ANNUAL RESEARCH AND DEVELOPMENT PROGRAM
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Program Leader

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PROGRAM : FARMING SYSTEMS AND ADAPTIVE RESEARCH

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Improvement of Cropping Systems	: Dr. Md. Robiul Alam
On-Farm Trials with Advanced Lines and Technologies	: Dr. Quamrun-Naher
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Contents

On-Farm Soil Fertility Management

JUSTIFICATION

The gradual degradation of soil fertility status of the country is now becoming a crucial issue for sustainable crop production. More than 50% of our cultivated soil contains organic matter below the critical level (1.5%). Annual depletion of plant nutrients in the intensively cropped area ranges from 180 to more than 250 kg ha^{-1}. High and medium highland comprises 60% of total cultivated land which is in most cases deficient in essential nutrients such as nitrogen, phosphorus, potassium and sulphur. Deficiency of different secondary and micronutrients was also observed in some parts of the country due to intensive cropping with modern varieties of crops. The low organic matter content, higher cropping intensity, improper cropping sequence and faulty management practices are the major causes for depletion of soil fertility. Addition of organic materials to soil through farmyard manure, compost and crop residues has been reduced considerably. Farmers' usually do not use any organic fertilizers. Scarcity of fuel led them to use cowdung and crop residues as domestic fuel. Imbalance use of fertilizers is another serious problem for the country. Farmers use to apply fertilizers on single crop basis without considering the whole cropping pattern. But some of the nutrients have considerable residual effect on the succeeding crops. Excessive and continuous use of chemical fertilizer is detrimental for soil health and environment. Therefore, it was felt necessary to address the problem in a comprehensive way. In this context, the On-Farm Research Division of BARI aimed to develop fertilizer management practices and increase efficiency of fertilizers by integration of organic manures, green manure, crop residues etc. along with inorganic fertilizers to stabilize and improve soil fertility and yield of different crops and cropping patterns.

Expt. 001. Effect of Seed Rate and Fertilizer Application Methods on the Productivity of Relay Mustard in the Barind Tract

Activity	:	**Fertilizer management on mustard**
Objectives	:	To determine optimum seed rate for relay mustard To find out suitable fertilizer application method for relay-mustard To know their interaction effect for relay-mustard
Rationale	:	Rapeseed-mustard is the major oilseed crop in Bangladesh, supplying most of the country's edible oil. Its area and production are rising due to high-yielding, short-duration varieties developed by BARI and supportive government policies. In northwest Bangladesh, farmers usually grow long-duration T. Aman rice (e.g., BRRI dhan51, Swarna), which delays mustard sowing, especially when late monsoon rains prolong rice maturity—resulting in poor mustard yields. Relay cropping, where mustard is sown into standing T. Aman before harvest, offers a promising solution. However, farmers often fail to achieve expected yields due to improper seed rates and fertilizer use. Hence, this study aims to determine the optimum seed rate and fertilizer management to improve relay mustard productivity in northwest Bangladesh.
Procedure/methods	:	
Crop/Variety	:	Mustard/BARI Sarisha-14 & 17
Design	:	Split plot
i) Treatment	:	**Factor A: Seed rate** 1) 6.0 kg ha^{-1}, 2) 3) 8.0 kg ha^{-1} and 3) 10.0 kg ha^{-1} **Factor B: Fertilizer Application Methods** 1. **Basal application:** All fertilizer applied before mustard seeding. 2. **Single urea split:** All fertilizer except urea applied as basal; urea applied 20–22 days after sowing with irrigation. 3. **Two urea splits:** All fertilizer except urea applied as basal; urea applied in two splits at 10–12 and 20–22 days after sowing with irrigation.
ii) Replications	:	6 (Disperse)
Planting system	:	Line sowing, 30 cm x 5 cm
Plot size	:	4 m x 5 m
Fertilizer dose	:	STB fertilizer and methods of treatment specification
Irrigated/ rainfed	:	Irrigated
Data	:	Phenology, yield components, yield and cost-return analysis
Investigator(s)	:	M.S. Hossain and concern location scientists
Season		Rabi
Date of initiation	:	November, 2025
Date of completion		March, 2027
Expt. output/ benefit	:	Optimum seed rate and fertilizer application method will be determined for higher productivity
Location	:	Barind, Bogura, Dinajpur, Rangpur
Status	:	1st year
Program proposed from	:	Bottom up (OFRD)
Priority	:	First
Estimated cost	:	160000/-
Source of fund	:	BARI

Expt. 002. Effects of biochar with nutrient management on crop productivity and soil properties in a Lentil-Sesame-T. Aman rice cropping system

Activity	:	**Fertilizer management on cropping pattern**
Objectives	:	To evaluate the effects of integrated nutrient management with biochar on soil properties and crop yield in a diversified cropping system
Rationale	:	Sustainable intensification is vital for meeting rising food demand while preserving soil health in Bangladesh, where land degradation and fertility decline are major issues (Parvin et al., 2024). The lentil–sesame–T. Aman rice system, common in northwest Bangladesh, enables year-round land use but suffers from nutrient depletion and reduced productivity due to imbalanced fertilizer use and low organic inputs. Biochar, a carbon-rich product of biomass pyrolysis, can enhance soil structure, nutrient retention, and microbial activity, improving nutrient use efficiency and long-term fertility (Yadav et al. 2023). However, field-based studies on biochar in diversified systems like lentil–sesame–rice are limited. Therefore, this study aims to identify effective biochar-based nutrient management strategies to boost crop yield, improve soil health, and promote sustainable intensification in the region.
Materials and methods	:	Farmer's Practice: Traditional farmer management.
Treatments	:	STB: Soil test–based fertilization. STB + Biochar (2.0 t ha^{-1}). STB + Biochar (2.0 t ha^{-1}) + Vermicompost (2.0 t ha^{-1}). STB + Biochar (2.0 t ha^{-1}) + combined with Rhizobium inoculation for lentil and Azospirillum for sesame and rice. Biochar (2.0 t ha^{-1}) (Control).
Crop/variety	:	Lentil (BARI Masur-8), Sesame (BARI Til-4), T. Aman rice (BRRI dhan75)
Design	:	RCBD
Plot size	:	5 m X 4 m
Planting system	:	Continuous/ Transplanting
Fertilizer dose	:	As per treatment
Irrigated/rainfed	:	Irrigated and rainfed
Data to be recorded	:	Soil properties (initial and final), soil moisture, K availability, soil carbon, crop yield and yield attributes
Investigators	:	M.A. Islam, M.Z. Hasan, M. Maniruzzaman, and M.S.H. Molla
Season	:	Rabi, Kharif-1 and 2
Date of initiation	:	November, 2025
Date of completion	:	March, 2029
Expected output/benefit	:	Improved crop yield and soil health through integrated biochar-based nutrient management
Location	:	Atghoria/Gangarampur/ARS, Pabna
Status	:	New
Program proposed from	:	OFRD, BARI, Pabna
Priority	:	1st
Estimated cost	:	Tk. 100000.00/=
Source of fund	:	OFRD, BARI

Expt. 003. Response of sweet potato (*Ipomoea batatas* L.) to the combined application of organic and inorganic fertilizer under upland acidic soil

Activity	:	**Fertilizer management on sweet potato in acid soil**
Objective(s)	:	To assess the profitability of sweet potato production to the combined application of inorganic and organic fertilizer in acid soil To determine the appropriate combination of inorganic and organic fertilizer on sweet potato
Rationale	:	Sweet potato (*Ipomoea batatas* L.) is an important root crop in Bangladesh, typically grown in tropical regions. Rapid population growth has reduced prime agricultural lands, forcing farmers to cultivate marginal, often acidic and clayey soils. Improving the fertility of these upland acid soils is essential for better sweet potato productivity. The combined use of organic and inorganic fertilizers can enhance soil fertility, nutrient retention, and crop growth. This study was undertaken to evaluate the response of sweet potato to integrated organic and inorganic fertilizer application on upland acidic soils.
Materials and methods	:	
Crop/Variety	:	BARI Mistialu-12/16
Design	:	RCBD
i. Treatment		T_1: Control (no fertilizer) T_2: 160-36-120-15-3-10-2 kg NPKSZnMgB ha^{-1} plus 3 ton CD ha^{-1} (FRG' 2024) + 1.0 ton lime ha^{-1} T_3: Farmers practice T_4: 160-36-120-15-3-10-2 kg NPKSZnMgB ha^{-1} + 5 t CD ha^{-1}+1.0 t lime ha^{-1} T_5: 180-50-150-15-3-10-2 kg NPKSZnMgB ha^{-1} + 5 t CD ha^{-1}+1.0 t lime ha^{-1}
ii Replications		06 (six) dispersed
Plot Size	:	660 m^2
Spacing	:	Line sowing: 60 cm × 30 cm
Fertilizer application method	:	All P, S, Zn, Mg, and B and half of N and K should be applied as basal during final land preparation. Entire am1ount of organic fertilizer (OF) should also be applied during final land preparation. Remaining half for both N and K should be applied as side dressing at 30-35 days after planting during earthing up operation.
Irrigated/Rainfed	:	Irrigated
Data to be recorded		Initial soil status, dates of all operations, crop duration, yield and yield attributes, the gross return, the gross margin, the total variable cost, and the benefit-cost ratio (BCR), farmers' opinion and post harvest soil status.
Investigator(s)	:	Dr. Nargis Sultana and concerned scientist of respective location
Season	:	Rabi 2025-26
Date of initiation	:	December, 2025
Date of completion	:	March, 2026
Expected output/benefit	:	The findings could lead to determine the combined application of fertilizer dose on sweet potato cultivation in acid soil
Location	:	Mymensingh, Sherpur, Tangail and Gazipur
Status	:	New
Program proposed from	:	OFRD, BARI, Mymensingh
Priority	:	1st
Estimated cost	:	Tk. 60000/- per location
Source of fund	:	BARI

Expt. 004. Effects of nutrient management on yield of okra and onion in strip intercropping

Activity	:	**Fertilizer management on onion okra intercropping**
Objective(s)	:	To Evaluate fertilizer profitability and identify the optimal organic–inorganic combination in onion–okra intercropping to increase farmers' income.
Rationale		Strip intercropping has gained attention for its potential to increase yields compared to sole cropping. In Bangladesh, onion is a major spice crop typically grown alone, while okra is a widely cultivated summer vegetable. Studies show that onion–okra strip intercropping can be highly productive and profitable. However, fertilizer recommendations are usually based on sole crops, potentially leading to over-application. This study aims to identify an optimal fertilizer package for efficient nutrient use in onion–okra intercropping.
Materials and methods	:	
Crop/Variety	:	Onion: BARI Piaz-4, Okra: BARI Dherosh-2/Hybrid (Two rows onion in between two rows okra)
Design	:	RCBD
i. Treatment		T_1: 120-30-75-30-2.6-1.4 kg NPKSZnB ha^{-1} + 5 t Organic fertilizer per hectare (Onion: RFD) (FRG'2024), T_2: 120-30-69-15-2-1.4 kg NPKSZnB ha with 5 t OF ha^{-1} (Okra: RFD) (FRG'2024), T_3: 100% RFD of onion + 20% of Okra T_4: 100% RFD of Onion + 50% of Okra T_5: 100% RFD of onion + 75% NPK of okra T_6: FP
ii Replications		06 (six) dispersed
Plot Size	:	660 m^2
Spacing	:	Line sowing: 60 cm × 30 cm
Fertilizer application method	:	All of organic fertilizers (OF), P, S, Zn, and half of N and K should be applied as basal during final land preparation. Remaining N and K should be applied in two equal splits as 25 and 50 days after planting (DAP).
Irrigated/Rainfed	:	Irrigated
Data to be recorded		Initial soil status, dates of all operations, crop duration, plant height, branch per plant, leaf number per plant, leaf length, leaf area, fruit length, yield and yield attributes, the gross return, the gross margin, the total variable cost, and the benefit-cost ratio (BCR), farmers' opinion and post harvest soil status.
Investigator(s)	:	Dr. Nargis Sultana
Season	:	Rabi 2025-26
Date of initiation	:	December, 2025
Date of completion	:	July, 2026
Expected output/benefit	:	The findings could lead to determine the combined application of fertilizer dose on onion and okra intercrop cultivation in upland loamy soil
Location	:	Gouripur site, Mymensingh
Status	:	New
Program proposed from	:	OFRD, BARI, Mymensingh
Priority	:	1st
Estimated cost	:	Tk. 80000/-
Source of fund	:	BARI

Expt. 005. Effect of rhizobium inoculum on the yield of groundnut at char land

Activity	:	**Biofertilizer on groundnut**
Objectives	:	To find out the infectivity of rhizobium and the suitable fertilizer dose for groundnut production To enhance soil quality, and the yield and the economic return of the farmers
Rationale	:	Groundnut, a major oilseed in Bangladesh covering one-third of oilseed area, has low average productivity. Sulfur, along with primary nutrients, is important for enhancing yield, while groundnut improves soil fertility through nitrogen fixation. Char soils are suitable for groundnut, but farmers often grow local varieties without balanced fertilization. The use of Rhizobium inoculum and vermicompost instead of urea can improve both soil health and yield. This study aims to evaluate the response of a BARI-released groundnut variety to Rhizobium inoculum and vermicompost application on char lands.
Materials & Methods	:	
Crop	:	Groundnut
Variety	:	BARI Chinabadam-9/10
Treatments	:	T_1: Rhizobium inoculation (BARI RAh-803 @ 2 kg/ha) + Vermicompost (3 t/ha) + other recommended fertilizer, T_2: Vermicompost (3 t/ha) + other recommended fertilizer, T_3: Rhizobium inoculation (BARI RAh-803 @2 kg/ha) + other fertilizer ????????? T_4: Farmers' practice
Design	:	RCB
Replications	:	06 (six) dispersed
Unit Plot size	:	6 m × 4.5 m
Spacing	:	30 cm x 15 cm
Fertilizer dose	:	According to treatments
Application of fertilizer	:	All organic manures, half of phosphorus and sulphur should be applied as basal during final land preparation. Half of nitrogen should be applied as side dressing during flower emergence.
Data to be collected	:	1. Initial soil status 2. Dates of all operations, 3. Yield and yield attributes, 4. Pest and disease reaction, 5. Cost and return analysis and farmers' opinion and 6. Post harvest soil status
Expected output	:	Farmers will be benefitted by getting a suitable fertilizer dose for groundnut production
Status	:	New
Date of initiation	:	February' 2026
Date of completion	:	June' 2027
Estimated cost	:	Tk 80000/- per location
Source of fund	:	BARI
Location (s)	:	Mymensingh, Tangail, Manikgonj and Kishoregonj
Investigator(s)	:	Dr. Shahana Sultana, Mymensingh and concern scientists of respective station

