-23 based on APA evaluation. On June 26, 2024, the Honorable Executive Chairman received the crest and certificate from the Hon'ble Agriculture Secretary.
- The evaluation report of the APA for the financial year 2022-23 was sent to the Ministry of Agriculture;
- The Ministry of Agriculture received the first, second, and third quarterly reports on APA in 2023-24, as well as a half-yearly evidence report (approximately 900 pages in length) were forwarded to the Ministry of Agriculture;
- Using the APAMS program, upload and submitted the first, second, third, and fourth quarterly reports of the 2023-24 APA;
- Drafted the Annual Performance Agreement of BARC for 2024-25;
- Assisted in the amendment of the draft and signing of the agreement 24-25 in accordance with the instructions of the expert pool of the Ministry of Agriculture;
- Sent the 1st quarterly report of the index related to the Ministry of Agriculture for the financial year 2023-24 to the Ministry of Agriculture followed by uploading and submitting the APAMS software.
- Sent letters and compiling reports to the concerned departments of BARC for the preparation of APA report for the financial year 2024-23;
- Upload the agreement on google drive for preparing BARC's APA report and send its link to the concerned department/unit of BARC.
- To perform all activities related to APA.



APA Award Certificate



## PLANNING AND EVALUATION DIVISION



## PLANNING AND EVALUATION DIVISION

Planning and Evaluation Division is one of the core divisions of BARC. It involves preparing, developing, implementing, and evaluating projects/programs for the organization. It also revises and reviews project proposals prepared by NARS institutes as per the direction of the Ministry of Agriculture (MoA). In addition, the division is involved in providing opinions/comments/inputs, and policy/action plan support at the national level. Furthermore, this division contributes in preparing a draft memorandum of understanding (MoU) for cooperation and research development in the agriculture sector as required by the Ministry of Agriculture. It provides invaluable inputs/opinions on different MoU/MoA/LA of the agencies of Ministry of Agriculture with foreign universities, institutes and organizations. Professionals working for the division are shown in the following table.

### Name of the Professionals

Name	Designation
Dr. Md. Kabir Uddin Ahmed	Member Director
Dr. Md. Ashraful Alam	Principal Scientific Officer (Deputation for PARTNER Program)
Dr. A B M Khaldun	Principal Scientific Officer (Deputation for BP-ATC Program)
Dr. Md. Iqbal Hosen	Principal Scientific Officer (A. C.)

Activities of the division for the year 2023–2024 have been briefly addressed:

### 1. Research Project Coordination and Monitoring

Currently, the division is coordinating and monitoring three projects. The first one is "Omics Food and Nutritional Security-Platform Technologies to Enhance Crop Genetic Resources and Food Value Chains in Bangladesh (OFANS)"; its third year's research activities are being implemented, funded by KGF (ID: TF-92-FNS/21). The second one entitled "Improving Research Qualities of ARIs Through Review and Evaluation by an External Panel of Experts, its third-year research activities are being implemented, is also funded by KGF (ID: CEP VI-BARC/2021). The last one is "Capacity Building for Conducting Adaptive Trials on Seaweed Cultivation in Coastal Areas"; its new phase started in July 2023 and will continue until June 2025.

### 2. Field Monitoring 2023-24

In the fiscal year 2023-24, five times field monitoring on two projects has been conducted. i) Adaptive Trials on the Seaweed Cultivation Project were monitored on 7 October 2023 at Cox's Bazar. In this project the monitoring team members were Former EC, Dr. Md. Abdus Salam (MD, Crops) and Dr. Kabir Uddin Ahmed (MD, P&E). ii) Fitting New HYV Crops Varieties in Existing Farming System for Productivity Improvement under the PARTNER project (Activities 8.1.3.6) was monitored four times at Satkhira, Dumuria of Khulna and Kalapara of Patuakhali. In this

project, the monitoring team members were Dr. Md. Abdus Salam (MD, Crops) Dr. Kabir Uddin Ahmed (MD, P&E), and Dr. Ashrafal Alam (APD, PARTNER), and they made the following efforts-

- Discussions with scientists about the progress of field activities.
- Field visit of seaweed cultivation and lab research.
- Field visit of activities DLI 8.1.3.6.



Field Monitoring at Different Locations of Bangladesh Funded By KGF and PARTNER Project Separately

### 3. Linkage with International Organizations and Development Partners

- Opinion on the Memorandum of Understanding (MoU) between BARC and Indian Council of Agricultural Research (ICAR) was sent to the Ministry of Agriculture.
- Opinion on the project entitled "Accelerating rice-based agri-food systems transformation for better sustainability, profitability, and inclusiveness through promoting the adoption and upscaling of mechanized ratooning rice system" proposed by FAO was sent to the Ministry of Agriculture.
- Opinion on the Draft Memorandum of Understanding (MoU) between Bangladesh and Singapore for cooperation in the field of agriculture was sent to the Ministry of Agriculture.
- Opinion regarding the signing of the proposed Memorandum of Understanding (MoU) between Bangladesh Agricultural Research Council (BARC) and International Water Management Institute (IWMI) was sent to the Secretary, Ministry of Agriculture.
- Opinions on the views received on the draft MoU are coordinated for signing the Memorandum of Understanding (MoU) between Bangladesh Agricultural Research Council (BARC) and Indian Council of Agricultural Research (ICAR) was sent to MoA.

- The proposed Memorandum of Understanding (MoA) between Bangladesh Agricultural Research Council (BARC) and International Potato Center (CIP) seeking consent for signing was to the Ministry of Agriculture.
- Opinion on “Accelerating rice-based agri-food systems transformation for better sustainability, profitability, and inclusiveness through promoting the adoption and upscaling of mechanized ratooning rice system” proposed by FAO was sent to the Ministry of Agriculture
- Opinion regarding the signing of the proposed draft MoU between Department of Agricultural Extension (DAE) and Syngenta Bangladesh Limited was sent to the Ministry of Agriculture.
- Prepared Bengali version of the proposed MoU for signing between Bangladesh Agricultural Research Council (BARC) and Indian Council of Agricultural Research (ICAR) was sent to Ministry of Agriculture.
- Opinion on the MoU between Bangladesh Agricultural Research Institute (BARI) and Shimane University, Japan has been to the Ministry of Agriculture.
- Opinion on signing and training module of Memorandum of Understanding (MoU) between Department of Agricultural Marketing (DAM) and Kasetsart Entrepreneurship Education Program (KEEP), Faculty of Education, Kasetsart University, Thailand was sent to the Ministry of Agriculture on 20/9/2023.
- Brief notes for Bangladesh delegations to visit ADB Headquarters in Manila, International Rice Research Institute and Bangladesh High Commission in Colombo, and Sri Lankan Government Office were sent to Ministry of Agriculture on 04/10/2023
- Opinion on the participation of Bangladesh in “The 9th Sichuan Agricultural Expo (SAE), 2023” to be held at Chengdu, Sichuan, China during 27–30 October 2023 was sent to MoA.
- A tentative agenda for presentation in the 1st Joint Agriculture Working Group (JAWG) meeting between Bangladesh and Japan held in the latter half of November 2023 was sent to MoA on 09/10/2023.
- A draft MoU between Bangladesh and UAE on food security was sent to the Ministry of Agriculture on 11/10/2023
- Opinion on Food and Agriculture Organization of the United Nations (FAO) proposed project titled “Engaging the food and agriculture sectors in sub-Saharan Africa, and South and South-East Asia to generate data-for-action to combat antimicrobial resistance using a One Health approach” was sent to the Ministry of Agriculture.
- Opinion sent to the Ministry of Agriculture on the proposed Memorandum of Understanding (MoU) between Bangladesh Agricultural Research Council (BARC) and International Water Management Institute (IWMI)
- Opinion sent to the Ministry of Agriculture regarding the signing of MoU between Bangladesh Agricultural Research Council (BARC) and Cornell University, USA.
- Opinion on “Technical support to agriculture sector transformation programme (ATP)” proposed by the United Nations Food and Agriculture Organization (FAO) was sent to the Ministry of Agriculture.
- Opinion on Bilateral Memorandum of Understanding (MoU) on Scientific & Technical Cooperation in Agriculture between Bangladesh and Oman was sent to the Ministry of Agriculture.
- Updated information on the overall situation of cooperation between GCC (Middle East) countries with Bangladesh was sent to the Ministry of Agriculture on 28/12/2023

- Opinion on the proposed draft Memorandum of Understanding (MoU) between National Agricultural Training Academy (NATA) and Land O'Lakes Venture-37 was sent to the Ministry of Agriculture on 28/12/2023
- Draft MoU prepared for signing between Bangladesh and Kuwait for bilateral cooperation in the agriculture and fisheries sector was sent to the Ministry of Agriculture on 28/12/2023
- In the light of the Memorandum of Understanding signed between the Government of Bangladesh and Denmark, the platform meeting to be held, G2G potential project proposal was sent to the Ministry of Agriculture on 28/12/2023
- Opinion on the Proposed Memorandum of Understanding (MoU) between Agricultural Information Service (AIS) and International Maize and Wheat Improvement Center (CIMMYT) was sent to the Ministry of Agriculture on 17/12/2023
- Opinion on the Memorandum of Understanding (MoU) between Department of Agricultural Marketing and DAI Global, LLC regarding the formulation of the National Plan of Action for the National Agricultural Marketing Policy 2023 was sent to the Ministry of Agriculture on 29/01/2024
- Opinion on Memorandum of Understanding (MoU) for bilateral cooperation between Bangladesh and Brazil was sent to the Ministry of Agriculture on 24/01/2024
- Opinion on the proposed draft Letter of Agreement (LoA) between Soil Resources Development Institute (SRDI) and Food and Agriculture Organization of the United Nations (FAO) was sent to the Ministry of Agriculture on 17/01/2024
- Opinion on the proposed draft Memorandum of Understanding (MoU) between Bangladesh Rice Research Institute (BRRI) and Harvest Plus was sent to the Ministry of Agriculture on 08/1/2024
- Opinion on Notification specifying specific areas for bilateral cooperation in agriculture and agro-processing between Bangladesh and Canada was sent to the Ministry of Agriculture on 08/01/2024
- Opinion on the proposed draft Memorandum of Understanding (MoU) between Bangladesh Agricultural Research Institute (BARI) and International Rice Research Institute (IRRI) was sent to the Ministry of Agriculture on 08/01/2024
- Opinion on Bangladesh Agricultural Research Council (BARC) and Cornell University, USA for the signing of MoU was sent to the Ministry of Agriculture on 02/01/2024
- Amendment of draft MoU for signing between Bangladesh and Kuwait for bilateral cooperation in the agriculture and fisheries sector was sent to the Ministry of Agriculture on 28/02/2024
- Based on the proceeding's amendment of the draft MoU for bilateral cooperation between Bangladesh and Brazil was sent to the Ministry of Agriculture on 15/02/2024
- A Memorandum of Understanding (MoU) between Bangladesh and Kuwait for the delineation of specific areas for bilateral cooperation in the agriculture and fisheries sector was sent to the Ministry of Agriculture on 21/03/2024
- Renewal of signed MoU between Bangladesh Agricultural Research Council (BARC) and Department of Agriculture (DoA), Ministry of Agriculture and Forest, Royal Government of Bhutan was sent to the Ministry of Agriculture on 14/03/2024
- Opinion on the draft MoU between the Trading Corporation of Bangladesh (TCB) and Myanmar Rice Federation (MRF) for the import of various types of food products on G2G basis was sent to the Ministry of Agriculture on 05/03/2024

- Opinion on the proposed Draft Basic Agreement for bilateral technical cooperation between Bangladesh and Brazil was sent to the Ministry of Agriculture on 05/03/2024
- Draft MoU prepared by BARC for bilateral cooperation in agriculture between Bangladesh and Austria was sent to the Ministry of Agriculture on 08/04/2024
- Opinion on the proposed draft Memorandum of Understanding between SAARC and ESCAP was sent to the Ministry of Agriculture on 23/04/2024
- Opinion on the proposed draft Memorandum of Understanding (MoA) between Agricultural Information Service (AIS) and CAB International (CABI) was sent to the Ministry of Agriculture on 23/04/2024
- A draft MoU prepared by BARC for bilateral cooperation on agricultural development between Bangladesh and Rwanda was sent to the Ministry of Agriculture on 08/05/2024.
- A draft MoU prepared by BARC for bilateral cooperation in agriculture between Bangladesh and Morocco was sent to the Ministry of Agriculture on 08/05/2024.
- Opinion on the Draft Memorandum of Understanding (MoU) between the Governments of Bangladesh and Mexico on bilateral cooperation in Agriculture was sent to the Ministry of Agriculture on 03/07/2024.
- Views on the draft Memorandum of Understanding (MoU) received from China to expand bilateral trade between Bangladesh and China was sent to the Ministry of Agriculture on 30/06/2024.
- Opinion on the Draft Memorandum of Understanding (MoU) on bilateral cooperation in Agriculture between the Governments of Bangladesh and Mexico was sent to the Ministry of Agriculture on 23/06/2024
- Suggestions on Letter of Agreement (LoA) between Department of Agricultural Marketing and Syngenta Foundation was sent to the Ministry of Agriculture on 20/06/2024
- Opinion on Letter of Agreement (LoA) between Department of Agricultural Marketing and Syngenta Foundation was sent to the Ministry of Agriculture on 20/06/2024
- A draft MoU prepared by BARC for signing for bilateral cooperation on Agricultural Development between Bangladesh and Rwanda was sent to the Ministry of Agriculture on 13/06/2024
- Views on draft MoU of Foreign Importer (FI) of Bangladesh with National Co-operative Exports Ltd (NCEL) of India to ensure annual fixed supply for Bangladesh in import of various essential commodities from India was sent to the Ministry of Agriculture on 06/06/2024
- Opinion on signing the MoU between Department of Agricultural Extension (DAE) and CAB International was sent to the Ministry of Agriculture on 06/06/2024

#### **4. Research Project Development and Evaluation DPP/TAPP/Project Documents**

- Establishment of the Bangabandhu-Pierre Eliot Trudeau Agricultural Technology Center (BP-ATC) and enhancement of agricultural research capability in Bangladesh
- Establishment of the Institute of Agricultural Economists Bangladesh (corrected DPP copy was sent to MoA on 28 July 2024)
- Technical support to sustainable and resilient investment towards the agriculture sector transformation programme of Bangladesh (project doc finalized, TAPP in preparation stage)

## 5. Preparation of Policy Documents, Agreements, Comments on MoU/MoA/LoA and Providing Inputs

- Opinion on the draft report titled “Extended Coastal Zone (ECZ) Basin Management Plan” prepared under the project “Support to the Implementation of the Bangladesh Delta Plan 2100” under the implementation by the General Economics Division (GED) for the proper implementation of the Bangladesh Delta Plan 2100 was sent to the Ministry of Agriculture.
- Opinion sent to the Ministry of Agriculture on publication regarding activities of the concerned ministries/departments aimed to implement "My Village My Town: Expansion of Modern Urban Facilities in Every Village".
- Draft of “Bangladesh Plant Genetic Resources Institute Act-2023” was revised and sent to the Ministry of Agriculture on 14/10/2023.
- Prepared the recommendations adopted in the round table discussion on "Prospects for better agricultural practices to increase export of fruits and vegetables" and sent to the Ministry of Agriculture on 23/10/2023.
- Sent information related to the NATP-2 project implemented by Bangladesh Agricultural Research Council FY 2009-2023 to the Ministry of Agriculture.
- The information on the Annual Development Program (ADP) review meeting for FY 2023-24 under the Ministry of Agriculture was sent to the Ministry of Agriculture.
- Sent opinion to the Ministry of Agriculture on the proposed project entitled "Increasing productivity through infrastructural development of field research department in Gaibandha district and dissemination of sustainable agricultural technology in char areas".
- Opinion on the proper implementation of the “Bangladesh Delta Plan 2100 opinion on the draft report titled “Major River Systems and Estuaries” prepared under the project “Support to the Implementation of the Bangladesh Delta Plan 2100” under the implementation by the General Economics Division (GED) was sent to the Ministry of Agriculture.
- Information on additional government expenditure/government investment in the agriculture sector from 2021 to 2025 was sent to the Ministry of Agriculture.
- Opinion on the proper implementation of the Bangladesh Delta Plan 2100, comments on the draft report titled “Chittagong Hill Tracts (CHT)” prepared under the project “Support to the Implementation of the Bangladesh Delta Plan 2100” under the implementation by the General Economics Division (GED) was sent to the Ministry of Agriculture.
- Information on the implementation progress of “Bangladesh Delta Plan-2100” was sent to the Ministry of Agriculture.
- The future plan of the Ministry of Agriculture and the challenges of its implementation, the information related to the five-year future plan of the Bangladesh Agricultural Research Council and the challenges of its implementation was sent to the Ministry of Agriculture.
- Information regarding a Memorandum of Understanding (MoU) or Memorandum of Agreement (MoA) was sent to the Ministry of Agriculture on 27/12/2023.
- Progress on Memorandum of Understanding/Agreement forwarded for taking necessary steps after signing to enhance bilateral cooperation in agriculture sent to the Ministry of Agriculture on 21/12/2023.
- Opinion on draft concept note and Memorandum of Understanding (MoU) for Go-4 Impact: Governance for Improved Climate Resilient Public Service Delivery (2023-2027) was sent to the Ministry of Agriculture on 19/12/2023.
- Opinion on the MoU signed between Moumita Flower Products and Bangladesh Agricultural Research Institute (BARI) was sent to the Ministry of Agriculture on 11/12/2023.

- Information on the proceeding's decision meeting held in the Ministry for reviewing the implementation of the signed and proposed MoU/MoA/Memorandum of Cooperation with Ministry of Agriculture and its agencies with various countries/organizations/international institutions/reputable universities sent to the Ministry of Agriculture on 16/01/2024.
- Opinion on the Memorandum of Understanding (MoU) between Bangladesh Jute Research Institute (BJRI) and Bangladesh Seed Association was sent to the Ministry of Agriculture on 08/01/2024.
- Information on the achievements under the MoU/MoA signed with various countries/international organizations/universities during the period 2009–2023 on the occasion of the visit of the Honorable Prime Minister to the Ministry of Agriculture as sent to the Ministry of Agriculture on 12/02/2024.
- Opinion on the Memorandum of Understanding (MoU) between Bangladesh Jute Research Institute (BJRI) and Mayfair Stylewear was sent to the Ministry of Agriculture on 18/03/2024
- Opinion on signing the Memorandum of Understanding (MoU) between Masud Seed Company and Bangladesh Agricultural Research Institute (BARI) was sent to the Ministry of Agriculture on 12/03/2024.
- Opinion of Memorandum of Understanding (MoU) between Bangladesh Sugar Crop Research Institute (BSRI), Ishwardi, Pabna and Bangladesh Sugar and Food Industry Corporation (BSFIC), Sugar Industry Building-3 Dilkusha B/A, Motijheel, Dhaka was sent to the Ministry of Agriculture on 16/05/2024.
- Opinion on the Memorandum of Understanding (MoU) between Caritas Bangladesh (CB) and Bangladesh Wheat and Maize Research Institute (BWMRI) was sent to the Ministry of Agriculture on 15/05/2024.
- Opinion on Memorandum of Understanding (MoU) between Bangladesh Jute Research Institute (BJRI) and Bangladesh Seed Association was sent to the Ministry of Agriculture on 27/06/2024.
- Opinion on the joint research agreement between Bangladesh Jute Research Institute and Elite Global Tea Ltd. for development and marketing of multipurpose products of jute, kenaf, and mesta was sent to the Ministry of Agriculture on 23/06/2024.
- Opinion on the Letter of Agreement (LoA) between Department of Agricultural Marketing and Syngenta Foundation was sent to the Ministry of Agriculture.

## **6. Workshop/Seminar/Training/Meeting**

### **(a) Training on Project Development and Management (14<sup>th</sup> Batch)**

Planning and Evaluation Division, BARC organized a five-day training program (14<sup>th</sup> batch) on "Project Development and Management" during 4–8 February 2024 at BARC. In this program, 30 scientists and officers from NARS and other organizations were present. In total 24 different topics on Project Development and Management were presented and discussed. Resource persons offered lectures and practical sessions on the specific fields. After successful completion of the training program, certificates were awarded among the participants.



Closing Day Moment of Project Development and Management

### (b) National Workshop on Implementation Progress and Future Plan of SDG Action Plan

The division organized a day-long workshop program titled “National Workshop on Implementation Progress and Future Plan of SDG Action Plan” on 31<sup>st</sup> March 2024 at the BARC auditorium. In total 95 participants including scientists from NARS and other agencies of MoA have actively participated. Representatives of 24 organizations presented their implementation progress and future plan of SDG action plan in two technical sessions. At the end of each technical session, participants took part in the open discussion session and shared their opinions. Finally, the rapporteur prepared recommendations based on the views, comments, and suggestions made by the participants for the future implementation of the SDG action plan.



National Workshop on Implementation Progress and Future Plan of SDG Action Plan

### (c) Training Workshop on Project Development and Management (15<sup>th</sup> Batch)

The division organized a five-day long training program (15<sup>th</sup> batch) on “Project Development and Management” on 19–23 May 2024 at the Training Building (3rd floor), BARC. In total 25 scientists including officers from NARS and other agricultural organizations were present as participants. The training program was funded by the Program on Agricultural and Rural Transformation for Nutrition, Entrepreneurship, and Resilience in Bangladesh (PARTNER),

APCU-BARC, PARTNER PROGRAM, BARC. In total 24 different topics on Project Development and Management were presented. Resource persons conducted lectures and practical sessions on the specific fields. After completing the training program, the participants were awarded certificates.



*Moment of Project Development and Management*

**(d) National Review Workshop on Achievement and Future Activities of 4IR Action Plan**

A day-long national review workshop on “National Review Workshop on Achievement and Future Activities of 4IR Action Plan” organized by the division was held on 22 April 2024 at the BARC auditorium. Over 100 hundred participants including scientists, officers from NARS, and other agencies of MoA were the participants. The focal point of representatives of 17 agencies of MoA presented their progress and future activities of the 4IR action plan. Prof. Dr. Md. Monjurul Alam, Department of Farm Power and Machinery, Faculty of Agricultural Engineering & Technology, BAU, and Prof. Dr. Md. Roshidul Hasan, Computer Science and IT Division, BSMRAU were present as expert members of the technical session. At the end of each technical session, participants took part in the open discussion session and shared their opinions. Finally, the rapporteur prepared recommendations based on the views, comments, and suggestions made by the participants for the future implementation of the 4IR action plan.



*Inaugural Session Moment of 4IR Action Plan*

## e) Training Attended by the Scientist of Planning and Evaluation Division

- IoT Based Precision Agriculture for Sustainable Production held during 17–19 October 2023, Agricultural Engineering Unit, BARC.
- Nutrition and Food Safety, NATA, Gazipur, held during 19–23 November 2023, conducted by NATA.
- Human Resource Management, BARC, Farmgate, held during 30–31 December 2023, conducted by Manpower and Training Unit, BARC.
- Adaptive Delta Management, held during 4-6 February 2024, conducted by the General Economic Division, Bangladesh Planning Commission.
- GIS & Remote Sensing for Smart Agriculture held during 2–6 June 2024, Conducted by the Computer & GIS Unit.
- Climate Adaptation for Sustainable Crop

## 7. Regular/Routine Activities/Report

The following reports were prepared viz; report on Prime Minister's /Chief Advisor's direction, ADP review meetings report, update information of BARC MoU (if any), report on national social security program in the agriculture sector, report on to build up a developed, prosperous and smart Bangladesh, etc. were prepared monthly and sent to the Ministry of Agriculture for necessary action. In addition, a newsletter write-up (quarterly) was prepared on the important events organized by P&E and submitted to AIC for publishing. Besides, the annual report for this division was prepared and submitted to AIC.

## 8. Publications

### a) Training Manual/Report

- Training Manual on Project Development and Management (PDM) funded by GOB.
- Training Manual on Project Development and Management (PDM) funded by PARTNER Program.

### b) Scientific Paper

- Xu J, **Hosen MI**, Zhang M, and Li TH (2023). *Pluteus aurantioruber*, a new species of *Pluteus* section *Celluloderma* (Pluteaceae) from China. *Phytotaxa* 629:65–74. [SCI, Impact Factor 1.0]
- Yang KL, Lin, JY, Li GM, Liu ZC, **Hosen MI** and Yang ZL (2024). *Heinemannomyces*, *Hymenagaricus* and *Xanthagaricus* revisited (Basidiomycota, Agaricaceae). *Phytotaxa* 659: 112–164. [SCI, Impact Factor 1.0]

## MANPOWER AND TRAINING UNIT

During the reporting period (July 2023 to June 2024), a total of 10,284 scientists, officers, and representatives from the National Agricultural Research System (NARS) institutes, public and private organizations participated in the BARC-organized or some cases facilitated revenue/other sources' funded training, workshops, seminars and higher studies programs at home and abroad. In addition, in total 1,150 farmers were trained on the Khamari mobile app, and 200 farmers were trained on good agricultural practices (GAP) in eight crops through the Crop Zoning Project and the APCU-BARC, PARTNER programs, respectively.

### Name of Professionals

Name	Designation
Mr. Md. Mustafizur Rahman	Director
Mr. Md. Al Mobasher Hussien	Principal Training Officer
Dr. Mohammed Khorshed Alam	Senior Training Officer

The major activities that Manpower and Training Unit has accomplished/assisted in implementation during the reporting period are delineated below.

### 1.1: Training in Human Resource Management (HRM)

The unit, BARC organized an in-house training program on *Human Resource Management* from 30 to 31 December 2023 at BARC Conference Room 1. All 60 officers of BARC were present as participants. The objective of the training program was to enrich participants' knowledge and understanding of various issues in human resource management. The training program was inaugurated by the chief guest, Dr. Md. Saifullah, Member Director (Admin & Finance), BARC. The inaugural session was presided over by Dr. Kabir Uddin Ahmed, Member Director



*Training Session on HRM*

(Planning & Evaluation), BARC. Welcome remarks were delivered by Mr. Md. Mustafizur Rahman, Director (Manpower & Training), BARC. At the beginning of the inaugural session Mr. Md. Al Mobasher Hussien, Principal Training Officer, BARC, as course coordinator, briefly highlighted the importance of the program. The resource persons were from the Graduate Training Institute (GTI), Bangladesh Agricultural University (BAU), and Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU). Certificates were awarded after the successful completion of the training program.

## 1.2: Training in Administrative and Financial Management

A ten-day training program on *Administrative And Financial Management* was organized by Manpower and Training Unit, BARC at the Bangladesh Institute of Management (BIM), Dhaka from February 25 to March 10, 2024. The training program was attended by 40 participants, including recently appointed mid-level officers from BARC. The objective of the training program was to increase participants' knowledge and understanding of administrative and financial management rules and regulations. Resource persons were from the ministries and other public organizations. Certificates were awarded after the successful completion of the training program certificate distribution ceremony.



Training Session on AFM

## 1.3: Training on Archives and Record Management

Manpower and Training Unit, BARC organized a day-long training program on *Archives And Record Management* for all officers of BARC on May 2, 2024. 62 officers attended the training program. The purpose of the training program was to enrich participant's knowledge on archives and record management and build links with the concerned departments on how to effectively record important documents in archives. Resource persons from the Department of Archives and Library, Ministry of Cultural Affairs, Dhaka conducted the training sessions.

## 1.4: Training on Stress Management

The Manpower and Training Unit at BARC conducted a two-day training on *Stress Management*. The training program was held on May 12–13, 2024 at BARC. 62 officers of the Council attended the training program. The purpose of the training was to understand how to manage and overcome stress in the workplace. The major training sessions were conducted by the corporate coach and trainers. The training program was inaugurated by the chief guest Dr. Nazmun Nahar Karim, Executive Chairman (Routine Charge), BARC. The inaugural session was presided over by Dr. Kabir Uddin Ahmed, Member Director (Planning & Evaluation), BARC. Welcome remarks were delivered by Mr. Md. Mustafizur Rahman, Director (Manpower & Training), BARC.



Inaugural Session of Stress Management Training

### 1.5: Annual Performance Agreement (APA)

The Manpower and Training Unit at BARC conducted a day-long training on the *Annual Performance Agreement*. The training was held on May 23, 2024, at BARC. 62 officers of the Council attended the training program. The objective of the training was to improve participants' knowledge and abilities in selecting outcome-based performance indicators as part of the development of the 2024-25 Annual Performance Agreement. Ms. Nazia Shirin, Joint Secretary (Budget & Monitoring), Ministry of Agriculture, conducted major sessions on (i) Guidelines for APA; (ii) APA Structure, Process, and Timeline; (iii) APA Mandatory Strategic Objectives (MSO); and (iv) APA Monitoring and Evaluation as a resource speaker.



Inaugural Session of APA Training

### 1.6: Training in Modern Office Management

The Manpower and Training Unit, BARC organized a three-day training program on *Modern Office Management* for entry-level and mid-level officers of BARC on June 27, 2024, and June 29–30, 2024 at BARC. The training program was organized to enhance professional skills and improve the quality of institutional work for officers. 56 officers took part in the training program. Member Directors of BARC conducted the training sessions on the assigned topics.



Inaugural Session on Modern Office Management

### 1.7: Training on Human Resource Management (HRM)

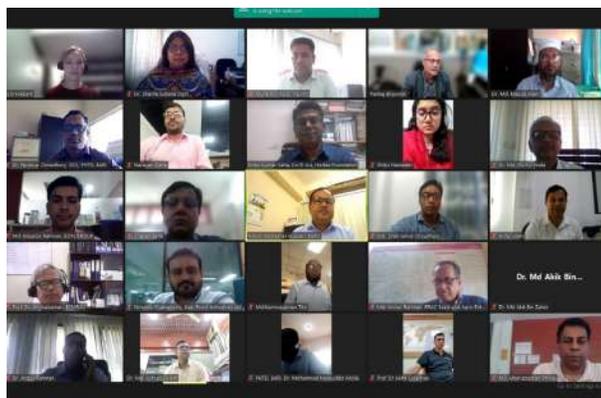
The Manpower and Training Unit, BARC organized a three-day training program on *Human Resource Development* for mid-level officers of BARC funded by APCU-BARC, PARTNER project. The training program was held from 2-4 June 2024 at BARC. The training program was organized for BARC Officers (25) to enhance their knowledge and skills in HRM for achieving the organizational missions and visions. Resource persons were from the Bangladesh Institute of Management (BIM), Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU), and some from corporate agencies. Certificates were awarded after the successful completion of the training program.



*Corporate Trainer Conducting Training*

### 1.8: Post-harvest Food Safety Training for Module 1 and Module 2

Two sets of post-harvest food safety training for Module 1 (General Food Safety And Hygiene) and Module 2 (safe food handling) were completed under Theme 4.4 (Postharvest Food Handling and Processing in Bangladesh) of the OFANS Project. The online training program was organized by BARC and the Global Institute for Food Security (GIFS) with the technical assistance of the National Research Council (NRC) and the Saskatchewan Food Industries Development Centre (SFIDC), Canada. Erin Hiebert, Food Safety & Skills Development Manager, SFIDC, conducted an online training program on Module 1 and Module 2 on October 18–19, 2023, and October 30-31, 2023, respectively, for the public and private participants in Bangladesh. The selected 25 participants from NARS institutes (BARC, BARI, BRR); DAE, Hortex Foundation; Academia (BAU, BSMRAU, SAU); Representatives of the Food Processing Industry (SQUARE, PRAN, Bombay Sweets, A R Malik Seeds, Akij, ACI, Kazi Food, Eon Group); NGO (BRAC); and Small-Scale Processors & Entrepreneurs (Swapno Bunon) joined online training program in two-batches. With the assistance of GIFS, NRC, SFIDC, Canada, and BARC, Hortex Foundation, Bangladesh, this unique type of trainer package is helpful in Bangladesh for capacity building of different stakeholders in postharvest food handling, processing, and the food value chain.



*A Group Photo of Post-Harvest Food Safety Training*

## 2.1 Review Workshop on Citizen Charter of BARC

The Manpower & Training Unit and Citizen Charter Update Committee of BARC organized a review workshop on *Citizen Charters* at BARC on November 20, 2023. The objective of the workshop was to review services for updating the Citizen Charter. In total 80 employees of BARC attended the workshop. The event was inaugurated by executive chairman of BARC. In his speech as chief guest, the executive chairman emphasized ensuring transparency and accountability while delivering services to citizens. He also added that everyone should have a citizen-friendly mentality in their respective positions.



*Technical Session of Review Workshop*

The technical session was presided over by Dr. Md. Saifullah, Member Director (Admin & Finance), BARC. Dr. Md. Baktear Hossain, Member Director (NRM), and Dr. Nazmun Nahar Karim, Member Director (Livestock) of BARC, were present as discussants. Mr. Md. Al Mobasher Hussien, Principal Training Officer and Focal Point Officer of Citizen Charter, briefly highlighted the importance of the program. Mr. Md. Mustafizur Rahman, Director (Manpower & Training), presented a paper on citizen charter guidelines and the work plan for 2023–24 by the Cabinet Division. The session chair requested all divisional and unit heads of BARC to submit all possible services for inclusion in the citizen charter. A fruitful discussion was held in the program where the participants exchanged views and ideas. Finally, it was decided to take the necessary steps to include new and updated services proposed by divisions and units in the BARC's Citizen Charter. Besides, the BARC Citizen Charter Update Committee will take the necessary actions.

## 2.2 Discussion Meeting on Cooperation in Agricultural R & D between YAAS Delegation and BARC Senior Officials

The Manpower and Training Unit organized a discussion meeting on cooperation in agricultural R&D between the YAAS, China delegation, and BARC senior officials on November 4, 2023. The meeting's focus was on YAAS, China, and BARC's possible collaboration in agricultural R&D. A total of 30 participants, including 4 delegates from YAAS, China, 6 talented young scientists from NARS institutes, and BARC senior officials, attended the meeting.

Dr. Yanjie Luo, Director, International Cooperation Division, YAAS, briefly presented an outline including an overview of international cooperation, a briefing on cooperation, a talent exchange program, and the next plan of YAAS. Dr. Xiaolin Li, Vice President, Yunnan Academy of Agricultural Sciences (YAAS) and Team Leader, YAAS, China delegation, attended the meeting and made valuable remarks. On BARC-YAAS collaboration in agriculture, the executive chairman of BARC presented an overview of agricultural R&D in Bangladesh. The renewal of the framework agreement between BARC and YAAS was also discussed in the meeting.

The YAAS delegates visited BARI and BRRI on November 5, 2023, and discussed with concerned scientists the possible areas for collaboration between YAAS and NARS in agricultural R&D. The team also visited the BARI and BRRI different research labs, i.e., biotech, IPM, Gene Bank, Rice Museum, etc., and research fields.