Expt. 006. Optimization of Fertilizer Dose for Banana Production in Tangail

Activity	:	**Fertilizer management on Banana**
Objective (s)	:	• To find out optimum fertilizer dose for sustainable banana production • To evaluate the effect of different nutrient packages on growth, yield, and profitability.
Rationale	:	Banana (*Musa spp.*) is a key fruit crop in Bangladesh, providing quick returns and steady income for small farmers. In Tangail district, it is grown on about 4,518 ha, mainly in Atia (Delduar) and Madhupur. Despite favorable conditions, farmers rely on traditional, often imbalanced fertilization, leading to low yields, soil degradation, and higher costs. Following FRG' 2024, which emphasizes site-specific nutrient management (SSNM), this experiment aims to compare recommended, soil test–based, and farmer-practiced fertilizer doses to identify the most effective and economical approach for banana cultivation in these areas.
Materials and Methods	:	**Crop**: Banana, **Variety**: BARI Kola-1, G-9 and Local
Design	:	RCBD
Replications	:	6 (Six)
Plot size	:	40 m^2 per treatment
Spacing	:	2.5 m × 2.5 m
Treatments		T_1: Recommended dose (FRG 2024): NPKSB =250-80-300-20-1.5 kg/ha, T_2: According to Khamari app, T_3: Soil test based dose, T_4: 25% higher than recommended dose and T_5: Farmers' practice
Fertilizer dose and methods of application		Full dose of cow dung, TSP, gypsum, and boric acid at pit preparation; Urea and MOP in three equal splits at 30, 60, and 90 days after planting.
Irrigated/rainfed	:	As required during dry periods
Data to be recorded	:	Dates of all cultural operations, Plant height and pseudo stem girth, Number of hands and fingers per bunch, Fruit yield (t/ha) and fruit size, Disease and pest incidence, Cost-return analysis and Farmers' opinion
Investigator (s)	:	K. Roy, M.A. Rahaman, G. Pal, and T. Tasmima
Season		2025-2026
Date of Initiation		November, 2025
Date of completion		October, 2028
Expected output	:	Site-specific fertilizer recommendations for banana will be find out, Enhanced yield and income for banana farmers and Improved nutrient use efficiency and sustainability. Improve soil health.
Location		FSRD site Atia and MLT site Madhupur Tangail
Status		1st year
Estimated cost		Tk.180000
Source of fund		BARI
Priority		1st

Expt. 007. Integrated Nutrient Management of BARI Aam-4 in Bandarban Hill District

Activity	:	Technology Transfer
Objective(s)	:	To determine the optimum integrated nutrient management package for BARI Aam-4 in the hilly areas of Bandarban.
Rationale	:	Mango is a major fruit crop in the Chittagong Hill Tracts, and BARI has developed several high-yielding varieties. However, proper nutrient management is crucial for maximizing yield and fruit quality. This experiment aims to develop and validate an integrated nutrient management package that is suitable for the soil conditions and farmer practices in Bandarban, promoting sustainable mango production.
Materials and Methods	:	
Crop/variety	:	Mango
Design	:	RCB
Treatments		T_1: 100% of Recommended dose as per FRG-2024 T_2: 75% of Recommended dose as per FRG-2024 T_3: IPNS+ 5 t ha^{-1} vermi-compost T_4: Khamari App
Replications		06(dispersed)
Plot size	:	50 m x 20 m (1000 sq. m) or 40 x 25 (1000 sq. m)
Planting system/spacing	:	8 m x 8m
Fertilizer dose and methods of application	:	As per treatments
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Growth parameters (plant height, canopy spread), flowering and fruiting intensity, yield per plant, fruit quality parameters, soil nutrient status, farmer's opinion, economic return.
Investigator(s)	:	Dr. Salim, SSO and Md. Imam Hossain, SO, OFRD, BARI, Bandarban
Season	:	2025-26 and onwards
Date of initiation	:	June, 2025
Date of completion	:	Continuous monitoring for several fruiting seasons
Expected output/benefit	:	An effective integrated nutrient management package will be identified, leading to higher mango yields, improved fruit quality, and sustainable production for farmers.
Location	:	Bandarban Sadar
Status	:	1st year
Program Proposed from		OFRD, BARI, Bandarban
Priority	:	1st
Estimated cost	:	Tk. 100000/-
Source of fund	:	BARI

Expt. 008. Integrated Nutrient Management on Growth and Yield of BARI Coffee-1 in Bandarban Hill District

Activity	**:**	**Validity test**
Objective(s)	:	To evaluate the effects of applying doses lower or higher than the recommended level. To identify the most economically viable fertilizer dose for maximizing its productivity. 3.To assess the growth and yield performance of BARI Coffee-1 under varied nutrient regimes.
Rationale	:	BARI Coffee-1 (Robusta) is a key variety with potential for expanding coffee cultivation in the hilly regions of Bangladesh. This variety requires precise and balanced nutrition for optimal growth and high-quality bean production. The Bangladesh Agricultural Research Institute (BARI) has a recommended integrated fertilizer dose combining organic and inorganic sources. This experiment is designed to evaluate the efficacy of this recommended dose, as well as adjusted levels (increased and decreased by 25%), against the typical farmer's practice in Bandarban. The study aims to determine the optimal fertilizer strategy for BARI Coffee-1 to maximize growth, yield, and economic returns for farmers in the region.
Materials and Methods	:	
Crop variety	:	BARI Coffee-1
Design	:	RCBD
Treatments	:	T_1: 100% of BARI Recommended Dose: (Organic Fertilizer: 5 kg/plant, Urea: 45 g/plant, TSP: 35 g/plant, MoP: 30 g/plant) T_2: 125% of BARI Recommended Dose: (Organic Fertilizer: 6 kg/plant, Urea: 56 g/plant, TSP: 44 g/plant, MoP: 38 g/plant) T_3: 75% of BARI Recommended Dose: (Organic Fertilizer: 4 kg/plant, Urea: 34 g/plant, TSP: 26 g/plant, MoP: 23 g/plant) T_4: Farmers' Practice (Control)
Replications	:	6 (dispersed)
Plot size	:	12m x 9m
Planting system/ spacing	:	3 m × 3 m. (1,112 plants/ha)
Fertilizer dose and methods of application	:	The BARI recommended annual fertilizer dose for BARI Coffee-1 is 5 kg Organic Fertilizer, 45 gm Urea, 35 gm TSP, and 30 gm MoP per plant. Fertilization is required four times a year. The first split application should be done in March (prior to flowering), the second in May (after flowering), the third in August (during the pinhead stage), and the fourth in October (before fruit ripening). Fertilizers will be applied using the ring method, creating a shallow circular trench around each plant (30–35 cm from the stem, extending outward), applying fertilizers evenly, and covering with soil. This method targets the root zone, enhancing nutrient availability and uptake.
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	The study will assess growth parameters such as plant height, stem girth and canopy spread at 6-month intervals. Yield parameters will include productive nodes per branch, berries per node, fresh cherry yield (kg/plant and kg/ha), parchment/dry cherry yield

		(kg/ha), bean size grading. Quality will be evaluated through bean density and 100-bean weight. Pest and disease incidence will be regularly monitored due to their impact on growth and yield. An economic analysis will be conducted using the cost-benefit ratio for each treatment, along with farmer feedback and participatory evaluation on growth and yield aspects.
Investigator(s)	:	Fahim Arshad, SO, RDECCP and Imam Hossain, SO, OFRD, BARI, Bandarban
Season	:	Year round
Date of initiation	:	July 2025
Date of completion	:	January 2028
Expected output/benefit	:	Identification of the optimal and economically viable BARI recommended fertilizer dose for BARI Coffee-1. Practical recommendations to improve productivity and profitability in coffee cultivation in the Bandarban region.
Location	:	Bandarban Sadar
Status	:	1st year
Program Proposed from		OFRD, BARI, Bandarban
Priority	:	1st
Estimated cost	:	Tk. 1,20,000/-
Source of fund	:	BARI

Expt. 009. Integrated Nutrient Management on Growth and Yield of Cashew Nut (Cambodian M23) in Bandarban Hill District

Activity	**:**	**Validity test**
Objective(s)	:	To evaluate the effects of applying doses under varied nutrient regimes than the recommended level. To identify the most economically viable fertilizer dose for maximizing its productivity for established, fruit-bearing cashew plants. To assess the growth and yield performance of Cambodian M23 cashew nut under varied nutrient regimes.
Rationale	:	Cashew nut (*Anacardium occidentale* L.) is a high-value cash crop with significant economic potential in Bandarban. The Cambodian M23 variety, noted for its yield and quality, requires optimized nutrient management to achieve its full potential. While BARI provides general fertilizer recommendations, these need validation for Cambodian M23 variety under Bandarban's unique conditions, as current farmer practices may be inconsistent or suboptimal. This study aims to evaluate different levels of BARI-recommended fertilizer for established Cambodian M23 variety trees to identify a balanced, cost-effective strategy that enhances tree growth, nut yield and quality, and overall profitability.
Materials and Methods	:	
Crop variety	:	Cashew nut (Cambodian M23)
Design		RCBD

Treatments	:	T_1: 100% of BARI Recommended Dose: (Urea: 800 g/plant,TSP: 450 g/plant, MoP: 450 g/plant, Gypsum: 300 g/plant) T_2: 125% of BARI Recommended Dose: (Urea: 1000 g/plant, TSP: 562.5 g/plant, MoP: 562.5 g/plant, Gypsum: 375 g/plant) T_3: 75% of BARI Recommended Dose: (Urea: 600 g/plant, TSP: 337.5 g/plant, MoP: 337.5 g/plant, Gypsum: 225 g/plant) T_4: Farmers' Practice (Control)
Replications	:	6 (dispersed)
Plot size	:	16m x 16m
Planting system/ spacing	:	8m × 8m.
Fertilizer dose and methods of application	:	The BARI recommended annual fertilizer dose for established cashew nut plants forms the basis of T_1. This annual dose will be applied in two equal splits. The first split will be applied in May-June and the second split in September-October. Fertilizers will be applied using the ring method. A circular trench, 15cm deep, will be created around each plant at a distance of 1.5m from the stem, extending outward. The fertilizers for each split application will be applied evenly within this trench and then covered with soil. Irrigation will follow the application.
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Vegetative growth, including stem girth and canopy spread, will be measured annually. Yield parameters will include the number of nuts per plant, average nut weight, total yield (kg per plant and per hectare), and shelling percentage. Nut quality will be assessed through size/grade, kernel weight, and kernel recovery. Pest and disease incidence will be monitored, and an economic analysis, including cost-benefit ratio, will be conducted alongside farmer feedback to evaluate the practicality and benefits of each fertilizer treatment.
Investigator(s)	:	Fahim Arshad, SO, RDECCP and Imam Hossain, SO, OFRD, BARI, Bandarban
Season	:	Year round
Date of initiation	:	June 2025
Date of completion	:	June 2028
Expected output/ benefit	:	• Identification of the optimal and economically viable BARI recommended fertilizer dose for cashew nut in the region. • Practical recommendations to improve productivity and profitability in cashew nut cultivation in the Bandarban region.
Location	:	Bandarban Sadar
Status	:	1st year
Program Proposed from		OFRD, BARI, Bandarban
Priority	:	1st
Estimated cost	:	Tk. 1,00,000/-
Source of fund	:	BARI

Expt. 010. Improving the soil fertility and crop productivity of Potato-Groundnut-T. Aman cropping pattern by crop residue recycling via integrating nutrient management

Objective(s)	: 1. To improve soil fertility and productivity 2. To increase farmers' income
Rationale	Rice-rice cropping system is the most extensively followed crop rotation in the northern part of Bangladesh. It is a highly intensive cropping system with expensive energy inputs on tillage, irrigation water and fertilization. The farmers of the region have problems managing the crop residues, especially for rice crops. The residue crops are rich in nutrients (~ 0.5-1.5 % N). If recycled the residue can become a useful biofertilizer/soil conditioner. There can be various means of using rice residues for soil fertility enhancement. Some of the means include, in situ residue retention and incorporation into soil after crop harvest, transforming the residues into compost via suitable composting method and applying to soils, and integrating these crop residues based options with other options like green manuring. Crop wastes, farmyard manure, and green manure crops are all useful organic sources for increasing soil quality and reducing chemical fertilizer demand without harming crop yields. Integrated nutrient management provides balance as the organic sources release nutrients slowly into soil solution for plants to absorb, whereas inorganic fertilizers release nutrients quickly and may match plant needs throughout crop growth.
Materials and methods	:
Crop/Variety	: Potato: BARI Alu-86, Groundnut: BARI Chinabadam-8, T. Aman: BRRI dhan75
Design	: RCBD
Treatment	T_1: in situ 20 cm rice stubble retention and incorporation + 80 % RCF, T_2: in situ 20 cm rice stubble retention and incorporation + 100 % RCF, T_3: in situ 20 cm rice stubble retention and incorporation + 120 % RCF, T_4: IPNS and T_5: Absolute control
Replications	Six (6) dispersed
Plot Size	: 1320 m^2
Planting system/spacings	: Line sowing (Potato: 60 cm × 25 cm, Groundnut: 30 cm × 15 cm, T. Aman: 20 cm × 15 cm)
Fertilizer dose and methods of application	: NPKSMgZnBMg (Potato: 135-20-90-10-5-0-1.5-0; Groundnut: 48-37-60-25-0-1.1-0.8-0.4; T. Aman: 90-6-50-4-0-1-0-0)
Irrigated/Rainfed	: Irrigated
Data to be recorded	Dates of all operations, crop duration, yield and yield attributes, the gross income, the gross margin, the total variable cost, and the benefit-cost ratio (BCR), Rice equivalent yield, Land use efficiency, Production efficiency, and farmers' opinion.
Investigator(s)	: Md. Akhter-Ul-Alam
Season	: Rabi 2024-25
Date of initiation	: October, 2024
Date of completion	: October, 2026
Expected output	: The findings could lead to long-term crop management solutions for conservation agriculture that use less fertilizer.
Location	: Kaunia site
Status	: 2nd year
Proposed from	: OFRD, BARI, Rangpur
Priority	: 1st
Estimated cost	: Tk. 200,000/-
Source of fund	: BARI

Expt. 011. Effect of split application of Urea and MoP on potato production in Rangpur region

Objective(s) : 1. To evaluate the effect of split application of Urea and MoP of potato cultivation
2. To control the excessive use of Urea and MoP fertilizer
3. To increase productivity as well as maximize farmer's income

Rationale : Potato (Solanum tuberosum L.) is regarded as a high-potential food-security crop with excellent nutritional values (Ali et al. 2021). Bangladesh is the 7 th largest potato producers in the world and ranks 2 nd after rice in production (FAOSTAT 2020) and mainly consumed as vegetable. Potato is the most sensitive crop to nutrient stress because of its sparse root system. Thus it needs high dose of fertilizers for getting full yield potential. Nitrogen and Potassium are important essential macronutrients which play important role in growth and development of potato crop. Nitrogen (N) is one of the nutrients that exerts the greatest influence on the growth and development of plants under different environmental conditions (Rens et al., 2015). Excessive levels of early season N can lead to delayed tuber initiation and reduced yield, while increasing N rates at emergence or tuber initiation have not always increased yield (Rens et al., 2015). High N rate application concentrated at tuber initiation can cause rapid tuber growth, leading to a higher incidence of tuber defects such as growth crack, hollow heart and malformed tubers (Bussan, 2008). Scientific data indicate that a significant improvement for N fertilizer used efficiency results from split N fertilizer applications according to potato growth needs (Datta et al., 2015) and a reduction in N fertilization rates may also have the undesirable effect on both reducing crop yield and nitrate leaching (Fandikaet al. 2016). Potassium (K) is the second-most important macronutrient for potatoes. Potato plants require much more potassium than many other vegetable crops. The split application of potassium influence the production, nutrients extraction and quality of potatoes if a single application of K is supplied at planting, it may not meet all plants demands during all cycles for the full developmentof plants and roots (Echer 2015). In addition to N and K, potato is a heavy remover of soil potassium and its response to potassium varies with variety, source and method of potassium fertilizer application (Kumar et al., 2007). There is a fundamental need to develop an N management strategy for potatoes that will not only improve N use efficiency but also reduce potential nitrate leaching (Fandikaet al., 2016). Accordingly, spilt application of N and K fertilizer could be adopted as effective mitigation alternatives to control the environmental impacts of fertilization. Timing of fertilizer application and manipulation of fertilizer rates are low
cost strategies for reducing nutrient leaching so that nutrient supply is synchronized with
plant nutrient demand (Worthington et al., 2007). This research seeks to determine the
effect of splitting of nitrogen and potassium on the growth and yield of potato.