*BARI Lab, Gazipur*



*BRRI Biotech. Lab, Gazipur*



*BRRI Rice Museum, Gazipur*



*BRRI Rice Research Plot, Gazipur*

### 2.3 2023 Bioinformatics Training Workshop

OMICS Food and Nutritional Security (OFANS) is a joint initiative between BARC and the Global Institute for Food Security (GIFS), Canada. Plant genomics and phenomics for breeding is one of the research themes (Theme-1) in OFANS. However, in OFANS, an important objective (Objective 1.4) under Theme-1 is to organize a training program led by Canadian experts in bioinformatics and statistical genomics. This program aims to educate students, post-docs, technicians, and researchers in Bangladesh. GIFS hosted two sets of Introduction to Linux and Introduction to R training sessions to organize as part of bioinformatics training in February and May 2023, respectively, attended by 33 participants on the Zoom platform. The follow-up bioinformatics training workshop was to learn more hands-on Linux applications was held on October 23 and 25,



*Bioinformatics Training Workshop Session*

2023, at BARC for the nominated participants of respective institutions under Objective 1.4 in Theme 1 of the OFANS project. The two-day training workshop was jointly organized by GIFS and BARC at conference room 2 of BARC. The training courses focused on utilizing bioinformatics tools and innovative statistical genomics technologies

Dr. Andrew G. Sharpe, Research Chair in Food Security at GIFS, and Mr. Kevin Koh, Platform Lead, Data Management and Analytics Group, GIFS conducted the training sessions as resource persons. Also, Dr. Raju Chowdhury and Dr. Nadeem Khan, Research Fellow, GIFS, Canada (virtually) joined as resource persons for the two-day training workshop. A total of 33 participants from NARS institutes and Universities took part in the face-to-face training workshop. In the closing ceremony on October 25, 2023, Executive Chairman, BARC; Dr. Md. Abdus Salam, Member Director (Planning & Evaluation), BARC; Dr. Andrew G. Sharpe, Dr. John Davies, Accelerated Breeding Program Lead, GIFS, USask; Mr. Kevin Koh, Platform Lead, Data Management and Analytics Group, GIFS; Dr. Asutosh Sarker, Bangabandhu Research Chair; and Dr. Sreekanth Attaluri, GIFS Representative were present as distinguished guests and delivered their inspirational and fruitful speeches to the participants.

## 2.4 Global Benefit from Crop Biotechnology Workshop

BARC and Global Institute for Food Security (GIFS), University of Saskatchewan, Canada jointly organized a day-long workshop on 'Global Benefit from Crop Biotechnology' on March 28, 2024, at BARC, Farmgate, Dhaka. The workshop was arranged under the OMICS Food and Nutritional Security (OFANS) project. Executive Chairman, BARC Dr. Steven Webb, Executive Director and Chief Executive Officer of GIFS, Canada and Dr. Andrew G. Sharpe, Research Chair of GIFS attended the workshop. Dr. Md. Baktear Hossain, Member Director (NRM) of BARC and Principal Investigator of the OFANS project (Themes 1.4 and 4.4) delivered the welcome speech and moderated the question-and-answer session at the workshop. Mr. Md. Al Mobasher Hussen, Principal Training Officer, BARC, and Co-PI, OFANS (Themes 1.4 and 4.4), acted as Master of Ceremony in the inaugural session.



*Dr. Stuart Smyth, Usask, Delivered Technical Presentations*

Prof. Dr. Stuart Smyth, a renowned researcher, and the Agri-Food Innovation & Sustainability Enhancement Chair at the University of Saskatchewan, Canada, delivered technical presentations in three sessions on global benefits from crop biotechnology, global biosafety regulations, and the intellectual property (IP) landscape at the workshop. Also, Dr. Andrew Roberts, CEO of the Agriculture and Food Systems Institute, Canada, delivered a recorded presentation on the global regulatory status of genome-edited plants.

The workshop was attended by 50 officers, scientists, and representatives from the Ministry of Agriculture, the Ministry of Environment, Forestry, and Climate Change, research and extension institutions, various universities, private institutions, GIFS, the University of Saskatchewan, and the National Research Council of Canada. The issues that were emphasized by the resource speakers, chief guest speeches, and open discussions are documented in the form of recommendations.

## **2.5 Inception workshop on BP-ATC Project**

The inception workshop on the 'Establishment of Bangabandhu-Pierre Elliott Trudeau Agricultural Technology Center (BP-ATC) and Enhancement of Agricultural Research Capability in Bangladesh' project was held on Wednesday, March 27, 2024, at 9.30 AM at the auditorium of BARC, Farmgate, Dhaka. Ms. Lilly Nicholls, H.E., High Commissioner for Canada in Bangladesh, Dr. Baljit Singh, Vice President, University of Saskatchewan, Canada, and Dr. Steven Webb, Executive Director and CEO of GIFS, and distinguished officials from Ministry of Agriculture, Bangladesh attended the workshop. The Executive Chairman of the Bangladesh Agricultural Research Council chaired the workshop. As many as one hundred senior officials, scientists, and representatives from the different ministries, several academic institutions, and public organizations, including GIFS, the University of Saskatchewan, and the National Research Council of Canada, attended the workshop.

As part of BARC-GIFS collaboration, the Bangladesh Government has approved the project 'Establishment of the Bangabandhu-Pierre Elliott Trudeau Agricultural Technology Center (BP-ATC) and Enhancement of Agricultural Research Capability in Bangladesh' at the ECNEC meeting on November 9, 2023. This project has several components, like human resource development, research methodology exchange, development and transformation, and infrastructure development in agricultural research. BP-ATC will be a center of excellence that will promote partnerships among the NARS institutes with GIFS, USask, and other world-class research centers in Canada.

## **2.6 Technical Workshop on Canada's Plant and Livestock Inspection and Safety Systems by the Canadian Food Inspection Agency**

Manpower and Training Unit, BARC, organized a technical workshop on Canada's Plant and Livestock Inspection and Safety Systems by the Canadian Food Inspection Agency on April 28, 2024 at BARC. The program was jointly organized by the High Commission of Canada in Dhaka and BARC. The objective of the workshop was to share with Bangladeshi government regulatory officials and agrifood industry representatives information on Canada's approach to plant inspection and safety systems and foster communication on subjects of mutual interest. A total of 50 participants from different concerned organizations attended the workshop. The workshop was attended by Mr. Md. Ismiel Hossain, ndc, Secretary, Ministry of Food, who was present as chief guest and Ms. Lilly Nicholls, H.E. High Commissioner for Canada in Bangladesh as special guest. The workshop was chaired by Executive Chairman of the Bangladesh Agricultural Research Council (BARC).

## **2.7 BARC and International Water Management Institute (IWMI)-MoU signing ceremony**

BARC-IWMI MoU signing event was organized by BARC in collaboration with IWMI on March 24, 2024, at Hotel Intercontinental, Dhaka. The Hon'ble Agriculture Minister Dr. Md. Abdus Shahid MP was present as chief guest while Ms. Wahida Akter, Secretary, Ministry of Agriculture was the special guest in the workshop. The MoU was signed by Executive Chairman of BARC and Director General of IWMI on behalf of their respective organizations.

### 3. Meetings in OMICS Food & Nutritional Security (OFANS) Theme 4.4:

Design an online training module for postharvest food handling and processing in Bangladesh under the OFANS project was designed with the following activities and progress

Sl.	Activities	Progress
i.	<b>Expert consultation on Module-1 (hygiene) and Module-2 (safe food handling) Training Matrix and Program Outline development</b>	<p>For review of the draft Module-1 and Module-2 training matrix and program outline, an expert consultation was held on 25 July 2023 at BARC.</p> <ul style="list-style-type: none"> <li>• A total of 20 participants attended from NARS Institutes, Academia, HORTEX, and food processing companies</li> <li>• Brief recommendations/suggestions from expert consultation shared with SFIDC for finalizing Module-1 (hygiene) and Module-2 (safe food handling)</li> </ul>
ii.	<b>Meeting to identify key personnel for Module-1 and Module-2 training participation</b>	<ul style="list-style-type: none"> <li>• Identify key personnel to be trained as ToT, meeting held at BARC on 5th of Sept. 2023</li> <li>• 15 participants (Project Coordinator, Bangabandhu Research Chair, KGF, GIFS, PIs &amp; Co-PIs of Theme-4) attended</li> <li>• Finalized 25 participants (15 from the public and 10 from the private sector)</li> <li>• 25 trainees list was shared with GIFS, NRC &amp; SFIDC and confirmed joining for the first two batches of online training held on 18-19 Oct. 2023 (1<sup>st</sup> batch) and 30-31 Oct. 2023 (2<sup>nd</sup> batch)</li> </ul>

#### 4. Progress on Citizen Charter Work Plan 2023-24

The activities and progress are as follows:

Sl.	Activities	Progress
i.	<b>Indicator 1.1: Quarterly updated citizen charter (4 times)</b>	<p>1<sup>st</sup> updated on September 27, 2023</p> <p>2<sup>nd</sup> updated on December 24, 2023</p> <p>3<sup>rd</sup> updated on March 20, 2024</p> <p>4<sup>th</sup> updated on June 23, 2024</p>
ii.	<b>Indicator 1.2: Stakeholder Meetings on Citizen Charter (4 meetings)</b>	<p>As per Citizen Charter Work Plan 2023-24, organized four stakeholder meetings on BARC's citizen charter:</p> <p>1<sup>st</sup> stakeholder meeting on citizen charter in hybrid mode was held on September 25, 2023; Participants: 24. The meeting was chaired by Dr. Md. Saifullah, Member Director (Admin &amp; Finance), BARC</p> <p>2<sup>nd</sup> stakeholder meeting on citizen charter in hybrid mode was held on December 18, 2023; Participants: 30. The meeting was chaired by Dr. Md. Saifullah, Member Director (Admin &amp; Finance), BARC</p> <p>3<sup>rd</sup> meeting on citizen charter in hybrid mode was held on March 18, 2024; Participants: 27. The meeting was chaired by Dr. Md. Saifullah, Member Director (Admin &amp; Finance), BARC</p> <p>4<sup>th</sup> meeting on citizen charter (in-person) was held on June 25, 2024; Participants: 84. The meeting was chaired by Dr. Md. Saifullah, Member Director (Admin &amp; Finance), BARC</p>

## 5. Seminar on different agricultural issues (based on demand)

Sl.	Activities	Progress
i.	<b>Smart Agriculture to Build Smart Bangladesh</b>	<p>Manpower and Training Unit organized a seminar on smart agriculture to build smart Bangladesh on June 26, 2024, at BARC</p> <p>No. of Participants: About 300 nos. from public and private sectors</p> <p>Moderator: Dr. Md. Saifullah, Member Director (A&amp;F), BARC</p> <p>Keynote Speaker: Dr. Golam Mahboob, PSO (Forest) and Focal Point, Climate Change and Adaptation, BARC</p>
ii.	<b>Seminar on Climate Smart Agriculture</b>	<p>Manpower and Training Unit organized a seminar on climate-smart agriculture on 8 Feb. 2024 at BARC</p> <p>No. of Participants: About 200 nos. from public and private sectors</p> <p>Moderator: Dr. Md. Saifullah, Member Director (A&amp;F), BARC</p> <p>Keynote Speaker: Dr. Golam Mahboob, PSO (Forest) and Focal Point, Climate Change and Adaptation, BARC</p>
iii.	<b>Safe Food Production for Sustainable Development: Bangladesh and World Perspectives</b>	<p>Manpower and Training Unit organized a seminar on safe food production for sustainable development on 25 Sept. 2023 at BARC</p> <p>No. of Participants: About 220 nos. from the public and private sectors</p> <p>Moderator: Dr. Md. Saifullah, Member Director (A&amp;F), BARC</p> <p>Keynote Speaker: Dr. Md. Rafiqul Iskam, Director (Nutrition), BARC</p>

## 6. Foreign training/seminar/workshop/consultation meeting

During the reporting period 2023-24 apart from in-country activities, the Manpower and Training unit conducted the nomination process for participation in an international seminar/workshop/meeting. A total number of 16 research managers/scientists/personnel under different fields of agriculture and cross-cutting issues attended 43 programs (training/seminar/workshop/meeting) to enrich their professional expertise and skills to achieve the country's ultimate goal to ensure food and nutrition security. Details are as follows:

### Foreign Training/Workshop/Seminar/Visit//Meeting (2023-2024)

Sl. No.	Name, designation & organization	Program	Duration	Country	Funding Org.
1.	Executive Chairman, BARC	20 <sup>th</sup> CGIAR System Council and related events	11-14 June 2024	Brasilia, Brazil	CGIAR System Organization
		Roundtable on 'Future of Bangladesh Agriculture' convened by Bangladesh Embassy in the Netherlands, Wageningen University (WUR), and the University of Saskatchewan (USASK) at the WUR Campus, the Netherlands	4-8 May 2024	the Netherlands	Co-organizers and GOB
		Exposure visits to learn about the expansion of digital agricultural services in Kenya	15-19 April 2024	Kenya	FAO
		Visit IRRI South Asia Regional Centre and India Council of Agricultural Research in India	4-8 March 2024	India	IRRI
		Canada-in-Asia Conference (CIACs)	26-29 Feb. 2024	Singapore	Asia Pacific Foundation (APF), Canada
		15 <sup>th</sup> Governing Board Member Meeting of the SAARC Agriculture Centre (SAC)	15-16 Nov. 2023	Colombo, Sri Lanka	SAC

Sl. No.	Name, designation & organization	Program	Duration	Country	Funding Org.
2.		Consortium for Scaling up Climate-Smart Agriculture	27-29 October 2023	Kandy, Sri Lanka	C-SUCSeS and livelihood enhancement project
		World Food Forum and Hand-in-Hand Initiative Investment Forum	16-20 October 2023	Rome, Italy	FAO
		Sanction to visit the Kingdom of Saudi Arabia	12-17 August 2023	Saudi Arabia	MAADEN, KSA
		REDtone IOT SDN BHD organized a program to discuss Bangladesh Smart Digital Rice Production (SDRP) project 2023	1-5 August 2023	Malaysia	REDtone IOT SDN BHD
		First United Nations Food Systems 2023 Stocktaking Moment	23-26 July 2023	Rome, Italy	GoB
	Dr. Md. Baktear Hossain, Director, SAARC Agriculture Centre & MD (NRM), BARC	AFACI Project Evaluation Workshop	7-11 August, 2023	Thailand	AFACI
		Regional training on Climate Smart Agriculture in Asia: Technologies, Policies and Digital tools	25-29 July 2023	Varanasi, India	C-SUCSeS project
		Project Steering Committee meeting & policy roundtable discussion meeting of C-SUCSeS	23-29 October 2023	Sri Lanka	C-SUCSeS and livelihood enhancement project
		Training Program on Contemporary and Strategic Issues in Agribusiness Management focusing on Value Chain Management	26-30 November 2023	India	Livelihood enhancement project
		15 <sup>th</sup> Governing Board Member Meeting of the SAARC Agriculture Centre (SAC)	15-16 November 2023	Colombo, Sri Lanka	SAC
		Agro Solutions Production Facilities and Field Trials	5-10 May 2024	Europe	Agro Solutions BV, Netherlands

Sl. No.	Name, designation & organization	Program	Duration	Country	Funding Org.
3.	Dr. Md. Saifullah, Member Director (A&F) & Chief Scientist Officer (Forestry), BARC.	19 <sup>th</sup> Regional Session of the Commission on Genetic Resources for Food and Agriculture	17-21 July 2023	Rome, Italy	FAO
4.	Dr. Md. Abdus Salam Member Director (Crops)	10 <sup>th</sup> Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)	18-24 Nov. 2023	Rome, Italy	ITPGRFA
		Taking Action on Biodiversity for Food and Agriculture in Asia and the Pacific	27-29 Feb. 2024	Philippines	IRRI
		Asia and the Pacific Food Security Forum 2024	9-12 April 2024	ADB, Philippines	ITPGRFA- FAO
5.	Dr. Nazmun Nahar Karim Member Director (Livestock)	Australian Centre for International Agricultural Research (ACIAR) Salinity Futures Symposium in Can Tho, Vietnam	3-6 March 2024	Vietnam	ACIAR
		Global Science Policy Forum: Socially Inclusive Solar Irrigation System Workshop	24-26 April 2024	Nepal	IWMI, India
6.	Dr. Shah Md. Monir Hossain	High-Level Policy Dialogue on Gene Editing for Sustainable Agriculture and Food Security in the Asia-Pacific Region	11-12 Dec 2023	Bangkok, Thailand	APAARI
7.	Dr. Md. Harunur Rashid CSO (Crops), BARC	Workshop on Stress- tolerant, high-yielding rice varieties suitable for AFACI member countries	4-9 September 2023	IRRI, Philippines	AFACI

Sl. No.	Name, designation & organization	Program	Duration	Country	Funding Org.
		Field Visit to the SAARC Development Funded Livelihood Enhancement Project sites in Chennai and a progress sharing meeting of SAARC Ph.D. fellow's activities, Kochin, India	22-25 Jan 2024	India	Livelihood Enhancement Project Fund
		59 <sup>th</sup> Session of the Programming Committee meeting of SAARC, Kathmandu, Nepal	6-7 March 2024	Nepal	SAARC Agriculture Centre
		7 <sup>th</sup> meeting of the Coordination Committee of IRRI South Asia Regional Centre (ISARC) and discuss the possible areas of common interest and explore new avenues of collaboration with ISARC, Varanasi, India	28 March 2024	India	IIRI-SARC
		9 <sup>th</sup> Meeting of the Standing Group of Experts on African Swine Fever for Asia and the Pacific	25-27 June 2024	Manila, Philippines	SAARC Agriculture Centre
8.	Md. Mustafizur Rahman, PTO, BARC	Promoting Nutrition-Sensitive Agriculture for Improving Nutrition Security and Health of Smallholders in South Asia	11-12 July 2023	Kathmandu, Nepal	Welthungerhilfe
		2023 AFACI Project Planning Workshop	11-15 Sept. 2023	South Korea	AFACI
		5 <sup>th</sup> Crawford Master Class Program on Leadership Management in Agricultural R&D	5-11 Nov. 2023	Bangkok Thailand	Crawford
9.	Dr. Ali Akbar Bhuiyan PSO (livestock), BARC	ACASA Livestock Risk & Adaptation Meeting 2024	22-23 May 2024	India	BISA

## 7. In-country Training/ Workshop/ Seminar

During the reporting period, 165 training programs and 50 workshops/seminars were arranged by the divisions/units and different projects of BARC. Under revenue funding 56 training programs and 42 workshops were organized. The participants for the training and workshop/seminar were 6,366 and 4,728 respectively.

Detailed lists training and related information are given below:

### Programs Implemented During 2023-2024

#### 7.1: Training (Revenue)

##### A. In-house-Training

Division/ Unit	Training Title	Training Venue	Duration	No. of Participants		
				M	F	Total
Computer & GIS Unit	Training on Cyber Security (Officer)	BARC	14 Nov.2023	62	8	70
	Training on D-Nothi Application (Officer)	BARC	4 Dec.2023	26	4	30
	Training on D-Nothi Application (Officer)	BARC	5 Dec.2023	28	2	30
	Training on D-Nothi Application (Staff)	BARC	6 Dec.2023	17	6	23
	Training on D-Nothi Application (Staff)	BARC	7 Dec.2023	19	4	23
	Training on Integrated Digital Service Platform (Officer)	BARC	28 Jan.2024	29	3	32
	Training on Integrated Digital Service Platform	BARC	29 Jan 2024	56	6	62
Manpower & Training Unit	Human Resource Management	BARC	30-31 Dec.2024 (2 days)	56	6	62
	Administrative & Financial Management	BIM	25 Feb to 10 March 2024 (10 days)	36	4	40
	Archives & Record Management	BARC	02 May 2024	56	6	62
	Stress Management	BARC	12-13 May 2024 (2 days)	56	6	62
	Annual Performance Agreement (APA) for Officers	BARC	23 May 2023	56	6	62
	Human Resource Management (funded by PARTNER Project)	BARC	2-4 June. 2024 (2 days)	23	2	25
	Modern Office Management for Professionals	BARC	27, 29 & 30 June 2024	56	6	62
APCU-BARC, PARTNER	Office File Management and Skill Development Training	BARC	28-30 April 2024 (3days)	19	6	25
Support Service Unit	Professional Skills Development (Staff-1 <sup>st</sup> batch)	BARC	5-13 May 2024 (7 days)	35	7	42
	Professional Skills Development (Staff-2 <sup>nd</sup> batch)	BARC	14-23 May 2024 (7 days)	34	7	41
	Professional Skills Development (Staff-3 <sup>rd</sup> batch)	BARC	26 May to 3 June 2024 (7 days)	35	5	40
	Rules and Regulations for Organizational Management	BARC	27-29 Feb. 2024 (3 days)	73	7	80
	Administrative and Financial Management (Staff)	BARC	15-16 Feb. 2024 (2 days)	30	5	35

Division/ Unit	Training Title	Training Venue	Duration	No. of Participants		
				M	F	Total
	Annual Confidential Report (ACR) for Officers (1 <sup>st</sup> batch)	BARC	21 Jan 2024	50	7	57
	Annual Confidential Report (ACR) For Staff (2 <sup>nd</sup> batch, Grade 10-16)	BARC	22 Jan.2024	48	5	53
	Annual Confidential Report (ACR) For Staff (3 <sup>rd</sup> batch, Grade 17-20)	BARC	25 Jan.2024	18	6	24
GRS Focal Point	Grievance Redress System for Officers	BARC	13 Dec.2023	45	5	50
	Grievance Redress System for Officer & Staff (officer-12, staff-46)		29 May 2024	47	11	58
NIS Focal Point	Training on National Integrity Strategies (2 batches)	BARC	8 Nov, 2023 & 14 March 2024	136	24	160
RTI Focal Point	Right to Information Act 2009 (Officer)	BARC	2 Jan.2024	57	6	63
	Right to Information Act 2009 (Staff)	BARC	16 May 2024	51	16	67
Finance Unit	Training on IBAS++	BARC	9-11 June 2024 (3 days)	23	2	25
	Training on Resolving Audit Objection & use of AMMS 2.0 Software	BARC	22-24 June 2024	33	7	40
<b>Total Program: 31</b>				<b>1,310</b>	<b>195</b>	<b>1,505</b>

## B. Training organized for NARS scientists and others (Revenue Funding)

Division/ Unit	Training Title	Training Venue	Duration	No. of Participants		
				M	F	Total
Crops Division	Awareness Building on Agricultural Act & Policies in Bangladesh	BARC	18-20 Feb. 2024	32	8	40
	Phytosanitary Measures in Bangladesh	BARC	5-7 March 2024	29	11	40
	Conservation and Management of Plant Genetic Resources	BARC	9-11 June 2024	19	11	30
P&E Division	Project Development & Management	BARC	5 days 4-8 Feb.2024	26	4	30
Nutrition Unit	Food Utilization, Quality Processing, and preservation techniques of Agro-products at the household level	BARC	02 days 29-31 October 2024	8	23	31
Livestock Division	The Fourth Industrial Revolution and Potential Application in Livestock Sector (1 <sup>st</sup> batch)	BARC	03 days 25-27 Sept. 2024	32	8	40
	The Fourth Industrial Revolution and Potential Application in Livestock Sector (2 <sup>nd</sup> batch)	BARC	03 days 28-30 April 2024	26	14	40
	Advanced training in Bioinformatics for Sustainable Development in Agriculture	BARC	05 days 11-15 Feb.2024	15	5	20
	Good Livestock Husbandry Practices in Bangladesh	BARC	03 days 24-26 June 2024	9	11	20
	Quality and safety in livestock source food (milk, meat & egg) production and value-adding to facilitate export	BARC	03 days 30-31 Jan. & 01 Feb,2024	20	10	30

Division/ Unit	Training Title	Training Venue	Duration	No. of Participants		
				M	F	Total
Fisheries Division	Potentiality of Unconventional Fisheries Resources and Farming in Bangladesh	BARC	25-26 Oct. 2024 (2 days)	24	6	30
	Aquaculture Feed and Food Safety	BARC	6-7 Mar 24 (2 days)	20	10	30
NRM (Soil) NRM (Soil)	Climate Change, Carbon Sequestration & Adaptation Strategies	BARC	14-16 May 2024 (3 days)	20	20	40
	Use of Fertilizer Inspection Manual	BARC	22-24 April 2024 (3 days)	31	9	40
	Use of Fertilizer Recommendation Guide-2024 (2 batches)	BARC	1-3 June & 9-11 June 2024 (3 days)	47	33	80
NRM (Agril. Engineering)	'IoT-based Precision Agriculture for Sustainable Crop Production'	BARC	17-19 Oct. 2023 (3 days)	26	4	30
	Use of 'Modern Farm Machinery for Ensuring Food Security'	BARC	6-8 Feb. 24 (3 days)	25	5	30
	Water-Efficient and Climate-Smart Irrigation Management	BARC	18-20 Feb. 2024 (3 days)	22	8	30
NRM (Forest)	Forestry and Agroforestry Technologies for Professionals	BARC	28-29 Jan. 2024 (2 days)	33	7	40
	Climate Smart Agriculture for Adaptation and Mitigation	BARC	27-29 Feb. 2024 (3 days)	30	10	40
AERS Division	Application of Econometric Model for Socioeconomic Research	BARC	3-7 Mar 24 (5 days)	12	8	20
	Orientation on Public-Private Partnership in Agriculture (2 batches)	BARC	28 Nov. 23 & 9 May 2024	53	7	60
TTMU Unit	Training of Trainers on Matured Technology (Oil Seed Crops)	BARI, Gazipur	22 Nov. 2023	18	12	30
AIC	Technical Report Writing and Editing (26 <sup>th</sup> batch)	BARC	30 Jan to 1st Feb. 24	23	7	30
	Communication Skills Development for Professionals	BARC	12-14 May 2024	22	8	30
<b>Total Program: 27</b>				<b>622</b>	<b>259</b>	<b>881</b>

**C. Training organized for NARS Scientists, Extension Officials, Farmers, etc.  
(PARTNER and other funding sources)**

Division/ Unit	Training Title	Training Venue	Duration	No. of Participants		
				M	F	Total
APCU-BAR C, PARTNER Program	Advanced Training on Thesis and Journal Paper Writing for PARTNER PhD Fellows (8 batches)	BARC, CDB & SRDI	4-6, 9-11, 23-25 & 25-27 June 2024 (3 days/ batch)	168	32	200
P&E Division	Project Development & Management	BARC	19-23 May 2024	21	4	25
Crops Division	Genome Editing for Agricultural Research	BARC	25-29 May 2024	16	9	25
	Mass Production and Quality Control of Bangladesh	BARC	22-24 June 2024	16	9	25
	Climate Adaptation for Sustainable Crop Production	BARC	25-27 June 2024	18	7	25
GAP Unit, BARC	Training of Trainer (ToT) on 'Good Agricultural Practices (GAP) for Safe Fruits and Vegetables' Production (Officers level) [5 batches, 25 participants per batch]	BARC	(5 days) 3-7 Mar, 21-15 Apr. 5-9 May & 23-27 June 2024	73	52	125
	Training of Trainer (ToT) on 'Good Agricultural Practices (GAP) for Safe Fruits and Vegetables' Production (Staff level) [3 batches, 25 participants per batch]	BARC & Mushroom Development Institute, Savar	3 days 13-15 Feb.2024 & 28-30 May 2024	70	5	75
	Farmer Training on Good Agricultural Practices (GAP) in Mango Production	DAE, Chapainawabganj	28 Dec. 2023	25	0	25
	Farmer Training on Good Agricultural Practices (GAP) in Yard Long bean Production	UAO office Cumullia, Chandian	18 Jan. 2024	21	4	25
	Farmer Training on Bangladesh Good Agricultural Practices (GAP) in Gourd Production	UAO office, Dhamrai, Dhaka	20 Jan. 2024	21	4	25
	Farmer Training on Bangladesh Good Agricultural Practices (GAP) on Brinjal Production	UAO office Shibpur, Narshingdi	30 Jan. 2024	24	1	25
	Farmer Training on Bangladesh Good Agricultural Practices (GAP) on Pointed Gourd Production	UAO office Sadar, Jessore	10 Feb. 2024	21	4	25
	Farmer Training on Bangladesh Good Agricultural Practices (GAP) on Jackfruit Production	UAO office Bhaluka, Mymensingh	12 May 2024	23	2	25
	Farmers Training on Bangladesh Good Agricultural Practices (GAP) for Green Papaya Production	UAO office Atghoria Pabna	15 May 2024	24	1	25
	Farmers Training on Bangladesh Good Agricultural Practices (GAP) on Guava Production.	UAO office Godagari Rajshahi	16 May 2024	24	1	25
NRM (Soil)	Use of Fertilizer Recommendation Guide-2024	BARC	24-26 June 2024	16	9	25
NRM (Agril. Engg.)	Postharvest Technology for Food and Nutritional Security (funding source PARTNER project)	BARC	03 days (12-16 May 2024)	19	6	25

Division/ Unit	Training Title	Training Venue	Duration	No. of Participants		
				M	F	Total
NRM (Forest)	Experimental Methods in Forestry and Agroforestry Research (funding source PARTNER project)	BARC	05 days 26-30 June 2024	22	3	25
Livestock Division	Genome editing for sustainable development in agriculture (funding source PARTNER project)	BARC	03 days 19-21 May 24	19	6	25
AERS Division	Forecasting Methods for Agricultural Data Analysis	BARC	5 days 9-13 Jun 24	16	9	25
Computer & GIS Unit	Training on GIS & Remote Sensing for Smart Agriculture (funding source PARTNER program)	BARC	5 days 2-6 Jun 2024	19	6	25
	A total of 70 batches of training on the uses of the Khamari Mobile App were organized under the Crop Zoning Project (KGF Funding) for UAOs, AEOs, SAAOs, and others [one day per batch]	Different UAO offices, DAE	05/11/2023 to 12/06/2024	1,640	355	1,995
		Lead Farmers		950	100	1,050
M&T unit	Follow-up training on Bioinformatics under OFANS Theme 1.4 (KGF Funding)	BARC	02 days 23 & 25 Oct. 2023	25	10	35
	Postharvest food safety training on Module 1- (General Food Safety & Hygiene)	Zoom platform	18-19 Oct. 2024	22	3	25
	Postharvest food safety training on Module 2-Safe food handling)	Zoom platform	30-31 Oct. 2024	22	3	25
<b>Total Program: 107</b>				<b>3,335</b>	<b>645</b>	<b>3,980</b>

**Total Training Program Number: 165 (A+B+C): Participant Number: 6,366**

## 7.2. Workshop/Seminar organized for NARS scientists and others

### C. Workshop (Revenue)

Division/ Unit	Training Title	Training Venue	Duration	No. of Participants		
				M	F	Total
Crops Division	Annual Review Workshop on Crop Improvement Program of NARS Institutes: Research Progress 2022-2023 and Research Program 2023-24	BARC	22-23 August 2023	73	27	100
	Annual Review Workshop on Disease Management Program of NARS Institutes: Research Progress 2022-23 and Research Program 2023-24	BARC	30 August 2023	68	17	85
	Annual Review Workshop on Crop Production Program of NARS Institutes: Research Progress 2022-2023 and Research Program 2023-24	BARC	27-28 August 2023	85	35	120

Division/ Unit	Training Title	Training Venue	Duration	No. of Participants		
				M	F	Total
	Annual Review Workshop on Insect Pest Management Program of NARS Institutes: Research Progress 2022-23 and Research Program 2023-24	BARC	31 August 2023	65	20	85
	Annual Review workshop on Biotechnology Program of NARS institutes: Research Progress 2022-23 and Research Program 2023-24	BARC	24 August 2023	70	30	100
	Progress Review Workshop on Biotechnological Research Based on Biotechnology Policy-2012 (2 batches)	BARC	29 May 2024 & 15 June 2024	159	46	205
	Consultation Workshop on drafted Plant Variety Protection Rules-2024	BARC	9 June 2024	29	1	30
AERS Division	Socio-Economic Research Progress (2022-23) and Future Research Program (2023-24) of NARS Institutes	BARC	27 June 2024	73	12	85
	National Budget 2024-25: Perspective on Agriculture	BARC	26 June 2024	62	8	70
Computer & GIS unit	Workshop on Smart Bangladesh Development (1 <sup>st</sup> batch)	BARC	30 Jan. 2023	63	7	70
	Workshop on Validation of Dataset for Data Standardization and Interoperability for Smart Agriculture	BARC	02 days 29-30 April 2024	21	4	25
	Workshop on Smart Bangladesh Development (2 <sup>nd</sup> batch)	BARC	9 May 2024	57	6	63
	Workshop on Innovation Showcasing	BARC	9 June 2024	70	13	83
	Workshop on Newspaper Clipping & Record Management	BARC	10 June 2024	72	11	83
	Workshop on Khamari Mobile App with DAE Senior Officials	BARC	23 May 2024	122	30	152
	Workshop on Khamari Mobile App with NARS participants	BARC	01 June 2024	128	31	159
	Workshop to review the results of the demonstration set up on Khamari mobile app for moderate fertilizer use and extension of Water Efficient Irrigation (AWD) technology in Boro rice in the current Rabi season (2023-24)	BARC	24 June 2024	195	15	210
Soil unit	Research Review and Planning Workshop on Soil Management Program of NARS Institute 2023	BARC	25-27 Sept. 2023	72	8	80

Division/ Unit	Training Title	Training Venue	Duration	No. of Participants		
				M	F	Total
Agril. Engg. Unit	Research Progress 2022-23 and Research Program 2023-24 on Agricultural Engineering of NARS Institutes	BARC	02 days 4-5 Sept. 2023	74	6	80
Forestry unit	Annual Workshop on Forestry and Agroforestry in Bangladesh programs of NARS Institutes: Research Review 2022-23 and Research Programs 2023-24	BARC	02 days 11-12 Oct. 2023	75	13	88
	National Workshop on Implication of National Adaptation Plan (NAP) of Bangladesh (2023-2050) to Crop-Agriculture Sub-Sector	BARC	28 May 2024	140	25	165
P&E Division	Workshop on Annual Progress 2022-23 & Work Plan 2023-24	BARC	07 August 2023	44	5	49
	Workshop on Sustainable Development Goals (SDG)	BARC	31 March 2024	92	13	105
	National Review Workshop on Achievement and Future Activities of 4IR Action Plan	BARC	22 April 2024	77	13	90
M&T Unit	Review Workshop on BARC's Citizen Charter	BARC	20 Nov. 2023	70	10	80
	Inception Workshop on BP-ATC project	BARC	27 March 2024	84	16	100
AIC	Presentation Skills for Professionals	BARC	29 April 2024	63	7	70
Livestock Division	Annual Research Review Workshop on Research Progress 2022-23 and Research Program 2023-24 of BLRI	BARC	3-4 Dec. 2023	44	16	60
	Workshop on the draft dairy breeding roadmap for Bangladesh	BARC	11 March 2024	46	14	60
Fisheries Division	Workshop on Smart Aquaculture: Future Prospects & Challenges in Bangladesh	BARC	4 June 2024	68	12	70
TTMU Unit	Review Workshop on Matured Technology Developed by NARS Institutes (2020-21 to 2022-23)	BARC	6-7 Dec. 2023 (2 days)	72	13	85
Nutrition Unit	Awareness Campaign cum Workshop on Nutrition for the Adolescents and Establishment of Nutrition Corner at School (1 <sup>st</sup> campaign)	BARC	29 Jan. 2024	106	90	196
	Awareness Campaign cum Workshop on Nutrition for the Adolescents and Establishment of Nutrition Corner at School (2 <sup>nd</sup> campaign)	BARC	28 Feb. 2024	100	75	175
NIS Focal Point	Workshop on establishing good governance through integrity practice	BARC	25 June 2024	84	11	95
Finance Unit	Workshop on ibas++	BARC	29-31 July 2023	17	3	20
<b>Total Program: 36</b>				<b>2,730</b>	<b>663</b>	<b>3,393</b>

#### D. Workshop (Other sources of fund)

Division/ Unit	Training Title	Training Venue	Duration	No. of Participants		
				M	F	Total
Computer & GIS Unit	Two Training Workshops on Khamari mobile app of selected 61 upazilas concerned Sub-Assistant Agriculture Officers (SAAOs) [KGF Funding]	BARC	21 Nov. 2023 & 24 Nov. 2023	115	12	127
	Workshop on the update of Khamari app according to Fertilizer Recommendation Guide (FRG)-2024 [KGF Funding]	BARC	2 Oct. 2023	27	1	28
	Training Workshops on AWD (Alternate Wetting & Drying) of the selected 61 Upazila Agriculture Officers [KGF Funding]	BARC	18 Jan 2024	70	12	82
	Training Workshop on CZIS & Khamari app with BARC officials [KGF Funding]	BARC	20 Jan 2024	38	7	45
M&T unit	Global Benefit from Crop Biotechnology Workshop under OFANS Theme 1.4 (KGF funding)	BARC	28 Mar 2024	39	11	50
	Technical workshop on Canada's Plant and Livestock Inspection by the Canadian Food Inspection Agency organized by the High Commission of Canada in Dhaka and BARC	BARC	28 April 2024	40	10	50
	BARC-IWMI MoU signing event	Hotel Inter-continental, Dhaka	24 March 2024	32	8	40
<b>Total Program: 8</b>				<b>361</b>	<b>61</b>	<b>422</b>

#### E. Seminar (Revenue & other funding source)

Division/ Unit	Training Title	Training Venue	Duration	No. of Participants		
				M	F	Total
M&T Unit	Smart agriculture to build smart Bangladesh	BARC	26 June 2024	285	35	320
	Seminar on Climate Smart Agriculture	BARC	8 Feb. 2024	192	28	220
	'Food Safety for Sustainable Development: Bangladesh and Global Perspective'	BARC	25 Sept. 2023	184	46	220
RTI Focal Point	Seminar on Right to Information Act 2009 (Officers)	BARC	3 Oct. 2023	57	6	63
	Seminar on Right to Information Act 2009 (Staff, Grade 11-16)	BARC	3 March 2024	37	7	44
	Seminar on Right to Information Act 2009 (Staff, Grade 17-20)	BARC	3 April 2024	33	11	44
<b>Total Program: 6</b>				<b>780</b>	<b>133</b>	<b>913</b>

**Total Workshop/Seminar Program Number: 50 (A+B+C): Participant Number: 4,728**

## 8. Higher Education: (Summary of Higher Study 2023-2024)

SL No.		Post Doc.		PhD		Total	Remarks
		Foreign	Local	Foreign	Local		
1.	APCU-BARC, PARTNER program			131	102	233	Received award for PhD
2.	Bangabandhu Research Chair, GIFS, Canada	4		2			
	<b>Total</b>	<b>4</b>		<b>133</b>	<b>102</b>	<b>239</b>	

## 9. Human Resources Development (HRD) Status of BARC (2023-2024)

Events	Programs	Participants			Remarks
		M	F	Total	
Training	165	5,267	1,099	6,366	Rev: 53; Others:109
Workshop/ Seminar	50	3,871	857	4,728	Rev:46; Others: 14
Foreign Training/Seminar/Workshop/Visit	43	15	1	16	
Higher Study (PhD & Post-doc)	-	172	67	239	Awarded 233 scientists and researchers as PhD fellows by APCU-BARC PARTNER Program
In-country training/workshop/ seminar/visit	85	60	25	85	BARC participated
<b>Total</b>		<b>9,385</b>	<b>2,049</b>	<b>11,372</b>	-

## FISHERIES DIVISION



## FISHERIES DIVISION

The Fisheries Division of the Bangladesh Agricultural Research Council (BARC) is dedicated to promoting the sustainable development of fisheries resources in Bangladesh. The division undertakes various key activities such as project development, supervision, execution, technology development, monitoring, and evaluation of research projects. It also coordinates research programs with other institutes within National Agricultural Research System (NARS), universities, Bangladesh Fisheries Research Institute (BFRI), Department of Fisheries (DoF), and other agencies involved in fisheries research for nutrition and development, such as Food and Agriculture Organization (FAO) and World Fish.

Additionally, organizing and participating in national and international seminars, workshops, symposiums, conferences, meetings, and training sessions related to fisheries and aquaculture research, technologies, and value addition are regular responsibilities of the division. Reporting on national issues, reviewing scientific papers, providing expert opinions on policy documents, and offering advisory services are also part of its routine tasks.

Furthermore, the fisheries division is responsible for establishing and maintaining communication with both national and international agencies to foster collaboration and enhance the national research and developmental programs in the fields of fisheries, as well as agricultural and livestock sectors. Additionally, the fisheries division provides technical advisory services to the Ministry of Agriculture (MoA) concerning various matters on agricultural research, with particular emphasis on the development of fisheries and aquaculture.

### Name of the Professionals

Name	Designation
Mr. Ajit Kumar Chakraborty	Member Director
Dr. Md. Shahzad Kuli Khan	Principal Scientific Officer
Dr. Shirin Sultana	Principal Scientific Officer

A concise overview of the activities conducted by the Fisheries Division throughout the reporting period of 2023-2024 is given below:

### 1. Training and Workshop

#### a. Training program on “Potentiality of Unconventional Fisheries Resources and Farming in Bangladesh” organized by Fisheries Division

The training program titled "Potentiality of Unconventional Fisheries Resources and Farming in Bangladesh" was organized by the Fisheries Division, Bangladesh Agricultural Research Council (BARC) on October 25-26, 2023 at the Training Building, BARC. The inaugural ceremony of the training program was graced by the esteemed presence of Executive Chairman, BARC. Dr. Mohammad Rafiqul Islam, Director, Nutrition Unit, BARC, chaired the event.

In the training program, 30 participants were from Bangladesh Fisheries Research Institute, Department of Fisheries, Department of Environment, Department of Forest, Bangladesh

Fisheries Development Corporation, and non-government institutions. The program highlighted the overlooked potential of unconventional fishery resources in Bangladesh. Addressing the nutritional demands of individuals and simultaneously contributing to the national economic growth through the development of trade in non-traditional fishery products were emphasized. At the end of the training, participants were awarded certificates.

#### **b. Training program on “Aquaculture Feed & Food Safety” organized by Fisheries Division**

The training program titled "Aquaculture Feed & Food Safety" was organized by the Fisheries Division, Bangladesh Agricultural Research Council (BARC) on March 06-07, 2024 at the Graduate Training Institute (GTI), Bangladesh Agricultural University (BAU), Mymensingh. The inaugural ceremony of the training program was graced by the esteemed presence of Dr. Md. Zulfikar Ali, Director General, Bangladesh Fisheries Research Institute (BFRI). Mr. Ajit Kumar Chakraborty, Member Director, Fisheries Division, BARC, chaired the event.

In the training program, participants were from Bangladesh Fisheries Research Institute, Department of Fisheries, BIRTAN, Department of Youth Development, and *Sher-e-Bangla Agricultural University*. The program focused on a crucial aspect of aquaculture feed and food safety. At the end of the training, participants were awarded certificates.



*Training Session*

#### **C. Workshop on “Smart Aquaculture: Future Prospects & Challenges in Bangladesh” organized by Fisheries Division**

The Division organized a workshop titled "Smart Aquaculture: Future Prospects & Challenges in Bangladesh" on June 4, 2024, at the Auditorium, Training Building, BARC. The inaugural ceremony of the workshop was graced by the esteemed presence of Executive Chairman, BARC, as the chief guest, and Mr. Md. Zillur Rahman, Additional Director General, Department of Fisheries (DoF), as the special guest. Mr. Ajit Kumar Chakraborty, Member Director, Fisheries Division, BARC, chaired the event.

The workshop was attended by 80 participants from Bangladesh Fisheries Research Institute, Department of Fisheries, Bangladesh Fisheries Development Corporation, university professionals, research students, entrepreneurs, and non-government institutions. Professor Dr. Md. Monirul Islam from the Department of Fisheries, University of Dhaka, chaired the Technical Session. The keynote presenter, Dr. Tanvir Rahman, Professor from the Department of Aquaculture, Faculty of Fisheries, Bangladesh Agricultural University, addressed "Smart Innovations in Aquaculture for Smart Bangladesh: Present status, prospects & challenges." Additionally, Mr. R. A. Juice, Assistant Professor from the Department of Agricultural Economics, Faculty of Agricultural Economics and Rural Sociology, Bangladesh Agricultural University, delivered a presentation titled "Transformation of Aquaculture: Building a Smart & Sustainable Market." Concluding the workshop, Mr. Ajit Kumar Chakraborty, the chairperson, expressed gratitude to all participants and attendees.

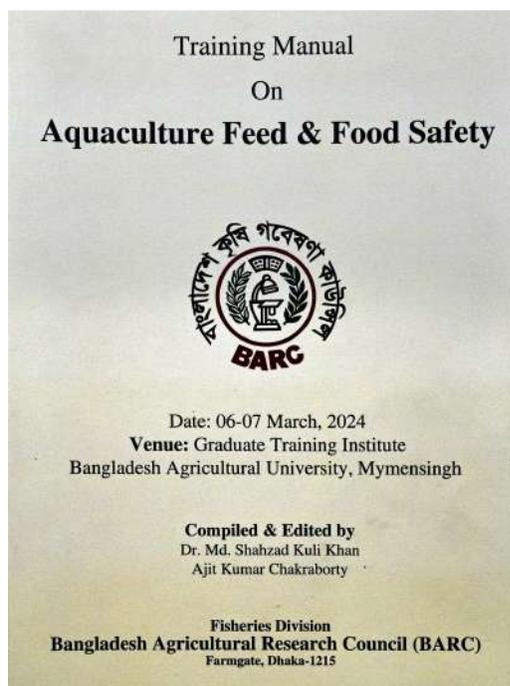


*Pictorial View of Workshop Activities*

## **2. Publication(s)**

### **a. Training manuals**

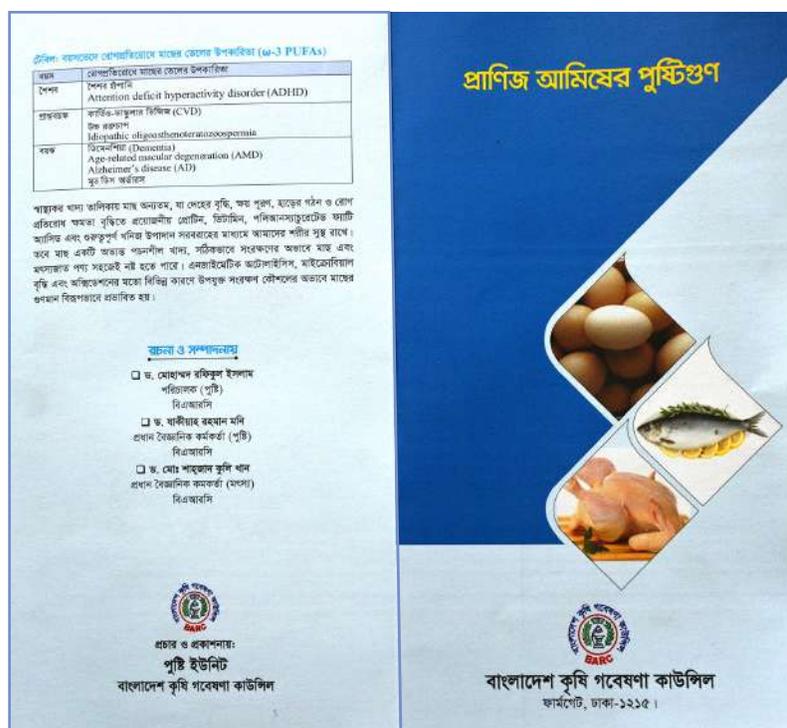
- i) Training Manual-2023 on **“Potentiality of unconventional fisheries resources and farming in Bangladesh”**
- ii) Training Manual-2024 on **“Aquaculture feed & food safety”**



Training Manual

## b. Leaflet

The Fisheries Division contributes to the "Nutritional Quality of Fish" section in the leaflet titled "Nutritional Quality of Animal Protein," published by the Nutrition Unit.



Leaflet

**c. Annual Report:**

Contributed to publish BARC Annual Report 2022-23

**d. BARC Newsletters:**

Contributed to publish BARC Newsletters

**e. Workshop Proceedings**

Workshop Proceedings on "Smart aquaculture: prospects & challenges in Bangladesh"

**3. Opinions**

Opinions have been provided on

- i) The preliminary report regarding the "Extended Coastal Zone (ECZ) Basin Management Plan" of "Bangladesh Delta Plan 2100"
- ii) The preliminary report regarding the "Major River Systems and Estuaries" of "Bangladesh Delta Plan 2100"
- iii) The preliminary report regarding the "Chittagong Hill Tracts (CHT)" of "Bangladesh Delta Plan 2100"

**4. Regular Activities**

Attended a good number of training, workshops, seminars, and meetings organized by BARC & other organizations.

**New PSO Joined at Fisheries Division of BARC**

Dr. Shirin Sultana joined as the Principal Scientific Officer at the fisheries division of BARC on 30th June 2024. She is a devoted and professional fisheries biotechnology Researcher in Bangladesh with more than 11 years of experience at the National Institute of Biotechnology, Dhaka. She graduated in Fisheries (B.Sc Hons.) and also completed MS (Masters of Science) in Fisheries Biology and Genetics from Bangladesh Agricultural University, Mymensingh in 2008 & 2009, respectively. Dr. Shirin Sultana achieved a PhD in fish health management from the Department of Fisheries, University of Dhaka in 2023.

## Nutrition Unit

A vital component of development and health is nutrition. Adequate nutrition is essential for overall well-being, disease prevention, and management in these regions. Nutrients have one or more of three basic functions: provide energy, contribute to body composition, and/or regulate body chemical and physiological processes. The prevalence of malnutrition is staggering worldwide. Bangladesh is not an outlier.

Thus, the government of Bangladesh has made nutrition a top priority and taken impressive measures to guarantee both the advancement of improved national nutrition and a robust policy framework to meet the global aim. The objectives of the Bangladesh Agricultural Research Council's (BARC) Nutrition Unit are to enhance human nutrition in accordance with desired policy.

As a part of the regular activities the unit was involved to organize and attend the national and international seminars, workshops, symposiums, conferences, meetings, and training in the field of nutrition in agricultural research and technologies, food adulteration, contamination, and mitigation measures; reporting national issues, review of scientific papers, expert opinion on policy document, and advisory services, etc. Additionally, maintaining cooperation with national and international agencies for strengthening national research and developmental programme in nutrition along with agriculture, fisheries, and livestock sectors were also attended. Moreover, the technical advisory services are also provided to the Ministry of Agriculture (MoA) on different issues related to agricultural research (including crop, livestock, fisheries & nutrition as a whole) and development.

### Name of the Professionals

Name	Designation
Dr. Mohammad Rafiqul Islam	Director (A.C.)
Dr. Zakiah Rahman Moni	Principal Scientific Officer

A brief description of activities done by the Nutrition Unit during the reporting 2023-2024 period is given below:

### 1. Project Development/Project Financing

Nutrition unit has designed, developed and submitted a project titled **“Consumption of unsafe foods, health risk assessment, and support to make legislative decision: Pesticides residues analysis in fresh and cooked vegetables and fruits”** to the cabinet division, Government of Bangladesh during the reporting period in association with Moulana Bhashani Science and Technology University.

## 2. Training

- i) A three-days long training titled 'Food utilization, quality processing and preservation techniques of agro-products at household level' held during 29-31 October, 2023 at Training room, BARC by Nutrition Unit, BARC. The Executive Chairman, BARC was present as chief guest, Mr. Ajit Kumar Chakraborty, Member Director (Fisheries) as special guest while Dr. Mohammad Rafiqul Islam, Director, Nutrition Unit, BARC was in the chair in inaugural & Closing session.

A training session was also held where scientist of nutrition unit, Corps, AERS division of BARC, post-harvest technology of BARI, Officer of BSTI respectively trained thirty entrepreneurs of Joyeeyta foundation, Hortex foundation, BD mushroom were attending this program as trainee. The presenters focused on conservation techniques to reduce agricultural product waste as well as packaging laws and regulations. They also discussed the utilization of agricultural products and quality processing at the home level. Participants in the critical discussion placed more focus on hands-on learning and longer training sessions.

## 3. Awareness Campaign through Workshop

The unit arranged a awareness campaign on “Nutrition for the Adolescent and Establishment of nutrition corner at school” held at Dhaka & Sylhet divisions in Bangladesh, adolescents represent more than one fourth of the total population. Although adolescents are the healthiest members of the communities having survived infancy and early childhood diseases, they face a number of important health risks arising out of early pregnancies, violence, inadequate nutrition etc. In this perspective, the Nutrition unit, BARC has taken a Campaign program to build awareness on food and nutrition for adolescents. This program held at BARC, Dhaka and Sylhet Agricultural University (SAU), Sylhet. In total 200 adolescents and 100 teachers from 20 schools of Dhaka and Sylhet city along with different officials were attend in these Campaign programs.

The Executive Chairman, BARC was present as chief guest, Mr. Ajit Kumar Chakraborty, Member Director (Fisheries) as special guest while Dr. Mohammad Rafiqul Islam, Director, Nutrition Unit, BARC was in the chair in inaugural & Closing session at BARC, Dhaka 29 January 2024 whereas Professor Dr. Md. Jamal Uddin Bhuiyan, Professor Md. Siddiquil Islam (Convener, Dean Council) and Dr. Mohammad Rafiqul Islam, Director (Nutrition) were present as chief guest, special guest and chair in inaugural and closing session in SAU, Sylhet, 28 February 2024 respectively. Four Papers on Nutrition, safety and hygiene, adolescence behavior, different responsibilities of family, school, society & national level to adolescence were presented in this program. All the participant along with teachers and students were very much curious and burn with questions. School teachers and students were requested this program should be continuing for establishing Nutrition corner at every school.

#### 4. Presentation of Research Articles/Key Note Paper by the Scientist(s) in Different Program

- a. Key Note Paper Presented by Dr. Mohammad Rafiqul Islam, Director, Nutrition Unit, BARC entitled on "Contribution of livestock to build Smart Bangladesh" in the BCSIR CONGRESS-2023 at BCSIR auditorium on 08 March 2024.
- b. Delivered the keynote speech by Dr. Mohammad Rafiqul Islam, Director, Nutrition Unit, BARC on "Making food safe for adolescents" in the International Nutrition Olympiad 2024 organized by BIID in association with Feed the future, USAID, gain, national nutrition services, BFSa on 17 April 2024.



*Director Nutrition Delivering his Speech as Key Note Presenter*

- c. Attended as one the panellists for the event of "Global hunger index 2023-Bangladesh perspective and way forward" focusing on the power of youth in shaping food systems organized by Welthungerhilfe and Concern Worldwide on 06 March 2024 at Hotel Amari. In the event, Dr. Muhammad Abdur Razzaque MP, Chairman, Parliament Standing Committee on Ministry of Agriculture was present as Chief Guest. The representative from the concerned ministry and department, development partner, private sector, academia, media, NGOs and youth representatives were present in the occasion.



Dr. Rafiqul Islam, Director (Nutrition) Attend as Panellists

## 5. Preparation Policy Document and Inputs

### i) Inputs/Comments

Last financial year Nutrition unit, BARC provided comments on:

Sl No.	Topic	Date
i.	Draft amendments/adoption of international standards initially approved by Technical Committee of BSTI	27 Mar. 24
ii.	Providing information for the formulation of future plans of the Ministry of Agriculture	11 Nov. 23
iii.	The circulated draft of the Codex	12 Nov. 23
iv.	The preliminary draft of the 'Bangladesh National Nutrition Council Act-2023'	24 Sep. 23
v.	Concept Note on "Development of a Multi-Sectoral Urban Nutrition Strategy"	14 Sep. 23
vi.	Action plan of Nutrition sensitive agriculture	27 Feb. 24

## ii) Report writing

### A. Annual Progress & Budget Report:

- **Islam. M.R., Moni, Z. R.** Annual Progress and Work-plan Report: (2023-2024) and future work-plan (2024-25), Nutrition Unit, BARC, Farmgate, Dhaka
- **Islam. M.R., Moni, Z. R.** Budget Report according to Work-plan: (2023-2024): "Budget for future work-plan (2023-24). Nutrition Unit, BARC, Farmgate, Dhaka
- Report for Newsletter of BARC
- Report for APA

## 6. National and International Linkage (MoU/Agreement)

### a) Director (Nutrition) acted as Member of different committees of different National and International organization.

- Acted as a Member of the "Chemical Division" sectional Committee of BSTI, Dhaka.
- Acted as a Member of Agriculture and Food Division Committee (AFDC), BSTI, Dhaka.
- Acted as expert member of the Food Safety Authority (FSA) (Fruits and vegetables Committee/crop sector)
- Member of the National Plan of Action on Nutrition (NPAN)
- Member, Nutrition Working Group (NWG)
- Acts as member of requirement committee of BIRTAN
- PSO Nutrition working as a member secretary GAP unit, BARC as well as different committees of GAP

### b) Evaluation of Research Project:

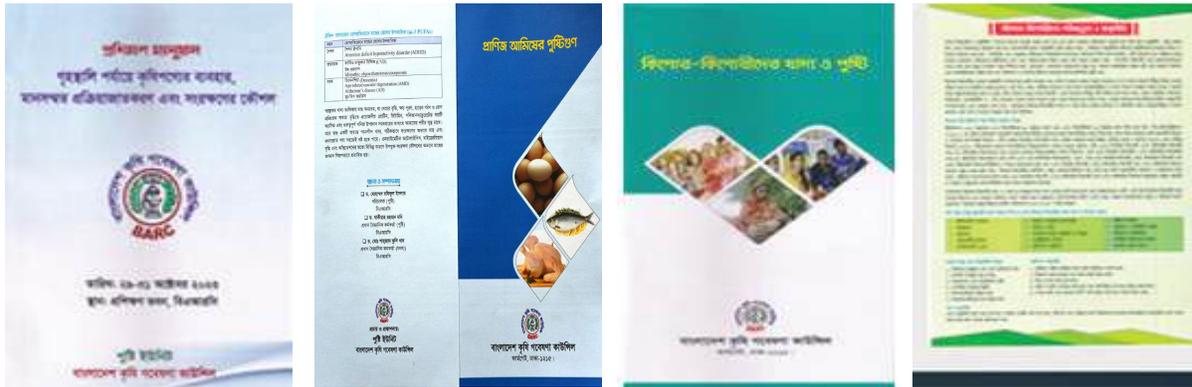
Director Nutrition & PSO evaluate the Research Project of BIRTAN (annual Review) as expert member

Director Nutrition evaluate the Research Project of BLRI (annual Review) as expert member

## 7. Publication

### Scientific paper

- M.M. Rahman, **Z. R. Moni**; M.A.M. Hussen (2023). Investigation of Antioxidant Activities of *Cenchrus purpureus* Extracts using In Vitro Assay. Int. J. Bus. Soc. Sci. Res. 11(2): 42–46. Retrieve from <http://www.ijbssr.com/10.55706/ijbssr11209>
  - M.M. Rahman, **Z. R. Moni** and N. C. Mahat (2024). Effects of Brown HT on Biochemical Parameters of Long Evans Rats. Int. J. Bus. Soc. Sci. Res. 12(1): 07–11. Retrieve from <http://www.ijbssr.com/10.55706/ijbssr12102>
- Training Manual: 1
  - Leaflet: 2
  - Factsheet: 2
  - Popular Article: 2



Training Manual



Leaflet

## 8. Regular Activities

### Scientific paper

- i. Attended a good number Training, Workshop, Seminar, Meeting organized by BARC & other organizations.
- ii. Rapporteur report/Speech writing
- iii. Preparation Meeting Minutes

**NATURAL RESOURCES  
MANAGEMENT DIVISION**



## AGRICULTURAL ENGINEERING UNIT

The Agricultural Engineering Unit (AEU) of the Natural Resources Management (NRM) Division, BARC is dedicated to planning, coordinating, and managing research and related activities to advance irrigation and water management (IWM), farm mechanization (FM), and postharvest technology (PHT) in Bangladesh. To fulfill BARC's mandated responsibilities and meet national needs and priorities, the unit is tasked with planning, reviewing, prioritizing, approving, monitoring, evaluating, supervising, and coordinating IWM, FM, and PHT programs implemented by relevant NARS institutions and other entities. Additionally, the unit provides training and research support to NARS institutions, universities, BADC, BMDA, DAE, NGOs, and other organizations. It also offers relevant policy support to the Ministry of Agriculture. The AEU conducts seminars and workshops, maintaining strong linkages with national organizations such as WARPO, IWM, CEGIS, BWDB, BSTI, NGOs, and universities, as well as international organizations like CGIAR, CIMMYT, IRRI, CSAM, IWMI, and FAO.

### Name of the Professionals

Name	Designation
Dr. Nazmun Nahar Karim	Chief Scientific Officer (A. C.) Upto 19.10.2023
Dr. AFM Tariqul Islam	Principal Scientific Officer
Dr. Md. Ashraful Alam	Principal Scientific Officer and DPD (PARTNER)

The progress of activities for 2023-24 and the work plan for 2024-25 of the Agricultural Engineering Unit are briefly discussed below:

### 1. Review and Evaluation of Research Programs of NARS Institutes

Research programs on Agricultural Engineering focusing on Farm Machinery, Irrigation & Water Management, and Postharvest Technology for five NARS institutes (BARI, BRRI, BINA, BSRI, and BWMRI) were precisely reviewed and evaluated during the research review workshop held on 04-05 September 2023 at BARC. Heads of different agricultural engineering divisions from these institutes presented a substantial number of programs, totaling 328. The distribution of the number of the research progress 2022-23 and program 2023-24 of the NARS Institutes are given in Table 1. An esteemed expert panel, comprising renowned senior scientists, engineers, and professors of agricultural engineering background undertook the task of reviewing and evaluating these programs. They provided invaluable guidelines, suggestions, and technical inputs to enhance the quality and effectiveness of the research programs including screening the duplications. These recommendations were forwarded to the respective divisions of the NARS institutes for incorporation into the future research programs (2023-24) planning and execution. However, the average implementation status of recommendations of the previous year's research review workshop 2022 on Agricultural Engineering of NARS institutes was 85.80.

Table 1. Distribution of the number of the Research Reports 2022-23 and Programs 2023-24 related to the Agricultural Engineering of the NARS Institutes

Institutes	FM		IWM		PHT		Total	
	Progress 2022-23	Program 2023-24						
BARI	34	34	24	16	19	36	77	86
BIRRI	13	38	22	06	07	17	42	61
BINA	03	05	07	27	-	-	10	32
BSRI	05	04	-	-	-	-	05	04
BWMRI	04	07	-	-	-	-	04	07
<b>Total</b>	<b>59</b>	<b>88</b>	<b>53</b>	<b>49</b>	<b>26</b>	<b>53</b>	<b>138</b>	<b>190</b>

## 2. Research Project Monitoring and Evaluation

Scientists of Agricultural Engineering Unit conducted the following research project activities through monitoring and evaluation during the reporting year:

- a) Scientists of this unit conducted field monitoring of the KGF-funded project titled *Feasibility Study of the IoT-based Precision Agriculture for Sustainable Crop Production in Bangladesh* at BARI on 12 July 2023, 18 July 2023, 23 November 2023, 12 December 2023 and 08 February 2024. The BARC team visited the project's experimental fields and discussed with the project personnel and field staff. The team collected the current information on the research progress activities and provided on-the-spot suggestions regarding IoT sensors-based modeling, crop management, and other project activities to ensure the smooth running of the project.

Moreover, during the visit on 08 February 2024, Honorable Secretary (MoA), Executive Chairman (BARC), DGs (DAE, BARI), ED (KGF), Directors (BARI, BARC, KGF), and other high officials, resource personnel paid a visit to the IoT-based research field at BARI.

- b) Scientists of this unit conducted field monitoring and evaluation of the Alternate Wetting and Drying (AWD) and Khamari App-based fields' demonstration activities in Rangpur, Gaibandha, and Lalmonirhat District during 18-20 April 2024. The team collected updated information on the progress of the activities and provided on-the-spot suggestions regarding the AWD and fertilizer application using Khamari app and other related activities for the smooth running of the project.
- c) Scientists of this unit conducted a feasibility study on the Smart Green House at Gadkhali, Jkikargacha, Jessore on 18 March 2024.
- d) Scientists of this unit monitored the selected site of the GAP implementation fields of vegetables at Jessore Sadar upazila on 18 March 2024.

### 3. Research Project Coordination and Implementation

Scientists of Agricultural Engineering Unit coordinated and implemented the following three research and development projects:

- a) Scientist of AEU worked as Coordinator of KGF funded project (ID: TF86-C/21) titled Feasibility Study of The lot-Based Precision Agriculture for Sustainable Crop Production in Bangladesh.
- b) The scientist worked as the Local Coordinator of ACAIR funded project (CSI4CZ Phase II) titled Mitigating Risk and Scaling-Out Profitable Cropping System Intensification Practices in The Salt-Affected Coastal Zones of the Ganges Delta
- c) The scientist worked as Deputy Program Director (DPD) in the Program on Agricultural and Rural Transformation for Nutrition, Entrepreneurship, and Resilience in Bangladesh (PARTNER, APCU-BARC).

### 4. National and International Linkage & Cooperation

Scientists of Agricultural Engineering Unit established national and international linkage and cooperation through the members of the different committees as well as attending numerous meetings, seminars, and workshops during the reporting period as mentioned below:

- a) Acted as Country Representative of Asian Regional Working Group.
- b) Acted as a Member of the governing council of the Centre for Sustainable Agricultural Mechanization
- c) Worked on Country Project Management Committee: Solar Irrigation for Agricultural Resilience (SoLAR) of IWMI and IDCOL.
- d) Worked as Advisory Committee of Appropriate-scale Mechanization Innovation Hub-Bangladesh
- e) Acted as Focal Point, GCF Concept Note Development on Climate Resilient Agriculture for Transformative Ecosystems (CREATE)
- f) Member, BSRI and BJRI Promotion/Recruitment Committee-2
- g) Member, Editorial Board of Bangladesh Journal of Agriculture (BJA).
- h) Member, LDC Graduation Sub-Committee
- i) Member, Technical Advisory Committee, Agricultural Mechanization of Bangladesh
- j) Member, official cost estimation committee, proposal opening & evaluation committee; tender opening & evaluation committee; receiving committee; purchase committee, PARTNER, APCU-BARC.
- k) Member and Rapporteur, Speech Preparation Committee, World Food Day 2024.
- l) Member, Integrated 4IR Workplan Implementation Committee
- m) Member, Research and Academic Committee, Institute of Appropriate Technology, BUET
- n) Member, Technical Committee, agrometeorology information system development project
- o) Member, Combine harvester & rice transplanter production policy preparation committee.
- p) Member, ToR Preparation Committee of Consultant Services, PARTNER-DAM
- q) Focal Point, National Integrity Strategy, BARC
- r) Focal Point, Workplan for National Youth Policy 2017.
- s) External examiner of postgraduate thesis defense: IWFM, BUET
- t) External examiner of Agricultural Engineering Division, SAU, Dhaka

Additionally, scientists from this unit continued national and international linkages and cooperation by attending numerous meetings, seminars, and workshops organized by FAO, IWMI, CSAM, IFRI, CGIAR, CSIRO, KGF, IWM, WARPO, CEGIS, CIMMYT, NGO Forum, BUET, DoE, NARS, BADC, and DAE, among others.

## 5. Policy Documents and Inputs Preparation

Agricultural Engineering Unit provided furnished comments and inputs on the following Policy/Rules/Acts/Aspects/Issues:

- a) Industrial Water Use Policy (Draft)-2024
- b) Boiler Rules, 2023
- c) Highway Rules 2023
- d) Civil Aviation Rules 2024
- e) Land Zoning, Use and Protection Act, 2023
- f) Formulation of action plan for the implementation of National Youth Policy 2017
- g) Bangladesh National Authority Chemical Weapons Convention
- h) Gazette of stone quarries management and up-gradation
- i) Provision of digital data for updating national water resources inventory
- j) Global Biofuel Alliance as a founding member
- k) Mainstreaming Water Resilience in Asia and the Pacific
- l) Low-Carbon Energy Outlook and Energy Technology Road Map for Bangladesh
- m) Public Demands Recovery Act 1913 modernization
- n) 10th Regional Forum on Sustainable Agricultural Mechanization

## 6. Training and Workshop

Scientists of the Agricultural Engineering Unit organized four training programs and two workshops during the reporting year described below:

### 6.1 Training on IoT-Based Precision Agriculture for Sustainable Production

A three-day-long training course titled *IoT-Based Precision Agriculture for Sustainable Production* organized by the AEU, was held at the Training Building, BARC, from 17-19 October 2023. The training aims to enhance participants' understanding and skills in implementing IoT-based precision agriculture technologies, promoting sustainable agricultural practices, and facilitating knowledge sharing and networking among professionals in the field of precision agriculture. Thirty participants from NARS institutes (BARC, BARI, BRRI, BINA, BSRI, and BJRI), SRDI, CDB, BADC, and DAE attended the training. Renowned scientists, professors, and professionals from different government and private organizations and universities delivered fifteen lectures on diverse topics, focusing on artificial intelligence, machine learning, infrastructure design, adoption, profitability, opportunities, challenges, and plans & policies of IoT-based precision agriculture. The inaugural session was presided over by Dr. Md. Baktear Hossain, MD (NRM), BARC, and Dr. Nazmun Nahar Karim, Member Director (Livestock), BARC, was present as the chief guest. In the closing session, Dr. Nazmun Nahar Karim, Member Director (Livestock), BARC, was present as the chief guest and distributed certificates among the participants, followed by concluding remarks.



Training on lot Based Precision Agriculture for Sustainable Production

## 6.2 Training on the Use of Modern Farm Machinery for Ensuring Food Security

A three-day-long training course titled *Use of Modern Farm Machinery for Food Security* organized by the AEU, was held at the Training Building, BARC from 08-10 February 2024. The training aims to improve participants' knowledge and skills in using modern farm machinery, enhancing agricultural productivity, and ensuring food security through efficient and sustainable mechanized farming practices. Thirty participants from NARS institutes (BARC, BARI, BRRI, BINA, BSRI, BWMRI), BADC, and DAE attended the training. Renowned scientists, teachers, and experts from various government and private organizations and universities delivered fifteen lectures on different topics, focusing on mechanization status, public and private sector initiatives, the business model of farm machinery, renewable energy uses, farm machinery uses in crop fields, and smart farming. The Executive Chairman, BARC delivered his insightful speech as chief guest and Dr. Md. Baktear Hossain, MD (NRM), BARC presided over the inaugural session. In the closing session, Executive Chairman, BARC was present as the chief guest and distributed certificates among the participants.