Materials and methods :

Crop/Variety : Potato, Variety : BARI Alu-25 (Asterix)

Design : RCBD

Treatment		**T_1: Farmers practices** (Basal : $\frac{1}{3}$ Urea and $\frac{1}{3}$MoP,$\frac{1}{3}$ Urea and $\frac{1}{3}$MoP at 28 DAP,$\frac{1}{3}$ Urea and $\frac{1}{3}$ MoP at 42 DAS) **T_2: Two splits of RFD** (Basal: $\frac{1}{2}$ Urea and $\frac{1}{2}$MoP,$\frac{1}{2}$ Urea and $\frac{1}{2}$ MoP at 28 DAS) **T_3: Three splits of RFD** (Basal : $\frac{1}{3}$ Urea and $\frac{1}{3}$MoP,$\frac{1}{3}$ Urea and $\frac{1}{3}$MoP at 28 DAS,$\frac{1}{3}$ Urea and $\frac{1}{3}$ MoP at 42 DAS) **Farmers practices:** (Urea 410 kg/ha, TSP 410 kg/ha, MoP 450 kg/ha, Gypsum 150 kg/ha, ZnSo4 10 kg/ha, Boric acid 9 kg/ha, MgSo4 75 kg/ha, Cowdung 10 t/ha) **RFD:** (Urea 300 kg/ha, TSP 100 kg/ha, MoP 180 kg/ha, Gypsum 55 kg/ha, Boric acid 9 kg/ha, MgSo4 80 kg/ha, Cowdung 5 t/ha) **(BARC, FRG' 2018)**
ii) Replications		4 (Compact).
Plot Size	:	3m x 5m
Planting system/spacings	:	Line sowing (60cm x 25cm)
Fertilizer dose and methods of application	:	As per treatments
Irrigated/Rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations Yield and yield attributes of crop Pest and disease reaction Cost and return analysis Farmers' opinion Initial and final soil status
Investigator(s)	:	Ummay Kulsum Laily, SO and scientists of OFRD, BARI, Rangpur
Season	:	Rabi, 2024-25
Date of initiation	:	October 2024
Date of completion	:	February 2026
Expected output	:	Economic fertilizer dose for maximum yield of potato
Location	:	OFRD, BARI, Rangpur
Status	:	2nd year
Proposed from	:	OFRD, BARI, Rangpur
Priority	:	1st
Estimated cost	:	Tk. 120000
Source of fund	:	BARI

Expt. 012. Effect of application method of gypsum on groundnut production in char land of Rangpur region

Objective(s)	:	To evaluate the influence of graded levels gypsum (basal, split and top dress) @ 400kg/ha and different times of application as a source of sulphur and calcium on soil fertility, yield and yield parameters of groundnut under charland condition.
Rationale	:	Groundnut (Arachis hypogaea L) is an important warm-season oilseed crop and is one of the most important oil producing crops in Bangladesh and ranking in second position both in area

and production. In Bangladesh, groundnut is grown in both the Rabi and Kharif season. In char areas of Rangpur region groundnut is one of the popular crops. Gypsum is widely used as a source of calcium and sulphur for groundnut worldwide. Gypsum contains 18.6% sulphur and 23.3% calcium. Calcium and sulphur also plays an important role in enhancing production and productivity of groundnut. Groundnut possessed the unusual ability to absorb calcium and suphur through the development of pegs and pods. Oil and protein content of groundnut kernel increased significantly under gypsum application.Addition of sulphur to the oil-seed crops increases the final oil yield in two ways, i.e., by improving the seed yield and also increasing the oil content of the seed. Calcium is the most critical element in growth and development of peanut seeds and is the main limiting of the peanut production in many parts of the world. Gypsum enhances soil structure by improving water penetration and reducing crusting, which is known for its effective pegging and supports the creation and filling up of pods in groundnut. Groundnut plants have a high calcium need, which increases throughout the pod filling stage. Enough calcium content in the soil around the peanut pods leads to increased yield, growth and oil content and protein content of the kernel.The calcium in gypsum is able to move more quickly through the soil profile, thus the reason it is applied at early bloom. Split application of gypsum (50% at sowing + 50% at flower initiation stage) resulted in higher plant height, number of branches and dry matter accumulation of groundnut as compared to the application of full dose of gypsum at sowing at all the stages except at 30 DAS. Split applications, such as at planting and bloom, are still not recommended. Considering the fact, the present study has been taken to find out the suitable application method of gypsum fertilizer in char land of Rangpur region.

Materials and methods	:	
Crop/Variety	:	BARI released groundnut variety
Design	:	RCB
i)Treatment		T_1 – Farmer's practice
ii) Replications		T_2 – 400 kg gypsum as basal
		T_3 – 400 kg gypsum (50% basal+50% top dress during 30-45 days under irrigated condition)
		T_4 – 400 kg gypsum as top dress (during 30-45 days under irrigated condition).
		(Kannan *et.al*., 2015;Vidya Sagar*et.al*., 2020; Ariraman, and Kalaichelvi, 2020)
		6 (Dispersed)
Plot Size	:	8 m × 5 m (unit plot)
Planting system/spacings	:	Line sowing, 30 cm X 15 cm
Fertilizer dose and methods of application	:	Cowdung-5 t/ha, Urea 115kg/ha, TSP 30 kg/ha, MP 125 kg/ha, gypsum 25 kg/ha Zn 2 kg/ha and Boric Acid 1.5 kg/ha. Entire quantity of cowdung, P, K, S, B and half amount of urea will be applied at the time of final land preparation. Rest urea will be applied 30-35 days after germination.

Irrigated/Rainfed	:	Irrigated
Data to be recorded	:	Plant height, flowering behavior, number of pods/plant, weight of pods/plant, number of seeds/plant, 100-seed weight, yield, oil and protein content, disease and pest infestation, farmer's reaction.
Investigator(s)	:	Dr. Most. Ummay Salma Khatun, SSO and scientists of OFRD, Rangpur
Season	:	Rabi, 2024-25 and 2025-26
Date of initiation	:	Last week of October 2024
Date of completion	:	Last week of March 2026
Expected output	:	Optimum dose of gypsum fertilizer will be identified for char areas of Rangpur region. Farmers in the char areas will be benefited through the application of optimum dose of gypsum fertilizer in groundnut.
Location	:	Chilmary, Kurigram
Status	:	2nd year
Proposed from	:	OFRD, BARI, Rangpur
Priority	:	1st
Estimated cost	:	Tk. 100000
Source of fund	:	BARI

Expt. 013. Interactive effect of tillage and potassium in Mustard -Boro-T. Aman cropping pattern in the northern part of Bangladesh

Objective(s)	:	To find out the effectiveness of conservation agriculture along with potassium fertilizer in the Mustard-Boro-T.aman cropping pattern
Rationale	:	Tillage, the mechanical preparation of soil, significantly influences soil water content, physicochemical properties, and crop yield. Various tillage depths, such as deep, conventional, and reduced tillage, impact soil differently. Deep and conventional tillage improves soil porosity, moisture content, aeration, and nitrate levels while reducing weeds and soil compaction. Shallow tillage is recommended for better crop yield and soil quality compared to more intensive tillage methods. Conventional tillage (20-22 cm) improves yield, and deep manipulation with a chisel plough enhances soil aeration, moisture, and porosity. In Bangladesh, potassium is naturally abundant in most soils, but high-yield varieties, lack of crop rotation, and continuous monocropping have led to potassium deficiency. Potassium is crucial for crop yield and quality, playing roles in photosynthesis, carbohydrate formation, and drought tolerance. Water availability is a key factor in plant distribution and survival, and improving crop, soil, and water management involves increasing root penetration and water use efficiency. Plants adapt to stress conditions with high water use efficiency, effective until stress becomes severe or prolonged. Potassium helps plants resist drought stress by stimulating root growth, reducing transpiration, and increasing water retention. Given these benefits, the feasibility of potassium nutrition to enhance crop performance needs to be tested under different tillage conditions.
Materials and methods	:	
Crop/Variety	:	Mustard: BARI Sarisha-18, Boro: BRRI dhan104, T. Aman: BRRI dhan 75

Design	:	CRD
Treatment		Main-plots: ➢ ZT-zero tillage and ➢ CT-conventional tillage K application methods: ➢ K_0-no potassium, ➢ K_1-basal application and ➢ K2-basal + split application
Replications		Six (6) dispersed
Plot Size	:	1320 m^2
Planting system	:	Mustard: BARI Sarisha-18, Boro: BRRI dhan104, T. Aman: BRRI dhan 75
Fertilizer dose and methods of application	:	N-P-K-S-Mg-Zn-B-Mo (Mustard: 90-18-40-10-2.5-0-1.0-0, Boro-144-8-60-4-0-2-0-0, T. Aman: 90-6-50-4-0-1-0-0)
Irrigated/Rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, crop duration, yield and yield attributes, data on yields and yielding characteristics, the gross income, the gross margin, the total variable cost, and the benefit-cost ratio (BCR), Rice equivalent yield, Land use efficiency, Production efficiency, and farmers' opinion.
Investigator(s)	:	Md. Akhter-Ul-Alam
Season	:	Rabi 2024-25
Date of initiation	:	October, 2024
Date of completion	:	October, 2026
Expected output	:	The crop yields, system productivity, and profitability would be increased.
Location	:	MLT site Pirgonj
Status	:	2nd year
Program proposed	:	OFRD, BARI, Rangpur
Priority	:	1st
Estimated cost	:	Tk. 210,000/-
Source of fund	:	BARI

Expt. 014. Effect of doses and placement methods of nitrogen fertilizer on bulb yield and post-harvest quality of onion

Objectives	:	To find out the appropriate dose and application method of N fertilizer on the yield and post-harvest quality of onion
Rationale	:	Onion (*Allium cepa* L.) is one of the major spice crops in Bangladesh. However, bulb yield and productivity have been consistently below optimal levels due to various factors, with the lack of location-specific nitrogen (N) fertilizer recommendations and proper application methods being among the most significant. Several management practices are known to influence onion bulb yield and quality. In Bangladesh, farmers commonly apply N fertilizer in improper doses through broadcast methods, which may increase bulb yield but often compromises storage quality and nitrogen use efficiency. We hypothesize that optimizing the N dose and employing banding as an application method can enhance both bulb yield and post-harvest quality, particularly shelf-life, without sacrificing yield. Moreover, banding N application can reduce nitrogen losses and improve its efficiency. To date, most research in this area has focused on onion varieties, with limited information on the effects of nitrogen fertilizer levels and application methods on growth, yield, and storage quality.

		Therefore, this proposed study aims to evaluate the impact of different nitrogen levels and application methods on onion bulb yield and post-harvest quality.
Materials and methods	:	
Crop/variety	:	Onion
Design	:	RCBD
i)Treatment:	:	Factor A: N-levels (3) 1. Recommended N fertilizer 2. RF – 25 % reduced 3. RF + 25 % increase Factor B: Placement methods (3) 1. Broadcast method 2. Surface banding beside the row 3. Deep banding beside the row
ii) Replications	:	6
Plot size	:	5 x 4 m^2
Planting system/spacing	:	As per recommended spacing for onion.
Intercultural operation	:	As per requirement
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, plant height, bulb length and breadth, Individual bulb weight, days to maturity, bulb yield, storage related parameters (temp., humidity, thickness of bulb, bulb damage, storage quality %, shelf-life etc.), pest and disease, cost and return and farmer's opinion
Investigators	:	Md. Ariful Islam, Md. Maniruzzaman, Md. Zahedul Hasan, Mehera Afroj Suborna, Md. Samim Hossain Molla
Season	:	Rabi
Date of initiation	:	December 2024
Date of completion	:	April 2025
Expected output	:	Optimum nitrogen levels and methods on increased yield and shelf-life of onion will be obtained
Locations	:	On-Station, ARS, OFRD, Pabna
Status	:	2nd year
Proposed from	:	On-Station, ARS, OFRD, Pabna
Estimated cost	:	Tk. 50,000
Source of fund	:	BARI
Priority	:	1st

Expt. 015. Effects of Zn and B on growth and yield of Foxtail Millet at char area

Objectives	:	To assess the effects of Zn and B on growth and yield of foxtail millet
Rationale	:	Nutrition security is a most talked topic in recent time. Millets, a nutrient-dense cereals, containing proteins (12.3 g), carbohydrates (60.9 g), fat (4.3 g), crude fiber (8.0 g), calcium (3.1 g), vitamins and thiamin (50 mg) per 100 g. The grains are a good source of Beta-carotene, antioxidants, dietary fibre and minerals like Ca, Fe, Mg, Zn (Murugan and Nirmala, 2006). Foxtail millet is fairly a drought tolerant crop and it has ability to withstand adverse weather conditions.