Training on Use of Modern Farm Machinery for Food Security

### **6.3 Training on Water Efficient and Climate Smart Irrigation Management**

A three-day training course on Water Efficient and Climate Smart Irrigation Management was organized by the AEU and was held at the Training Building, BARC, from 17-19 February 2024. The training aims to equip participants with knowledge and skills in water-efficient and climate-smart irrigation management, promoting sustainable water use and resilience in agricultural practices. Thirty participants from NARS institutes (including BARC, BARI, BRRI, BINA, BSRI, and BWMRI), BADC, BMDA, and DAE attended the training. Renowned scientists, professors, and experts from government and private organizations as well as universities delivered fifteen lectures covering diverse topics. These included climate-smart agriculture, irrigation management encompassing surface water and groundwater resources management, climate-smart and water-saving technologies, automated irrigation technologies, irrigation scheduling techniques, and adaptive strategies tailored to Bangladesh's unique agro-climatic conditions. Executive Chairman of BARC, delivered a valuable speech as the chief guest during the inaugural session, while Dr. Md. Baktear Hossain, Member Director (NRM) of BARC, presided over the session. In the closing session, Executive Chairman of BARC, was present as the chief guest and distributed certificates among the participants.

### **6.4 Training on Postharvest Processing Technology for Food and Nutritional Security**

A five-day-long training program titled *Postharvest Processing Technology for Food and Nutritional Security* organized by the AEU was held from 12-16 May 2024 at the Conference Room, Training Building, BARC. The objectives of the training were to equip participants with knowledge and skills in advanced postharvest processing techniques and technologies to reduce losses, enhance food quality, and extend shelf life with lectures and lab visits. Participants engaged in a dynamic blend of presentations, a two-day-long lab visit, and brainstorming sessions to achieve the training objectives. Twenty-five participants from 15 (fifteen) institutes, namely, BARC, BARI, BRRI, BINA, BSRI, BWMRI, BIRTAN, BADC, DAE, BCSIR, BSFA, RDA, SAU, BSMRAU and Pran Foods Ltd. attended the training. Renowned scientists and professors having experiences in postharvest processing technologies delivered lectures on different topics, focusing on food science and nutrition, postharvest processing circular economy and postharvest losses reducing techniques and technologies, etc. On day three, participants visited the Postharvest Technology (PHT) and Farm Machinery & Postharvest Process Engineering (FMPE) Labs at BARI, Grain Quality & Nutrition (GQN) and Farm Machinery & Postharvest Technology (FMPHT) Labs at BRRI. On day four, participants visited the Central Packing House of DAE at Shyampur, Dhaka. Dr. Md. Baktear Hossain, Member Director (NRM), BARC inaugurated the training program. In the closing session, Executive Chairman, BARC distributed the certificates among the participants and delivered insightful remarks as chief guest.



The Training on Postharvest Processing Technology For Food And Nutritional Security

### 6.5 Annual Workshop on Research Review 2022-23 and Research Program 2023-24 on Agricultural Engineering of NARS Institutes

The two-day-long workshop titled *Research Review 2022-23 and Research Program 2023-24 on Agricultural Engineering of NARS Institutes* organized by AEU was held at BARC from 4-5 September 2023 with the participation of the NARS, DAE, BADC, BMDA, WARPO, CEGIS, IWM, RDA, ACI, Pran, Square, Metal, and Universities, etc. The objectives of the workshop were to review the agricultural engineering-related research progress and research program of NARS institutes to improve future research programs (2023-24) including screened duplication. The inaugural session of the workshop was chaired by Dr. Md. Baktear Hossain, Member Director (NRM), BARC, and Dr. Nazmun Nahar Karim, Member Director (Livestock), BARC was present as the Guest of Honour.

Among the three technical sessions, the Farm Machinery and Post-Harvest Technology sessions held on September 4, 2023, were chaired by Engr. M. Harun Ur Rashid, former DG, BARI & former EC, BARC, and Professor Dr. Md. Shams-Ud-Din, former Vice-Chancellor, PSTU, respectively. The Irrigation and Water Management session held on 5 September 2023, was chaired by Dr. Wais Kabir, former EC, BARC & former ED, KGF. Senior scientists, engineers and academia of the relevant fields of research institutes and universities were invited as expert members. Heads of different agricultural engineering divisions of BARI, BRRI, BINA, BSRI, and BWMRI presented their research progress 2022-23 and programs 2023-24 according to the mentioned three sessions. Following the presentations of each session, participants, professionals, and especially, the expert panel members provided their valuable comments, suggestions, and guidelines to align the research activities with relevant national demands and priorities. Finally, the proceedings of the workshop, including these recommendations were provided to the respective NARS institutes for incorporation into the future research programs (2023-24) planning and implementation.



Pictorial View of the Workshop

## 6.6 Progress Workshop on Mitigating Risk and scaling-out Profitable Cropping System Intensification Practices in the Salt-affected Coastal Zones of the Ganges Delta

A day-long progress workshop titled *Mitigating risk and scaling-out profitable cropping system intensification practices in the salt-affected coastal zones of the Ganges Delta* was held at BARC on 31 July 2023. This project aims to improve the quality of life of farmers in the coastal areas by improving the availability of fresh water and the management of water and soil salinity, along with increasing the productivity of the land and the intensity of crops under the changing climate. The project is funded by the Australian Center for International Agricultural Research (ACIAR), Australia, and Krishi Gobeshona Foundation (KGF), Bangladesh, and implemented by the Commonwealth Scientific and Industrial Research Organization (CSIRO) in collaboration with the BARC, BARI, BRRI, and Shushilon Bangladesh. Sixty multi-sector stakeholders and representatives from different government organizations, research institutions, universities, and NGOs, participated in the workshop. Executive Chairman, BARC graced the workshop as the chief guest. Dr. Debashish Sarker, DG, BARI; Dr. Shahjahan Kabir, DG, BRRI, Dr. Jibon Kishna Biswas, ED, KGF was present as special guests. Dr. Nazmun Nahar Karim, MD (Livestock), BARC and local coordinator of the project provided a welcome speech and overview of the project. Dr. Md. Baktear Hossain, MD (NRM), BARC presided over the session. The representatives from BARI, BRRI, and Shushilan presented the progress of the project in the workshop.

## 7. Publications

Scientists of the Agricultural Engineering Unit either published or contributed to the following publications:

### 7.1 Scientific Papers

Scientists of the Agricultural Engineering Unit published three scientific papers in the following reputed journals:

- a) Islam, A. K. M. S., **Md. Ashraful Alam**, Adom, M. E., Khan, A. U., Kamruzzaman, M. and Islam, M. M. (2023). Design and fabricate BRRRI seed sower machine for mat-type seedling raising. *Journal of Science, Technology and Environment Informatics*, 12(02), 786-799. Crossref: <https://doi.org/10.18801/jstei.120223.79>.
- b) Varun Tiwari, Mirela G. Tulbure, Júlio Caineta, Mollie D. Gaines, Vinicius Perin, Mustafa Kamal, Timothy J. Krupnik, Md Abdullah Aziz and **AFM Tariqul Islam** (2024). Automated in-season rice crop mapping using Sentinel time-series data and Google Earth Engine: A case study in climate-risk prone Bangladesh. *Journal of Environmental Management* 351 (2024) 119615. <https://doi.org/10.1016/j.jenvman.2023.119615>
- c) Mottalib M.A., Hossain M.A, Amin M.N., Hoque M.A., Rahman M.A., Kamar S.S.A., Rahman M.A., Alam M.A., Saha K.K, **AFM Tariqul Islam**, et al. (2024). Agro-Geoinformatics-based approach for predicting requirements of BARI seed planter machine in the southern region of Bangladesh. *International Journal of Engineering Inventions* e-ISSN: 2278-7461, p-ISSN: 2319-6491 Volume 13, Issue 2 [February. 2024] PP: 73-89.
- d) Khan, M. R., Rahman, M. H., Tarafder, M. M. A., Haque, M. A., Hossain, M. B., **AFM Tariqul Islam**, Skalicka, J., Skalicky, M., & Hossain, A. (2024). Determination of the critical limit of soil phosphorous for mustard (*Brassica napus* L.) and maize (*Zea mays* L.) in different agroecological zones of Bangladesh. *Acta Agrobotanica*, 77, Article 174958. <https://doi.org/10.5586/aa/174958>

## 7.2 Training Manual

Scientists of the Agricultural Engineering Unit published four Training Manuals during the reporting year 2022-2023:

- a) IoT-based Precision Agriculture for Sustainable Crop Production (October 2023)
- b) Water Efficient and Climate Smart Irrigation Management (February 2024)
- c) Use of Modern Farm Machinery for Ensuring Food Security (March 2024)
- d) Postharvest Processing Technology for Food and Nutritional Security (May 2024)

## 7.3 Report and Proceedings

Scientists of the Agricultural Engineering Unit either contributed or published the following reports and proceedings:

- a) Contributed to publishing BARC Annual Report 2022-23 by providing the AEU Annual Report 2022-2023.
- b) Contributed to publishing BARC Newsletters 2023-24 (Quarterly) by providing AEU information during 2022-2023.
- c) Prepared and distributed the proceedings of the workshop Research Review 2022-23 and Research Program 2023-24 on Agricultural Engineering of NARS Institutes.
- d) Prepared rapporteurs reports and proceedings of different workshops, seminars, and meetings of BARC and other organizations.
- e) Prepared reports for eight five year plan, SDG, delta plan, etc.

## 8 Professional Activities

Scientists of the Agricultural Engineering Unit contributed both officially and professionally by reviewing manuscripts, project proposals, and thesis:

- a) Scientists of this unit reviewed five manuscripts the renowned journals namely, Remote Sensing Applications: Society and Environment (Elsevier), Hydrological Sciences Journal (Taylor & Francis) Bangladesh Rice Journal (BRRI), Bangladesh Journal of Agricultural Research (BARI), and Bangladesh Journal of Agriculture (BJA)
- b) This unit reviewed one project proposal funded by Advanced Research in Education, Bangladesh Bureau of Educational Information and Statistics (BANBEIS)
- c) This unit evaluated two M.Sc Thesis of the Institute of Water and Flood Management (IWFM), BUET, Dhaka.

## 9. Regular Activities

Scientists from the Agricultural Engineering Unit made a substantial contribution to a number of training sessions, workshops, seminars, and meetings that BARC arranged in 2023-24. Additionally, scientists prepared remarks for various national and international events for high-officials of BARC and MoA. They also completed various tasks assigned by the different Units/Divisions of BARC and NARS institutes during the reporting period.

## Forestry Unit

Forestry Unit, Natural Resources Management Division, BARC is in charge of carrying out the required operations and more. Since its establishment, the forestry section of the NARS Institutes has been responsible for planning, organizing, prioritizing, approving, monitoring, and coordinating OFRD of BARI and BFRI for research activities relating to agroforestry and forestry technology. The Unit conducted training sessions, seminars, and workshops. It maintains close relationships with non-governmental organizations (BRAC, ADPC, CNRS, Friendship, and CEGIS) and domestic (BARI, BRRI, BFRI, BTRI, BSRTI, BSRI, CDB, BWMRI, BIRTAN, DAE, BFIDC, SPARRSO, BMWA, RDA, and WARPO) organizations. Activities of the Forestry Unit in 2023-2024 has been briefly discussed below:

### Name of the Professionals

Name	Designation
Dr. Md. Saifullah	Member Director (Admin and Finance) and Chief Scientific Officer (A.C)
Dr. Md. Golam Mahboob	Principal Scientific Officer
Dr. Kazi Noor-E-Alam Jewel	Principal Scientific Officer

### 1. Project Development/Project Financing

- i) Developed Project Concept Proposal on "Bangladesh Smart Fertigation Greenhouse (SFG)"

### 2. Policy Level Contribution

#### **Policy Research on Forestry, Agroforestry, Environmental and Climate Change aspects:**

Furnished 14 Policy Comments on the following aspects/ issues and send to the MOA/MoFE/ Rural Development and Co-operatives Division (RDGD):

- i) Provided inputs and comments on the draft version of Environment Protection Rules, 2023 (Amendment 2024)
- ii) Assistant to provided proposal "Send specific proposals on obtaining technical assistance in view of joining the Global Methane Commitment"
- iii) Provided inputs and comments on the draft version of 'Social Forestry Rules-2004 (Amended, 2021)'
- iv) Provided inputs and comments on the draft questionnaire of Household Based Environmental Survey (HES).
- v) Provided inputs and comments on the "Carbon border adjustment mechanism proposed by the UK"
- vi) Provided inputs regarding preparation of brief/speech for Hon'ble Prime Minister for presentation of Cop-28 and providing required inputs/information for preparation of position paper for Bangladesh

- vii) Provided inputs and comments on the “Bangladesh-German Negotiations 2024”
- viii) Providing input for the “France -Bangladesh Adaptation Pact”
- ix) Provided inputs and comments on the draft version of 'National Air Quality Management Plan'.
- x) Contributed to the FAO's "Climate Resilient Agriculture for Transformative Ecosystems (CREATE)" project concept notes for the GCF.
- xi) Contribute to the development of a new project that will be added to the GCF Country Program priority list of climate-related initiatives.
- xii) Examine the feedback on the concept note that the World Green Economy Organization (WGEO) and the United Arab Emirates (UAE) sent on Bangladesh's participation in the Global Alliance on Green Economy (GAGE) Global Forum.
- xiii) Provided comments on TA 9690-REG Low-Carbon Energy Outlook and Energy Technology Road Map for Bangladesh and Low-Carbon Energy Outlook for Dhaka City
- xiv) Provided inputs on National Disaster Risk Financing Strategy

### **3. Evaluation and Review of Forestry Research Programs**

- In the yearly research programme of BFRI for the years 2023–2024, there are 70 research programmes of BFRI that were examined, appraised, and proposed for further study as needed and technically sound.
- Review workshop for NARS Institutes (BFRI, BARI, BRRI, BINA, BSRI) on Forestry and Agroforestry technologies were co-developed

## **4. Training, Workshop, Seminar, etc. (Foreign and Local) Organized**

### **4.1 Workshops**

#### **a) Annual Workshop on Forestry and Agroforestry in Bangladesh: Research Review 2022-23 and Research Planning 2023-24**

The “Annual Workshop on Forestry and Agroforestry in Bangladesh: Research Review 2022–23 and Research Planning 2023–24” was held on October 11–12, 2023, at BARC Auditorium under the chair of Dr. Md. Bakhtiar Hossain, Member Director (NRM Division). At the outset of the workshop, the Dr. Md. Saifullah, Member Director (A&F) and Chief Scientific Officer (Forestry) offered the welcome address. The distinguished Special Guest, Dr. Md. Ismail Hossain, Director, BTRI, Moulvibazar, and Dr. Md. Mahbubur Rahman, Divisional Officer, Bangladesh Forest Research Institute, Chattogram, delivered their speeches. There were 80 participants from different organizations in attendance at the workshop. Based on the presentation of BFRI and different NARI (e.g., BARI, BRRI, BSRI, BTRI, and BJRI), certain questions were thoroughly examined, and some comments and ideas for improving research planning were made. At last, the chairperson, Dr. Md. Bakhtiar Hossain, concluded his remarks.



*The Annual Workshop on Forestry and Agroforestry in Bangladesh: Research Review 2022-23 and Research Planning 2023-24 expert members and audiences*

The insightful general recommendations were:

- Each institute should evaluate all research programs through an expert team to avoid duplication.
- BFRI should initiate agroforestry research and development, fostering collaboration with relevant institutions such as BARI, BSMRAU, and BAU.
- The presentation must adhere to the specified format, incorporating pertinent content, graphs, and high-resolution picture(s), each appropriately labeled with a corresponding slide number.
- Printing more than two slides on a single page should be avoided for handouts to ensure readability.
- An elaboration of the abbreviation should be provided on the same slide.

**b) Organized a day long workshop on “Implication of National Adaptation Plan (NAP) of Bangladesh (2023-2050) to Crop-Agriculture Sub-Sector”**

A day-long workshop on “Implication of National Adaptation Plan (NAP) of Bangladesh (2023-2050) to Crop-Agriculture Sub-Sector” was organized at the Auditorium of BARC on May 28, 2024. The workshop was presided by The Executive Chairman of BARC, while the Additional Secretary (FMM), Ministry of Agriculture Dr. Nurun Nahar Chowdhury, ndc, was present as the Chief Guest. In the session, Mr. Md. Ziaul Haque, the Director (Air Quality Management) of the Department of Environment, was a Special Guest. Dr. Md. Saifullah, Member Director (Administration and Finance) of BARC, gave the workshop’s keynote address. Dr. Md. Abdul Mueed, a senior consultant for CIMMYT Bangladesh and the former Director General of the Department of Agricultural Extension, and Dr. Ainun Nishat, the Emeritus Professor at BRAC University and team leader of the Bangladesh National Adaptation Plan (2023–2050) Development Consortium, participated as discussants on the key-note paper. Principal Scientific Officer of BARC’s Forestry Unit, Dr. Md. Golam Mahboob offered the vote of Thanks after Member Director (NRM) of BARC, Dr. Md. Bakhtiar Hossain delivered the welcoming address. Attendees at the workshop included senior scientists and representatives from over 45 organizations, including the Ministry of Agriculture, BARC and other NARS institutions, Faculty Members from various agricultural universities, and a

variety of domestic and international organizations, donor organizations, knowledge institutes, and NGOs. The goal of NAP, according to workshop speakers, is to create a country that is climate resilient by implementing practical adaptation measures that strengthen ecosystems and society and promote long-term economic growth. To realize this vision, six national adaptation objectives have been established, with Goal 2 specifically pertaining to agriculture: the development of climate-resilient agriculture for food, nutrition, and livelihood. Currently, agriculture employs almost 40% of the labor force and provides 14% of the GDP. Agriculture, food security, and livelihoods are facing serious problems due to climate change and its impacts. A major part of the food production system is at risk due to climate signals and hazards. Phenological changes appear due to increasing temperatures, including at night. Rising temperatures and uncertain rainfall may create phenological changes in plants that result in lower yields. Crop damage from floods; alterations in the calendar, phenology, and pollination of crops; insect infestation and unusual weather patterns are common causes of disease outbreaks. He explained the 15 investment plans mentioned in the NAP 2023-50 to address these challenges and particularly detailed out the intervention of “CRD7: Action research and field demonstrations on climate-smart agriculture” where BARC has been given lead to execute.

#### **c) Inception Workshop of KGF Funded Pineapple-Based Agroforestry Project**

An Inception Workshop of the 5th Call Project by Krishi Gobeshona Foundation (KGF) “TF119: Improvement of existing pineapple-based agroforestry practices and estimation of GHGs emissions” was held on Thursday, August 17, 2023, at the KGF Annex Building, Farmgate, Dhaka. Dr. Jiban Krishna Biswas, Executive Director of KGF, presided over the session. Dr. Md. Golam Mahboob, Principal Scientific Officer (Forestry), BARC, and project CI, presented the project’s specific activities, methodology, and outcomes. There were 29 experts from different organizations was attendance. Based on the presentation, certain questions were thoroughly examined, and some comments, ideas, and proposals for improving project operations were made. The participating organizations graciously accepted the experts' insightful recommendations and submitted the Inception Workshop’s report to KGF by complying with the remarks.

## 4.2 Trainings

### a) Organized Training on “Experimental Methods in Forestry and Agroforestry Research”

A five-day training course on “*Experimental Methods in Forestry and Agroforestry Research*” was organized at Conference Room of the Training Building of BARC on May 26-30, 2024. A total of twenty-five participants from three different organizations of NARS institutes attended the training course. Among them, 10 from Bangladesh Agricultural Research Institute (BARI), 13 from Bangladesh Forestry Research Institute (BFRI) and rest of the participants from Bangladesh Agricultural Research Council (BARC) attended. Two of the participants were women. Participants enjoyed 25 different lectures delivered by the renowned scientists and experts of the specific topics. A well-designed and carefully developed printed learning material was provided to the participants, and a soft copy in PDF format was also made available online, which could be downloaded by scanning the provided QR code (Fig. 1). Dr. Shaikh Mohammad Bokhtiar, Executive Chairman of BARC, inaugurated the ceremony, and Dr. Md. Baktear Hossain, Member Director, Natural Resources Management Division, BARC, and course director of the training, distributed course completion certificates with valuable remarks among the participants during the closing ceremony.



QR Code to download the Training Manual 2024



Picture of the Training Program on “*Experimental Methods in Forestry and Agroforestry Research*” (inaugural and closing session)

## b) Organized Training on “Forestry and Agroforestry Technologies for Professionals”

A two-day training course on “Forestry and Agroforestry Technologies for Professionals” was organized at Auditorium-2 of the Training Building of BARC on January 28-29, 2024. Forty participants from nine different organizations including from NARS institutes (BARC, BARI, BFRI, BRRI, BSRI, BJRI, BSRI, BINA, SRDI, and CDB, etc.) and other organizations (DAE, BFD, BFIDC) attended. Among them seven participants were female. Participants enjoyed the ten different lectures delivered by the renowned scientists and experts of the specific topics. A well-designed and carefully developed printed learning material was provided to the participants, and a soft copy in PDF format is also available online, which can be downloaded by scanning the provided QR code (Fig. 1). Dr. Shaikh Mohammad Bokhtiar, Executive Chairman, Bangladesh Agricultural Research Council (BARC), inaugurated the ceremony, and Dr. Md. Baktear Hossain, Member Director, Natural Resources Management Division, BARC, and course director of the training, distributed course completion certificates with valuable remarks among the participants during the closing ceremony.



QR Code to download the F&AF Training Manual 2024



Picture of the Training Program on “Forestry and Agroforestry Technologies for Professionals” (Inaugural and Closing Session)

## c) Organized Training on “Climate Smart Agriculture for Adaptation and Mitigation”

A three-day-long training course on “Climate Smart Agriculture for Adaptation and Mitigation” was organized at the Training Building (room no. 301) of BARC on February 27-29, 2024. Forty participants from different 18 organizations including NARS institutes (BARC, BARI, BSRI, BINA, CDB, SRDI, BWMRI, BRRI, BTRI, BSRTI, etc.), and other organizations (DAE, BIRTAN, SPARRSO, RDA, BMDA, WARPO) including three different NGOs (Food for Hungry, CNRS and CEGIS) attended. Among them eleven participants were female. Participants enjoyed sixteen different lectures delivered by different renowned scientists and experts of the specific topics. A printed copy of competency-based learning material (CBLM) was provided to the participants, a soft copy (in PDF format) of which was also made available online, which can be downloaded by scanning the QR code (Fig. 3). Dr. Nazmun Nahar Karim, Member Director (Livestock) inaugurated the ceremony and also distributed course completion certificates among the participants during the closing ceremony.



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Some Pictures of the Training Program on "Climate Smart Agriculture for Adaptation and Mitigation" (Inaugural and Closing Session)

### 4.3 Farmers Trainings

#### a) Organized Farmers Training for Pineapple-based Agroforestry Practices at Moulvibazar

A day long training was held at BARI-Akbarpur, Moulvibazar on "Farmers Training for Pineapple-based Agroforestry Practices" (কৃষিবনায়ন পদ্ধতিতে টেকসই আনারস উৎপাদন বিষয়ক কৃষক প্রশিক্ষণ) during 27 September 2023. Twenty trainees from Akbarpur, Giashnagor, Moulvibazar Sadar, Moulvibazar attended over there. Among them, three were female participants. Everybody enjoyed the five (05) different topics of lectures delivered by the renowned scientists and experts on the specific subjects. Dr. Md. Sarwar Alam, SSO and PI (BARI Component) of the project, delivered the welcome address. Dr. Md. Jamal Hossain, Principal Scientific Officer, RARS-Akbarpur, BARI, was present as Guest of Honor, and Dr. Md. Saifullah, Member Director (A&F) and CSO (Forestry) (A.C.), BARC, Dhaka, offered his valuable speech as Course Director of the training. In his speech he emphasized on the capacity building of farmers for resource management. The farmers expressed their high level of satisfaction after receiving the training on pineapple-based agroforestry.



Some Pictures of the Training Program on "Farmers Training for Pineapple-Based Agroforestry Practices"

#### **b) Organized Farmers Training for Pineapple-based Agroforestry Practices at Tangail**

A day-long training was held at Madhupur, Tangail, on "Farmers Training for Pineapple-based Agroforestry Practices" (কৃষিবনায়ন পদ্ধতিতে টেকসই আনারস উৎপাদন বিষয়ক কৃষক প্রশিক্ষণ) on November 22, 2023. The course director was Professor Dr. G.M. Mujibar Rahman, Bangladesh Agricultural University (BAU). Twenty trainees from Modhupur, Tangail, attended over there. Among them, seven (07) were female participants. Everyone appreciated the five (05) talks on various themes given by well-known scientists and subject matter specialists. Dr. Md. Golam Mahboob, PSO (Forestry), BARC, was present as Guest of Honor, and Professor Dr. Kazi Kamrul Islam of Bangladesh Agricultural University (BAU) offered his valuable speech during the training. Dr. Md. Sarwar Alam, SSO and PI (BARI Component), and Dr. Kazi Noor-E-Alam Jewel, PSO (Forestry), BARC, attended and delivered insightful lectures during the course.



Some Pictures of the Training Program on "Farmers Training for Pineapple-Based Agroforestry Practices"

#### **4.4 Data Enumerators' Training**

##### **c) Organized "Baseline Survey of Pineapple-Based Agroforestry Practices" training**

A day long training was held at BARI-Akbarpur, Moulvibazar on "Data Enumerators' Training for Baseline Survey of Pineapple-based Agroforestry Practices" during 28 September 2023. Fifteen participants attended from Bangladesh Agricultural University, Mymensingh and BARI-Akbarpur. Among them, six (06) participants were female. Everybody enjoyed the five (05) different lectures delivered by the scientists and experts on the specific subjects. Dr. Md. Golam Mahboob, PSO (Forestry) and CI (Coordination Component) of the project delivered the welcome address. Dr. Md. Jamal Hossain, Chief Scientific Officer, RARS-Akbarpur, BARI was present as Chief Guest, and Dr. Md. Saifullah, Member Director (A&F) and CSO (Forestry), BARC, Dhaka offered his valuable speech as Course Director of the training. He also distributed course completion certificates among the participants for successful completion of the training.



Some Pictures of the Training Program on "Data Enumerators' Training for Baseline Survey of Pineapple-Based Agroforestry Practices".

#### d) Organized "Survey Data Analytics of Pineapple-Based Agroforestry Practices" training

On November 21, 2023, a daylong training on "Survey Data Analytics of Pineapple-Based Agroforestry Practices" was conducted at Madhupur, Tangail. The course director was Dr. Md. Saifullah, Member Director (A&F) and CSO (Forestry), BARC, Dhaka. Fifteen participants attended from Bangladesh Agricultural University, Mymensingh. Among them, seven (07) participants were female. Everybody enjoyed the five (05) different lectures delivered by the scientists and experts on the specific subjects. Dr. Md. Golam Mahboob, PSO (Forestry) and CI (Coordination Component) of the project, delivered the welcome address. The chief guest of the event was Professor Dr. Kazi Kamrul Islam of Bangladesh Agricultural University (BAU). CI of the project, chief guest, Dr. Md. Sarwar Alam, SSO and PI (BARI Component) and Dr. Kazi Noor-E-Alam Jewel, PSO (Forestry), BARC, awarded the course completion certificates to the participants who successfully completed the program.



Certificate Giving Ceremony for the Training Program

## 5. Monitoring Activities

- a) A monitoring visit was done in 05-06 August 2023 at Madhupur Garh, Tangail, observing and selecting the research sites for the KGF funded project "TF119: Improvement of existing pineapple-based agroforestry practices and estimation of GHGs emissions" implemented by the Component-1 (Dept. of Agroforestry, BAU, Mymensingh). In this visit, the team inspected the lands of Mr. Utpal and Mr. Alam in Gaira village, Mr. Mizan's field in Jalchatra Gachabari, and Mr. Abraham's field in Magantinagar for setting up experiments on farmers' fields. During the visit, the farmers were informed about the project activities and expressed their hope to be involved in the research activities of the project spontaneously.



Research Team at Madhupur Ghar, Tangail to Monitored the Activities of KGF Funded Project "Improvement of Existing Pineapple-based Agroforestry Practices and Estimation of GHGs Emissions".

- b) KGF funded Coordinated project "Improvement of existing pineapple-based agroforestry practices and estimation of GHGs emissions" implemented by RARS, BARI, Akbarpur, Moulvibazar was monitored on 28 September 2023, by Dr. Md. Saifullah, Member Director (A&F) and CSO (Forestry)(C.C), along with two PSOs (Forestry) namely, Dr. Md. Golam Mahboob and Dr. Kazi Noor-E-Alam Jewel.



Some Pictures of the Monitoring Visit of the KGF Funded Project "Improvement of Existing Pineapple-based Agroforestry Practices and Estimation of GHGs Emissions" Coordinated by Forestry Unit, BARC.

**c) Monitoring activity of the KGF funded project “TF119: Improvement of Existing Pineapple-based Agroforestry Practices and Estimation of GHGs Emissions”**

Dr. Md. Saifullah, MD (A&F) and CSO (Forestry), along with Professor Dr. Kazi Kamrul Islam from Bangladesh Agricultural University (BAU) and the Co-Investigator of the KGF-funded project "TF119: Improvement of existing pineapple-based agroforestry practices and estimation of GHGs emissions," conducted a monitoring visit to the research sites on November 11, 2023, at Magonti Nagar in Madhupur Garh, Tangail. In this visit, the team inspected the lands and research activities of Mrs. Zeruni Nocre and Mr. Abraham for setting up experiments on farmers’ fields. During the visit, the farmers were informed about the project activities and expressed their hope to be involved in the research activities of the project spontaneously.



*Research Team at Madhupur Ghar, Tangail to Monitored the Activities of KGF Funded Project*

**d) Monitoring of survey and research activities at Madhupur, Tangail**

Also observed the data collection activities through survey by the research fellows of BAU (figure 2.1) and the research activities on the field of Farmer Utpol Nocre, Gaira Village, Madhupur, Tangail during 23 November 2023.



*Research Team at Madhupur Ghar, Tangail to Monitor the Activities of KGF Funded Project*



Research Team at Madhupur Ghar, Tangail to Monitored the Research Field of KGF Funded Project

### e) Monitoring visit

As a member of monitoring team no. 5, Dr. Kazi Noor-E-Alam Jewel, Principal Scientific Officer (Forestry), worked under the direction of Dr. Md. Saifullah, Member Director (Administration & Finance), to oversee the AWD and the Khamari mobile app-oriented fields implemented by the Department of Agriculture (DAE). The areas visited were Sarail upazila of Brahmanbaria district, Chandina and Barura upazilas of Comilla district, Kachua and Faridganj upazilas of Chandpur district, and Lakshipur Sadar upazila of Lakshipur district. Moreover, Dr. Md. Golam Mahboob, Principal Scientific Officer (Forestry) and the team leader of team no. 13, observed Dumuria upazila of Khulna district, Sadar upazila of Bagerhat district, Mathbaria upazila of Pirojpur district, and Rajapur and Sadar upazila of Jhalkathi district.



Some Pictures of the Monitoring Visit on "AWD and Khamari App Oriented Field"

### f) Monitoring activity of the KGF funded project "TF119: Improvement of Existing Pineapple-based Agroforestry Practices and Estimation of GHGs Emissions"

On May 9, 2024, Dr. Md. Golam Mahboob, PSO (Forestry), and Dr. Kazi Noor-E-Alam Jewel, PSO (Forestry), along with Co-Investigator Professor Dr. Kazi Kamrul Islam from Bangladesh Agricultural University (BAU), conducted a monitoring visit to the research sites in Magonti Nagar, Madhupur Garh, Tangail. This visit was part of the KGF-funded project "TF119: Improvement of Existing Pineapple-Based Agroforestry Practices and Estimation of GHG

Emissions." During the visit, the team inspected the lands and research activities of Mrs. Zeroni Nokrek and Mr. Abraham, focusing on setting up experiments on GHG emissions in farmers' fields.



*Some Pictures of the Monitoring Activities of KGF Funded Project at Madhupur Ghar, Tangail*

**g) "Upscaling of climate resilient agroforestry practices as CSA technologies for fragile agro-ecological areas" is Task for Partners. Cox's Bazar and Rajshahi are being monitored**

An expedition tour was conducted by Dr. Md. Saifullah, Member Director (A&F), and Coordinator Dr. Kazi Noor-E-Alam Jewel, PSO (Forestry), along with the Working Scientist of the same PARTNER Activity 8.1.3.7. The visits took place in Rajshahi on April 27, 2024 (Fig. 5), and in Cox's Bazar on May 22, 2024 (Fig. 6). During these visits, satisfactory field monitoring and effective farmer training sessions were carried out. The farmers expressed high satisfaction with the training and the quality of planting materials, including seeds, seedlings, and saplings, provided to them. Dr. Md. Golam Mahboob (PSO, Forestry) also participated as a trainer in the activities in Cox's Bazar.



*Some Pictures of the Monitoring Activities PARTNER Activity 8.1.3.7 at Rajshahi*



Some Pictures of the Monitoring Activities PARTNER Activity 8.1.3.7 at Cox's Bazar

## 6. Training, Workshop, Seminar, etc. (Foreign and Local) Attended

Dr. Md. Golam Mahboob, PSO (Forestry) participated in the “Annual Project Review and Planning Meeting of Atlas of Climate Adaptation in South Asian Agriculture (ACASA) Project” held Kathmandu, Nepal during 12 to 14 December 2023, “Spatial Crop Simulation Modeling Workshop”, held in Colombo, Sri Lanka during 16 to 18 January 2024 and a training on “LiDAR Applications in Agriculture and Flood Risk Mapping” held at Asian Institute of Technology (AIT), Thailand from 19 to 29 June 2024.



Bangladesh contingent attending at the Annual Project Review and Planning Meeting of ACASA Project in Kathmandu, Nepal and Participants of training on “LiDAR Applications in Agriculture and Flood Risk Mapping” held at Asian Institute of Technology (AIT), Thailand.

## 7. Linkage activities

Maintained strong Linkage with NARS Institutes, BSTI, DoF, BCSIR, DoDM, MoFE, DoE, Universities, NGOs etc. as well as reputed international organizations

- i. Arranged several meetings with department/center of Asian Institute of Technology (AIT) including School of Environment, Resources and Development (SARD) and Geoinformatics Center (GIC) as side event during training on “LiDAR Applications in Agriculture and Flood Risk Mapping” held at Asian Institute of Technology (AIT), Thailand from 19 to 29 June 2024.
- ii. Joined series of meetings/events of “Atlas of Climate Adaptation in South Asian Agriculture (ACASA)” projects and built linkage with partner organizations including Bill & Melinda Gates Foundation (BMGF), University of Florida, Columbia University and NASA.

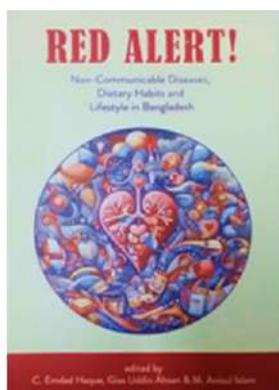
## 8. Publication(s) by the Division/Section in Different Journals/Media

### a. Journal Articles

- iii. Kazi Kamrul Islam; **Md. Saifullah; M. Golam Mahboob; Kazi Noor-E-Alam Jewel; S. M. Kamran Ashraf; Kimihiko Hyakumura** (2024). Restoring Soil Fertility, Productivity and Biodiversity through Participatory Agroforestry: Evidence from Madhupur Sal Forest, Bangladesh. *Land*, 13, 326. doi:10.3390/land13030326
- iv. AFM Tariqul Islam, AKM Saiful Islam, GM Tarekul Islam, Sujit Kumar Bala, Mashfiqus Salehin, Apurba Kanti Choudhury, Nepal C Dey, **M Golam Mahboob** (2023) Simulation of water productivity of wheat in northwestern Bangladesh using multi-satellite data, *Agricultural Water Management*, 281(108241): 1-16. doi:10.1016/j.agwat.2023.108242
- v. M M Rahman, S A Rahman, N C Mahat and **K N A Jewel** (2023). A Comparative Study of the Biosynthesis, Characterization, Impact On Pathogen and Cytotoxic Activities of Gold and Silver Nanoparticles from *Trewia Nudiflora* Extract, Bangladesh J. Agric. and Environ. 19 (1): 01-08.
- vi. M.M. Rahman, Z. R. Moni, N. C. Mahat and **Kazi Noor-E-Alam Jewel (2024)**. Assessment of Medicinal Effects on selected Pathogenic Bacteria and Cytotoxicity of *Persicaria glabra*'s trunk extract. *Bangladesh Journal of Agriculture Environment (BJAE)*, On press.

### b. Book Chapter

- vii. M. Kamruzzaman, **Md. Saifullah**, Sadia Islam Pranty, and Sadia Islam Jui (2024). Vegetable Production, Consumption, and Value Chain Analysis: Perspectives of Rural Bangladesh. *Red Alert! Non-Communicable Disease, Dietary Habits and Lifestyle in Bangladesh*. Print Station (a concern of The University Press Limited), 6 Harish Chandra Basu Road, Farashganj, Dhaka 1100, Bangladesh.



Picture of the Book Chapter

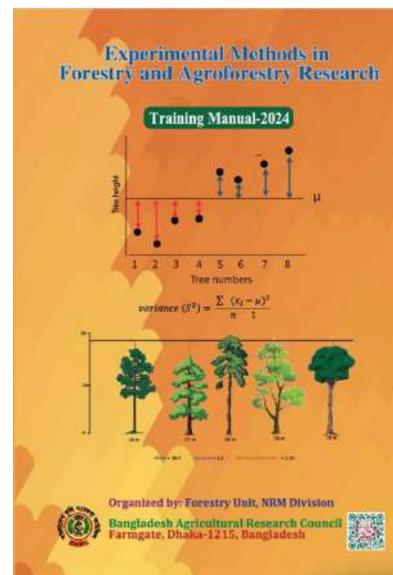
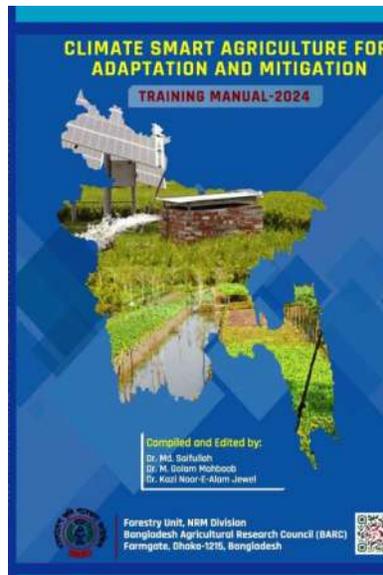
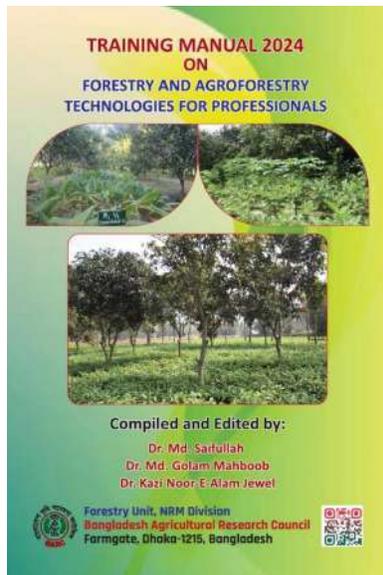


### c. Annual Report:

- viii. Contributed to publish BARC Annual Report 2022-23

**d. BARC Newsletters:**

- ix. Contributed to publish BARC Newsletters
- e. Training manuals
- x. Training Manual - 2024 on "Climate Smart Agriculture for Adaptation and Mitigation"
- xi. Training Manual - 2024 on "Forestry and Agroforestry Technologies for Professionals"
- xii. Training Manual on "Experimental Methods in Forestry and Agroforestry Research"



*Training Manuals*



*Forestry and Agroforestry*



*Climate Smart Agriculture*



*Experimental Methods*

## SOILS UNIT

The Soils Unit of the Natural Resources Management Division, BARC, has been implementing the mandated activities and beyond. The unit, since its inception, has been prioritizing, planning, approving, reviewing, monitoring, and coordinating soil fertility and fertilizer management, soil pollution, and climate change-related research programs of the NARS institute and other institutions, including Universities, the Department of Agricultural Extension (DAE), and NGOs. The unit conducted training programs, seminars, and workshops to maintain a strong linkage with national and international organizations through coordinating research projects. Professionals and their activities of the Soils Unit during 2023-2024 are stated below:

### Name of the Professionals

Name	Designation
Dr. Md. Baktear Hossain	Member Director
Dr. Faridul Alam	Principal Scientific Officer (PSO)
Dr. Ahmad Numery Ashfaquul Haque	Principal Scientific Officer (PSO)

The profile of activities of the unit are as follows:

### 1. Project Development and Coordination

The unit of BARC is working in line with the mandate of the Council. The Unit oversees the soil fertility and fertilizer management-related programs of the country. This unit is involved in developing national and international coordinated/collaboration projects. One project is going under the Asian Food and Agriculture Cooperation Initiative (AFACI) titled "Development of National Soil Map and National Soil Information Systems of Bangladesh". The Soils Unit has completed one project titled "Updating and publication of Fertilizer Recommendation Guide-2024 (ID-TF104-C/23)" with funding from the Krishi Gobeshona Foundation (KGF).

### 2. International Collaboration Project

#### 2.1 Project title: Development of National Soil Map and National Soil Information Systems of Bangladesh

This project is a coordinated project between BARC and SRDI, in which BARC is working as the coordination agency. The 2nd phase is the continuation of AFACI SOIL project phase 1, and AFACI has designed and specified the plan to implement the project. Objectives of the project are to:

- Create soil health indices and assess soil health through soil sampling and analysis of soils in the laboratory.
- Update the national soil database and maps of soil properties and threats.
- Develop a sustainable data management environment for Bangladesh through the establishment of a fully operational National Soil Information System.

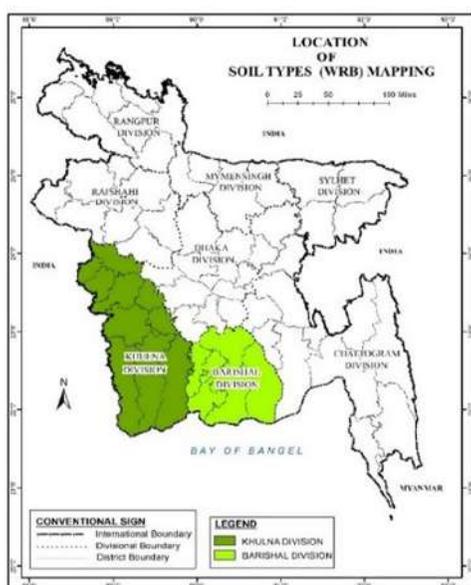
- Enhance stakeholder engagement via EduSOILs initiative for informed land management.
- Increase the national capacity to produce and deliver soil maps and soil information for decision-making on sustainable land management.

Main technical activities involved with product generation

1. Preparation of harmonized soil type maps applying the WRB approach for different districts.
2. Updating of soil profile data.
3. Creation of topsoil nutrient databases for districts.

The project has made the following progress:

Harmonized soil type maps for 16 districts of the southern/coastal region under two administrative divisions have been produced from October 2023 to June 2024. The test districts are located in the south and south-western parts of the country.



Soil Type Maps for 16 Districts of Southern/Coastal Region

Updating of soil profile data and creation of topsoil nutrient database: Horizon-based soil analysis data as generated through the collection of soil samples from 28 locations have been incorporated into the existing profile database. The data includes the soil texture (%sand, %silt, %clay), pH, CEC, BSP, %C, organic matter, EC, bulk density,  $\text{CaCO}_3$ , and macro and micro nutrient elements. Keeping views in mind regarding data harmonization, the top soil nutrient database will be produced from the data validated for KHAMARI Apps, and the data gap will be minimized using updated data included in the Upazila Land and Soil Resource Utilization Guides (Upazila Nirdeshika).

The outcome of the project will result in a number of products, including a total of 64 district soil types maps, a comprehensive national soil database with updated soil profiles and topsoil data, updated National Soil Properties Maps with accurate soil attributes and characteristics, soil nutrient, and nutrient budget maps with updated data providing insights into nutrient dynamics for informed agricultural practices, national soil health indices and a user-friendly soil health dashboard for informed land management decisions, and a fully functional National Soil Information System (SIS) accessible to stakeholders. The outcome will be reflected in ensuring food security through SSM.

### 3. Policy Level Contribution

#### 3.1 Activities of Fertilizer Technical Sub-Committee

The Fertilizer Technical Sub-Committee was formed by the Ministry of Agriculture (MoA) in 1997 to help the National Fertilizer Standardization Committee. Member-Director (NRM), BARC works as the convener, and Additional Director (Input), DAE as the Member Secretary of the committee. The committee comprises of 20 (twenty) members with the CSO (Soils), BARC, CSOs of Soil Science Divisions of different NARS institutes, CSO, OFRD, and BARI; representatives from different concerned organizations like the Departments of Environment, Livestock, Fisheries, BSTI, SRDI, BADC, BCIC, etc. Presently, the director of AIS has been added as another member of the Technical Sub-Committee.

The principal activities of the Technical Sub-Committee of Fertilizer Standardization are as follows:

- Organized periodic meetings of the Fertilize Technical Sub-Committee for the standardization of new fertilizers and reviewed the existing fertilizers.
- Organized meetings on fertilizer needs and quality control.
- Giving comments on policy issues related to the use, import, export, or production of fertilizer and fertilizer materials as and when necessary by the government.
- Monitoring fertilizer quality.



*58<sup>th</sup> Fertilizer Technical Sub-committee for Standardization*

Two meetings of the Fertilizer Technical Sub-Committee were held with the Member Director, NRM Division, BARC as the meeting chair during 2023-2024.

A number of organic and chemical fertilizers, biofertilizers, and PGRs were evaluated in these meetings, of which the following number of organic fertilizers, chemical fertilizers, biofertilizers, and plant growth regulators were recommended for standardization to the National Fertilizer Standardization Committee headed by the Secretary, Ministry of Agriculture. The status of fertilizer standardization is as follows:

Sl. No.	Item	Recommended for standardization	Under the process of standardization
01	Organic fertilizer	7	109
02	Chemical fertilizer	1	25
03	Plant growth regulator	12	71
04	Biofertilizer	1	17
05	Soil Conditioner	0	3
<b>Total</b>		<b>21</b>	<b>225</b>

#### 4.2 The Soils unit of BARC also performed the following activities during 2023-2024:

PSO (Soils) has been serving as convener of a 3-member committee of field monitoring for evaluating the capacity of a quality organic fertilizer-producing factory. The committee visited two (2) organic fertilizer factories at Kahalu and Sherpur of Bogura district and submitted a report to the convener of the technical Sub-Committee on fertilizer (TSC).

Sl. No.	Name of the fertilizer company	Date	Location
1.	BRRRI Organic Fertilizer	18.05.2024	Kahalu, Bogura
2.	MA Organic Fertilizer	18.05.2024	Sherpur, Bogura



*Field Evaluation of Biofertilizers at Pabna and Rajshahi*



Moreover, PSO (Soils) is also involved in the field evaluation of biofertilizers namely TRICHOPEX-TH, PROBEX-BS, AZOTOPEX-AC, TRICHOPEX-TV, AND ROOTOPEX in Pabna and Rajshahi districts.

### 4.3 Final Proposal Fertilizer Standardization sent to Ministry of Agriculture:

1. Sent a proposal to the Ministry of Agriculture regarding the quality of Flora (Nitrobenzene-20%) fertilizer (PGR).
2. Deliver a PRIME PLUS proposal to the Ministry of Agriculture in order to assess the PGR's quality.
3. Regarding the standardization of PGR named Primapen 40 SL. Sent the proposal to the Ministry of Agriculture.
4. Submit a SUPER GOLD grade proposal for PGR to the Ministry of Agriculture.
5. Sent a proposal to the Ministry of Agriculture to determine the quality of PGR named BEST HUMIC BOOSTER.
6. Made a suggestion on the quality of New Green Organic Fertilizer, an organic fertilizer, to the Ministry of Agriculture.
7. Sent a proposal to the Ministry of Agriculture regarding the quality of organic fertilizer named Super Compost Sar.
8. Sent a proposal to the Ministry of Agriculture regarding the quality of organic fertilizer named BRRI Organic Fertilizer.
9. Submitted a request for information on the quality of the microbial fertilizer known as Activator (Mixed Biofertilizer) to the Ministry of Agriculture. Tricho-biofertilizer ACI bumper.
10. Sent a proposal to the Ministry of Agriculture regarding its standardization.
11. Made a suggestion on the quality of Hisan Plus (Organic Fertilizer), an organic fertilizer, to the Ministry of Agriculture.
12. Made a request for the standardization of Combo NPK chemical fertilizer to the Ministry of Agriculture.
13. Sent a proposal to the Ministry of Agriculture regarding the standardization of PGR named East Gold.
14. Submitted a request for information on PGR quality, dubbed HUMIC SUPER, to the Ministry of Agriculture.
15. Sent a proposal to the Ministry of Agriculture regarding the quality of the fertilizer named HUMIC STAR (PGR).
16. Provided a recommendation on the quality of PAEL Superhit Jaibo Sar, an organic fertilizer, to the Ministry of Agriculture.
17. Sent a proposal to the Ministry of Agriculture regarding the standardization of PGR named Sea Lion.
18. Gave an observation on the quality of Khagrachhori Joibo Shaar to the Ministry of Agriculture.
19. Sent a proposal to the Ministry of Agriculture regarding the standardization of PGR named Clybio.
20. Sent a proposal to the Ministry of Agriculture regarding the quality of Deen Jaibo Sar.
21. Sent a proposal to the Ministry of Agriculture regarding the standardization of PGR named Flora (Nitrobenzene).

#### 4.4 The Soils Unit Provided Comments to the Ministry of Agriculture on the following aspects:

SL. No.	Theme	Date
01.	Submission of opinions about the Memorandum of Understanding (MoU) between the Ministry of Land of the People's Republic of Bangladesh and the Ministry of Agriculture.	06/08/2023
02.	Submission of viewpoints about the proposed draft Letter of Agreement (LoA) between the Food and Agriculture Organization of the United Nations (FAO) and the Soil Resources Development Institute (SRDI).	27/12/2023
03.	An agreement was signed between the Soil Resources Development Institute (SRDI) and the Australian Centre for International Agricultural Research (ASIR) for the implementation of the project titled Developing and Translating Soil Health Information in Bangladesh with Farmers and Four Farmers to Build Resilient Agricultural Systems.	08/01/2024
04.	Provide remarks about the release of the humic acid and organic fertilizer specifications.	02/06/2024

#### 5. Research Management and Coordination

The unit organized the Annual Research Review and Planning Workshop on Soils Program of NARS institutes. In 2023-2024, the workshop was held at BARC on 27-29 September 2023 with scientific professionals involved in soil and fertilizer management research in the NARS institutes of the country. Research programs conducted in all the NARS institutes during 2022-2023 were reviewed in the workshop. The workshop was divided into seven technical sessions and one recommendation session. The technical sessions were divided into different areas of soil fertility fertilizer management research and environmental issues. Besides reviewing on-going research programs, new research programs proposed for 2023-2024 were also discussed in the workshop. Scientists from different NARS institutes took part in the discussion, contributed, and shared their knowledge, thoughts, and experiences for improvement of the programs and avoiding duplication.



Annual Research Review and Planning Workshop on Soils Program of NARS Institutes in 2023-2024

## 6. Monitoring and Evaluation

The unit is actively involved in the regular monitoring and evaluation program of BARC. Scientists of the Soils Unit worked as team members of the Monitoring and Evaluation teams formed by the Planning and Evaluation Division of BARC. Member Director (NRM) and CSO (Soils) work as the team leader of a monitoring team.

## 7. Training, Workshop, Seminar and Symposia

### 7.1 Training

**Soils Unit, NRM, and BARC conducted training programs on the following aspects:**

- 7.1.1 Conducted training program on **“Use of Fertilizer Inspection Manual”** during 22-24 April 2024. There were 40 participants, and they were mainly from DAE and NARS institutes.
- 7.1.2 Conducted training program on **“Climate Change, Carbon Sequestration, and Adaptation Strategies”** during 14-16 May 2024. There were 40 participants in the training program and they were NARS scientists and DAE officials.



*Training Program on Climate Change, Carbon Sequestration, and Adaptation Strategies*

- 7.1.3 Conducted “Training Program on Use of Fertilizer Recommendation Guide-2024 (1<sup>st</sup> batch)” during 01-03 June 2024. There were 40 participants, and they were mainly from BADC, DAE officials, and NARS scientists.
- 7.1.4 Conducted “Training Program on Use of Fertilizer Recommendation Guide-2024 (2<sup>nd</sup> batch)” during 09-11 June 2024. There were 40 participants, and they were mainly from BADC, DAE officials, and NARS scientists.
- 7.1.5 Conducted “Training Program on Use of Fertilizer Recommendation Guide-2024 (3<sup>rd</sup> batch)” during 24-26 June 2024. There were 40 participants, and they were mainly from BADC, DAE officials, and NARS scientists. The training programme is funded by PARTNER Program.



*Training Program on Use of Fertilizer Recommendation Guide-2024*

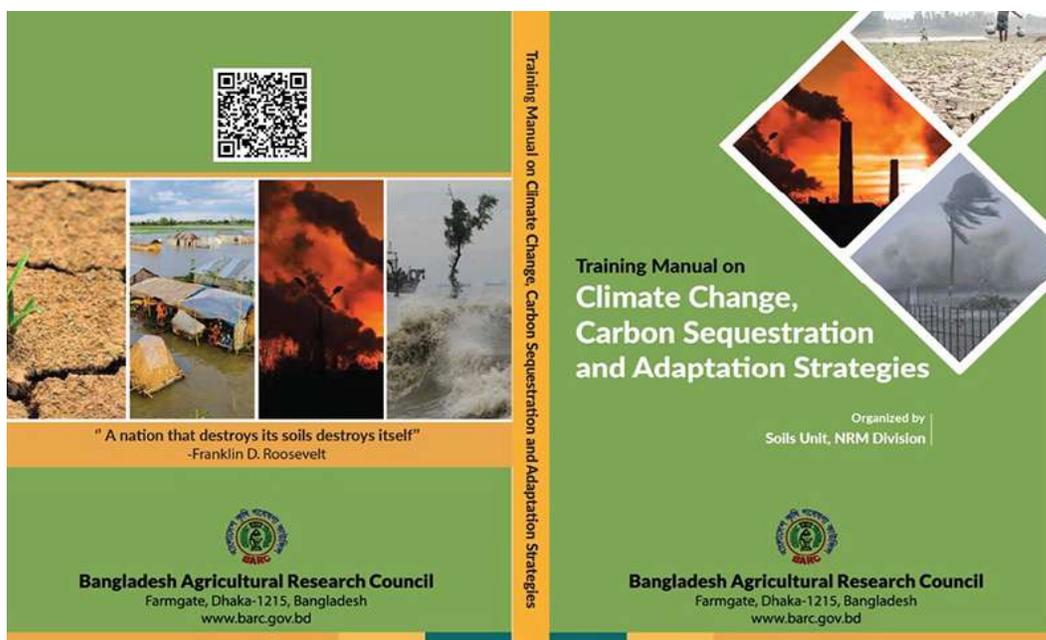
## 7.2 Workshop

**7.2.1** Organized Research Review and Planning Workshop of Soil Management Program of NARS Institutes from 27-29 September 2023. Participants from the Soil Science Division of the NARS Institute (BARI, BRRI, BINA, BJRI, BSRI, BTRI, BFRI, SRDI, CDB, and BSRTI), senior soil scientists, soil experts, professors of soil science from different universities, and DAE officials participated in the workshop. Recommendations for the workshop were sent to respective institutes for integration.

## 8. Publications

Soils Unit published the following documents during 2023-2024.

- 8.1 Published two proceedings of Fertilizer Technical Sub-Committee Meetings.
- 8.2 Published training manuals of the following training programs:
  - 8.2.1 Training program on Climate Change, Carbon Sequestration, and Adaptation Strategies
  - 8.2.2 Training Program on the Use of Fertilizer Inspection Manual
  - 8.2.3 Training Manual on Use of Fertilizer Recommendation Guide-2024



*Training Manual on Climate Change, Carbon Sequestration, and Adaptation Strategies*



## 9. Other Activities

Scientists of the Soils Unit worked as the members of the following committees

- PSO (Soils) has been working as convener of the Organic Fertilizer Factory Investigation Committee.
- Participated as a member/resource person of various committees' meetings, training programs, and development activities organized by ARIs, SRDI, DAE, and NGOs.
- CSO (Soils) has been working as convener and member, respectively of the Fertilizer Inspection Manual amendment committee.
- CSO and PSO (Soils Unit) serve as research supervisors of MS and PhD students of BAU, and BSMRAU.
- CSO and PSO (Soils) served as an external examiner of B.Sc.Ag (Hons.) and MS level examinations of BAU, BSMRAU, PSTU, and SAU.
- CSO and PSO of the Soils Unit served as an MS Soil Science thesis examiner.
- Served as an examiner for PhD of the Department of Soil, Water and Environment of the University of Dhaka and Sher-e-Bangla Agricultural University.
- CSO (Soils) served as a member of the Steering Committee for Establishment of Laboratory of SRDI.
- CSO (Soils) worked as a member Project Management Committee of the Soil Resources Management and Strengthening Farmers Services Project.

## Livestock Division



## LIVESTOCK DIVISION

The Livestock Division is involved in organizing and managing various research and other related activities for developing the livestock sector in Bangladesh. The division is working to achieve the goal of improving the nutritional status of the general mass through cost-effective livestock production for an increased supply of animal-origin food, supporting increased crop production through providing healthy draft animals and biological manure and helping the rural poor in employment generation, income and fuel supply through profitable livestock rearing.

To carry out the mandated responsibilities of BARC and to full-fill the national needs the division is entrusted with the duties of planning, reviewing, prioritizing, approving, monitoring, evaluating, supervising, and coordinating the livestock research programs implemented by the relevant NARS institution and other institutions including universities, Department of Livestock Services (DLS) and NGOs. The division provides training and research support to the NARS institution, DLS, relevant faculties of various educational institutions, and NGOs. The division is imparting policy support to the relevant NARS institutes and extension agencies. The division arranges, conducts, and participates in training, meetings, and seminars/workshops. The division is also engaged in supporting national avian influenza/bird flu prevention and control programs, recruiting scientists/officers in NARS institutes, and supporting different research activities of NARS institutes.

### Name of the professionals

Name	Designation
Dr. Nazmun Nahar Karim	Member-Director
Dr. Mohammad Rafiqul Islam	Chief Scientific Officer
Dr. Ali Akbar Bhuiyan	Principal Scientific Officer
Dr. Md. Masud Rana	Principal Scientific Officer

### 1. Research Program Development of NARS Institutes

A two-day long annual review workshop on 'Research Progress 2022-2023 and Research Program 2023-2024 of Bangladesh Livestock Research Institute' held on 3-4 December 2023 at auditorium-2, Training Building (3<sup>rd</sup> floor), BARC. Participants from different organizations viz., BLRI, DLS, FAO, CVH, CDIL, NIB, different universities, and other organizations attended the workshop. The objectives of the workshop were to review the research progress 2022-2023 and research program development in the fields of health, production, biotechnology, and other areas. All divisional heads of BLRI presented research progress reports for the year 2022-2023 and proposed research programs for the year 2023-2024. Following the presentation, participants, professionals, and a panel of experts gave their valuable comments, suggestions, and guidelines to align the research activities with national demand and priority, which were integrated in the proceeding for improving programs.

- Evaluated final research reports of the projects for 2022 -2023 of BLRI
- Given technical recommendations to prepare future research plans of BLRI for 2023-2024
- Technical support to the research programs of BLRI throughout the year
- Attended the Annual Research Review Workshop 2023 of BLRI

## 2. Project Development/Project Financing

Livestock Division has designed, developed, and submitted a project titled '*Characterization of pathogenic bacteria and antibiotics residues in table eggs, meat, and bovine milk: A Food Safety Concern*' to the cabinet division, Government of Bangladesh during the reporting period in association with Sher-e-Bangla Agricultural University.

## 3. Project Implementation

- i) Livestock division, BARC and Department of Pathology, Sher-e-Bangla Agricultural University has implemented the project '*Clinical investigation of Peste Des Petits Ruminants (PPR) virus in small-ruminants circulating in Bangladesh*' under the Transformative Research Challenge (TRC)'s PPR Special Prize (2022), funded by the *World Food Forum (WFF)* and the *Animal Health* team of the Food and Agriculture Organization of the United Nations (FAO).



*Transformative Research Challenge (TRC)'s PPR Special Prize Winner.*

- ii) Livestock division, BARC and Department of Pathology, Sher-e-Bangla Agricultural University has implemented the project '*Assessment of environmental samples of PPR and FMD in live animal markets in Bangladesh*' under the *Transformative Research Challenge (TRC)'s PPR Special Prize (2023)*, funded by the *World Food Forum (WFF)* and the *Animal Health* team of the Food and Agriculture Organization of the United Nations (FAO).

#### 4. Monitoring and Evaluation of Research Projects

A) Monitoring of the project entitled 'Feasibility Study of the IoT-Based Precision Agriculture for Sustainable Crop Production in Bangladesh' at Bangladesh Agricultural Research Institute.

The division conducted field monitoring of a KGF-funded project titled 'Feasibility Study of the IoT Based Precision Agriculture for Sustainable Crop Production in Bangladesh (TF86/C-21)' at Bangladesh Agricultural Research Institute on 18 July and 10 October 2023. Executive Chairman of BARC, Director General of BARI, Director of KGF, and other high officials visited the experimental field on that day. It has collected updated information on the progress of activities compared with planned activities, problems, and their suggestion/actions needed for the smooth running of the project. We also provided some on-the-spot suggestions regarding project activities for the smooth running of the project.

We conducted field monitoring of a KGF-funded project titled 'Feasibility Study of the IoT Based Precision Agriculture for Sustainable Crop Production in Bangladesh (TF86/C-21)' at Bangladesh Agricultural Research Institute on 11 December 2023. It has collected updated information on the progress of activities compared with planned activities, problems, and their suggestion/actions needed for the smooth running of the project. Provided some on-the-spot suggestions regarding project activities for the smooth running of the project.

Conducted field monitoring of a KGF-funded project entitled 'Feasibility Study of the IoT Based Precision Agriculture for Sustainable Crop Production in Bangladesh (TF86/C-21)' at Bangladesh Agricultural Research Institute on 8 February 2024. The honorable Secretary of Ministry of Agriculture, Executive Chairman of BARC, Director General of Department of Agricultural Extension, Director General of BARI, Joint Secretary of Ministry of Agriculture, Executive Director of KGF, Directors of BARI & KGF, and other resource personnel visited the IoT based eggplant production research field. They provided suggestions regarding project activities and future activities for integration in the future research programs.

##### **B) Monitoring of water-saving technology AWD and increasing use of khamari apps in Boro rice field set up by the Department of Agricultural Extension.**

The division conducted field monitoring of water-saving technology AWD and increased use of khamari apps in Boro rice field on 12 February 2024 at Dohar Upazilla, Dhaka. Collected updated information, and problems and provided suggestions.



Monitoring of Water-saving Technology AWD and use of khamari Apps in Boro Rice Field on 12 February 2024 at Dohar Upazila, Dhaka.

We conducted field monitoring of water-saving technology AWD and increased use of khamari apps in Boro rice field on 18 February 2024 at Sonargoan Upazilla, Narayanganj. We also collected updated information, and problems and provided suggestions.



Monitoring of Water-saving Technology AWD and Use of khamari Apps in Boro Rice Field on 18 February 2024 at Sonargoan Upazilla, Narayanganj.

The division carried out field monitoring of water-saving technology AWD and increased use of khamari apps in Boro rice field on 22 February 2024 at Dhamrai Upazilla, Saturia Upazilla & Manikgonj Sadar Upazilla, Manikgonj. Collected updated information, and problems and provided suggestions.



Monitoring Images of Dhamrai, Manikganj



Monitoring Photos of Saturia, Manikganj

Monitoring of water-saving technology AWD and use of khamari apps in Boro rice field on 22 February 2024 at Dhamrai Upazilla, Saturia Upazilla & Manikgonj Sadar Upazilla, Manikgonj.

We carried out field monitoring of water-saving technology AWD and increased use of khamari apps in Boro rice field on 04 May 2024 at Singra, Natore, and Naldanga, Natore. Collected updated information, and problems and provided suggestions.



Monitoring of Water-saving Technology AWD and Use of Khamari Apps in Boro Rice Field on 04 May 2024 at Singra and Naldanga Upazilla, Natore.

It has conducted field monitoring of water-saving technology AWD and increased use of khamari apps in Boro rice field on 06 May 2024 at Naogaon Sadar and Raninagar Upazila, Naogaon. Collected updated information, and problems and provided suggestions.



Monitoring of Water-saving Technology AWD and Use of Khamari Apps in Boro Rice Field on 06 May 2024 at Naogaon Sadar and Raninagar Upazila, Naogaon, Naogaon.

## 5. National and International Collaborations

### **i) International ACIAR Salinity Futures Symposium at Can Tho University in Vietnam.**

Dr. Nazmun Nahar Karim, Member Director (Livestock) participated in the International ACIAR Salinity Futures Symposium which was held at Can Tho University in Vietnam from 3 to 7 March 2024. In the symposium, participants discussed synergies, research gaps, addressing salinity challenges, policy implications, the role of a future salinity network, and implications for ACIAR and future research endeavors. This symposium served as a platform for scientists and stakeholders from the three projects which are funded by the Australian Centre for International Agricultural Research (ACIAR) in the Ganges Delta, Mekong Delta, and Indus Delta, along with experts from Australia

### **ii) Bangladesh Agricultural Research Council and International Water Management Institute signed a MoU at the InterContinental Hotel, Dhaka.**

BARC and the International Water Management Institute (IWMI) signed BARC-IWMI MoU at the InterContinental Hotel, Dhaka on 24 March 2024. Dr. Nazmun Nahar Karim, Member Director (Livestock) participated in the event and also attended as a Panel Speaker in the technical session on “Needs and opportunities in the water sector in Bangladesh”.

### **iii) Global Science-Policy Forum Meeting on Socially Inclusive Solar Irrigation Systems at Kathmandu, Nepal.**

Dr. Nazmun Nahar Karim, Member Director (Livestock) participated in the Global Science-Policy Forum: Socially Inclusive Solar Irrigation Systems which was held in Kathmandu, Nepal during 24-26 April 2024. International Water Management Institute (IWMI) and its partners organized a three-day Global Forum as a part of its Swiss Agency for Development and Cooperation (SDC) funded project titled ‘Solar Irrigation for Agricultural Resilience in South Asia (SoLAR)’. About 150 participants from across the world participated in this forum. The key objectives of the forum were to (i) Demonstrate key lessons learned from South Asia on the effectiveness of solar irrigation as a viable strategy for sustainable agri-food systems (ii) Provide a platform for policymakers, public and private sector partners, and scientists to exchange ideas and experiences on key barriers and opportunities in the uptake of solar irrigation taking gender and social inclusion into consideration (iii) Share innovative ideas and strategies for supporting south-south collaboration to suitably scale equitable and inclusive solar irrigation globally, including ideas for future research. Dr. Nazmun Nahar Karim attended as a Panelist in the High-Level Plenary Session 2 entitled ‘Barriers and Opportunities for Financing and Scaling Technology and Innovation for Promoting Solarized Agri-Food Systems’ on 25 April 2024.

### **iv) ACASA Meeting "Livestock Risk and Adaptation Workshop" New Delhi, India.**

Atlas of Climatic Adaptation in South Asian Agriculture (ACASA) organized on ‘Livestock Risk and Adaptation Workshop’ held on 21-23 May 2024, in New Delhi, India. In the inaugural session, the welcome speech was delivered by Dr. Pramod Aggarwal, BISA-CIMMYT, Delhi, India, and explained the workshop theme and detailed outline of the workshop. Participants from Bangladesh, India, Nepal, and Sri Lanka were introduced to each other. After the

introduction, Dr. Phillip K Thornton, Flagship Leader and Principal Scientist for Livestock, University of Edinburgh, UK presented his remarks on Global overview of risk assessment in livestock. Then country wise summary on Climate risks for livestock in South Asia was presented by the delegates of different South Asian countries. From Bangladesh team, based on the results of our national workshop, three delegates presented their results. Dr. Ali Akbar Bhuiyan, Principal Scientific Officer, BARC, Dhaka, delivered one presentation on 'Hazard, Exposure and Vulnerability in Sheep and Goat: Bangladesh'.

**v) Presentation of research articles/keynote papers by the scientist(s) in different programs.**

One Key Note paper was presented by Dr. Mohammad Rafiqul Islam, CSO, Livestock Division, BARC titled "Smart Bangladesh: Contribution of Livestock, Challenges and Opportunities" at 5th AHCAB International Expo, 30 November-02 December 2023, Dhaka.