		Deficiency of zinc and boron occurs in alkaline soils, particularly in calcareous soils. Boron may be present but locked up in soils with a high pH, and the deficiency may be worse in wet seasons (Dholariya *et al*., 2020). Due to the deficiency of these two nutrients, the plant growth is stunted and seed yield is greatly reduced. Therefore, zinc and boron fertilizer application could enhance the yield of foxtail millet.
Materials and methods	:	
Crop/variety	:	BARI Kaon-2
Design	:	RCBD
i) Treatments	:	1. Recommended fertilizer (-B, - Zn) 2. Recommended fertilizer + 1 kg/ha Zn 3. Recommended fertilizer + 1 kg/ha B 4. Recommended fertilizer + 1 kg/ha Zn + 1 kg/ha B 5. Farmers' practice
ii) Replications	:	6
Plot size	:	4 m X 5 m
Planting system/spacing	:	Broadcasting
Fertilizer dose and methods of application	:	All fertilizer dose and methods of application will be followed as per FRG' 2018
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Plant height, no. of leaves/plant, dry weight, no. of tillers, no. of ears/plant, length of ears, grain yield, stover yield, harvest index
Investigators	:	Mehera Afroj Suborna, Md. Zahedul Hasan, Md. Maniruzzaman, Md. Ariful Islam, Md. Samim Hossain Molla
Season	:	Rabi
Date of initiation	:	March, 2024
Date of completion	:	June, 2026
Expected output	:	Zn and B nutrient effect on growth and yield of foxtail millet will be evaluated
Locations	:	MLT site, Sujanagar, Pabna
Status	:	2nd year
Proposed from		Pabna, OFRD,BARI
Estimated cost	:	60,000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 016. Effect of different doses of fertilizer in Potato-Maize relaying system in coastal area

Objective (s)	:	1. To identify suitable fertilizer doses for potato-maize system. 2. To utilize the fallow land and overcome salinity stress at seed germination stage
Rationale	:	Intercropping is an important tool for getting higher productivity per unit area of land and it improves the food security (Mahfuza et al., 2012). Intercropping system becomes productive and economical only when it is done properly by selecting compatible crops (Begum et al., 2010). Potato and maize may be grown as intercrop as they have different photosynthetic pathway, growth habit, growth duration and demand for

growth resources. In recent years maize is gaining popularity in coastal environment due to high yield, more economic return and versatile uses. In southern region Maize should be planted within December to avoid adverse effect of cyclone or early seasonal rainfall. For this reason a farmer has to sacrifice other high productive crop like-Potato. But intercropping of these two crops may fulfill farmers' demand of both maize and potato. Potato and Maize both are more fertilizer consuming crops. Vegetable crops are very responsive to soil fertility status (Moslehuddin et al., 1997), so nutrient management strategies should be used on vegetable farms to maximize the benefits of fertilizer application on crop yields and fruit quality while minimizing nutrient loss to the environment. With these views the trial has been undertaken with the above objectives.

Materials and Methods	:	
Crop/variety	:	Potato, Maize
Design	:	RCB
i. Treatment	:	The treatments will be assigned as follows: T_1 = Soil test based (STB) T_2 = N160P40K150S30Z2B4 (RD Potato) T_3= N140P64K128S24Z2B4 (80% RD Maize) T_4= N112P56K112S21Z2B4 (70% RD Maize)
ii. Replications	:	Six
Plot size	:	8 m x 5 m for each unit plot
Planting system	:	Line sowing, 60 cm x 40 cm
Fertilizer dose and methods of application		Treatment wise fertilizer will be used
Irrigated/rainfed	:	Rainfed
Data to be recorded	:	Yield and yield contributing characters, benefit & cost, disease and pest infestation, Salinity at 15 days interval and farmers opinion.
Investigator (s)		Concerned scientist of OFRD, Patuakhali
Season		Rabi, 2024-25
Date of Initiation		First week of December 2024
Date of completion		Last week of May 2025
Expected output	:	Minimize fertilizer doses in Potato-Maize relay system and increase income of the farmers in coastal lands
Location	:	Amtoli, Baruna & Kuakata, Patuakhali
Status	:	1styear
Estimated cost	:	Tk. 70000/-
Source of fund	:	BARI Main
Priority	:	1st

Expt. 017. Fertilizer Recommendation for Soybean-T. aus-T. aman Cropping Pattern in the Coastal Saline Area

Objective(s)	:	To develop an optimum fertilizer dose for higher productivity and profitability at Noakhali region To increase total productivity and farmers income
Rationale	:	Coastal area of Bangladesh are characterized by heavy clay soil, heavy rainfall from May to November, cyclone, tidally flooded twice a day during wet season, soil salinity and scarcity of sweet

		water for irrigation in the dry season, shorter winter that starts late, late harvesting of T.Aman rice etc. So, cropping diversity is very low in the region in *Rabi* season. T.Aman is the only crop in *Kharif*-II that harvested within December. By this time sowing time of the most *Rabi* crops passed away. In late *Robi* season soybean is the major cash crop of Lakshmipur and Noakhali. After harvesting soybean T.Aus rice could be transplanted there in time. Farmers are using improved varieties and single crop basis fertilize that leads misuse of fertilizer specially Phosphorus and Potassium. For sustainable crop production and management of soil fertility, the experiment will undertake to develop the optimum fertilizer dose for higher productivity and profitability.
Materials and methods	:	
Crop/ Variety	:	BARI Soybean-6, BRRI dhan85 and BRRI dhan87
Design		RCB
i) Treatments	:	T_1: STB fertilizer dose (FRG' 2018) T_2: T_1 + 20% of T_1 T_3: Khamari app T_4: Pattern based fertilizer recommendation (FRG' 2018) T_5: Farmers' practice (average of 20 farmers)
ii) Replications	:	06 (dispersed)
Plot size	:	10m × 10m
Planting system	:	Soybean: 30cm × continuous, Rice: 25cm × 15cm
Fertilizer dose and methods of application	:	As per treatments and recommendation
Irrigated/rainfed	:	Soybean & T.Aman: rainfed, T.Aus: partially irrigated
Data to be recorded	:	Dates of all operation, yield and yield contributing characters, major disease and insect incidence, soil nutrient status before and after experiment, soil salinity, applied input and output price, farmers' opinion
Investigator(s)	:	MM Bashir, SSO & MS Islam, PSO
Season	:	Round the year: 2024-25
Date of initiation	:	Mid December 2024
Date of Completion		End of December 2025
Expected output	:	Optimum fertilizer dose and 15-20% higher system productivity will be achieved
Location	:	Sadar, Noakhali and Kamalnagar, Lakshmipur
Status	:	2nd year
Proposed from	:	OFRD, BARI Noakhali
Priority	:	1st
Estimated cost	:	Tk. 100,000/-
Source of fund	:	BARI

Expt. 018. Effect of different fertilizer doses on the yield of groundnut in the charland of river Jamuna at Manikganj

Objective(s)	: 1. To validate the effect of fertilizer management on the yield of groundnut. 2. To recommend a suitable fertilizer dose of BARI Chinabadam-8 for charlands of Manikganj. 3. To increase production and income of the farmers.
Rationale	: Groundnut (*Arachis hypogea*) is the third most important oilseed crop in terms of area in Bangladesh. It covers approximately 32000 hectares of land in our country. Groundnut contains 45-50% oil and 22-29% protein. It is also a good source of omega-3 fatty acid. Groundnut is widely used bakery items especially for chanachur making factory. The current production could not meet the demand of groundnut used in various food items. Farmer's generally grow local varieties of groundnut and they get lower yield. The cause of lower yield might be due to non-judicial application of fertilizers in this crop. Oilseed Research Division of BARI has developed some groundnut varieties those high yielding and less susceptible to pest and diseases. Optimum dose of fertilizer application provides better agronomic and economic benefits to growers. Soil analysis provide a better understanding of what and how much fertilizer inputs to be allocated considering the high cost of fertilizer and the limited financial resources of farmers. Therefore, the present investigation will was undertaken to verify the effect of variable rates of fertilizer on the yield of BARI Chinabadam-8 in the charland of river Jamuna at Manikganj.
Materials and Methods	:
Crop/variety	: Chinabadam (BARI Chinabadam-8)
Design	: RCBD
i. Treatments	: T_1 = Soil Test Based fertilizer dose (STB) T_2 = STB + 10% extra of NPKS T_3 = STB + 20% extra of NPKS T_4 = STB + 30% extra of NPKS T_5 = Farmers' practice
ii.Replications	: 3 (experiment will be set up in one farmers field)
Plot size	: 4m x 3m
Planting system/spacing	: Line sowing, 30 cm x 15 cm
Fertilizer dose and methods	: Fertilizer will be calculated based on the soil test values. Half of urea and all other fertilizers to be applied during final land preparation. Remaining urea will be applied as top dress at 45 DAS at pre-flowering stage of the crop.
Irrigated/rainfed	: Irrigated
Data to be recorded	: Initial and final nutrient status of soil, nutrient uptake. Dates of all operation, Yield and yield contributing characters, Shoot and fruit damage by number and %, Shoot and fruit damage by weight and percentage. Major disease and insect incidence, Cost and return analysis, Farmer's opinion.
Investigator(s)	: Dr. Md. Ruhul Amin (PSO) of OFRD, Manikganj
Season	: Rabi, 2024-25
Date of initiation	: December, 2024
Date of completion	: May, 2024
Expected output	: Fertilizer dose will be determined and yield of groundnut will be increased by 20-30%.
Location	: Char Katari, Daulatpur, Manikganj
Status	: 2nd year
Proposed from	: OFRD, BARI, Manikganj
Priority	: 1st
Estimated cost	: Tk. 30000/-
Source of fund	: DG, BARI

Expt. 019. Effect of fertilizer on turmeric production in hilly areas of Mymensingh

Objectives	:	i. To find the suitable fertilizer dose for turmeric in the hilly area of Mymensingh. ii. To increase crop productivity
Rationale	:	Turmeric (*Curcuma longa* L) is an important spice crop in Bangladesh. Turmeric is a rhizomatous crop, that requires substantial amount of nutrients to boost the yield. Being a long-duration crop, it extracts numerous nutrients from the soil. In Haluaghat, farmers of hilly areas produced turmeric as a cash crop. The imbalance use of fertilizer is a serious problem for soil health. This is mainly because of a lack of proper knowledge of the usage of nutrient sources and limited information on turmeric cultivation. It is necessary to study the best source of fertilizer for the commercial cultivation of turmeric. Hence, the experiment will be undertaken to find a suitable fertilizer dose for turmeric production in hilly areas
Materials and Methods	:	
Crop/Variety	:	Turmeric: BARI Halud-4
Design	:	RCB
i) Replications	:	6 (dispersed)
ii) Treatments	:	T1: 100% STB T2: IPNS+10 t/ha CD T3: Khamari apps T4: Farmer's practice
Plot size	:	6 m × 4.5 m
Planting system/spacing	:	60 cm x 45 cm
Fertilizer dose and methods of application	:	All organic manures, phosphorus, and sulphur should be applied as basal during final land preparation. Nitrogen should be applied as a side dressing in two equal splits at 15-20 and 40-45 days after emergence.
Irrigated/ rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, Yield and yield attributes, Pest and disease reaction Cost and return analysis, Farmers' opinion
Investigators	:	Dr. Nargis Sultana, PSO, Dr.Esmat A. Begam, SSO, Dr. Nazma Akhter, SSO, Dr. Shammi Akhtar, SSO and Dr. Shahana Sultana, SSO, OFRD, Mymensingh
Season	:	Rabi 2024-25
Date of initiation	:	October, 2024
Date of completion	:	January 2025
Expected output	:	Farmers will benefit by getting a suitable variety and fertilizer dose for turmeric cultivation
Location	:	Fulbaria Mymensingh
Status	:	2nd year
Proposed from	:	OFRD, BARI, Mymensingh
Priority	:	1st
Estimated cost	:	Tk. 50,000
Sources of fund	:	BARI

Expt. 020. Mode of Sulphur application on Groundnut yield and productivity

Objectives	:	i. To investigate the effects of Sulphur application time on the yield of groundnut ii. To enhance soil quality and yield, and economic return of the farmers
Rationale	:	Groundnut is one of the most important oil seed crops of Bangladesh occupying one third areas under oil seeds. Average production of groundnut is very low in Mymensingh district. Besides primary nutrients sulphur plays an important role in enhancing production and productivity of groundnut. Sulphur is very crucial for the formation of sulphur containing amino acids and oil synthesis. There are large numbers of sulphur sources available in the country and their efficiency in crops like groundnut needs to be evaluated. Keeping this in view, the present investigation was planned to find out the response of groundnut to Gypsum and its application time.
Materials and Methods		
Crop/Variety	:	Groundnut: BARI Chinabadam-9/10
Design	:	RCB
i) Replications	:	6 (dispersed)
ii) Treatments	:	T_1: 100% S as basal soil dressing, T_2: 50% S as basal soil dressing and 50% S as foliar spray at 30 DAE T_3: 50% S as basal soil dressing and 50% S as foliar sprays (2 doses) at 30 and 50 DAE T_4: 100% S as foliar spray at 30 DAE
Plot size	:	6 m × 4.5 m
Planting system/spacing	:	30 cm x 15 cm
Fertilizer dose and methods of application	:	All organic manures, half urea, phosphorus should be applied as basal during final land preparation. Half urea will apply during flower emergence. Gypsum (S source) will apply according to the treatments.
Irrigated/ rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, yield and yield attributes, Pest and disease reaction, Cost and return analysis, Farmers' opinion
Investigators	:	Dr. Shahana Sultana, SSO, Dr.Esmat A. Begam, SSO, Dr. Nazma Akhter, SSO, Dr. Shammi Akhtar, SSO and Dr. Nargis Sultana, PSO, OFRD, Mymensingh.
Season	:	Rabi 2024-25
Date of initiation	:	October, 2024
Date of completion	:	February 2025
Expected output	:	Farmers will benefit by getting a suitable variety and fertilizer dose for Groundnut cultivation
Location	:	Gaforgaon/ Biddagonj, Mymensingh
Status	:	2nd year
Proposed from	:	OFRD, BARI, Mymensingh
Priority	:	1st
Estimated cost	:	Tk. 50,000
Source of fund	:	BARI

Expt. 021. Effects of Biofertilizer on the yield of BARI released Cabbage Variety in the Farmer's field