*Photos of Key Note Paper Presentation at 5<sup>th</sup> AHCAB International Expo, 2023.*

**vi) Linkage with national organizations**

**a. The Scientist of the Division Participated as Resource Speaker in Various Training Courses**

**b. Scientists of Livestock division actively worked in the different Committees:**

1. Acted as a member of the National Avian Influenza control Committee, DLS.
2. Acted as an Academic Council Member for Sylhet Agricultural University.
3. Acted as a member of the Committee on Market value assessment for BARC.
4. Acted as a member of the Antimicrobial Resistance Sectorial Working Group, DLS.
5. Acted as a member of the National PPR control Committee, DLS.
6. Acted as an External examiner for different universities.
7. Acted as MS thesis evaluator and co-supervisor.
8. Worked as a member of the different committees of BARC.
9. Worked as a member of the Editorial Board of Bangladesh Journal of Agriculture (BJA).
10. Attended meetings/seminars/workshops/training programs organized by BARC.
11. Worked as a member of the recruitment committee of BLRI, BIRTAN, LDDP, and other projects.

12. Worked as a member of the recruitment committee of BLRI Promotion Committee-2.
13. Worked as a member of the BLRI Technology Evaluation Committee.
14. Worked as a member of the BLRI Technical program evaluation Committee.
15. Acted as member of the selection committee for research and Innovation Sub-project, LDDP, DLS.
16. Worked as a member of the different committees of PIU-BARC.
17. Worked as a technical member for research projects evaluation of BARC/KGF/PARTNER project and other organizations.

## 6. Workshop/Meeting/Seminar

### i) Annual Review Workshop on 'Research Progress 2022-2023 and Research Program 2023-2024 of Bangladesh Livestock Research Institute'

The division organized Annual Review Workshop on 'Research Progress 2022-2023 and Research Program 2023-2024 of Bangladesh Livestock Research Institute' held during 3-4 December 2023, BARC. Participants from different organizations like DLS, BLRI, FAO, CVH, CDIL, NIB, ICDDRDB, KGF, PIU-BARC, universities, and other organizations attended in the workshop. In the inaugural session, The Executive Chairman of BARC was present as Chief Guest while Dr. Nazmun Nahar Karim, Member Director, Livestock Division, BARC presided over the session. Dr. SM Jahangir Hossain, Director General of BLRI, and Dr. Nasrin Sultana, Director (Research), of BLRI were present as special guests. Welcome address was delivered by Dr. Mohammad Rafiqul Islam, Chief Scientific Officer, Livestock Division, BARC. He briefed about the recommendations of last year's annual review workshop. Technical Session 1 was chaired by Dr. Nazmun Nahar Karim, Member Director, Livestock Division, BARC, and Technical Session 2 by Dr. Kazi M Kamaruddin, Former Chief Scientific Officer, Livestock Division, BARC, and Technical session-3 was chaired by Dr. Md. Mosharraf Uddin Molla, Member Director, AERS Division, BARC. The Research progress 2022-2023 and Research Program 2023-2024 were presented by Head of Animal Health Research Division, Animal Production Research Division, Poultry Production Research Division, Goat and Sheep Production Research Division, Biotechnology Division, Socio-Economic Research Division, System Research Division of BLRI. The presentations were followed by lively discussions. The concluding session was graced by the Executive Chairman, BARC. In the concluding session, the rapporteurs were presented with their report. Draft recommendations were made in this session. At the end, Member Director, Livestock, BARC concluded the annual workshop by thanking to the participants for their spontaneous contribution. Proceedings of the workshop have been sent to respected institutions for necessary actions.

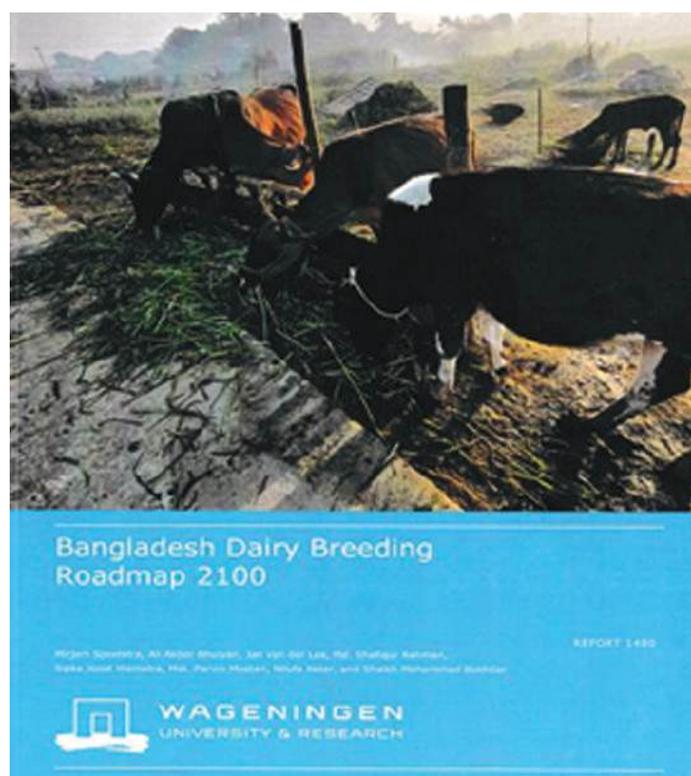


*Pictorial View of the Annual Review Workshop on 'Research Progress 2022-2023 Research Program 2023-2024 of BLRI'*

## **ii) International Workshop on the 'Development of Bangladesh Dairy Breeding Roadmap-2100' at Bangladesh Agricultural Research Council.**

Livestock Division, Bangladesh Agricultural Research Council (BARC) organized a workshop on 'Draft Dairy Breeding Roadmap for Bangladesh' held on 11 March 2024 at BARC. Thereafter, BARC and Wageningen Livestock Research (WLR), Netherlands, compiled "Bangladesh Dairy Breeding Roadmap-2100" funded by Ministry of Agriculture under the project "Development of a dairy breeding roadmap for Bangladesh" according to the work plan of the "Framework Agreement of Wageningen University and Research (WUR), Netherlands and Ministry of Agriculture (MOA), Bangladesh".

The Bangladesh Dairy Breeding Roadmap-2100 is aimed accelerating efforts to support the dairy sector in contributing to key goals of the nation: to minimize the shortage of nutritious milk and dairy products for consumers across Bangladesh, to enhance the export of dairy products, and to produce these products long-term in a climate-resilient and environment-friendly way. Achieving these goals requires a robust and ambitious strategy that employs science and technology to yield dramatic positive impacts on the dairy sector across the country. The Dairy Breeding Roadmap steering group, led by the Dairy Development Board, BARC, DLS, and BLRI, is working collaboratively with the wider dairy sector to develop plans and work programs that demonstrate the economic, social, and environmental credentials of the dairy sector to key policymakers, in particular focusing on the development of suitable dairy breeds that can help the dairy sector achieve its contribution to national food and nutrition security.



*Bangladesh Dairy Breeding Roadmap-2100*

Wageningen Livestock Research from The Netherlands was approached by Ministry of Agriculture to develop a dairy breeding roadmap that will enhance the performance of genetic resources of dairy animals in Bangladesh and the accessibility of improved breeding stock, aiming to facilitate overall improvements at the farm level and along the dairy value chain.



*Pictorial view of the workshop on 'Development of Dairy Breeding Roadmap for Bangladesh.*

### **iii) Project Closing Workshop on 'IoT-based precision agriculture for sustainable crop production in Bangladesh (TF-86/C-21)' at Bangladesh Agricultural Research Council.**

The division organized Project Closing Workshop on Feasibility Study of the IoT base precision agriculture for sustainable crop production in Bangladesh (TF-86/C-21) BARC on 25 June 2024 with the participation of the National Agricultural Research System (BARI, BRRI), Department of Agricultural Extension (DAE), Institute of Water Modeling (IWM), Krishi Gobeshona Foundation (KGF), different government and private Universities, etc. The project aimed to develop and test the IoT-based machine learning precision agriculture systems for predicting fertilizer, water, and pesticide use at field conditions for improving crop productivity.

Dr. Mohammad Rashedul Haque, Co-Principal Investigator of the project presented the progress report on behalf of the coordinator. This workshop was chaired by Dr. Nazmun Nahar Karim, Member Director (Livestock), and Coordinator (TF-86/C-21), BARC. The Executive Chairman, BARC conducted the technical session and delivered his valuable speech as chief guest.

## **7. Training Program**

### **i) Training Program on 'The Fourth Industrial Revolution and Potential Application in Livestock Sector' at Bangladesh Agricultural Research Council.**

The division organized a training program titled 'The Fourth Industrial Revolution and Potential Application in Livestock Sector' held during 25-27 September 2023 (1st Batch) and 28-30 April 2024 (2nd Batch) at BARC. In the training program, forty (40) scientists, officers, and teachers from NARS and other institutes (BARC, BLRI, DLS, BAU, SAU, BSMRAU, ACI, APS, YTC, PKSF, Lal Teer Livestock Ltd., NIB and BIRTAN) participated in the training. In the inaugural session, The Executive Chairman, BARC was present as Chief Guest, and the session was chaired by Dr. Nazmun Nahar Karim, Member Director, Livestock Division, BARC. The welcome remarks in the session were delivered by Dr. Mohammad Rafiqul Islam, Chief Scientific Officer, Livestock Division, BARC, and Dr. Ali Akbar Bhuiyan, Principal Scientific Officer, Livestock Division, BARC, coordinated the training. Nine resource persons have successfully conducted lectures on the Fourth Industrial Revolution (4IR) implementation in agriculture: Bangladesh's preparedness, Big data application in sustainable livestock and poultry production in Bangladesh, Tracing and traceability in GMP of livestock and poultry industries using blockchain and other digital technologies, Internet of Things (IoT) based sensors and their application in livestock and poultry production, IOT based cattle shed monitoring and transformation of veterinary services through 4IR technologies, Artificial intelligence (AI) and Cloud Computing for climate-smart livestock and poultry production, Drone for counting and monitoring livestock in the field, IoT-based anaerobic digestion and biogas utilization prediction, Ammonia (NH<sub>3</sub>) and Methane (CH<sub>4</sub>) emission monitoring system in livestock industry and Impact-based smart weather advisory services for livestock and poultry industries. After successful completion of the training program, certificates were awarded to the participants.



*Photos of 1<sup>st</sup> Batch 4IR Training Program*



*'The Fourth Industrial Revolution and Potential Application in Livestock Sector'*

**ii) Training Program on 'Quality and Safety in Livestock Source Food (Milk, Meat and Egg) production and Value adding to facilitate export' at Bangladesh Agricultural Research Council.**

The division organized a training Program on 'Quality and Safety in Livestock Source Food (Milk, Meat and Egg) Production and Value adding to Facilitate Export' from 30-31 January to 01 February 2024 at Auditorium-2 (3rd Floor), Training building, BARC. Thirty officers from BARC, BLRI, BAU, SAU, NIB, BSMRAU, ACI, BRAC, BIRTAN, and other private and public organizations were present as participants in the training. In the inaugural session, The Executive Chairman, BARC was present as Chief Guest, and the session was presided over by Dr. Nazmun Nahar Karim, Member Director, Livestock Division, BARC. The welcome address in the inaugural session was given to Dr. Mohammad Rafiqul Islam, Chief Scientific Officer, Livestock Division, BARC, and Dr. Ali Akbar Bhuiyan, Principal Scientific Officer, Livestock Division, BARC, coordinated the training. In the training program, theoretical sessions were successfully conducted by different resource persons of the relevant field of expertise on Agricultural transformation, Food safety issues, Ensuring the quality and safe food production, Contamination and adulteration of livestock source products, Collection, Handling, Preservation, Transportation, Marketing, Value chain and value addition of livestock products, Export and import guidelines of livestock feed and products. After completing the training program, certificates were offered among the participants.



*'Quality and Safety in Livestock Source Food (Milk, Meat and Egg) Production and Value Adding to Facilitate Export*

### **iii) Advanced training Program on 'Bioinformatics for Sustainable Development in Agriculture' at Bangladesh Agricultural Research Council.**

Livestock Division organized an advanced training on 'Bioinformatics for Sustainable Development in Agriculture' from 11 to 15 February 2024 at the Computer Lab of Computer and GIS Unit, BARC, Farmgate, Dhaka. In this training program, scientists from BARC, BLRI, BARI, BFRI, BSRI, BJRI, BINA, DLS, and teachers from Gono Bishwabidyalay, and SAU were present as participants. In the inaugural session, The Executive Chairman, BARC was present as Chief Guest, while Dr. Nazmun Nahar Karim, Member Director, (Livestock), BARC presided over the session. In the training program, five theoretical and twenty hands-on training sessions were successfully conducted by different resource persons on the Advancement and transformation of agriculture in Bangladesh, Bioinformatics for Sustainable Agriculture, and Bioinformatics Database. Introduction to NCBI, Ensembl, and TAIR database, Genomic analyses, Transcriptomic analyses, Phylogenetic analysis, Metabolomics analysis, Integration of genomic and proteomic analysis for drug discovery, Toxicogenomics analysis for drug discovery, Use of common bioinformatics tools, Nanotechnology, Next generation sequencing (NGS) tools and their use in agriculture. After completion of the training program, certificates were handed over to the participants.



*Moments of the Bioinformatics Training Program*

#### **iv) Training Program on 'Genome Editing for Sustainable Development in Agriculture Bangladesh Agricultural Research Council.**

The division organized a training Program on 'Genome Editing for Sustainable Development in Agriculture' held on 19-21 May 2024 at Auditorium-2 (3<sup>rd</sup> Floor), Training building, BARC, Dhaka to introduce the genome editing knowledge in agriculture for the NARS scientists and academicians of different universities. In the training program, scientists from BARC, BLRI, BARI, BSRI, BJRI, BINA, and LRI and teachers from BAU, BSMRAU, and SAU were present as participants. In the inaugural session, the Executive Chairman, BARC was present as Chief Guest, while Dr. Nazmun Nahar Karim, Member Director, Livestock Division, BARC presided over the session. In the training program, fifteen theoretical training sessions were successfully conducted by different resource persons on the Introduction of Genome Editing, Application and General Aspects, Standard Operating Procedures for Research and Release of Genome Edited Plants in Bangladesh, Concepts, Mechanisms, Methods, and Applications of RNA Editing and RNAi, Zinc Finger Nucleases, Transcription Activator-like Effector Nucleases, CRISPR-Cas Technology, Microbiology-Mediated End Joining, Transposon-Mediated Genome Editing, Base Editing, Protein-Enabled Gene Editing, Epigenome Editing and Homology-Independent Targeted Integration. After completion of the training program, certificates were distributed among the participants.

#### **v) Training workshop on 'Cloud computing data analytics and datacube technology for Earth Observation applications' at Bangladesh Agricultural Research Council.**

A 5-day-long training course on 'cloud computing data analytics and datacube technology for Earth Observation applications' organized by the Bangladesh Agricultural Research Council was held at the Conference Room, Training Building, BARC from 02-06 June 2024. The objectives of the training workshop are to empower practical skills in EO and cloud computing with an introduction to cloud-computing concepts, data, and tools for EO including the use of the CSIRO EASI platform for advanced and scalable data analytics. The objective was also to discuss and co-design a collaborative data/knowledge integration platform that will enable the efficient and scalable use of Earth Observation (EO) to tackle Bangladesh's environmental and socioeconomic challenges. Over the course of the workshop, participants were engaged in a dynamic blend of presentations, hands-on exploration of the Earth Analytics Science and Innovation (EASI) platform, and brainstorming sessions to achieve the objectives.

Eleven participants (having experiences in remote sensing and programming language) from BARC, BARI, BRRI, and DAE attended the training. Two renowned remote sensing scientists from CSIRO, Australia delivered lectures on different topics, focusing on earth observation techniques in rice mapping, water resources management, etc. The Executive Chairman of BARC delivered his valuable speech as chief guest in the inaugural session. Dr. Nazmun Nahar Karim, MD (Livestock), BARC presided over the inaugural session. In the closing session, Dr. Nazmun Nahar Karim, MD (Livestock) was present as the chief guest and offered certificates to the trainees, followed by a concluding remarks.

**vi) Training Program on 'Good Livestock Husbandry Practices in Bangladesh' at Bangladesh Agricultural Research Council.**

The division arranged a training Program on 'Good Livestock Husbandry Practices in Bangladesh' during 24 to 26 June 2024 at BARC. In the training program, twenty-five scientist officers and teachers from NARS and other institutes from BARC, BLRI, SAU, BSMRAU, ACI, BRAC, and other private and public organizations participated. In the inaugural session of the training, The Executive Chairman of BARC chaired as a chief guest, while Dr. Nazmun Nahar Karim, Member Director, Livestock Division, BARC presided over the session. Dr. Mohammad Rafiqul Islam, Chief Scientific Officer, Livestock Division, BARC, delivered a welcome address in the inaugural session. Dr. Ali Akbar Bhuiyan, Principal Scientific Officer, Livestock Division, BARC, coordinated the training. Ten resource persons successfully conducted training lectures on Importance of Good Livestock Husbandry Practices in Bangladesh, Good Livestock Husbandry Practices in Dairy Production, Beef Production, Buffalo Production, Poultry Production, Goat and Sheep Production, Value Addition, Value Chain and Supply Chain Management of Livestock Source Food Marketing, Milk Processing, Preservation, Packaging and Marketing, Marketing, Meat Processing, Preservation, Packaging and Marketing, Egg Processing, Preservation, Packaging and Marketing, Livestock Slaughter, Examination, Meat Preservation and Transportation, Contamination and Adulteration Issues in Quality and Safety Livestock Source Food Production, Management, Prevention, Treatment and Control of Livestock Diseases, Livestock Welfare and Responsibilities of Farm Owner and Livestock Enterprises in accordance with 'Animal Welfare Act-2019' of Bangladesh. After completion of the training program, certificates were awarded to the participants.



*Pictorial Moments of the 'Good Livestock Husbandry Practices in Bangladesh'*

## 9. Publications

1. Contributed to publish BARC Annual Report (2022-23).
2. Contributed to publish BARC Newsletter (2023-24).
3. Published a training manual on 'The Fourth Industrial Revolution and Potential Application in Livestock Sector' September 2023 and April 2024.
4. Published a training manual on 'Quality and Safety in Livestock Source Food (Milk, Meat and Egg) Production and Value Adding to Facilitate Export' February 2024.
5. Published a training manual on 'Bioinformatics for Sustainable Development in Agriculture' in February 2024.
6. Published a training manual on 'Genome Editing for Sustainable Development in Agriculture' in May 2024.
7. Published a training manual on 'Good Livestock Husbandry Practices in Bangladesh' in June 2024.
8. Published a popular article by Dr. Mohammad Rafiqul Islam, CSO, Livestock Division, BARC entitled 'Contribution of Livestock to build Smart Bangladesh' A Development of Review Magazine: The Win, December 2023.
9. Published a popular article by Dr. Mohammad Rafiqul Islam, CSO, Livestock Division, BARC entitled "Smart Bangladesh: Contribution, Challenges and Opportunities of Livestock Sector" at World Veterinary Day, April 2024.

### 9.1. Scientific Publications

- i. Hossain, M.A.; M. A. Hoque, M.A.; Kamar, S.S.A.; M. A. Rahman, M.A.; **Karim, N.N.**; Islam, M.S.; T. Ashraf T.; Jahan, N.; Kader, M.A. (2024) Prospects of Solar Pump for Irrigation and Household Applications for Climate Resilience in the Coastal Region of Bangladesh. *International Journal of Environment and Climate Change*, 14(3): 508-519.
- ii. Asmaul Husna, A.; Md. Masudur Rahman, M.M.; Badruzzaman, A.T.M.; **Islam, M.R.**; Md. Tanvir Rahman, M.T.; Jahangir Alam, J.; Sikder, M.H.; Ashour, H.M. (2023). Extended-Spectrum-Lactamases (ESBL): Challenges and Opportunities. *Biomedicines*, 11, 2937. DOI: <https://doi.org/10.3390/biomedicines11112937>.
- iii. Ahamed, T.; Sultana, P.; Rahman, M.Z.; Bose, P.; **Islam M.R.**; Khatun, M.M.; Islam, M.A. (2023). Protection of Khaki Campbell Ducks against Duck Plague Using an Inactivated Duck Plague Vaccine. *World Vet. J.*, 13 (2): 332-340. DOI: <https://dx.doi.org/10.54203/scil.2023.wvj36>.

## 10. Regular/Routine Activities

Regular/routine activities performed by the scientists of the livestock division are enumerated as follows:

- I. Written speeches for the high officials of BARC and MoA for different national and international events.

- II. Acted as a member/member secretary in different committees formed for observing national and international days (World Food Day, national Independence Day, National Victory Day, etc.).
- III. Acted as rapporteurs in different workshops conducted by BARC and the MoA.
- IV. Preparation of proceedings of different meetings and seminars.
- V. Actively participated in different workshops/seminars organized by different divisions/units of BARC, and other national and international organizations.
- VI. Attended project workshops (inception, review, and completion) arranged by different Divisions/Units of BARC and other organizations.

## Agricultural Economics and Rural Sociology Division



## AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY DIVISION

Agricultural Economics and Rural Sociology (AERS) division is one of the most important divisions of BARC dealing with socio-economic aspects of crops, forecasting and demand-supply, market analysis/economy, and strategic policy formulation in various ways as and when asked by the Ministry of Agriculture. Various pertinent research programs are either developed solely or in coordination followed by implementation. Also, research progress and programs of NARS institutes are reviewed regularly in order to coordinate research without duplication. The professionals working for the division are listed below.

### Name of the Professionals

Name	Designation
Dr. Md. Mosharraf Uddin Molla	Member Director (C.C.) and Chief Scientific Officer
Dr. Md Abdus Salam	Principal Scientific Officer (Deputation)
Dr. Md. Shofiqul Islam	Principal Scientific Officer
Md. Sazzadur Rahman Sarker	Principal Scientific Officer (A.C.)

**During the reporting, a wide variety of activities were done by the scientists of the division as below.**

### 1. Project Development/Financing

- Preference and feedback study for GAP protocol and other proposed research at the farm level
- Input and output analysis of rice and wheat cultivation in Bangladesh
- Institute of Agricultural Economists Bangladesh (IAEB) establishment project

### 2. Policy Level Contribution

#### I. Policy Document

- Prepared draft policy document on the action plan for LDC graduation in the agriculture sector

#### II. Comments Provided

- Agricultural Product Processing Policy 2023
- Export Policy 2021-2024
- Import Policy Order 2021-2024

#### III. Provide Information and Input

- Proposed Bangladesh-Japan Economic Partnership Agreement (EPA)
- South Asian Subregional Economic Cooperation (SASEC) Subgroups Terms of Reference (TOR)
- Bangladesh-Sri Lanka Preferential Trade Agreement (BS-PTA)
- Potential Challenges Arising from the Graduation from LDC (Least Developed Country) Status

- Doha Programme of Action for the Least Developed Countries for the Decade 2022-2031 (DPoA)
- Virtual Mini Ministerial Meeting on Agriculture Negotiation
- Bangladesh Cross-Border Paperless Trade Roadmap
- Discussions of the 2nd Meeting of the Working Group between Bangladesh and Singapore
- Bangladesh-Japan Public-Private Joint Economic Dialogue (PPED)
- Bangladesh Economic Review 2024
- 15th Meeting of the Bangladesh-China Joint Economic Commission
- Bilateral Cooperation in Agriculture and Agricultural Processing between Bangladesh and Canada
- 80th Session of the Economic and Social Commission for Asia and the Pacific (ESCAP)

### 3. Research Management/Financial Management and Coordination

#### Preference and feedback study of GAP protocol validation project

- Research management activities of GAP protocol validation project were conducted in FY 2023-24 which was funded by the PARTNER project, BARC part.
- Pre-testing of the survey questionnaires of eight different GAP validation crop plots namely mango, brinjal, bottle gourd, pointed gourd, yardlong bean, jackfruit, guava, and papaya was completed after the field visits.
- Feedback meeting held with the concerned working scientists of the project.



Crop: Bottle Gourd, Location: Dhamrai, Dhaka



Crop: Mango, Location: Nachole, Chapai Nawabganj



Location: Chandina, Comilla, Crop: Yardlong Bean



Crop: Brinjal, Location: Shibpur, Narsingdi



Crop: Pointed Gourd, Location: Sadar, Jashore



Crop: Jackfruit, Location: Bhaluka, Mymensingh



Crop: Guava, Location: Godagari, Rajshahi



Crop: Papaya, Location: Atghoria, Pabna

### Preference and feedback study of farming system project

- Preference and feedback analysis of the farming system project was conducted from 08 June to 14 June 2024.
- Questionnaire pre-testing was completed in three different locations during the field visit.

### Preference and Feedback Study of Agroforestry Project

- Preference and feedback study of agroforestry project activities was conducted during 25-27 May and 05-07 June 2024.
- Questionnaire pre-testing was conducted in three different locations during the field visit.



Experimental Plot and Questionnaire Pre-testing of Agro-forestry Project



#### 4. Monitoring, Reviewing, and Evaluation Reports of Program /Activities of NARS Institutes

##### (a) Monitoring activities

- Monitored validation activities of GAP unit and other proposed research of the PARTNER project through Activity 8.1.3.8.



Monitoring Activities of GAP Protocol Validation Project

#### 5. Research Program Development Of NARS/ Associates Institutes

Contributed to research program development of BINA, BLRI & BSMRAU as an expert member/session chair.

- Participated in the “Long Term Research Review Workshop” as session chairman in the Technical Session-1 which focused on socio-economic, rural development, and agro-processing. The workshop was organized by Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU), Gazipur. The progress report of four research projects was presented in Technical Session 1. The session chairman provided necessary suggestions to improve the project activities.



Participation in the Long-term Research Review Workshop Organized by BSMRAU

- ii) Participated in the “Annual Research Program Review 2024-2025” as an expert member in the Technical Session-10 which focused on socio-economic research. The workshop was organized by Bangladesh Institute of Nuclear Agriculture (BINA), Mymensingh. The progress report of agricultural economics division of BINA was presented in the session. The expert member provided necessary suggestions to improve the proposed research activities of BINA.
- iii) Participated in the research program on “Availability and price volatility of poultry meat and eggs in Bangladesh” as an expert member. The program was organized by Bangladesh Livestock Research Institute (BLRI), Savar, Dhaka. The expert member provided necessary suggestions to improve the research program which was organized by socio-economic research division of BLRI.

## 6. Training, Workshop, and Seminars (Foreign and Local) Organized Workshop

### i. **Review Workshop:** Review of Socio-Economic Research Programs of NARS Institutes

The annual review workshop on *Socio-economic Research Program (2023-24) and Future Research Program (2024-25)* of NARS Institutes” was held at BARC, Farmgate, Dhaka on 27 June 2024 organized by Agricultural Economics & Rural Sociology (AERS) Division, BARC. Executive Chairman, BARC was the Chief Guest in the inaugural session. Dr. Md. Mosharraf Uddin Molla, Member Director (AERS), BARC, presided over the session. Dr. Md. Abdus Salam, PSO (AERS), BARC made a welcome presentation on the implementation status of recommendations of last year’s workshop. The session chair welcomed all and stated the workshop's aims, highlighting the importance of this review workshop, which is part of the Annual Performance Agreement (APA) of BARC.

In total 85 participants including scientists, professors, agriculture experts, and delegates attended the workshop from different research organizations, universities, and private sectors. The present and future research activities were presented by the Head or nominee of the related division of five NARS institutes (BARI, BRRI, BINA, BSRI, BLRI & BFRI) in the technical session. The first technical session was presided over by Dr. A.S.M. Anwarul Huq, former Director General, BJRI, and the second by Prof. Dr. Jahangir Alam Khan, former Director General, BLRI. Five expert reviewers namely Dr. S.M. Fakhurul Islam, Professor (retired), Department of Agricultural Economics, BSMRAU, Gazipur, Dr. S M Khalilur Rahman, Former Member Director (AERS), BARC, Dr. Md. Shahe Alam, Professor (adjunct), BSMRAU, Gazipur, Dr. B A A Mustafi, Former Director (Admin and CS), BRRI, Gazipur, and Prof. Dr. Mohammad Mizanul Haque Kazal, Department of Development and Poverty Studies, SAU, Dhaka, have reviewed the presented research program critically.



*Annual Review Workshop on Socio-Economic Research Programs of NARS Institutes*

Participating NARS institutes also spoke on the implementation status of the previous year's comments on their research programs. According to the supplied documents Agricultural Economics Division, BARI has implemented overall 83% of the comments. Agricultural Economics Division of BRRI has implemented an average of 81.7% of the comments. Agricultural Economics Division of BINA has adopted 80% of the comments on their previous year's research programs. Besides, BLRI and BSRI have implemented on average 70 and 81.7% of the comments respectively, made by the expert reviewers last year.

**ii. Workshop: National Budget 2024-25: Agriculture Perspective**

A workshop on "National Budget 2024-25 Analysis: Agriculture and Agricultural Development Perspective" was organized at BARC on 26 June 2024. The Resource Speaker was Dr. Md. Abdus Salam, Principal Scientific Officer (AERS), BARC. All the scientists and officers of BARC participated in the workshop.



Workshop on National Budget 2024-25

## Training

### i) Training on the Application of Econometric Model for Socioeconomic Research

A five-day long training programme on *Application of Econometric Model for Socioeconomic Research* was held during 03-07 March 2024 at Computer Lab., BARC organized by AERS Division. The Resource Speakers were the Professors from Sher-e-Bangla Agricultural University, Dhaka. Twenty participants (Agricultural Economist) from NARS Institutes (fifteen participants from BARI, BRRI, BSRI, BLRI, and BFRI) and agricultural universities (five participants from Sylhet Agricultural University and Sher-e-Bangla Agricultural University) attended the training programme. Dr. Md. Abdus Salam, Member Director (Crops), BARC was the Chief Guest at the concluding session and handed over the certificates among the participants.



Training on the Application of Econometric Model for Socioeconomic Research

This training aimed to enable the participants to understand the importance of data analysis and learn about the application of different analytical techniques in social research; to develop an understanding of the importance of scientific writing; to learn the process of

writing scientific articles for journals; to be able to select right journal for publishing article. The overall objective of the course is to improve the knowledge and analytical skills of scientists in the application of quantitative and qualitative methods for scientific paper writing. The scientists themselves applied the method using a data set provided for the purpose. They also developed their skill in the operation of software packages such as STATA, Eviews, and R software.

## **ii) Training on Orientation on Public-Private Partnership in Agriculture (2 Batches)**

Two batches day-long training programme on *Orientation on Public Private Partnership in Agriculture* were held on 28 November 2023 and 09 May 2024, respectively at Public Private Partnership (PPP) authority, Agargaon, Dhaka organized by AERS Division of BARC. The Resource Speakers were the higher officials of the Public Private Partnership (PPP) authority, Agargaon, Dhaka. In total 60 participants (30 participants in each batch) attended the training programmes covering both public and private organizations working in the agriculture sector.

This training aims to enable the participants to understand the importance of PPP projects in the agriculture sector; explore the prospects and major challenges of the PPP project; understand the partnership framework; learn the PPP project development process and to be able to submit the PPP project systematically. The overall objective of the course is to align the stakeholders with the goals, processes, and expectations of the partnership and to improve the knowledge and analytical skills of the stakeholders to develop PPP projects in the agriculture sector.

## **iii) Training on Forecasting Methods for Agricultural Data Analysis**

A five-day long training programme on *Forecasting Methods for Agricultural Data Analysis* was held during 09-13 June 2024 at Computer Lab., BARC organized by AERS Division. The resource speakers were the Professors from Bangladesh Agricultural University, Mymensingh. Twenty-five participants (Agricultural Economist) from NARS Institutes (sixteen participants from BARI, BSRI, BLRI, and BFRI) and agricultural universities (nine participants from Sher-e-Bangla Agricultural University, Bangabandhu Sheikh Mujibur Rahman Agricultural University, and Sylhet Agricultural University) attended the training programme. The Executive Chairman, BARC was the Chief Guest at the concluding session and handed over the certificates among the participants.

This training aimed to enable the participants to understand the importance of agricultural data forecasting and learn about the fundamentals of forecasting in agricultural research; to develop an understanding of scenario and pattern analysis of agricultural data; and to be able to select suitable methods for time series data analysis. The overall objective of the course is to improve decision-making in agriculture, optimizing resource use, and enhancing productivity. The scientists themselves applied the method using a data set provided for the purpose. They also developed their skill in the operation of software packages such as STATA, SPSS, Eviews, and R software.

## 7. Training, Workshop, and Seminar (Foreign and Local)

### Stakeholder Workshop

Presented A keynote on “Agricultural Exports from Bangladesh: Challenges and Way Forward” organized by Ministry of Commerce, GoB, under a Stakeholder Workshop titled ‘LDC Graduation and Implementation of Action Plan: Export of Agro Products: Challenges and way Forward’ held on 26 November 2023 at BARC, Farmgate, Dhaka.

## 8. National and International Linkage (MoU/Bilateral/Agreement/ Collaborative Work Plan Signed During the Year. Highlights of Activities Undertaken Under the MoU/Agreement, etc.)

Contribute to formulating an international linkage between Wageningen Research Foundation (WR) business units Agrosystems Research and Field Crops and BARC for creating a roadmap for market-oriented and smart vegetable production in Bangladesh.

## 9. Publication by the Division/ Section in Different Journal /Media

### Journal article

1. Bokhtiar, S. M., Islam, S. M. F., **Molla, M. M. U., Salam, M. A.,** & Rashid, M. A. (2023). Demand for and supply of pulses and oil crops in Bangladesh: A strategic projection for these food item outlooks by 2030 and 2050. *Sustainability*, 15(10), 8240.
2. Bokhtiar, S. M., Islam, S. M. F., **Molla, M. M. U., Salam, M. A.,** & Rashid, M. A. (2023). Towards Sustainable Enhanced Rice Production for Meeting Food Grain Self-sufficiency: A Strategic Food Outlooks of Bangladesh by 2030 And 2050. *International Journal for Multidisciplinary Research*, 5(6), 1-16.
3. Biswas, R., **Molla, M. M. U.,** Faisal-E- Alam, M., Zonayet, M., & Castanho, R. A. (2022). Profitability analysis and input use efficiency of maize cultivation in selected areas of Bangladesh. *Land*, 12(1), 23.

## 10. Regular Activities

- Worked as a member of BJRI board, member of Executive Council, BARC, Tender Evaluation Committee, Recruitment Committee, Investigation Committee, Receiving Committee (goods), etc.
- Acted as an Expert Member of Socio-economic Research Review Workshop of NARS institutes.
- Performed as an Expert Evaluator of different projects under KGF-BKGET
- Participation in the Inter-Ministerial Committee of MoA for estimating the cost of production of paddy, rice, and wheat
- Participation in the Agricultural Price Advisory Committee to estimate minimum price
- Participation in procurement activities of the SACP project of DAM
- Annual Report 2023-24 of AERS division was prepared

## 11. Other Activities

- Scientists of the division worked as reviewers of scientific journals
- The scientist of the division worked as supervisor and examiner of MS Thesis

## 12. Research Highlights on Annual Research Report for FY 2023-24

### a) Preference and Feedback Study For GAP Protocol and Other Proposed Research at the Farm Level

BARC set up a research team as well as an advisory committee with renowned agricultural economists of National Agricultural Research System (NARS) to conduct the preference and feedback study for GAP protocol and other proposed research. The AERS division of BARC conducted pre-testing of the survey questionnaire during FY 2023-2024 in different project implementation areas in order to know the insights into farmers' attitudes towards the protocols, including their perceived benefits and challenges funded by PARTNER project, BARC part.