Objectives	:	i. To investigate the effects of different biofertilizer on the yield of cabbage ii. To enhance soil quality and to increase economic return of the farmers
Rationale	:	Cabbage (*Brassica oleracea* var. *capitata*)is a cash-value popular vegetable crop in the world, which is rich in protein, carbohydrates, vitamins A and C. In addition, cabbage is high in fiber and contains powerful antioxidants, including polyphenols and sulfur compounds. In Bangladesh, it is grown in winter season for using fresh head (vegetable buds) The garden pea is highly nutritious and tasty. Cultivation of this crop is highly profitable and preferable to the farmers for its short duration. However, the inclusion of biofertilizers like tricho-compost in the cultivation of cabbage helps in improvement of soil fertility. Application of Tricho-compost significantly reduced seedling mortalities, root-knot nematode infestation, and increased yield and also improved the quality of vegetable crops. Soil incorporation of Tricho-compost reduced seedling mortality up to 70% in cabbage (Nahar et al., 2012). The soils of the Muktagacha region of the Mymensingh district are very suitable for cabbage production and farmers of this region do not follow the balanced fertilizers used to cultivate the locally available variety. However, using biofertilizers like tricho-compost with other recommended fertilizer can improve the soil health as well as increase the yield. Therefore, the present study will undertake to find a suitable fertilization package to produce cabbage in Muktagacha, Mymensingh region of Bangladesh.
Materials and Methods:		
Crop/Variety	:	Cabbage: BARI Badhacopi-2
Design	:	RCB
i) Replications	:	6 (dispersed)
ii) Treatments	:	T_1: Tricho-compost (3 t/ha) + other recommended fertilizers, T2: Vermicompost (5 t/ha) + other recommended fertilizers, T3: Tricho-compost & Vermicompost + other recommended fertilizers, T4: Urea (100%) + other recommended fertilizers.
Plot size	:	6 m × 4.5 m
Planting system/spacing	:	60 cm x 45 cm
Fertilizer dose and methods of application	:	48-24-30 N-P-S Kg ha^{-1} + CD 5 t ha^{-1} (Recommended dose FRG' 2018) and Tricho-compost 3 t $ha^{-1}$and vermicompost 5 t ha^{-1} All organic manures, phosphorus and sulphur should be applied as basal during final land preparation. Nitrogen should be applied as side dressing in two equal splits at 15-20 and 40-45 days after emergence.
Irrigated/ rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, yield and yield attributes, Pest and disease reaction, Cost and return analysis, Farmers' opinion
Investigators	:	Dr. Shahana Sultana, SSO, Dr.Esmat A. Begam, SSO, Dr. Nazma Akhter, SSO, Dr. Shammi Akhtar, SSO and Dr. Nargis Sultana, PSO, OFRD, Mymensingh.
Season	:	Rabi 2024-25
Date of initiation	:	October, 2024
Date of completion	:	January, 2025
Expected output	:	Farmers will benefit by getting a suitable variety and fertilizer dose for cabbage cultivation
Location	:	Muktagacha, Mymensingh
Status	:	2nd year
Proposed from	:	OFRD, BARI, Mymensingh
Priority	:	1st
Estimated cost	:	Tk. 50,000
Source of fund	:	BARI

Expt. 022. Effect of different fertilizer doses on the yield of groundnut in the charland of Tangail

Objectives	:	1. To select optimum fertilizer dose 2. To increase production and maximize economic return of farmers
Rationale	:	The mid-channel island that occasionally rises from the riverbed due to accretion is known in Bengali as "Charland". Charland soil does not exhibit waterlogging or excessive moisture stress. Bhuapur upazila in the Tangail district contains 12841 hectares of Charland, compared to 0.82 million hectares nationwide. Farmers of Bhuapur cultivates groundnut with poor management practice that results in lower yield and ecomic return. Crop production will rise with high-yielding varieties, soil testing and appropriate fertilizer application. To boost output and farmers' income, On-Farm Research Division, BARI, Tangail introduced the high-yielding variety BARI Chinabadam-9 in the Charland region. This study was thus conducted to discover the appropriate fertilizer dose to increase the yield and farmers income.
Materials & Methods	:	
Crop/Variety	:	Crop: Groundnut; Variety: BARI Chinabadam-9 and Dhaka-1
Design	:	RCB
i) Treatments	:	T_1 = Recommanded as BARI T_2 = Soil Test Based fertilizer dose (STB) T_3 = STB + 10% more NPKS (STB) T_4 = STB + 20% more NPKS (STB) T_5 = Farmers' prractice T_6 = 20% more than farmers' practice
ii) Replication	:	6 (dispersed)
Plot size	:	10 m 8 m
Planting systems	:	Line sowing, Spacing = 30 cm x 15 cm
Fertilizer dose and methods of application	:	According to treatments, Half of nitrogen and full quantity of P K S B were applied as basal in the form of urea, triple super phosphate, muriate of potash, gypsum and boric acid, respectively. Remaining N was top dressed at flowering stage and covered with soil for proper establishment of crop.
Irrigation/rainfed	:	Irrigated
Data to be recorded	:	1. Yield and yield contributing characters of Groundnut 2. Cost and return calculation 3. Farmers reaction
Investigators	:	Mohammad Asiqur Rahaman SSO, Gourango Paul, SO; Tahera Tasmima, SO; Kakali Roy, SSO and Shomoresh Roy, SO;
Season	:	2024-25 and 2025-26
Date of initiation	:	Rabi 2024
Date of completion		Kharif 2026
Expected output	:	Optimum fertilizer dose will be selected for groundnut in char area and farmers will be benefited economically.
Location	:	MLT site Bhuapur, Tangail
Status	:	2nd year
Proposed from	:	On-Farm Research Division, BARI, Tangail
Priority	:	1st
Estimated cost	:	1,20,000/-
Source of fund	:	OFRD, BARI

Expt. 023. Effect of nutrient management on the productivity of Mustard (Canola) in Northwest Bangladesh

Objectives	:	To determine optimum nutrient packages for BARI Sarisha-18
Rationale	:	Rapeseed-Mustard is the most important oil crop contributing the lion share in the domestic edible oil economy of Bangladesh. Its area coverage and production are increasing gradually due to development of short duration and high yield potential varieties by BARI and Bangladesh Govt. initiatives. Bangladesh Agricultural Research Institute (BARI) has developed a high quality canola type oil-seed variety (BARI Sarisha-18). This variety has less amount of erucic acid content which is not harmful to human body and it is proved as good quality cooking oil. It is high yielding and market price is higher. Some farmers reported that seeds of late sown mustard show shrinkage and low or late germination tendency. This might be due to imbalanced fertilizer management practice. Additionally, the soil of AEZ-3 is characterized by low pH and deficit in micronutrient especially boron which is very crucial for seed formation. Normally, farmers apply similar dose of fertilizer as of short duration varieties. The fertilizer rate could not be fulfilled the demand of BARI Sarisha-18 for potential yield. Crop production system with high yield targets cannot be sustainable unless nutrients are judiciously supplied to soil against nutrient mining. It is utmost need to solve this problem immediately to keep up the ever increasing cultivation of BARI Sarisha-18 throughout the country for healthy oil production. Keeping these views in mind, the present study is proposed to determine optimum nutrient package for BARI Sarisha-18 in Rangpur region.
Procedure/methods	:	
Crop/Variety	:	Mustard/BARI Sarisha-18
Design	:	RCBD
Treatment	:	Nutrient package: STB, STB+25% NPKS, STB+50% NPKS and farmers' practice (average of 20 farmers)
Replications	:	6 (Disperse)
Planting system	:	Line sowing, 30 cm x 5 cm
Plot size	:	4 m x 5 m
Fertilizer dose & Methods of application	:	Fertilizer dose will be followed as per treatment specification ½ N and full quantity of other fertilizers will be applied as basal. Remaining N will be top dressed just before flowering stage and followed by irrigation.
Irrigated/ rainfed	:	Irrigated
Data to be recorded	:	Phenology, yield components, yield and cost-return analysis
Expt. output	:	Optimum fertilizer package for BARI Sarisha-18 will be determined for higher productivity
Investigator(s)	:	M. S. Hossain, M. S. Alam and Eakramul Haque
Date of initiation	:	November, 2023
Date of completion		March, 2025
Location	:	OFRD-Barind, Bagura and Rangpur
Status	:	3rd year
Estimated cost	:	1,20,000/-
Source of fund	:	BARI
Priority	:	First

Expt. 024. Development of fertilizer packages for Groundnut seed production in Char land condition

Objectives	: To find out the optimum dose of fertilizer for ground nut seed production in char land. To observe the effect of gypsum fertilizer on growth and yield of groundnut in char land.
Rationale	: Groundnut (*Arachishypogaea*L) is an important warm-season oilseed crop and is one of the most important oil producing crops in Bangladesh and ranking in second position both in area and production. In Bangladesh, groundnut is grown in both the Rabi and Kharif season. In char areas of Rangpur region groundnut is one of the popular crops. At present, drought is a very common problem in northern region of Bangladesh and specially in char areas it is a serious issue. In Bangladesh, groundnuts are primarily grown in dry river beds, and drought stress seems to adversely affect groundnut yield and quality. Groundnut is frequently subjected to drought stresses of different duration and intensities (Reddy *et al*., 2003). Drought is recognized as one of the major constraints limiting groundnut productivity. Calcium as well as gypsum fertilizer under drought stress could promote groundnut growth, increase the chlorophyll content, leaf photosynthetic rate and the root vitality, increase the recovery ability of groundnut during rewatering after drought stress, alleviate the impact of drought stress on groundnut. Applying Ca fertilizer under drought stress increased pod and kernel yields because of the increase of kernel rate and pod number per plant. It also increased the fat and protein contents of groundnut kernel, and improved kernel quality under drought stress. Considering the fact, the present study has been taken to find out the optimum dose of gypsum fertilizer in char land of Rangpur region.
Materials and Methods	:
Crop/variety	: Chinabadam/BARI Chinabadam-9
Design	: RCBD
Treatment	: T_1 : Recommended dose of fertilizer (RDF) T_2 : RDF + 25% higher gypsum T_3 : RDF + 50% higher gypsum T_4 : Farmer's practice (Average of 25 farmers used)
Replications	: 6 (dispersed)
Plot size	: 10 m × 8 m (unit plot)
Planting system/spacing	: Line sowing, 30 cm X 15 cm
Fertilizer dose and methods of application	: Cowdung-5 t/ha, Urea 115 kg/ha, TSP 30 kg/ha, MP 125 kg/ha, gypsum 25 kg/ha Zn 2 kg/ha and Boric Acid 1.5 kg/ha. Entire quantity of cowdung, P, K, S, B and half amount of urea will be applied at the time of final land preparation. Rest of urea will be applied 30-35 days after germination.
Irrigated/rainfed	: Irrigated
Data to be recorded	: Plant height, flowering behavior, number of pods/plant, weight of pods/plant, number of seeds/plant, 100-seed weight, yield, disease and pest infestation, farmer's reaction.
Investigator (s)	: Most. Ummay Salma Khatun, SSO and scientists of OFRD, Rangpur
Season	: Rabi, 2023-24 and 2024-25
Date of Initiation	: Last week of October 2023
Date of completion	: Last week of March 2025

Expected output/benefit	: Optimum dose of gypsum fertilizer will be identified for char areas of Rangpur region. Farmers in the char areas will be benefited through the application of optimum dose of gypsum fertilizer in groundnut.
Location	: Chilmary, Kurigram
Status	: 3rd year
Estimated cost	: Tk. 60000
Source of fund	: BARI
Priority	: 1st

Expt. 025. Effects of N fertilizer and application methods on bulb yield and post-harvest quality of onion

Objectives : To examine the influence of N levels and application methods on yield and shelf-life of onion (BARI Piaj-4)

Rationale : The onion(*Allium cepa* L.) is one of the major spice's crops in Bangladesh. However, the bulb yield and productivityof the crop has been far below standards owing to several factors - absence of locationspecific nitrogen (N) fertilizer recommendation, application method and time of application being the major among others.Several management practices are identified to influence yield and quality of onion bulb. Farmers in Bangladesh usually apply improper dose of N fertilizer for growing onion which helps to increase yield but reduces storage quality of onion and N efficiency. We hypothesized that appropriate N dose and time of N application can improve post-harvest quality especially shelf-life without compromising yield. So far, research in this area was mainly focused on the varieties of onions, but there is limited information available onthe effects of nitrogen fertilizeron growth, yield and storage quality of onion. Therefore, the effect of different levels of nitrogen and application methods on bulb yield and post-harvest quality of onion would be evaluated in the proposed study.

Materials and methods :
Treatment:
Main plot: N-levels (3)
4. Recommended N fertilizer (240 kg/ha Urea)
5. RF – 25 % reduced
6. RF + 25 % increase

Sub-plot: N Application methods (3)
4. Basal (1/3)+ 1st Installment (1/3) at 25 DAS + 2nd Installment (1/3) at 50 DAS
5. Basal (2/3)+ 1 Installment (1/3) at 50 DAS
6. Farmer's practice

Crop/variety	: Onion
Design	: Split-plot
Plot size	: 5 x 4 m^2
Planting system/spacing	: As per recommended spacing for onion.
Intercultural operation	: As per requirement
Irrigated/rainfed	: Irrigated
Data to be recorded	: Dates of all operations, Plant height, Bulb length and breadth, Individual bulb weight, Days to maturity, Bulb yield, Storage related parameters (Temp., humidity, thickness of bulb, bulb damage, storage quality %, shelf-life etc.), Pest and disease, Cost and return and Farmers opinion

Investigators	:	Md. Ariful Islam, Md. Maniruzzaman, Md. Zahedul Hasan, MeheraAfrojSuborna
Season	:	Rabi
Date of initiation	:	December 2023
Date of completion	:	April 2024
Expected output/benefit	:	Optimum nitrogen levels and methodson yield and shelf-life of onion will be obtained
Locations	:	On-Station, ARS, OFRD, Pabna
Status	:	3RD YEAR
Estimated cost	:	Tk. 50,000
Source of fund	:	BARI
Priority	:	1st

Expt. 026. Effect of different levels of sulphur on bolting and yield of Onion

Objectives	:	To find out optimum dose of sulphur for increasing yield and minimizing bolting of onion
Rationale	:	The onion (Allium cepa L.) is one of the most commercial vegetables cum spice crop. Onion is primarily used as a salad and cooked in various ways in curries, curries, fried, boiled, baked, and used in soup making and preparation of pickles (Jaggi, 2005). Onion is known for its flavor, pungency, which is due to sulphur-containing compound allylpropyldisulphide, and also eco-friendly stored grain protectant. Sulphur has been recognized as an important nutrient for higher yield and quality of onion bulbs. Sulphur is essential for building up sulphur-containing amino acids as well as for a good vegetative growth and bulb development in onion. Onion is a sulphur-loving plant and is required much for proper growth and yield of onion (Kumar and Singh, 1995). Therefore, the effect of different levels of sulphur on bulb yield and bolting of onion would be evaluated in the proposed study.
Materials and methods	:	Treatment: Levels of S (3) 1. Recommended S fertilizer of FRG-18 (RSF) 2. 50 % of RSF 3. 150 % of RSF
Crop/variety	:	Onion
Design	:	RCBD
Plot size	:	5 x 4 m^2
Planting system	:	As per recommended spacing for onion.
Intercultural operation	:	As per requirement
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, Plant height, Bulb length and breadth, Individual bulb weight, Days to maturity, Bulb yield, Storage related parameters (shelf-life etc.), Pest and disease, Bolting (%), Cost and return and Farmers opinion
Investigators	:	Md. Ariful Islam; Md. Maniruzzaman, Md. Zahedul Hasan, Mehera Afroj Suborna
Season	:	Rabi
Date of initiation	:	December 2023
Date of completion	:	April 2024
Expected output	:	Optimum sulphur levels on yield and bolting of onion will be obtained.
Locations	:	On-Station, ARS, OFRD, Pabna
Status	:	3RD year

Estimated cost : Tk. 50,000
Source of fund : BARI
Priority : 1st

Expt. 027. Development of Fertilizer Management Package on Potato-Groundnut-Fallow Cropping Pattern in Nikli, Kishoreganj

Objective(s) : To develop a package for Potato-Groundnut-Fallow cropping pattern in haor area.

Rationale : Bangladesh is one of the most densely populated countries of the world with population growth rate of 1.579%. The present cropping intensity of the country is 194%. Food requirement is estimated to be doubled in the next 25 years. Under such situations, it is very important to increase cropping intensity and productivity. Haor is bowl-shaped large tectonic depression and receive surface runoff water by rivers, Khals and consequently a haor becomes very extensive water body in monsoon period. In Bangladesh, 17% of the country's land covering by haor area. From the month of April-May haor get its sea like appearance and relief up to October. The land topography and soil characteristics of Haor is different than plain land. The haor area of Kishoreganj belongs to low pH. Soil pH of Nikli is found 4.5 to 5.3 (According to soil test result of SRDI, Kishoreganj) that's why SRDI, Kishoreganj recommended to apply 400kg Dolomite lime per acre during land preparation to increase soil pH for suitable crop cultivation. Considering the above issues, the present study will be undertaken.

Materials and Methods :

Crop/variety : Potato (Local variety Romana)-Groundnut (var. BARI Chinabadam-9)

Design : RCBD

Treatment : T_1= Lime (1 t/ha) with Soil test based recommended fertilizer dose.
T_2= Lime (1 t/ha) with 120% Soil test based recommended fertilizer dose.
T_3= Lime (1 t/ha) with 80% Soil test based recommended fertilizer dose.
T_3= Farmers practice
According to soil test result of SRDI, Kishoreganj recommended fertilizer dose is: Potato:114-24-45-11-4-2, Groundnut:30-24-15-26-2-1.5 (N-P-K-S-Zn-B kg $acre^{-1}$)

Replications : 6 (dispersed)

Plot size : 8m X 5m

Planting system/spacing : Line sowing-
Spacing- Potato (25 X 60)cm and Groundnut (15 X 30)cm

Fertilizer dose and application methods : Potato:114-24-45-11-4-2, Groundnut:30-24-15-26-2-1.5 (N-P-K-S-Zn-B kg $acre^{-1}$)

Irrigated/rainfed : Irrigated

Data to be recorded : i) Dates of all operations, ii) Yield and yield attributes of crops, iii) Pest and disease reaction, iv) Cost and return analysis

Investigator (s) : Md.Yeasinul Haque Rayhan and Dr. M. Mohiuddin

Season : Robi

Date of initiation : November, 2023

Date of completion : May, 2026

Expected output	: Reduction of soil acidity and Higher crop yield will be achieved.
Location	: MLT site, Nikli, Kishoreganj
Status	: 2nd year
Estimated cost	: Tk. 50,000/-
Source of fund	: PARTNER Project, BARI Part
Priority	: 1st

Expt. 028. Effects of P management under conservation agriculture on crop productivity and soil fertility of lentil-mung bean-T. Aman cropping sequence in north-west Bangladesh

Objective : To evaluate the changes of soil properties and crop yield after 6 years old experiment

Rationale : In rice-based system, rice is grown under puddled soil while intensive tillage along with limited crop residues is being used for growing non-rice crop in the field. Although puddling is beneficial for controlling weed, transplanting seedling and reduced deep percolation of the standing water (Ringrose-Voase et al., 2000) but it destroys soil aggregates, and degrades other soil physical properties to the detriment of the following upland crop (Sharma & De Datta, 1986). Transplanting seedlings into puddled soil is water and labour intensive which is increasingly scarce and expensive, making the production system unprofitable and unsustainable. With falling water table, constant cultivation of high-water consuming rice crop leads to decline over all system productivity and resource-use-efficiency (Parihar et al., 2016; Yadav et al., 2017b). In conventional farming system (CT), the intensive tillage along with residue removed are being used for growing the upland crop which also causes the degradation of physico-chemical and biological (Yadav et al., 2017a).

The continuous cultivation of cereal crop leads to the degradation of SOM, soil structure, the depletion of plant nutrients which are also major responsible factors of yield decline in intensive cereal-based cropping systems of South Asia (Ladha et al., 2003; Mulvaney et al., 2009). Hence, some form of crop diversification is necessary to sustain the agricultural production system. There is some evidence that inclusion of leguminous crops in a cropping sequence reverses the degradation process, increase the yield and improves soil fertility by fixing of atmospheric nitrogen (N) in their root nodules, which in turn supplies residual nutrients to the succeeding crop (Ghosh et al., 2012; Kumbhar et al., 2007).

The study of long-term tillage and residue effects on soil health and crop productivity is limited. Hence, there is a strong need to conduct more research on tillage and residue effects on soil health, nutrient cycling and crop productivity in rice-based cropping systems at contrasting soil environment. Therefore, the proposed study has been undertaken aiming to assess the effects of tillage and residue on crop productivity and soil health in intensive rice-based cropping systems under contrasting soil environment in Bangladesh.

Materials and Methods :

Crop/variety	:	Lentil (var.BARI Masur-8) - Mung bean (var. BARI Mung-6) -T. Aman (var. BRRI dhan75)
Design	:	RCB
Treatments	:	Main plot: Tillage types (3) 1. Strip tillage 2. No-tillage 3. Conventional tillage Sub-plot: Residue retention (2) 1. High residue retention (50% of biomass) 2. Low residue retention (15% of biomass)
Replications	:	4
Plot size	:	8 m × 16 m
Planting system/spacing	:	Lentil: 30 cm x continuous, Mungbean: 30 cm x continuous and Rice: 20 cm x 20 cm
Fertilizer dose and application methods	:	As per recommendation by FRG-2018: Lentil:20-20-20-10-0-1, Mung bean: 20-20-20-10-0-0 and T. aman: 90-8-50-8-1.5-0 (N-P-K-S-Zn-B kg ha^{-1})
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations Weather data (rainfall, temperature, humidity etc.) Monitoring soil moisture at seven days interval up to 45 days for rabi crops Yield and yield contributing characters of all crop in the rotation Major disease and insect incidence Bulk density Soil nutrient status after rice crop
Investigator (s)	:	M. A. Islam, M. S. H. Mollah, M. R. Alam, M. Maniruzzaman of OFRD, Pabna and M. F. Hossain of OFRD, Gazipur
Season	:	Year round
Date of initiation	:	November, 2022
Date of completion	:	30 October, 2024
Expected output	:	Soil health status will be known under different tillage systems after 6 years of experimentation
Location	:	RARS, Ishurdi, Pabna
Status	:	3rd year
Estimated cost	:	Tk. 90,000/-
Source of fund	:	BARI
Priority	:	1st

Improvement of Cropping Systems

JUSTIFICATION

Farmers in different parts of the country are following cropping pattern and management practices based on the land and soil characteristics, climatic conditions and other resources. With the use of advanced technologies developed by different research institutes and with proper use of farmers' resources it is possible to increase the farm production. This hypothesis is being tested at FSRD and MLT sites of OFRD, BARI. At all these sites testing of cropping patterns designed to improve farmers existing pattern is being done for few years. Component technologies are also designed and tested for possible improvement of different crops and cropping patterns. It is therefore necessary to continue this effort for development and improvement of alternative cropping patterns/ rotations and related component technologies for increased productivity and income.

Expt. 029. Development of Biorational Pest Management approach against Leaf Miner of field pea, *Liriomyza huidobrensis* in High Barind Tract

Activity	:	Field pea pest management
Objectives	:	To develop an effective management approach against field pea leaf miner, *Liriomyza huidobrensis* To avoid indiscriminate use of pesticides for controlling leaf miner of field pea
Rationale	:	The field pea leaf miner *Liriomyza huidobrensis* (Blanchard) (Diptera: Agromyzidae) is a highly polyphagous leaf miner that can seriously harm crops and consumes plants from at least fifteen different plant families. This leaf miner feeds on a variety of crops, including peas, beans, lettuce, spinach, broccoli, onions, and many decorative plants and spices. Older plants have decreased photosynthetic activity, which impairs growth rate, while young plants can be badly impacted and even perish. Field pea, cut flowers and ornamental plants may look less appealing due to damage from mature females' feeding habits and the punctures they cause when laying their eggs. In field pea, the larvae initially primarily damage the lowest portion of the plant; but, as the plant ages and stops growing, the upper portions are also impacted, and the leaves tissues eventually become necrotic and die. Thus, the goal of this study is to create a management strategy that effectively combats the field pea leaf miner *Liriomyza huidobrensis*.
Materials and Methods	:	
Crop(s)/Variety(s)	:	Field pea (*Pisum sativum*)
Design	:	RCBD
Treatments	:	T_1: Sanitation + D-limonene (bioclean)@1ml/litre of water + Antario (Bt-Kurstaki 1.4% Abamectin 0.1%) WP@0.75-1kg/ha T_2: Sanitation + Spinosad (Tracer 45 SC) @ 0.4 m1/l of water+ application of soil recharge (Lycomax) @ 4g/L of water T_3: Sanitation + *Celastrus angulatus* (bio-Chamak 1.0%EW) @ 2.5ml/L of water Matrine Biotrin 0.5%) @ 1.5 m1/L of water + Intrepid 10EC (Chlorphenapyr) @ 1 ml/L of water T_4= Sanitation + Matrizine plus 5 EC (Abamectin + Oxymatrine) @ 1 m1/L of water Spraying of Abamectin (Biomax 1.2 EC) @ 1 ml/L of water T_5: Farmers practice: Spray with Thiamethoxam (Voliam flexi 300SC) @ 0.5 ml/L of water T_6: Untreated control The pesticides will be sprayed thrice starting from the first sight of pest infestation at 10 days interval. Sanitation will be started from the first sight of pest infestation up to crop harvest
Replications	:	3 (Three)
Plot size	:	5 m x 6m
Planting system	:	As per recommended
Fertilizer	:	As per FRG, 2024
Irrigated/rainfed	:	Irrigated
Data to be collected	:	Pest population, Damage severity (%), and Yield data at crop harvest and Cost-benefit analysis
Investigator(s)	:	MEA Pramanik and MS Hossain
Season	:	2025-2026
Date of initiation	:	November 2025
Date of completion	:	April 2026

Expected output	:	An effective management approach against field pea leaf miner may be developed.
Location (s)	:	FSRD site, Godagari, Rajshahi and OFRD, Pabna
Status	:	New
Estimated cost	:	Tk. 120000/-
Program Proposed from	:	Bottom up (OFRD)
Priority	:	First
Source of Found	:	BARI

Expt. 030. Development of bio-rational pest management approach against Litchi Fruit Borer (*Conopomorpha sinensis*) and Litchi Mite (*eriophyes litchi*)

Activity	:	Litchi pest management
Objectives	:	To find out the most effective bio-rational based management package against litchi fruit borer
Rationale	:	The litchi (*lichi chinensis*) is a delicious juicy fruit of excellent quality. Litchi fruit borer is the most destructive insect pests of litchi in Bangladesh. Litchi fruit borer is laid yellow scale like eggs on leaves, shoots, fruits and fruit stems single or in groups. The larvae hatch after 3-5 days from eggs and immediately bore into fruits. Insects' excreta found at the base of fruit at ripening stage. Sometime, the fruit becomes rot and unable to consume. So, it is necessary to develop appropriate management strategies for these pest. The present study has been undertaken to find out suitable effective management approach against these insect pest
Materials and Methods	:	-----
Crop (s)/Variety (s)	:	Litchi
Design	:	RCBD
Treatments	:	T_1= Sanitation + Bagging with mosquito net (40 mesh) + K-mite (0.5% Matrine+25% plant oil) @ 1ml/L of water + Spinetoram (Delegate 11.7SC) @ 1 ml/L of water T_2= Sanitation + Bagging with mosquito net (40 mesh) + Fizimite (10% Sodium Lauryl ether Sulphate) @ 1 ml/L of water + Bt-Kurstaki @ 0.5 g/L of water T_3= Sanitation + Bagging with mosquito net (40 mesh) + Hexithiazox (Larsimite 10EC) @ 0.8ml/L of water + Minto plus (Bt+Spinosad) @ 1gl/L of water + Nitro 505 EC (Chlorpyriphos+ Cypermethrin) @ 2 ml/L of water T_4= Farmers practice: 5 times spray of Imidacloprid (Admire 200 SL) @ 0.5 ml/L of water at 10 days intervals starting from pea stage + Omite (Propargite 57% EC) @ 0.5 ml/L of water T_5= Untreated control The pesticides will be sprayed thrice starting from the first sight of pest infestation at 10 days interval. Sanitation will be started from the first sight of pest infestation up to fruit harvest and Bagging with mosquito net (40 mesh) will be done after marble size of litchi fruits.
Replications	:	3 (Three)
Plot size	:	-----
Planting system	:	------
Fertilizer	:	As per FRG, 2024
Irrigated/rainfed	:	Irrigated

Data to be collected	:	Data on infested and healthy fruits, Yield data at crop harvest
Investigator(s)	:	M.E.A. Pramanik and M. S. Hossain
Season	:	2025-2026
Date of initiation	:	February 2026
Date of completion	:	June 2026
Expected output	:	The results of this study will be helpful for developing suitable management strategies for litchi fruit borer and Litchi mite
Location (s)	:	Rajshahi region
Status	:	New
Estimated cost	:	Tk. 100000/-
Program Proposed from	:	Bottom up (OFRD)
Priority	:	First
Source of Found	:	BARI