The pre-testing was done through face-to-face interviews. The feedback study is designed to reveal the barriers to implementing recommended practices, such as lack of resources, insufficient training, or resistance to change. Identifying these barriers allows for targeted interventions, such as providing additional support or resources, that can facilitate the adoption of new practices. Conversely, the feedback study would also uncover opportunities for innovation or improvement. For instance, if farmers report that a certain practice yields better results than those suggested in the protocol, this insight can lead to the refinement of the protocol to incorporate these new findings. By ensuring that protocols are practical, relevant, and aligned with farmers' needs, the study contributes to more effective and sustainable agricultural practices. Proposed research at the farm level, including experimental trials, participatory research, and technology integration, further enhanced our understanding of how protocols perform in real-world conditions and offers opportunities for continuous improvement.

## COMPUTER AND GIS UNIT

The major responsibilities of the unit involve overall management of Information and Communication Technology (ICT) related activities in view of hardware, software, networking, etc. The ultimate goal is to establish BARC as the information hub of NARS so that the overall agricultural research system becomes strengthened and robust in terms of information accessibility, confidentiality, integrity, availability, dissemination, etc. through online systems to cater information needs of the stakeholders in the agriculture sector. This unit plays a vital role in establishing/strengthening ICT infrastructure to facilitate MIS-related activities/services among NARS institutes. The unit is also involved in assessing the needs of computer hardware, software, and network equipment, preparing technical specifications for procurement of the goods/accessories, evaluating technical proposals, receiving and distributing ICT goods, etc. It provides support for the troubleshooting of hardware, software, network, internet/email, d-nothi, and related services for the smooth running of the system. In addition to that, it conducts various ICT-based capacity-building trainings, workshops, and seminars for the personnel of BARC and NARS institutes. Besides, the unit conducts a lot of other activities such as preparation of progress reports, need assessment, review, and evaluation of research programs, recruiting of computer personnel, etc. Personnel of the unit are also working in the innovation team and 4IR implementation of BARC.

Geographic Information System (GIS) is another important functional part of the unit. Providing regular and ad-hoc basis cartographic support is a routine job of this unit. Maintenance, necessary updating, and output preparation of the Agroecological Zone (AEZ), land resources database, and local level Upazila Nirdeshika database (soil, land, nutrition, and others) is an ongoing activity of the unit. Land suitability assessment and crop zoning in Bangladesh is another important activity of the GIS unit which has been carried out since 2017.

Innovation and e-Governance, Service Process Simplification (SPS), Service Digitalization, etc., activities are led by the Computer and GIS unit as a regular job. This unit administers d-Nothi system of BARC, updates and uploads files to the website, and provides various inputs and reports to Ministry of Agriculture (MoA) and other organizations. Moreover, the unit has worked in the formulation/ implementation of different ICT and GIS-based national, international, and regional projects and programs since inception. Some examples are ARMP, NATP-1, NATP-2, AFACI-ATIN, AgMIP, ARMIS, Drought Monitoring, Crop Zoning, ACASA, LiDAR, etc.

### Name of the Professionals

Name	Designation
Hasan Md. Hamidur Rahman	Director
Hasan Mahmud	Senior System Analyst
Md. Hanif	System Analyst
Mst. Deloara Khushi	Programmer (resigned)
Al-Helal	Programmer
Rashedul Islam	Data Entry Officer
Md. Nura. Alam Uzzal	Data Entry Officer

**The activities carried out by the professionals during the reporting years are as follows:**

## **1. Project Proposal Development**

Developed two project proposals during the period:

- I. A Development Project Proposal (DPP) has been prepared for a project titled “GIS-based Crop Zoning System of Bangladesh” having an estimated budget of 48.62 crore BDT.
- II. Developed the budget for the Data Management component of the project “Establishment of Bangabandhu - Pierre Elliot Trudeau Agricultural Technology Center (BP-ATC) Project” Data Management Component of GIFS Project.

## **2. Project Implementation**

### **I. Development of Upazila Land Suitability Assessment & Crop Zoning System of Bangladesh**

During the period from July 2023 to June 2024, crop suitability assessment and zoning have been completed for 55 upazilas. In the meanwhile, 420 out of 495 upazilas have been completed. The important activities performed during the period are mentioned below:

- a. Compilation and editing/updating soil chemical data of 55 upazilas have been completed. The soil chemical data are Nitrogen (N), Phosphorus (P), Potassium (K), Sulphur (S), Zinc (Zn), Boron (B), Calcium (Ca), Magnesium (Mg), Ferus (Fe), Copper (Cu), Manganese (Mn), soil reaction (pH), Organic matter (OM), Soil Salinity along with soil series, sample number, land type and soil texture. The soil fertility status data is used for preparing fertilizer recommendations for crops/cropping patterns.
- b. Reviewing cropland-specific and union-based fertilizer recommendation outputs for correcting anomalies in analytical data of soil samples collected from different upazilas.
- c. The information related to crop varieties, crop management, production technology, etc. required for the crop zoning study has been gathered, compiled, edited, and documented both in Bangla and English. The information was uploaded to the agri-advisory portal ([www.cropzoning.gov.bd](http://www.cropzoning.gov.bd)).
- d. Socio-economic data editing and economic profitability analysis of cropping patterns have been completed for 10 upazilas. Till now cropping pattern-wise profitability analysis for 442 upazilas has been completed.
- e. Economic profitability indicators in terms of gross margin and BCR were calculated for 76 crops in 3 (three) upazilas. At present the economic profitability indicator of 76 crops for 361 upazilas has been completed. The economic profitability indicators of crops are used for evaluating the best crop/ cropping pattern to give an option to the farmers to choose which crop to grow.
- f. The compilation and uploading of upazila-wise dominant cropping patterns into the crop zoning database was done for 491 upazilas. It serves the vital purpose of providing cropping pattern-based fertilizer recommendations to farmers.

- g. Updating of upazila soil and landform map has been completed for 47 (forty-seven) upazila.
- h. Upazila wise updated land use map has been prepared using satellite imagery. During the reporting period, the updated land use map has been prepared for 54 (fifty-four) upazilas.
- i. The updating of pourashava (ward), union, and mauza boundary has been carried out for 7 (seven) upazilas. Small area atlas maps of BBS, BBS Geocodes, National Window Portal, and LGED Digital Maps have been reviewed to adjust the administrative boundary.
- j. The geocode and name of division, district, upazila, union, and mouza both in Bangla Unicode and English have been updated as required for the crop zoning study. During the reporting period, updating has been done for 283 upazilas.
- k. Land and soil properties map layers i.e. Land Type, Land Relief, Soil Texture, Soil Consistency, Soil Drainage, Soil Moisture, Water Recession, Soil Salinity and Soil pH required for suitability assessment of crop(s) have been prepared for 42 upazilas. At present the land and soil properties map layers for 397 upazilas have been prepared.
- l. Agro-climatic map layers required for the suitability assessment of crop(s) have been prepared for 42 upazilas.
- m. The weather data was extracted based on the BMD observation and globally available grid data. During the period daily maximum and minimum temperature, rainfall, relative humidity, cloud coverage, and wind data have been prepared for each of the 64 districts for the period of 1981-2022.
- n. During the period demonstration trials were carried out at 12 locations for T. Aman rice for validation of fertilizer recommendations provided through 'Khamari' mobile app. The trials were conducted by NARS Institute. One field day was organized in Dhonbari upazila of Tangail district where the Honorable Minister of Ministry of Agriculture was present.
- o. Coordinated activities related to demonstrating trials conducted for Boro rice by DAE in 60 upazilas using the 'Khamari' mobile app for fertilizer recommendations and water-saving AWD technology.
- p. Conducted training on 'Khamari' mobile app at 70 upazilas for agriculture extension officers, farmers, and input providers. In total 3,045 persons were trained of which 2,590 were male and 455 were female participants. Many important improvements on CZIS and 'Khamari' apps have taken place based on the user feedback gathered from the training.
- q. During this period, many features were added to 'Khamari' mobile app. Some of the features are (1) Cropping pattern-based fertilizer recommendation; (2) Save searched outputs and share; (3) "Soil properties" for displaying important soil characteristics and nutrient status information of a land parcel; (4) Links to websites, videos, call center, infographics related to different useful agricultural services.
- r. During the reporting period, the crop zoning dashboard has been overhauled. The dashboard of the crop zoning system has been developed for quick and easy access to

information. The users will be able to access information on crop suitability, land use, cropping pattern with profitability, crop zone, etc. in the form of a map, table, and chart instantly by upazila, district, division, country.

- s. The development of CZIS software, crop zoning dashboard, 'Khamari' mobile app, and agri-advisory portal in terms of adding new features, enhancement of existing features, improvement of the user interface, fixing bugs, etc. is ongoing.
- t. During the reporting period, 8 (eight) workshops were conducted. In total 803 participated in those workshops of which 695 were male and 108 were female participants.
- u. One workshop is organized to review the results of the demonstration set up on 'Khamari' mobile app for balanced fertilizer use and extension of Water Saving (AWD) technology in Boro rice in the 2023-24 rabi season. The Honorable Secretary Ministry of Agriculture was present as a Chief Guest of the workshop.
- v. Prepared Half Yearly Report for the period from February 2023 to July 2023 and submitted to KGF.

## **II. Implementation of "Atlas of Climate Adaptation in South Asian Agriculture (ACASA)" Project**

During the reporting period (July 2023 to June 2024) various activities including data collection on diverse parameters, Systematic Literature Review (SLR), risk and statistical analysis, organizing workshops and seminars have been implemented under ACASA project. The important activities performed during the period are summarized below:

### **Progress Report:**

- a. Appointed four project personnel as per the approved plan.
- b. Collected climate data by stations, soil series data, crop-coefficient data, and standard management data from the breeding phase to simulate three prominent crop models namely DSSAT, APSIM, and InfoCrop.
- c. Compiled agricultural data for ten commodities (e.g., rice, wheat, maize) over 64 districts from 1990-2021. The data includes Granular Area, Production, Yield, Management, and Cost of Cultivation. This data compilation aims to analyze long-term trends and climatic impacts on crop yields and production. Despite challenges due to district boundary changes, data standardization was achieved using scientific methods. Farm management data collection is ongoing.
- d. Prepared a database of 103 Climate Adaptation Projects in the agricultural sector of Bangladesh, sourced from various organizations.
- e. A systematic risk analysis using IPCC methodology was conducted for ten commodities using gridded climate and soil data from 1961 to 2020. The high-resolution data allows for localized assessments, aiding in devising adaptation strategies.
- f. Conducted an SLR on climate-agriculture relationships in South Asia, particularly focusing on rice. The review follows the PRISMA process and includes bibliometric and meta-analysis, ensuring methodological rigor.

- g. Created a regional database identifying key climatic risks for agricultural commodities through literature review and expert opinions. The database will inform region-specific adaptation solutions.
- h. Statistical/Econometric Analysis has been steered to identify relationships between climatic risks, impacts, and adaptation solutions using econometric models like Fixed Effect Model (FEM) and Random Effect Model (REM). Initial models developed for wheat in the Dinajpur region depict relationships between climatic variables and agricultural outcomes. The next steps include cost-benefit analysis using household survey data.
- i. Arranged four workshops with commodity-specific scientists from NARS organizations to collect commodity-specific hazard and adaptation data. Afterward, two more workshops were arranged to validate risk and hazard, adaptation, and vulnerability outputs to further process the result for the crop and livestock sector.

### **III. Implementation of “Piloting Light Detection and Ranging Technology (LiDAR) for Fast-tracking Agricultural Transformation and Sustainable Development” Project**

A project titled “Piloting Light Detection and Ranging Technology (LiDAR) for Fast-tracking Agricultural Transformation and Sustainable Development” has been under implementation. MoA, FAO, and BARC are working as the sponsoring ministry, implementing agency, and executing agency respectively. In this project, DAE, SPARRO, SRDI, and SoB are working as collaborating agencies. The main objective of the project is to establish a working group and a consortium of resource partners and technical partners towards the acquisition of national LiDAR datasets that benefit multiple sectors; and to build capacity for utilization of and clearly demonstrate LiDAR benefits to the agricultural sectors, thus helping the Government to develop a sustainable model for financing LiDAR.

#### **Progress Report**

- a. A basic training session on Light Detection and Ranging (LiDAR) Technology was conducted at the BARC on March 3-4, 2024.
- b. The Working Group (WG) meeting for the "Piloting Light Detection and Ranging (LiDAR) Technology for Fast-tracking Agricultural Transformation and Sustainable Development" project was held at the BARC on February 8, 2024.
- c. Awarded the contract to Global Survey Consultants through a tender process for data collection in Delduar Upazila of Tangail District.
- d. A test run of drone-based LiDAR survey has already been conducted in Purbachal, Dhaka.
- e. A 10-day foreign training program was held at AIT in Thailand.

### 3. Policy Level Contribution

The unit plays an important role in giving opinions and feedback upon ICT-related policy level issues asked from MoA from time to time. During the period, following opinions are sent to MoA:

- a) Opinion on "Digital Trade Authority Act 2023" to MoA.
- b) Smart Bangladesh Task Force-related report to MoA.
- c) Opinion & feedback provided on Integrate Digital Service Delivery Platform (IDSDP) to MoA.
- d) Innovation activities report of BARC (quarterly, half-yearly, and yearly) according to Innovation work plan 2023-2024 to MoA.
- e) Monthly/quarterly d-Nothi reports to MoA.
- f) Monthly website update/upload reports to MoA.
- g) Quarterly APA, integrity report sent to planning division, BARC.
- h) Smart Bangladesh work plan report to MoA.

### 4. Research Management/ Financial Management and Coordination

The director (Computer and GIS) has been working as the Principal Investigator (PI) of the Crop zoning project since 2017. He also has been working as PI of the ACASA project since 2023. As the project's principal investigator, he was responsible for project management and budgetary matters that complied with financial standards.

### 5. Organized Training, Workshop, and Seminar

#### 1) Training on "Cyber Security"

The training programme was held on 14 November 2023 at BARC. One day Training Program had 70 Participants among them 62 participants were male while 08 participants were female.

#### 2) Training on d-Nothi for Officers

Training on D-nothi, the updated version of e-nothi, was held on 4 and 5 December 2023 in two batches at BARC computer training lab. The Computer and GIS Unit organized the training. A total of 30 BARC scientists and officers attended the training in each batch.

#### 3) Training on d-Nothi for Staffs

Two hands-on training sessions on e-Filing and IT skill enhancement for staff were conducted on December 6 and 7, 2023. A total of 46 BARC staff participated in the program, which was divided into two batches.

#### 4) Training on the Utilization and Management of the Integrated Digital Service Delivery Platform (IDSDP)

Two hands-on training sessions on the Integrated Digital Service Delivery Platform (IDSDP) were conducted in BARC's Computer & GIS lab during January 28-29, 2024. In total 64 BARC scientists and officers participated in the training program, in two batches.

### **5) Training on GIS & Remote Sensing for Smart Agriculture**

The basic GIS & Remote Sensing training program for smart agriculture took place at BARC's Computer & GIS Unit lab from June 2 to 6, 2024. The training was attended by 25 scientists and officers from various institutes and organizations in the agriculture sector.

### **6) “Deconstruction Smart Bangladesh” - 1<sup>st</sup> Workshop**

The Computer & GIS Unit of BARC organized a day-long workshop on the Deconstruction of Smart Bangladesh. The workshop was taken place on 30 November 2023 at BARC premises. In total 64 scientists and officers of the council attended the program.

### **7) Workshop on “Validation of Dataset for Data Standardization and Interoperability for Smart Agriculture”**

BARC, with technical support from a2i, organized a series of six workshops aimed at creating an agro-data ecosystem through the “Workshop on Validation of Dataset for Data Standardization and Interoperability for Smart Agriculture.” The workshop series included participation from various agricultural institutions, focusing on drafting and analyzing 34 dataset schemas. To validate these dataset schemas, a two-day workshop was held at BARC on April 29-30, 2024, with notable attendees including the Honorable Secretary of the Coordination and Reform Division and the Honorable Secretary of the ICT Division.

### **8) “Smart Bangladesh” - 2<sup>nd</sup> Workshop**

The 2nd Workshop on "Smart Bangladesh" took place at BARC on May 9th, 2024, organized by BARC's Computer & GIS Unit. The workshop was attended by 70 scientists and officers from BARC.

### **9) Workshop on “Innovation Showcasing” at BARC**

The workshop on “Innovation Showcasing” took place at BARC on June 9th 2024, organized by BARC's Computer & GIS Unit. The workshop was attended by 83 scientists and officers from BARC. The main objective of the workshop was to present and discuss the innovations developed by BARC.

### **10) Workshop on “Newspaper Clipping & Report Management” at BARC**

The workshop on “Newspaper Clipping & Report Management” software was held on 10 June 2024 at BARC training building, organized by BARC's Computer & GIS Unit. The workshop was attended by 83 scientists/officers from BARC. In this training, the software developed by Computer & GIS unit of BARC was demonstrated to the participants.

## 6. Attended Training, Workshop and Seminar

The personnel of the unit attended various meetings/seminars/workshops under different capacity-building events at BARC and other organizations during this period. Some of those are focal point meetings and workshops, PCR workshops, stakeholder workshops, GIS and Remote sensing-related workshops, research review workshops, APA-related training, etc.

## 7. Transferable Technology

A GIS based mobile app '**Khamari**' was developed and promoted under crop zoning project during this period. Several training in field-level stakeholders including farmers, traders, and extension personnel was conducted with 3,045 personnel were being trained during this financial year.

## 8. National and International Linkages

Mr. Hasan Md. Hamidur Rahman, Director (Computer & GIS), and Mr. Hasan Mahmud, Senior System Analyst participated the "ACASA Spatial Crop Modelling Workshop" held in Sri Lanka during 16-18 January 2024. Six participants from BARC, BARI, and BRRI also attended the program as representatives from Bangladesh. Two officials of this unit also attended the Annual Project Review and Planning Meeting (2023) of the ACASA project held in Kathmandu, Nepal from 12-14 December 2023.

## 9. Other Activities

### I. Server and Network Operation

- a) Updated the firmware of the core switches and installed a new virus detection signature in the firewall.
- b) Email account creation of newly recruited professionals in the new platform. Smooth access and availability of internet service were ensured throughout the year.
- c) Procured and installed cloud-based antivirus Bit Defender (150 users) in desktop computers, laptops, workstations, and servers of BARC centrally for the protection of computers from viruses, spyware, adware, ransomware, or malware.
- d) SSL/TLS certificate installed for BARC & cropzoning website.
- e) The installation of Access Points at BARC has been completed, enhancing wireless connectivity and overall network performance. A total of 40 Access Points were strategically installed across designated areas within the BARC premises. This upgrade significantly supports ongoing initiatives to strengthen digital infrastructure, ensuring improved communication and seamless data access for scientists, officers, and staff members. As a result, the entire BARC facility is now seamlessly connected to the WiFi network, fostering enhanced operational efficiency and collaboration.
- f) Shifted two fiber connectivity in suitable locations of Finance Building and Admin building. Cable dressing, tagging & labeling were done in the main building, training building, and AIC building.
- g) BARC has implemented backup Internet connectivity through BdREN, bolstering operational resilience.

## **II. Maintain & Update Zoom License and Host Virtual Meetings using bdREN Platform**

Received eight Zoom users with 300 participants license each from BdREN as supplementary service for membership subscription. Created more than 50 meetings during this period and provided technical support to host and manage the virtual events.

## **III. Implementation of “Development of Upazila Land Suitability Assessment & Crop Zoning System of Bangladesh” Project**

During the period from July 2023 to June 2024, crop suitability assessment and zoning have been completed for 55 upazilas. In the meanwhile, 420 out of 495 upazilas have been completed.

## **IV. Data Standardization & Interoperability Activity in Collaboration with a2i**

BARC, with technical support from a2i, organized six workshops aimed at creating an agro-data ecosystem through the “Workshop on Validation of Dataset for Data Standardization and Interoperability for Smart Agriculture.” A notable three-day long workshop was held at the National Agriculture Training Academy (NATA) on June 18-20, 2023, where the Hon’ble Secretary of the Ministry of Agriculture provided online guidance on preparing draft dataset schema and metadata. The workshop series included participation from various agricultural institutions, focusing drafting and analyzing 34 dataset schemas. To validate these dataset schemas, a two-day workshop arranged at BARC on April 29-30, 2024. This event saw the participation of the Honorable Secretary of the Coordination and Reform Division and the Honorable Secretary of the ICT Division, among other notable attendees. Discussions during the workshop covered the current state of data standardization, technical aspects, and future actions. The outcome of these discussions led to the successful validation of the datasets, highlighting the importance of a unified data standard and data interoperability for agricultural development. The validated dataset schemas are to be published and promptly uploaded to the Bangladesh National Digital Architecture (BNDA) website, ensuring their proper use and sustainability. This initiative underscores the critical role of data standardization and interoperability in the development of the ‘Khamari’ mobile app, which aims to provide comprehensive agricultural services to farmers. The workshops and the subsequent validation of the dataset schemas are pivotal steps toward enhancing national capacity for climate-resilient and sustainable agricultural development in Bangladesh.

## **V. Database and Apps Development**

- a) The updated version of the ‘Khamari’ app is uploaded to the Google Play Store. The current version is 6.4.
- b) The Personnel Data Sheet (PDS) application has been upgraded to version 5.0 from the earlier version 4.0.
- c) New users request approval of different online applications of BARC as a routine job.

## **VI. Uploading, Updating and Maintenance of BARC Website**

- a) A new feature (event calendar) of our national web portal was explored and implemented for BARC.

- b) A new section for Good Agricultural Practices (GAP) was designed and necessary documents were also uploaded.
- c) A new menu item was added for the information of the retired chairman, MD, and other high officials.
- d) Anchoring of NATP website was done along with uploading project-related important documents to the main site.
- e) BARC web portal (www.barc.gov.bd) was being updated regularly based on data received from different sections/units/divisions. Files were uploaded and pages were updated on a regular basis. The website structure was changed several times as per the instructions from MoA.
- f) Website upload and update reports were sent to MoA, BARC administration, and APA focal point within the 7<sup>th</sup> day of each month as well as quarterly basis. During this period 1,416 files were uploaded and 147 pages were updated.

## **VII. d-Nothi Administration and Support**

- a) Successfully completed the journey of transition from the legacy e-Filing system to the new d-Nothi system.
- b) Collaborated with BCC professionals to update/create positions in BARC's d-Nothi system.
- c) Conducted d-Nothi administration tasks like user creation, updates, deletions for recruits, etc.
- d) Generated d-Nothi reports in prescribed formats, disseminated to MoA, BARC administration, and APA focal points on a monthly and quarterly basis.
- e) Provided technical support for d-Nothi operations to scientists, officers, and staff across divisions, units, and sections.
- f) There are currently 71 users in the BARC d-Nothi system and a total of 643 d-Nothi cases were completed in the reporting year.

## **VIII. Functioning of BARC's Innovation Team**

Director (Computer & GIS) has been working as an Innovation Officer of BARC since 2013. In 2023, BARC's innovative "Newspaper Clipping" initiative, designed to facilitate the search for agriculture-related news published in newspapers, earned a prestigious 2nd award among 17 organizations and institutions.

### **Progress:**

- a) Prepared Innovation work plan-2024-2025, and Innovation Report-2023-2024 with the help of innovation team members.
- b) Conducted four workshops for all BARC scientists/officers.
- c) Conducted four Innovation team meetings.
- d) Conducted other activities according to the Innovation work plan 2023-2024 with the help of innovation team members.

- e) Launched a new innovative idea of “Online Report Management” for our all divisions and units.

## **IX. Report/Opinion to MoA and Other Organizations**

During this period, the following ICT-related reports/documents were prepared and sent to related organizations:

- a) Opinion on “ডিজিটাল বাণিজ্য কর্তৃপক্ষ আইন ২০২৩” to MoA
- b) Smart Bangladesh Task Force-related report to MoA
- c) Opinion & feedback provided on Integrate Digital Service Delivery Platform (IDSDP) to MoA.
- d) Innovation activities report of BARC (quarterly, half-yearly, and yearly) according to Innovation work plan 2023-2024 to MoA.
- e) Monthly/quarterly d-Nothi reports to MoA.
- f) Monthly website update/upload reports to MoA.
- g) Quarterly APA, integrity report sent to planning division, BARC.
- h) Smart Bangladesh work plan report to MoA

## **X. Climate Database Update**

The daily weather data for the year 2022 was purchased from BMD, processed, generated monthly data, and uploaded to the website (<http://apps.barc.gov.bd/climate>).

## **XI. Continuation of GIS Activities**

Maintenance and necessary output preparation of AEZ land resources database and local level Upazila Nirdeshika database (soil, land, nutrition, and others) is an ongoing activity. The AEZ database is being used extensively in current Crop zoning project. Part of this data is also been used in ACASA project.

### **GIS Activity:**

- a) Ongoing maintenance and output preparation of AEZ and Upazila Nirdeshika databases.
- b) Use of AEZ data in crop zoning studies and current projects.
- c) Integration of AEZ data in the ACASA project.
- d) Regular validation and standardization of GIS data.
- e) Collaboration with stakeholders for data updates.
- f) Conducting training sessions and workshops for capacity building.

## **XII. Support to BARC and Different Components of GAP, PARTNER, etc.**

Supports provided to KGF, SAC, GAP team, BPATC & PARTNER project from time to time in the procurement of ICT-related goods, works, and services along with BARC.

### **XIII. Support to Divisions/Units of BARC for Hardware/Software; Data analysis; Information Sharing and Resource Management**

- a) Necessary supports were provided to different divisions/units/sections to fix various types of computer hardware, software, and networking-related problems. QR code generation support is provided to all divisions/units.
- b) Several types of maps such as climate maps, haor region maps, etc. provided to scientists/researchers/ extensionists as per requirement. Besides this, climate data, land and soil data, etc., with their shape files are shared with researchers.

### **XIV. Support for Planning, Budgeting, and Procurement of Computer Resources (Hardware, Software & Accessories, etc.)**

Procured four computers along with other computer accessories like printer, scanner, ups, etc. under revenue budget. Purchased 250 toners centrally for BARC officials.

### **XV. Personal Data Sheet (PDS) Management:**

Personal Data Sheet (PDS) Management system was updated to a new version that promises a more efficient and user-friendly experience for all employees. A letter was issued to request every employee to keep their PDS profile updated. With improved user activation, seamless upgradation, and robust operations and maintenance procedures, the PDS platform aims to enhance data management and security, contributing to a more reliable and effective data management solution. It is also mentioned that BRRI has been utilizing the PDS in full swing since its inception.

### **XVI. Development of Flipbook Platform for e-book Hosting**

The in-house development and release of the Flipbook Platform for e-book hosting has been successfully completed. Notable e-books now available on the platform include:

- i. 100 years of Agricultural Development in Bangladesh
- ii. 100 Agro Technology Atlas
- iii. Agricultural Development for Fragile Ecosystems in Bangladesh
- iv. A Development Trajectory of Bangladesh Agriculture from Food Deficit to Surplus

Link to access flip book: (<http://apps.barc.gov.bd/flipbook/flipbook>)

### **XVII. Khamari Training & Field Monitoring**

With support from the Department of Agricultural Extension (DAE), the verification of fertilizer recommendations provided by the Khamari app was completed for Boro rice demonstration trials across 60 upazilas during the 2023-24 Rabi season. Six officers from the Computer & GIS unit participated in the field monitoring activities in 25 of these upazilas.

## XVIII. Alternate Wetting and Drying (AWD) Field Monitoring

Field demonstrations were conducted for the Alternate Wetting and Drying (AWD) technology under synchronized cultivation carried out in 61 upazilas during the 2023-24 Rabi season. All six officials from the Computer & GIS unit visited the fields.

## XIX. Recruitment of Computer Personnel

Officers of Computer & GIS unit served as expert members of the ICT personnel recruitment of different organizations like MoA, BARC, SAC, BINA, BIRTAN, BARI, DAM, etc. The practical exams of the recruitment were conducted in the Computer Lab of the unit.



Training on "Cyber Security" (14 November, 2023)



Workshop on "Newspaper Clipping & Report Management" at BARC (09 June 2024)

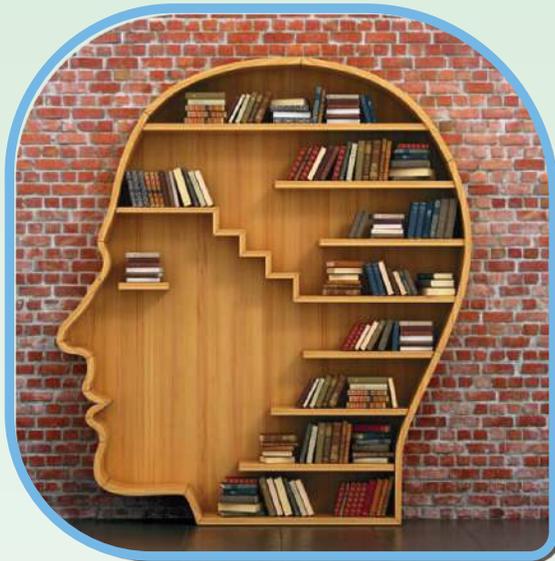


*Participants of the Integrated Digital Service Delivery Platform Training*



*Training on Smart Bangladesh*

# AGRICULTURAL INFORMATION CENTRE



## AGRICULTURAL INFORMATION CENTRE

Agricultural Information Centre (AIC), a knowledge management hub of BARC, is engaged in collecting, organizing and disseminating research information. It renders knowledge services to the stakeholders ranging from researchers to policy makers with a view to enhancing their capacity. This service is aimed to facilitate agricultural productivity. The center works on the principle of providing quality agricultural information in order to accelerate research and development. AIC provides knowledge services to the National Agricultural Research System (NARS) including documentation services. The documents generated in the institutes of NARS and beyond are huge in number subsequently being deposited in the AIC library of BARC. Information in terms of quantity and quality is managed in an institutional repository. AIC maintains two sections: 1. Documentation and Publication, 2. Library and Reprography.

### Name of the Professionals

Name	Designation
Dr. Kabir Uddin Ahmed	Director (A.C)
Dr. Susmita Das	Principal Documentation Officer
Dr. Md. Taibur Rahaman	Principal Librarian (A.C.)
Md. Sazzadur Rahman Sarker	Senior Reprographic Officer
Dr. Mst. Sufara Akhter Banu	Senior Scientific Editor
Md. Saimum Hasan	Information Officer
Mohammad Nazmul Islam	Graphics Designer
Md. Wasiuzzaman	Junior Bibliography Officer

### 1. Documentation and Publications

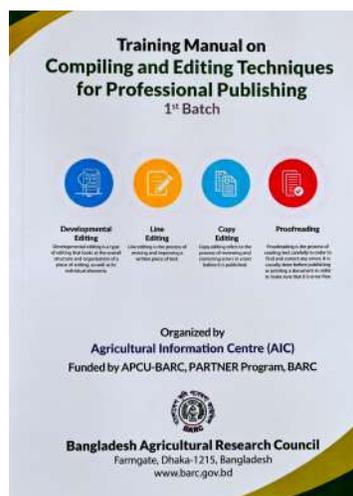
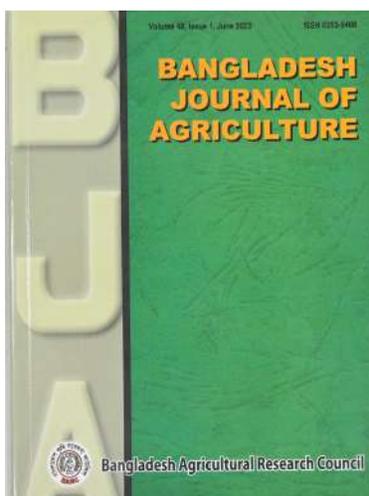
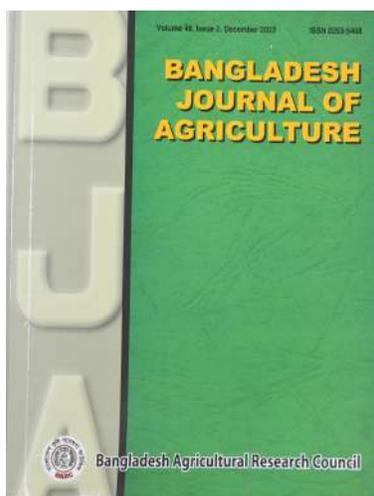
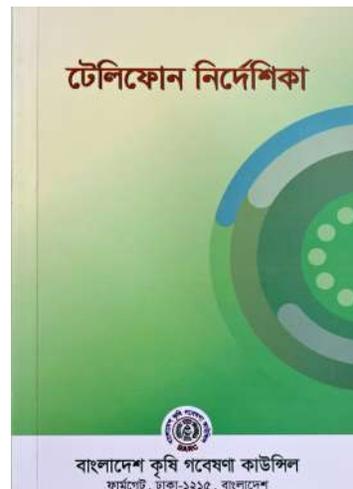
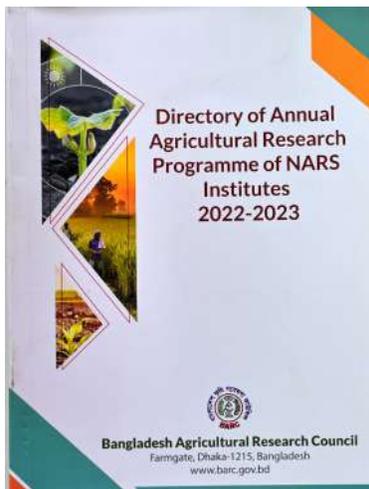
The Centre published the biannual Bangladesh Journal of Agriculture (BJA), Annual Report, Quarterly BARC Newsletter, NARS directory, technical reports, telephone directory, yearly diary, greeting cards, training manual etc. It prepared a good number of reports for Agriculture Standing Committee and question-answers including supplementary, star-marked and non-star marked questions required by the Parliament Sessions and relevant ministers for Parliament Meeting. AIC also organized annual religious and national events through designing and distributing Eid, Bangla and English New Year Greeting Cards, Banner, taken part in advertisement for disseminating scientific information, and designs of different research publications. It monitored different research projects and participants in different National and International seminars, workshops, symposiums and other relevant programs. It was also involved in preparing notes for the events organized by BARC or ministries including guests of different national seminars, workshops, symposiums. The Centre acted as master of ceremonies or facilitator for different national and international seminars, workshops and symposiums.