Expt. 031. Development of biorational pest management packages against sucking pest of Betel Leaf in North-Western Part of Bangladesh

Activity	:	Betel leaf pest management
Objectives	:	To find out the effectiveness of different management options against sucking pest of betel leaf To obtain a suitable management option against sucking pest of betel leaf To produce safe
Rationale	:	The betel (*Piper betle*) is a vine of the family Piperaceae, which includes pepper and kava. Betel leaf is mostly consumed in Asia, and elsewhere in the world by some Asian emigrants, as betel *quid* or in paan, with Areca nut and/or tobacco. In Bangladesh, India and Sri Lanka, a sheaf of betel leaves is traditionally offered as a mark of respect and auspicious beginnings. Successful betel farm in Bangladesh can provide a supplemental income to a farmer by providing six days of work every six months and net income when the leaf prices are attractive. The pests are attacking the crop on leaves and roots and causing considerable losses. So, it is necessary to document the pests for developing appropriate management strategies. The present study is undertaken to identify the pests of the study areas.
Materials and Methods	:	1) -----
Crop (s)/Variety (s)	:	2) Betel Leaf
Design	:	3) RCBD
Treatments	:	T_1: Sanitation + White and Yellow sticky trap + Bio-Magic 1.15% WP (*Metarhizium anisopliae*) @ 6.0 g/L of water + Fizimite (10% Sodium Lauryl ether Sulphate) @ 1 ml/L of water + Spinosad (Tracer 45 SC) @ 0.4 m1/l of water T_2: Sanitation + White and Yellow sticky trap + Bio-Magic 1.15% WP (*Metarhizium anisopliae*) @ 6.0 g/L of water + K-mite (0.5% Matrine+25% plant oil) @ 1ml/L of water + Gladius 10 EC (Flometoquin) @ 1.0 ml/L of water T_3: Sanitation + White and Yellow sticky trap + Bio-Magic 1.15% WP (*Metarhizium anisopliae*) @ 6.0 g/L of water + Hexithiazox

(Larsimite 10EC) @ 0.8ml/L of water + Imunit 15 SC (Teflubenzuron 75GL + Alpha-cypermethrin 75GL SC) @ 0.8 ml/L of water

T_4= Sanitation + White and Yellow sticky trap + Bio-Magic 1.15% WP (*Metarhizium anisopliae*) @ 6.0 g/L of water + Antario (Bt-Kurstaki 1.4% + Abamectin 0.1%) WP @ 1g/L of water + Minecto Forte 48SC (Cyantraniliprole + Diafenthiuron) @1 ml/L of water

T_5: Sanitation + White and Yellow sticky trap + Bio-Magic 1.15% WP (*Metarhizium anisopliae*) @ 6.0 g/L of water + 5 sprays of Kalomegh leaf extract @ 6g/L of water + Simodis 10 DC (Isocycloseram) @ 1.2 ml/L of water + Actara 25WG (Thiamethoxam) @ 0.5 g/L of water

T_6: Farmers practice: Abamectin (Vertimec 1.8 EC) @ 1.2 ml/L of water + 5 sprays with Nitro 505 EC (Chlorpyrifos + Cypermethrin) @ 2ml/L of water).

T_7: Control (Only water spray)

The pesticides will be sprayed thrice starting from the first sight of pest infestation at 10 days interval. Sanitation will be started from the first sight of pest infestation up to harvest. White and yellow sticky trap will also be installed after experiment set up. Bio-Magic use as a soil drencing with microbial pesticide

Replications	:	3 (Three)
Plot size	:	5 m x 6m
Planting system	:	As per recommended
Fertilizer	:	As per FRG, 2024
Irrigated/rainfed	:	Irrigated
Data to be collected	:	Incidence of insect pests' status, Data on infested and healthy plants, Yield data at crop harvest and Cost-benefit analysis
Investigator(s)	:	MEA Pramanik and MS Hossain
Season	:	2025-2026
Date of initiation	:	August 2025
Date of completion	:	December 2026
	:	
Expected output	:	Insect pests attacking betel leaf in Rajshahi region will be documented with control methods.
Location (s)	:	Rajshahi
Status	:	New
Estimated cost	:	Tk. 120000/-
Program Proposed from	:	Bottom up
Priority	:	First
Source of Found	:	BARI

Expt. 032. Performance of Intercropping lentil with groundnut at charland of Bogura

Activity	:	Intercropping
Objectives	:	To find out the suitable intercrop combination of lentil with groundnut for higher productivity.
Rationale	:	Groundnut (*Arachis hypogaea* L.) is one of the world's most popular legume crops grown in the tropical and sub-tropical regions. This crop is the third most important legume crop in Bangladesh which grown on 31,579 ha of land and produces 56713 metric tons of nut

with an average yield of 1.79 t ha^{-1} (BBS, 2019). Recently the area of groundnut is being decreased due to the competition with rabi crops like wheat, potato, boro rice and mustard (Alom *et. al*., 2009). Moreover, most of the char land of Bangladesh become inundated in kharif season which also one of the causes the decline of groundnut production area. Lentil (*Lens culinaris*) is the most popular pulse crop in Bangladesh. They are diploid legumes that belong to the Papilionoidea subfamily and are of agricultural importance because of their resistance to drought and the fact that they grow in soil with a pH range of 5.5–9; therefore, they are cultivated in various types of soil, and so they have an important role in sustainable food and feed systems in many countries. In addition to their agricultural importance, lentils are a rich source of protein, carbohydrates, fiber, vitamins, and minerals. They are key to human nutrition since they are an alternative to animal proteins, decreasing meat consumption. Another characteristic of legumes, including lentils, is their ability to form nodules, which gives them a growth advantage in nitrogen-deficient soils because they enable the plant to fix atmospheric nitrogen, thus contributing nitrogen to the soil and facilitating the nutrition of other plants during intercropping. Groundnut and lentil in intercropping systems may increase their production and profit. In this context, the experiment was conducted to find out the suitable intercrop combination of lentil with groundnut for higher productivity and profitability.

Procedure/methods	:	
Crop/Variety	:	BARI Chinabadam-9 and BARI Masur-8
Design	:	
Treatment	:	T_1=Groundnut sole 100%, T_2=Lentil sole 100%, T_3= Groundnut 100% + Lentil 30%, T_4= Groundnut 100% + Lentil (40%) and T_5= Farmers practice (Groundnut 100% + Lentil 20%)
ii) Replications	:	6 dispersed
Planting system	:	Groundnut: 30 cm x 15 cm and Lentil: Broadcast
Plot size	:	40 m^2
Fertilizer dose	:	11-32-42-54-1.70 kg of NPKSB ha^{-1}. Total TSP, MOP, Gypsum , Boric acid & half of urea as basal and rest half of Urea were applied after 40-50 days of sowing for initial flowering stage.
Irrigated/ rainfed	:	Irrigated
Data	:	Plant population, days to maturity, plant height, panicle length, 1000-seed weight, seed yield (t ha^{-1}), disease and insect infestation and farmer's opinion.
Investigator(s)	:	M.T. Hasan, M.M. Hasan and M.R.A. Mollah
Season		Rabi
Date of initiation	:	November 2025
Date of completion		Lentil: March-2026 and Groundnut: April-2026
Expt. output/ benefit	:	To find out suitable seed rate along with BARI Chinabadam-9 and BARI Masur-8 variety would be disseminated to the respective char areas and Farmers will be benefited.
Location	:	Charland of Sonatola, Bogura
Status	:	New
Program proposed from	:	
Priority	:	First
Estimated cost	:	Tk.50,000/-
Source of fund	:	BARI

Expt. 033. Intercropping of garlic with sugarcane at Level Barind Tract

Objectives	:	To find out a suitable intercrop combination of garlic with sugarcane under farmers' field conditions for increasing cropping intensity, increasing productivity and economic returns.
Rationale	:	Intercropping is one of the techniques of vertical expansion of crop production that increases total productivity per unit area than sole cropping. Our cultivated land is decreasing day by day. So, attempts should be made to produce more yields from limited land areas. Intercropping one or more crops with sugarcane is an appropriate approach to getting additional farm income besides the main crop of sugarcane. Sugarcane is a long-duration crop. From planting to harvest it requires 12 to 14 months. The growth of sugarcane is slow in earlier stages and it takes about 3 to 5 months to establish the full canopy of the crop. During the early stages of sugarcane growth, some short-duration crops can be grown as intercrop in the vacant spaces between two cane rows. Farmers of the Joypurhat district especially in sadar upazila cultivate huge amounts of sugarcane. Most of the farmers do not cultivate short-duration crops as intercropped with sugarcane and few of the farmers practice intercropped with sugarcane. Because of this consideration, the experiment was undertaken to find out a suitable crop for intercropping with sugarcane under farmers' field conditions for increasing cropping intensity, increasing productivity and economic returns.
Procedure/methods	:	
Crop/Variety	:	Ishurdi-16 and BARI Rashun-4
Design	:	
Treatment	:	Treatments : T_1=Sugarcane sole 100%, T_2=Garlic sole 100%, , T_4= Sugarcane (100%) + four rows of garlic (20%) and T_5 = Sugarcane (100%) + six rows of garlic (26%), T_3= Sugarcane (100%) + two rows of garlic (13%) (Farmers practice)
ii) Replications	:	6 dispersed
Planting system	:	Sugarcane: 150 cm x 50 cm and Garlic: 10 cm x 10 cm
Plot size	:	60 m^2
Fertilizer dose	:	55-36-60-15-1-1 kg ha^{-1} NPKSZnB, respectively. The total amount of PKSZnB was applied in the pit of sugarcane as a basal dose. The urea is divided into three parts and applied during 40-45, 55-60, and 70-75 days after the sugarcane transplanting in the pit. For intercropping all fertilizers except Urea are applied during final land preparation. Urea was applied 30 days after planting of garlic.
Irrigated/ rainfed	:	Irrigated
Data	:	Plat population, days to maturity, plant height, Individual sugarcane weight (kg), Number of cane ha^{-1} , Cane yield (t ha^{-1}), garlic yield (t/ha), disease and insect infestation and farmer's opinion, crop competition ratio.
Investigator(s)	:	M.T. Hasan, M.M. Hasan and M.R.A. Mollah
Season		Rabi
Date of initiation	:	November 2025
Date of completion		Sugarcane: October-2026 and Garlic: March-2027
Expt. output/ benefit	:	To find out suitable intercropping along with BSRI and BARI Garlic-4 variety would be disseminated to the respective Level Barind areas and Farmers will be benefited.
Location	:	Bandarban, Rangamati and Joypurhat

Status	:	New
Program proposed from	:	OFRD, BARI, Bogura
Priority	:	First
Estimated cost	:	Tk.100000/-
Source of fund	:	BARI

Expt. 034. Improvement of onion storage system using a forced-ventilation mobile structure in Pabna

Activity		Post-harvest processing
Objectives	:	To fabricate a user-friendly mobile forced ventilation structure for storing onions To evaluate its mechanical and economic performances in the farmer's house To compare performances of the improved system with those of the traditional systems
Rationale	:	During 2023–24, Pabna recorded the highest onion yield (710032.50 tonnes) in the country, surpassing all previous records and overtaking Faridpur (562465.97 tonnes), which had historically been the leading producer in prior years (BBS, 2024). Despite this satisfactory production, SRC of BARI estimated that about 40-50% of onions are lost in the traditional storage facilities. Farmers typically construct storage rooms using bamboo or thatch materials, which facilitate natural air circulation around the stored onions. In recent years, Department of Agricultural Marketing (DAM) built store houses based on the farmers' traditional methods for preserving onions. Besides, Bangladesh Water Development Board (BWDB) introduced a forced ventilation storage system for onions, featuring a blower-assisted airflow mechanism within enclosures made of concrete, bamboo, or wood to enhance preservation. In this storage system the onions are gathered uniformly on a perforated platform made of bamboo. A cylindrical structure with blower fan employs forced air to pass through the thick column of onions for a couple of hours at every two- or three-hours' interval. Thus, the air flow cools down the temperature and dries out any spoiled bulb, preventing rotting of other infected bulbs around it. Dissemination of this technology to the farmers has been facilitated by the Department of Agricultural Extension (DAE), NGOs and private-sector agricultural machinery manufacturers. However, some limitations of these systems have been observed. Therefore, this new programme is proposed to use an improved forced-ventilation mobile structure for preserving onion in the farmers' houses in Pabna and compare its performances with those of the other systems used by the farmers.
Materials and methods	:	An improved forced-ventilation mobile structure will be fabricated and installed in the farmer's house. Data will be recorded and compared with those of the other methods.
Crop/variety	:	Onion (BARI Piaj-1, local)
Design		RCBD
Treatment	:	Treatments: 1. Storage by the improved forced ventilation system, 2. Storage by the BWDB developed forced ventilation system, 3. Storage by

Replications		the DAM built storage house, 4. Storage developed by BARI and 5. Storage by the traditional system (farmers' storage rooms) 04
Plot size	:	N/A
Planting system/spacing	:	N/A
Fertilizer dose	:	N/A
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Moisture content of bulbs, bulb weight, temperature, humidity, airflow rate, power consumption, costs
Investigators	:	M. Z. Hasan, M. A. Islam, M. Maniruzzaman, and M. S. H. Molla
Season	:	Kharif
Date of initiation	:	1st week of March 2026
Date of completion	:	30 June 2028
Expected output/benefit	:	Losses and costs related to onion storage will be reduced.
Location	:	Sujanagar, Pabna
Status	:	1st year (2-year experiment)
Program proposed from	:	OFRD, BARI, Pabna
Estimated cost	:	Tk. 1,00,000.00
Source of fund	:	BARI
Priority	:	1st

Expt. 035. Integrated Nutrient and Insect Pest Management of Brinjal at Rajshahi Region

Activity	:	Crop protection
Objectives	:	To evaluate the effect of nutrient and insect pest management on the yield of brinjal.
Rationale	:	In the Rajshahi region, brinjal cultivation often involves excessive use of fertilizers and pesticides, resulting in: • Unsafe food due to chemical residues in edible portions. • Economic losses from inefficient input use. Given rising concerns over food safety, environmental health, and climate change, there is an urgent need for climate-smart, resource-efficient, and consumer-safe production systems. Such systems should ensure profitability while being environmentally sustainable and suitable for smallholder adoption in dry land conditions
Procedure/methods	:	
Crop/Variety	:	Brinjal: BARI Begun-12
Design	:	Split-plot
Treatment	:	**Factor A – Nutrient management** A_2: IPNS with 3 t/ha vermicompost A_2: RFD (FRG 2024) + 20% of RFD A_3: RFD (FRG 2024) **Factor B – Insect Pest Management** B_1: Integrated Pest Management (IPM) – pheromone traps, hand picking, yellow sticky traps, and need-based pesticide application B_2: Farmers' practice (routine pesticide applications)
ii) Replications	:	Four
Planting system	:	Transplanting
Plot size	:	8 m × 5 m (per treatment per crop)