Besides, information was maintained by AIC in two ways: in the digital databases for easy access for the users and in printed inventory documents available in the library. The center attempted

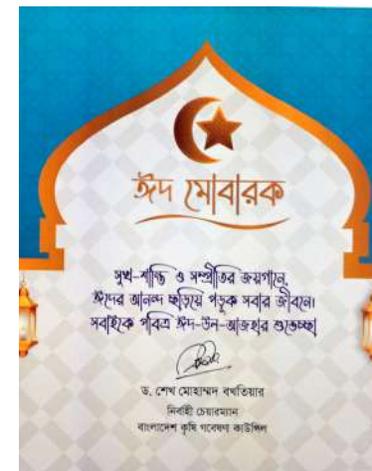
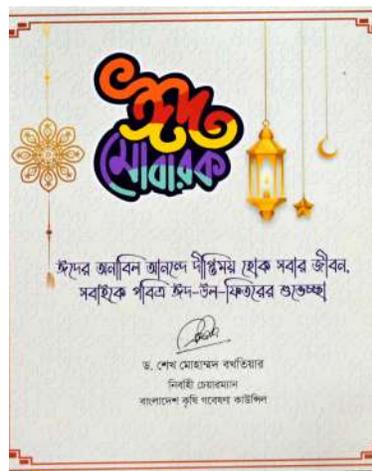
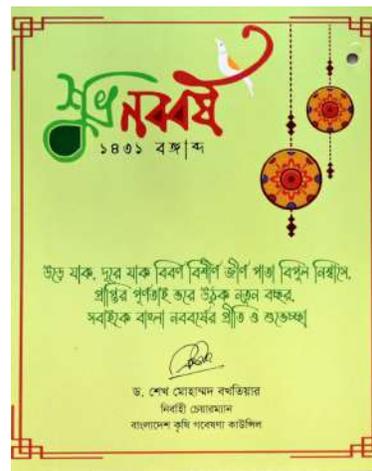
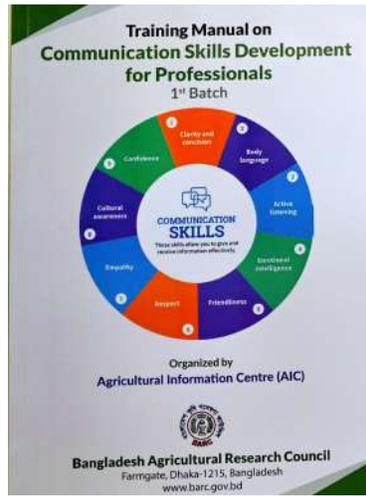
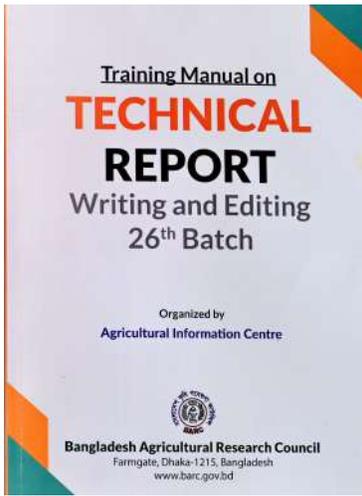
in bringing out the printed inventory of the information resources in series publication. This inventory was hoped to help the users to identify the materials of their interest.

During this period, the following publications were accomplished by AIC

- a. Publication of BARC Annual Report 2022-23
- b. Publication of NARS Directory 2022-23
- c. Publication of BJA Vol: 48(2), December 2023
- d. Publication of BJA Vol: 49(1), June 2024
- e. BARC Newsletter April-June, 2023 (Vol. 21.2)
- f. BARC Newsletter July-September 2023 (Vol. 21.3)
- g. BARC Newsletter October -December 2023 (Vol. 21.4)
- h. BARC Newsletter January-March 2024 (Vol. 22.1)
- i. BARC Calendar 2024
- j. BARC Diary 2024
- k. 3 Training Manuals



Glimpse of Different Publications from AIC



Glimpse of Different Publications from AIC

## **2. Library and Reprography**

This section is responsible for the development of the collection, literature search, update and maintenance of databases, news clipping services, resource exchange & sharing, and photography and photocopy services. Receiving publications from different national and international organizations and providing publications to NARS and other national and international institutes (if requested). This section is dedicated to scientific professionals, graduate students, and policy makers.

AIC devoted considerable efforts and resources to the development of an outstanding library collection to meet the expanding needs of agricultural research and to serve as an information resource center for NARS institutes. AIC library had a total collection of about 25,400 information materials in the form of 21,000 books and reports, pamphlets, and 1,400 bound journals and serials, etc.

### **2.1 Development of Collection**

Every year new books, reports, pamphlets, bound journal, etc., were added in professionally to manners to the existing ones. The AIC library maintained a total collection of about 25,400 information materials in the form of books, reports, pamphlets, bound journals, etc. In the previous year, 1,277 new books and reports were procured and nine current journals/ Newsletters were published and collected by AIC during 2023-24.

### **2.2 Literature Search**

The Centre rendered literature search services from digital full-text using CDS-ISIS and D-space database management to satisfy the queries of the researchers, agricultural scientists, planners, and policy-makers. It also provided search services on specific requests by teachers, students, and users from NARS institutes and other organizations during 2023-24. BARC and NARS scientists, teachers, and students of Universities, NGOs, and private organizational personnel were the users of this library.

### **2.3 Update and Maintenance of Databases**

Agricultural Information Centre updated and maintained the databases of different publications. It had its repository using D-space with a database on Koha 6,622 books and reports of different sorts out of which 411 records were added during the previous year. The database was rich in Journals, Newsletters, and Periodicals of about 1,220 records. A new entry has been added and updated regularly the existing records.

### **2.4 News Clipping Services**

News clippings from daily newspapers both in Bangla and English on different research-related issues or events, programs, and ceremonies related to agriculture were identified and processed in different formats and were circulated to the users for their attention. These had been compiled, and prepared with a content list and finally preserved in the library. 2,744 Articles in Bangla and English were identified, compiled,

mailed to the officers of BARC and uploaded at BARC website. Later, these clippings were compiled with a content list and preserved in the library. One hard copy was prepared and preserved as a reference copy.

## **2.5 Resource Exchange and Sharing**

The AIC library performed resource exchange and sharing activities with national and international organizations during 2023-24 like the previous years. Recently the library has started collecting information materials from FAO, CGIAR Centers, BBS, BANSDOC, and NARS institutes regularly.

## **2.6 Online Archive of Important Documents**

The AIC library developed a database-driven online archive based on Content Management System (CMS) last year. The database contained digital contents of non-conventional documents of high archival value (policy documents, all kinds of reports, proceedings and other mimeographs).

## **2.7 Photography and Photocopy Services**

AIC regularly provides photography and photocopy services to all divisions and units. Last year, it captured photographs of 304 workshops/trainings/seminars/meetings. It also supplied 39,276 photos in digital form to the concerned divisions and officials.

## **2.8 Library and Information Service**

During 2023-24, 1,477 users of different categories used the BARC library. Besides the BARC and NARS scientists, university teachers and students, NGO and private organizational personnel used the library for meeting their queries.

## **3. International Linkage**

Agricultural Information Center, BARC is linked with different international organizations. Dr. Susmita Das, Principal Documentation Officer, AIC, acted as Asia Ambassador of Plan S- an International Expert Group of Open Access Research, a board member of the working group of AgriXiv-a preprint repository for agriculture in India, and a Core Member of YPARD Bangladesh.

### **Attended National Training/Workshop/Seminar**

Dr. Kabir Uddin Ahmed, Director, AIC, and Dr. Susmita Das, attended AIP, BRRI 50 years' Golden Jubilee, National Agriculture Award-2023, World Food Day 2023, programs, etc. The entire AIC officers also attended the World Soil Day 2023, Vegetable Fair 2023, Jackfruit Fair 2024 etc., programs. Dr. Mst. Sufara Akhter Banu, Senior Scientific Editor, AIC Submitted 13 rapporteurs' reports of 13 programs in the concerned divisions of BARC

## 4. Training/Workshop/Seminar

Agricultural Information Centre (AIC) also arranges different workshops, trainings, seminars, and meetings for wider and quick delivery of agricultural scientific findings.

### 4.1 Training Program

#### Communication Skills Development for Professionals



*Dr. Nazmun Nahar Karim, MD, Livestock, BARC Delivering Speech*

Agricultural Information Centre (AIC), BARC, organized a three-day long training program on Communication Skills Development for Professionals during 12-14 May 2024 at BARC. The main objective of the training program was to make the NARS scientists and officers skilled in communication at professional life.

Thirty scientists from NARS institutes attended the training. The inaugural ceremony of the training program was graced by the chief guest Dr. Nazmun Nahar Karim, Member Director, Livestock Division, BARC. The program was chaired by course director, Dr. Kabir Uddin Ahmed, Director, AIC. Dr. Susmita Das, Principal Documentation Officer, AIC welcomed and highlighted the objectives of the training program as the course coordinator. As the chief guest, Dr. Nazmun Nahar Karim shared some techniques for effective communication and uttered the necessities of higher communication skill for every agricultural scientist.

After successful completion, the training program ended with a closing ceremony. EC, BARC as chief guest of the closing program distributed the certificates among the participants. Dr. Kabir Uddin Ahmed, Director, AIC chaired the concluding and certificate giving session and thanked the guests and the participants. The participants found the program highly valuable, with tailored content and practical exercises that were directly applicable to their field

## Technical Report Writing and Editing



*Dr. Md. Saifullah, MD, A&F, BARC Delivering Speech*

The Centre organized a three-day training program on Technical Report Writing and Editing from 30 January to 1 February 2024 at BARC. The primary objective of the program was to equip NARS scientists and officers with modern skills in technical report writing and journal paper editing. Thirty scientists from NARS institutes participated in the training. The inaugural ceremony was graced by the chief guest, Dr. Md. Saifullah, Member Director. In his speech, Dr. Saifullah emphasized the critical importance of technical report writing and journal paper editing for scientists, and shared valuable techniques for enhancing writing skills. Dr. Md. Mostafizur Rahman, Director of the Manpower and Training Unit, attended as the Special Guest, stressing the necessity of strong technical writing skills for every agricultural scientist.

After the successful completion of the training, a closing ceremony was held. The EC of BARC, acting as the Chief Guest, distributed certificates to the participants. The session was chaired by Dr. Kabir Uddin Ahmed, Director of AIC, who also expressed his gratitude to the guests and participants. The program was mastered by Dr. Susmita Das, Principal Documentation Officer, AIC, who delivered the welcome address and highlighted the key objectives of the training as the Course Coordinator.

### **Compiling and Editing Techniques for Professionals Publishing**

AIC organized a five-day long training program on Compiling and Editing Techniques for Professionals Publishing on 02-06 June 2024 at BARC. The training was funded by APCU, PARTNER, BARC.

Twenty-five scientists from NARS institutes attended the training. The inaugural ceremony of the training program was graced by the chief guest Dr. Nazmun Nahar Karim, Member Director, Livestock Division, BARC. The program was chaired by course director Dr. Kabir Uddin Ahmed, Director, AIC. Dr. Susmita Das, Principal Documentation Officer, AIC gave the welcome address and highlighted the objectives of the training program as the course coordinator.

After successful completion, the training program ended with a closing ceremony. Dr. Kabir Uddin Ahmed, Director, AIC distributed the certificates among the participants and thanked the guests and the participants. Participants appreciated the course for Professionals

Publishing, highlighting its practical value and comprehensive approach. They felt the content was highly relevant and beneficial for their professional development.



Picture of the Training Program

## 4.2 Workshop

Agricultural Information Centre (AIC), BARC, organized a day-long workshop on Presentation Skills for Professionals on 29 April 2024 at BARC. The course effectively boosted participants' confidence in presenting and significantly improved their ability to deliver impactful and professional presentation. Seventy scientists and officers from BARC attended the workshop. The inaugural ceremony of the program was graced by Dr. Md. Saifullah, Member Director, Administration and Finance Division. Dr. Susmita Das, Principal Documentation Officer, AIC gave the welcome speech and highlighted the objectives of the workshop. The inaugural session was followed by a technical session which was conducted by Dr. Md. Saifullah, Member Director, BARC. Resource persons Dr. Saiful Alam Chowdhury, Assistant Professor, University of Dhaka gave lectures on the topic and its practical application. Dr. Saifullah, MD, BARC chaired the concluding session and thanked the guest and the participants.



Dr. Saiful Alam, Keynote Speaker Delivering Speech

## 5. Preparation of Policy Documents and Inputs

Agricultural Information Center provided information for inclusion in the speech (both English and Bangla) of HE the president for the 1st Session of 12th National Parliament 2024. It prepared reports for Agriculture Standing Committee and Question-Answer including Supplementary, Star Marked Non-Star Marked and highlighting the recent success in agriculture remarkably. AIC also provided 42 Questions-Answer of Hon'ble Agriculture Minister, among those 17 of the Agriculture Minister, and other Parliament Members (MPs).

## 6. Policy Documents and Inputs

Made Comments and provided inputs on the following Policy Document and draft MoU

- Draft MoU between CIMMYT and BADC
- Draft MoU between “Bangladesh Rice Research Institute (BRRI) and Harvest Plus”
- Draft concept Note and Memorandum of Understanding (MoU) for ‘Go4Impact’: Governance for Improved Climate Resilient Public Service Delivery (2023- 2027)
- Draft Memorandum of Understanding (MoU) between International Maize and Wheat Improvement Center (CIMMYT) and Agriculture Information Service (AIS).

## 7. Publications

Six scientific papers, two issues of the journal, one annual report, one training manual, one NARS directory and four issues of BARC newsletters were published by Agricultural Information Centre (AIC), BARC during 2022-23.

### 7.1 Scientific Paper (06)

- **Banu, M.S.A.**, Huda, K.M.K., Rashid, M.H.R., Parveen, S., Islam, S.M.S., Tuteja, N. (2023) Phenotypic and microarray analysis reveals salinity stress-induced oxidative tolerance in transgenic rice expressing a DEAD-box RNA helicase, OsDB10. *Plant Mol. Bio.* 113:19–32. Impact Factor: 5.1 (Q1 Journal)
- **Banu, M.S.A.**, Huda, K.M.K., Rashid, M.H.R., Parveen, S., Tuteja, N. (2023). A DEAD box helicase Psp68 positively regulates salt stress responses in marker-free transgenic rice plants. *Transgenic Res.* 32:293–304. Impact Factor: 3 (Q1 Journal)
- Gutam S & **Das, S.** (2023) An Overview of Publication Patterns in India's Agricultural Research Community: Journals, Open Access, and Preprints. DOI: 10.21203/rs.3.rs-2565275/v3
- Kundu, P.K., Parveen, S., **Banu, M.S.A.**, Rashid, M. H., Huda, K.M.K. (2023) Morphological variations in some brinjal (*Solanum melongena* L.) genotypes. *Bangladesh J. Agri.* 2023, 48(1): 123-129.

## 7.2 Annual Report (01)

**Ahmed, K. U., Das, S., Sarker, M. S. R., Banu, M. S. A.,** and Hasan, M. S. Annual Report. 2022-23. Bangladesh Agricultural Research Council (BARC). Farmgate, Dhaka-1215, Bangladesh.

## 7.3 NARS Directory (01)

**Bokhtiar, S. M., Ahmed, K. U., Das, S.,** and **Hasan, M. S.** Directory of Annual Agricultural Research Program of NARS Institute. 2022-23. Bangladesh Agricultural Research Council (BARC). Farmgate, Dhaka-1215, Bangladesh. Published on 2023.

## 7.4 BARC Newsletter (04)

**Ahmed, K. U., Das, S., Banu, M. S. A.,** and **Hasan, M. S.** 2023. Newsletter. Bangladesh Agricultural Research Council (BARC), Farmgate, Dhaka-1215, Bangladesh. 21(2, 3 & 4):1-12.

**Ahmed, K. U., Das, S., Banu, M. S. A.,** and **Hasan, M. S.** 2024. Newsletter. Bangladesh Agricultural Research Council (BARC), Farmgate, Dhaka-1215, Bangladesh. 22(1):1-12.

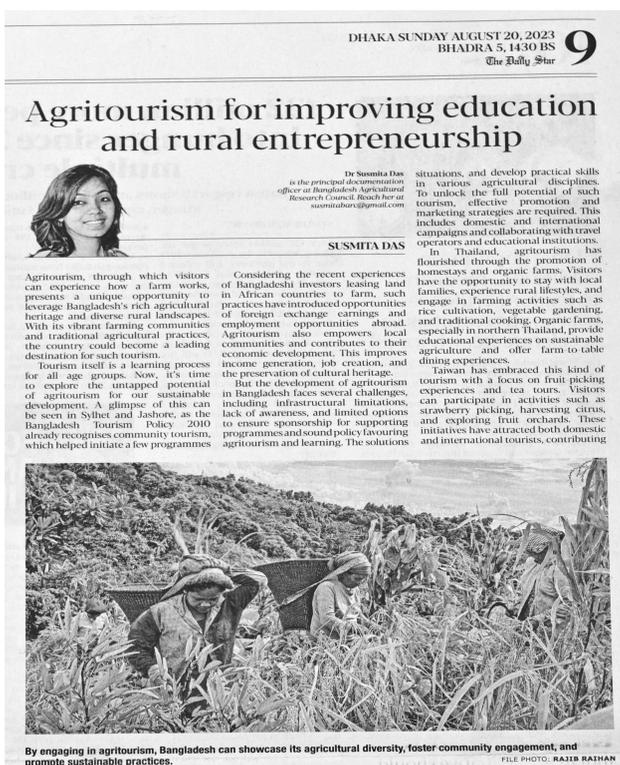
## 7.5 Collection of ISBN Numbers (02)

ISBN Numbers for three books of BARC were brought by AIC through proper formalities. i.e.,

1. সার সুপারিশমালা হাতবই- ২০২৪
2. Fertilizer Recommendation Guide - 2024
3. Standards of Bangladesh Good Agricultural Practices

## 7.6 Popular Articles (04)

Dr. Susmita Das, Principal Documentation Officer, AIC, BARC wrote popular articles on-



*Agro-tourism for improving education and rural entrepreneurship, Daily Star, published at 23 August, 2023*

GROWING GREENER FUTURES

## Nurturing Nutritional Self-Sufficiency Through Safe Vegetable Cultivation in Bangladesh

Dr. Susmita Das



In recent times, Bangladesh has achieved remarkable success in its agriculture sector. Under the visionary leadership of the Honorable Prime Minister and through the coordinated efforts of the Ministry of Agriculture, Bangladesh has achieved significant growth in its production of various crops. From staple grains to high-value horticultural products, the government's initiatives, research, and strategic planning have contributed significantly to this success. Efforts are being made to improve the quality of agricultural products and to position Bangladesh as a self-reliant food producer. According to the Food and Agriculture Organization (FAO), Bangladesh has witnessed the highest increase in vegetable production area in the world, with a corresponding rise in the last few years. The yield of vegetables has also increased to about 4.5 tons per hectare. Bangladesh is now the third-largest vegetable producer globally, producing 10 million metric tons annually. Presently, 25 million to 30 million hectares are involved in the production of 100 types of vegetables.

This rapid growth in vegetable production has led to improved nutritional conditions in Bangladesh. The average life expectancy has increased, and the country has shifted from malnutrition to nutritional security. However, now, the challenge lies in ensuring the quality of production and establishing a resilient global position in export-oriented agriculture for the people's benefit and by global standards. Most of the global demand for vegetables is met by a handful of countries, primarily the United States, China, and India. Bangladesh, and similar others are under pressure to fill this gap.

Recent developments in Bangladesh's agriculture sector have been promising. Under the visionary leadership of the Honorable Prime Minister and through the well-coordinated efforts of the Ministry of Agriculture, the production of various crops has greatly increased. Despite the global pandemic, Bangladesh's agriculture has been making impressive gains, with a significant increase in the production of various crops.

Over the last decade, there has been a revolution in vegetable production. The area under vegetable cultivation has increased by about 4.5 times per hectare. The Bangladesh Agricultural Research Institute (BARI) is focused on enhancing hybrid seed research. The spread of hybrid seeds is crucial for increasing the yield and quality of vegetable crops. BARI is working to train and develop seed-savvy farmers. Overall, Bangladesh's agriculture sector has witnessed remarkable growth and development, driven by strategic planning, research, and government initiatives. The Ministry of Agriculture has taken significant steps to ensure the quality of production and establish a resilient global position in export-oriented agriculture for the people's benefit and by global standards. Most of the global demand for vegetables is met by a handful of countries, primarily the United States, China, and India. Bangladesh, and similar others are under pressure to fill this gap.

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Nurturing Nutritional Self-Sufficiency Through Safe Vegetable Cultivation in Bangladesh, The Asian Age, 22, August, 2024

THE ASIAN AGE

SUNDAY 26 MAY 2024, DHAKA

Page 23 Price 10 Tk

## EDITORIAL

### BARC Can Play an Integral Role in Implementing Delta Plan 2100

Dr. Susmita Das



In the wake of a global call for an integrated approach to climate change, Bangladesh is facing a significant challenge. The Delta Plan 2100, a visionary blueprint for the country's future, emphasizes the need for a holistic approach to development. This approach must be centered on the well-being of the people and the environment. The Delta Plan 2100 is a comprehensive framework for the country's development, covering various sectors including agriculture, industry, and infrastructure. It is a blueprint for a sustainable and resilient future for Bangladesh.

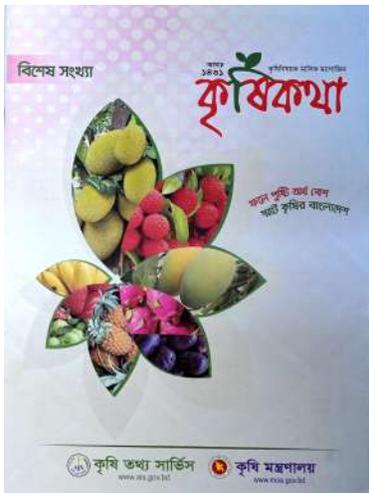
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BARC Can Play an Integral Role in Implementing Delta Plan 2100, The Asian Age, May, 24, 2024



Special Issue for Fruit Fair 2023  
Krishikotha



Special Issue for World Food Day 2023  
Krishikotha



Special Issue for Vegetable Fair 2024,  
Krishikotha



Glimpse of Different Publications from AIC

## 8. Additional Activities

Agricultural Information Centre (AIC) also performed various other duties for meeting different requirements of the BARC.

- a. The centre organized Editorial Board Meeting undertaken by Bangladesh Agricultural Research Council.
- b. It designed and distributed 4 greeting cards i.e., 2 Eid cards, Nabo Barsha, and New Year Greeting Card. It Prepared 20 Banners and 12 cover designs for different programs and publications. Also designed 4 Greeting cards, 1 Glass Board, 4 Logos, 4 Newsletter's Must Head, 1 Calendar, 1 Diary, and 631 pages illustrations
- c. It was involved with different research projects and participates in different national and international seminars, workshops, symposiums, and other relevant programs were mentored by Agricultural Information Centre during 2023-24.
- d. Last year, The centre monitored different research projects undertaken by Bangladesh Agricultural Research Council.
- e. As a member of different monitoring teams, Agricultural Information Centre participated in different field visits to various localities where projects have been undertaken by BARC and Cropzoning during 2023-24.
- f. The Agricultural Information Centre, as a member of the BARC innovation team, contributed to generating innovative ideas, piloting and showcasing different innovations in BARC.
- g. During 2023-24, The centre prepared speeches for chief guests, special guests of different national seminars and international conferences, seminars, workshops, and symposiums.
- h. AIC was involved in preparing notes and rapporteur's reports for the events organized by BARC during the reported time.

- i. The centre acted as master of ceremonies or facilitator for different national and international conferences, seminars, workshops, and symposiums organized by BARC during 2023-24.
- j. AIC contributed to the creation of reports for Bangladesh's Standard Operating Procedure (SOP) for Genome Edited Plants. Newsletter for the South Asian Biosafety Program. 20(6):1 Published in June 2023.
- k. AIC worked as focal person of Krishi media in last year.
- l. Distributed publications to different national & international organizations.
- m. AIC was involved in preparing the message of Hon'ble Prime Minister for 50 years' of BRRI.
- n. Monitored research projects, participated as a member of different team/committee, master of ceremonies (different seminars and workshops), etc.



## ADMINISTRATION AND FINANCE DIVISION

This division focuses on administration, management, and financial aspect of the organization. Regular financial matters including budgeting are also handled. Besides, various high profile management body meetings were organized.

Name of the Professionals	
Name	Designation
Dr. Md. Saifullah	Member Director
MD. Abdul Mottakin	Director (Support Service)
Muhammad Mahbulul Hassan	Deputy Director (Establishment)
Mirza Tosaddeque Hossain	Executive Engineer (Engineering Section)
Dr. Md. Taibur Rahman	Senior Assistant Director (Procurement)
K. M. Ali Haider	Senior Assistant Director (Establishment)
MD. Al-Amin	Protocol Officer (Admin. and Finance)
MD. Shohag Fokir	Assistant Director (Establishment)
MD. Fakrul Hasan	Assistant Director (Establishment)
Mohammad Tawfiqur Rahman	Assistant Director (Common Services)
Aysa Siddika	Assistant Director (Establishment)

### BARC Recruitment/Promotion Committee-1 (DPC-1)

In the financial year 2023-2024, three meetings of DPC-1 were held. Twenty-five Principal Scientific Officers (4th Grade) from NARS (BARC, BINA, BARI, BRRI) were promoted to Chief Scientific Officer/Director (3rd Grade) and one Chief Scientific Officer/Director (3rd Grade) was directly recommended for recruitment in BJRI through these meetings.

### BARC Recruitment/Promotion Committee-2 (DPC-2)

In the financial year 2023-2024, eight meetings of DPC-2 were held. Ten Officers (5 Principal Scientific Officers, 3 Senior Scientific Officers, 1 Senior Training Officer and 1 Assistant Director) were directly recruited in these meetings.

At these meetings, one of the employees was also promoted to Assistant Director.

### BARC Recruitment/Promotion Committee-3 (DPC-3)

Five DPC-3 meetings were held in the financial year 2023-2024. Fourteen personnel were directly recruited. The name and number of the post are given below:

01 Maintenance Inspector, 02 Word Processing Assistant, 02 Stenographer cum Computer Operator, 01 Head Cashier & 05 Office Assistant cum Computer Operator.

Two employees were also promoted through these meetings. The name and number of the post are given below:

One from Telephone Operator to PA System Operator and another from Office Assistant Cum Computer Operator to Upper Division Clerk.

### **Increment Order, Promotion Order, Retirement Order, and Retirement Benefit**

All increment orders, promotion orders, prl orders, and retirement benefit related orders were issued by the Establishment unit. Six employees went on PRL in this fiscal year. Retirement benefits for all employees have been settled or are in the process.

## Finance UNIT

Finance Unit is responsible for all kinds of financial aspects of BARC. This unit serves a fundamental role in making financial decisions for internal and external affairs. They manage the budget, prepare financial reports, and ensure all financial transactions which conducted legally and ethically. The primary functions of the unit are accounting and reporting, auditing, payroll management, cash management and investment of the fund. The unit is also responsible for issuance of debt for capital projects, the retirement fund, payment to suppliers, budget preparation and execution etc.

### Name of the Professionals

Name	Designation
Mr. Ajit Kumar Chakraborty	Director (Finance) (A.C)
Mr. Md. Jashim Uddin Chowdhury	Deputy Director (Budget)
Mr. Md. Daloar Hossain	Deputy Director (Accounts)
Mr. Kamrul Hasan	Senior Asstt. Director (Budget)
Mr. Md. Mominul Islam	Senior Asstt. Director (Audit)
Mr. Md. Jobair Reza	Senior Asstt. Director (Accounts) (C.C.)
Mr. Kazi Golam Azam	Asstt. Director (Audit) (C.C.)

### 1. Introduction

As per the BARC Act 2012, it has the mandate to develop priorities in agricultural research, allocate resources and function as a coordinating body to improve the overall research activities of the NARS. BARC received funds from Development and Revenue Budgets of the Govt. to conduct its annual mandate activities like research management, coordination, monitoring, evaluation, technology transfer and manpower development. In this respect BARC's Finance Unit prepares the MTBF budget and financial plan of medium-term activities and accordingly disburses fund for achievement of the goal. It keeps all the record of expenditure incurred during the year and reports to the Ministries, CAO, IMED, Development Partner and other Govt. Offices in time. It also reconciles the Accounts with CAO to prepare the final accounts which is submitted before the Public Accounts Committee (PAC) of the National Assembly.

### 2. Budgeting and Expenditure Control

The Govt. has implemented "Medium Term Budgetary Framework (MTBF)" for all the Ministries including Ministry of Agriculture and its Divisions, Bodies, and Corporations since 2005-06. Accordingly, BARC prepared a budget in the form of MTBF for Revenue Head and Development Projects and submitted it to the Ministry of Agriculture for approval.

### 3. Fund Release/Disbursement

BARC proposes the release of funds from the Govt. quarterly as per the approved annual allocation of Budget. In the Financial year 2023-24, BARC received Tk. 3414.73 lakh for Salary and allowances, Supply and services, Research, Pension and retirement benefits, Repair and maintenance, manpower development, capital fund and also implement activities like technology transfer and manpower development etc. As necessary funds were released to the Agricultural Research Institutes (ARI) and associated organizations according to the budget plan. The overall financial progress made during the FY 2023-24 is given follows:

#### Financial Progress Under Revenue Budget

(Taka in lakh)

Sl. No.	Line Items	FY 2023-24		Achievement (%)	Remarks
		Budget	Expenditure		
1.	Basic Salary	650.00	594.21	91.42%	
2.	Allowances	599.25	529.63	88.38%	
3.	Supply and Services	480.40	402.27	83.74%	Embargo at 03 subheads.
4.	Workshop, Seminar	70.00	67.70	96.71%	
5.	Training	135.00	121.98	90.36%	
6.	Repair and Maintenance	84.50	81.25	96.15%	
7.	Retirement Benifit	766.00	766.00	100%	
8.	Research	561.58	503.38	89.64%	
9.	Municipal tax	15	7.93	52.87%	
13.	Office equipment	15.00	13.62	90.80%	
11.	Buildings	0.00	0.00	-	Embargo.
12.	Computer & accecories	20.00	19.30	96.50%	
10.	Motor vehicle	0.00	0.00	-	Embargo.
14.	Furniture	8.00	7.09	88.63%	
	<b>Total</b>	<b>3404.73</b>	<b>3114.36</b>	<b>91.47%</b>	
	<b>(+) Own income</b>	<b>10.00</b>	<b>0.00</b>	<b>-</b>	
	<b>Total</b>	<b>3414.73</b>	<b>3114.36</b>		

#### 4. AFACI Projects and Others

Sl. No.	Projects Name
1.	AFACI Salt tolerant Rice
2.	Feed the Future Biotechnology potato partnership.
3.	Development of Upazilla Land suitability assessment and crop zoning system of Bangladesh (KGF)
4.	Capacity building for conducting adaptive trials of seaweed cultivation in coastal areas (KGF)

#### 5. Accounting

BARC's Finance Unit maintained its accounts following a standard accounting system. It has kept a well-printed Cash Book, General Ledger, Trial balance, Bank reconciliation, Advance Register, Budget Control Register, iBAS++ software posting (Budget and Expenditure), CPF, Gratuity, Leave salary, Benevolent fund, and other related books to record all transaction during the year accurately.

#### 6. GOB Audit

GoB Agriculture and Environment Audit Department has not yet conducted the audit for the FY 2022-23 & 2023-24.

#### 7. Settlement of audit objections

During the year 2023-24 two audit objections have been settled out of 16 audit observations:

Sl. No.	Particular	Settled audit objections	Amount (Tk)
1.	Revenue	02	22,51,755.00
2.	Development	0	0
	<b>Total :</b>	<b>05</b>	<b>22,51,755.00</b>

#### 8. Reporting

BARC Finance unit has kept all the records of expenditure incurred during the year and reported to the Agriculture Ministry, IMED, CAO, Development Partner, and other Government offices monthly, quarterly, half-yearly, and annually for revenue and development programs.

## 9. Monitoring and Evaluation:

Monitoring and Evaluation are integral parts of an effective planning and performance-based budgeting plan became successful and the value for money was realized only when the proposed targets for outcomes/outputs were achieved. To attain the targets, BARC Finance section regularly maintained desk monitoring on the utilization of funds for planned activities including budgetary and expenditure control mechanisms.

## 10. Reconciliation

BARC also reconciled the Accounts with CAO.

## 11. Retirement benefits

During the year 2023-24, retirement benefits and CPF payments made to the Officer and Staff of BARC are shown below:-

### A) CPF Final Payment

1.	Officer's (5 persons)	Tk. 1,82,22,306.00
2.	Staff (11 persons)	Tk. 1,16,53,421.00
	<b>Total =</b>	<b>Tk. 2,98,75,727.00</b>

### B) CPF Non-Refundable

1.	Officer's (Nil)	Tk. 0.00
2.	Staff two (2) persons	Tk. 7,50,000.00
	<b>Total = 2</b>	<b>Tk. 7,50,000.00</b>

### C) CPF Loan

CPF loan provided to the Officer and Staff during the year is as follows:

1.	Officer (Nil)	Tk. 0
2.	Staff two (2) persons	Tk. 7,50,000.00
	<b>Total = 2</b>	<b>Tk. 7,50,000.00</b>

### D) Gratuity payment

1.	Officers (4 persons)	Tk. 2,87,29,051.00
2.	Staff (9 persons)	Tk. 2,03,52,240.00
	<b>Total =</b>	<b>Tk. 4,90,81,291.00</b>

### E) Leave Salary payment

Leave Encashment allowed to the Officer and Staff during the year are as follows: -

1.	Officer's (0 persons)	Tk.0.00
2.	Staff (7 persons)	Tk.26,73,907.00
	<b>Total = 07</b>	<b>Tk. 26,73,907.00</b>

### F) Benevolent Fund

1.	Benevolent allowance (18 persons)	Tk.1,91,000.00
2.	Medical allowance (02 persons)	Tk.64,540.00
3.	Burial shroud allowance (02 persons)	Tk.30,000.00
	<b>Total= 22</b>	<b>Tk. 2,85,540.00</b>

## 12. Income tax

Salary statements are provided to the Officer and Staff for payment of Income tax during the reporting year.

## BARC Personnel

Annexure

**Bangladesh Agricultural Research Council (BARC)**  
**Farmgate, Dhaka-215**  
[www.barc.gov.bd](http://www.barc.gov.bd)

SL	Name	Designation	Office	Phone (Office)	Email
1.	Dr. Nazmun Nahar Karim	Executive Chairman (R.C.)	Executive Chairman's Office	02-41025252	ec.barc@barc.gov.bd
2.	Ajit Kumar Chakraborty	Member Director	Fisheries Division	02-41025930	md.fisheries@barc.gov.bd
3.	Dr. Nazmun Nahar Karim	Member Director	Livestock Division	02-41025847	nazmun.karim@barc.gov.bd
4.	Dr. Md. Abdus Salam	Member Director	Crops Division	02-41025921	md.crops@barc.gov.bd masalamsso@yahoo.com
5.	Dr. Md. Saifullah	Member Director	Administration and Finance Division	02-41025923	m.saif@barc.gov.bd
6.	Dr. Md. Baktear Hossain	Member Director	NRM Division	02-41025928	md.nrm@barc.gov.bd baktear.sac@gmail.com
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