Fertilizer dose	:	Recommended fertilizer dose following FRG 2024
Irrigated/ rainfed	:	Irrigated
Data	:	Agronomic:Plant height, number of branches, fruit size, fruit/plant, individual fruit weight and marketable yield (t/ha), infested fruit/plant, insect count, quality and nutrient uptake of brinjal Soil Health: Soil pH, organic matter (%), available N, P, K Economic Parameters: Input cost, gross return, net return, B:C ratio
Investigator(s)	:	Md. Jahedul Islam, Md. Nur-E-Alam Siddquie, Md. Monowarul Islam Chowdhury
Season		2025-26
Date of initiation	:	November, 2025
Date of completion		March, 2026
Expt. output/ benefit	:	Identification of safe and sustainable combinations of fertilizer, and pest control strategies for brinjal. Reduction in toxic residues in edible parts Improved soil quality and input efficiency Practical models for climate-resilient, peri-urban vegetable farming Farmer-ready recommendations for BARI/OFRD technology transfer
Location	:	Rajshahi
Status	:	New
Program proposed from	:	OFRD, BARI, Shyampur, Rajshahi
Priority	:	1st
Estimated cost	:	Tk. 2,50,000/-
Source of fund	:	BARI

Expt. 036. Performance of Turmeric Variety in Mango Orchard of Rajshahi

Activity	:	On-Farm validation
Objectives	:	To evaluate the performance of BARI turmeric varieties To increase productivity and income of the agro-forestry systems
Rationale	:	In Rajshahi, farmers commonly establish fruit orchards, which provide income mainly during fruiting seasons. Between tree rows, crops can be grown for up to 10–12 years, but as canopies expand, shading reduces land use. Often, the area remains fallow or is underutilized with traditional spices. Turmeric, a vital kitchen spice with medicinal properties, faces a supply shortage in Bangladesh. To meet rising demand, cultivation of high-yielding turmeric varieties is essential. BARI's Spice Research Center has developed improved turmeric varieties with better yield and disease resistance. This study aims to evaluate suitable turmeric varieties against local types in the Rajshahi region.
Procedure/methods	:	
Crop/Variety	:	Turmeric ()
Design	:	RCBD
Treatment	:	BARI Halud-4, BARI Halud-5, Local
ii) Replications	:	06 (six) dispersed
Planting system	:	Transplanting
Plot size	:	9.0 m × 4.5 m

Fertilizer dose	:	140-60-60-30-3-1.5N-P-K-S-Zn-B Kg ha^{-1} + CD 5 t ha^{-1} (Recommended dose FRG' 2023)
Irrigated/ rainfed	:	Irrigated
Data	:	Yield and yield attributes, Pest and disease reaction, Farmers' opinion
Investigator(s)	:	M. M. I. Chowdhury, M. N. A. Siddquie, and M. J. Islam
Season		2025-26
Date of initiation	:	April' 2026
Date of completion		January' 2027
Expt. output/ benefit	:	Suitable Turmeric varieties will be ascertained for mango orchard of Rajshahi
Location	:	MLT site, Shibpur & Paba, Rajshahi
Status	:	New
Program proposed from	:	OFRD, BARI, Shyampur, Rajshahi
Priority	:	1st
Estimated cost	:	Tk. 80,000/-
Source of fund	:	BARI

Expt. 037. Production Program of Lentil Mustard mixed cropping

Activity	:	Component technologies
Objectives	:	To enhance productivity of lentil and mustard.
Rationale	:	Sole cropping in upland areas often results in inefficient use of resources such as land, water, and sunlight. Mixed cropping lentil with mustard offers an opportunity to enhance resource utilization, diversify income sources, and stabilize yields in variable climatic conditions. By determining optimal seed ratios, it is possible to maximize **lentil-equivalent yield (LEY)** and improve overall farm profitability. This study aims to identify crop combinations that are both productive and economically viable for smallholder farmers in drought-prone environments.
Procedure/methods	:	Mixed will be established using the recommended seed ratios for lentil and mustard. Treatments will be maintained under uniform agronomic practices. Observations will be made on yield interactions, biological efficiency, and economic performance.
Crop/Variety	:	Lentil, and Mustard
Design	:	RCBD
Treatment	:	Lentil: Mustard (90:10)
ii) Replications	:	3
Planting system	:	Broadcasting
Plot size	:	1 bigha
Fertilizer dose	:	Recommended dose FRG' 2024
Irrigated/ rainfed	:	Irrigated
Data	:	Yield of each component crop (kg/plot or t/ha) Lentil Equivalent Yield (LEY) Land Equivalent Ratio (LER) Area Time Equivalent Ratio (ATER) Gross return, cost of production, net return Benefit: Cost (B:C) ratio Farmers' feedback on labor, input use, and risk

Investigator(s)	:	Md. Jahedul Islam, Md. Nur-E-Alam Siddquie andMd. Monowarul Islam Chowdhury
Season		2025-26
Date of initiation	:	April' 2026
Date of completion		January' 2027
Expt. output/ benefit	:	Mixed-cropping models that enhance productivity and profitability. Identification of resource-efficient crop combinations suitable for smallholders. Recommendations for technology transfer through BARI/OFRD programs.
Location	:	On station, Rajshahi
Status	:	New
Program proposed from	:	OFRD, BARI, Shyampur, Rajshahi
Priority	:	1st
Estimated cost	:	Tk. 1,50,000/-
Source of fund	:	BARI

Expt. 038. Up scaling of Lentil Production through Strip Planting at AEZ-11

Activity	:	Component technologies
Objectives	:	To enhance lentil production.
Rationale	:	In Bangladesh, vast areas of rice fallows, especially in the dry season (Rabi), remain underutilized despite their potential for legume intensification. Lentil, a key pulse crop rich in protein and micronutrients, can address both food and nutritional insecurity. However, traditional practices often result in poor establishment, low productivity, and inefficient resource use. Strip planting, a conservation agriculture-based approach, offers a viable solution by improving seed-soil contact, enhancing moisture conservation, reducing tillage, and ensuring better crop establishment. This program aims to harness the potential of strip planting to sustainably intensify lentil production in rice fallow areas.
Procedure/methods	:	Lentil was sown in rice fallows using strip planting with and without residue retention, alongside conventional tillage and broadcast methods. Standard agronomic practices were followed. Data on growth, yield, soil moisture, and economics were recorded to evaluate productivity, resource-use efficiency, and profitability under dry land conditions in selected AEZs.
Crop/Variety	:	Lentil (BARI Masur-8)
Design	:	RCBD
Treatment	:	
ii) Replications	:	4
Planting system	:	Spacing: 30 cm × continuous
Plot size	:	1 bigha
Fertilizer dose	:	Recommended dose FRG' 2024
Irrigated/ rainfed	:	Irrigated
Data	:	Agronomic:Plant population, Days to flowering and maturity, Plant height, Number of pods per plant, 1000-seed weight and seed and stover yield, Cost and return analysis

Investigator(s)	:	Md. Jahedul Islam, Md. Nur-E-Alam Siddquie andMd. Monowarul Islam Chowdhury
Season		2025-26
Date of initiation	:	November, 2025
Date of completion		March, 2026
Expt. output/ benefit	:	A sustainable, cost-effective method for intensifying lentil in rice fallows Enhanced productivity and profitability for smallholders Improved soil health and water-use efficiency Increased availability of protein-rich food for rural households Policy-ready recommendations for CA-based lentil intensification.
Location	:	On-farm research fields, OFRD, BARI, Shyampur, Rajshahi
Status	:	New
Program proposed from	:	OFRD, BARI, Shyampur, Rajshahi
Priority	:	1st
Estimated cost	:	Tk. 1,50,000/-
Source of fund	:	BARI

Expt. 039. Effect of planting system on sweet potato at Rangpur

Activity	**:**	Planting system
Objective(s)	**:**	To enhance productivity and quality
Rationale	**:**	Sweet potato (*Ipomoea batatas* L.) is an important food and cash crop in Bangladesh, valued for its high carbohydrate content, nutritional quality, and adaptability to diverse agro-ecological zones (Hossain *et al*., 2016). In the Rangpur region, sweet potato cultivation contributes to food security and farmer income, especially in marginal lands where other crops may perform poorly. However, achieving optimal yield and tuber quality depends heavily on appropriate planting methods and field management practices.One critical factor in sweet potato production is the planting system, particularly the timing and method of ridging. Ridging before planting involves making raised beds or ridges prior to vine or slip planting, ensuring good soil tilth, improved drainage, and enhanced aeration around developing roots. In contrast, ridging after planting consists of earthing up soil around the base of plants later in the growth cycle, which can improve weed control and reduce tuber exposure (Laurie *et al*., 2017).Research has shown that planting on ridges can significantly influence root development, yield, and quality by reducing waterlogging stress and improving soil structure (Tumwegamire *et al.*, 2014). Yet in Bangladesh, especially in the Rangpur region, comparative studies on ridging before versus after planting are limited. Understanding the effect of these systems can help develop site-specific recommendations to maximize sweet potato productivity and profitability. This study aims to evaluate the impact of ridge preparation timing on sweet potato growth and yield in the Rangpur region of Bangladesh.
Materials and methods	**:**	
Crop/Variety	**:**	Sweet potato, BARI Misti Alu-12
Design	**:**	RCBD

Treatment		1. Planting on ridge 2. Earthing up at 20 DAP 3. Earthing up at 40 DAP 4. Farmers practices (No earthing up)
Replications		6 (Dispersed)
Plot Size	:	
Planting system/spacings	:	Sowing time: Last week of October
Fertilizer dose and methods of application	:	As per recommended BARC, FRG / 2024
Irrigated/Rainfed	:	Irrigated
Data to be recorded	:	i) Date of all operation ii) Yield iii) Weevil infestation,Major disease and other insect incidence, iv) Cost and return and v) Farmers opinion
Investigator(s)	:	Md. Khairul Islam
Season	:	Rabi
Date of initiation	:	October 2025
Date of completion	:	May 2027
Expected output/benefit	:	Suitable planting systems is expected to promote better root development, increase tuber yield, and improve overall sweet potato production in the Rangpur region.
Location	:	Pirganj, Rangpur
Status	:	New
Program proposed from	:	OFRD, BARI, Rangpur
Priority	:	1st
Estimated cost	:	Tk. 120000
Source of fund	:	BARI

Expt. 040. Performance of BARI Onion Variety for Off-season Cultivation at Charland of Rangpur

Activity	:	On-Farm validation
Objective(s)	:	To evaluate the performance of BARI onion variety for off-season cultivation
Rationale	:	The proposed study is designed to explore a promising opportunity for onion production in the flood-prone, ecologically fragile char lands of the Rangpur region. Preliminary on-farm observations have revealed encouraging results, where BARI released varieties demonstrated successful establishment and yield performance when directly sown into moist char soils immediately after the recession of floodwaters and subsequently covered with a thin layer of sand. This innovative practice, implemented by farmers themselves, indicates that onion take advantage of residual soil moisture in post-flood environments, offering a rare opportunity for early establishment and harvest during the late monsoon to early winter transition period. Given the typically limited cropping options in char areas due to their transient hydrological and soil conditions, this variety shows strong potential to diversify production systems, enhance cropping intensity, and increase farmers' resilience to climate variability. The rationale for this experiment is to scientifically validate these initial findings through a systematic field trial under char-specific agroecological conditions. By evaluating growth, phenology, and yield performance of BARI released onion varieties during this critical seasonal window, the study aims to generate evidence-based recommendations for scaling up onion production in post-flood char environments. Ultimately, the outcomes will contribute to improved income generation and food security for vulnerable farming communities in the Rangpur charlands.
Materials and methods	:	
Crop/Variety	:	Onion (BARI Piaz-4, BARI Piaz-6 and BARI Piaz-7)
Design	:	RCBD
I. Treatment		T_1= BARI Piaz-1 T_2= BARI Piaz-4 T_3= BARI Piaz-5 T_4= BARI Piaz-6 and T_5= BARI Piaz-7
II. Replications		Six (6) Dispersed
Plot Size	:	40 m^2
Planting system/spacings	:	Direct sowing in moist soils immediately after flood recession, covered with a thin sand layer (farmer-adapted practice).
Fertilizer dose and application methods	:	All the fertilizers except urea will be applied before seed sowing followed by sand cover as mulch. Urea will be applied in three splits: 20, 35 and 60 DAS.
Irrigated/Rainfed	:	Irrigated
Data to be recorded	:	Emergence, Plant height (cm), leaves $plant^{-1}$, Leaf length (cm), neck height (cm), growth duration Yield Attributes: Plant population/ m^2, Bulb diameter (cm), Bulb weight (g), Number of bulbs per m^2. Yield: Bulb yield per hectare (t ha^{-1}). Quality Parameters: Total soluble solids (TSS, °Brix), Dry matter content (%)

Investigator(s)	:	Dr. Md. Eakramul Haque
Season	:	Kharif II 2025
Date of initiation	:	Mid August 2025 (After recession of flood water)
Date of completion	:	November, 2028
Expected output/benefit	:	Suitable onion variety for off-season cultivation in flood-affected areas will be identified.
Location	:	On Station, Rangpur
Status	:	New
Program proposed from	:	OFRD, BARI, Rangpur
Priority	:	1st
Estimated cost	:	Tk. 240,000/-
Source of fund	:	BARI

Expt. 041. Effect of spacing and Nutrient Management on the Yield of Onion

Activity	:	Component technology
Objective(s)	:	To find out optimum spacing and nutrient requirement forhigher yield of onion.
Rationale	:	Onion (Allium cepa L.) is one of the most important spice crops in Bangladesh, extensively grown for its high economic return and significant nutritional value. Despite its importance, onion productivity in the country remains sub-optimal, largely due to unfavorable climatic conditions, soil fertility constraints, and inadequate agronomic management practices (Hossain et al., 2022). According to the Bangladesh Bureau of Statistics (BBS, 2024), approximately 2.67 lakh hectares of land were cultivated for onion production in the fiscal year 2023–24, yielding an estimated 3.9 million tonnes. Among the various agronomic factors, nutrient management and planting geometry (crop spacing) are pivotal in enhancing onion growth, physiological efficiency, and bulb yield (Islam et al., 2021; Roy et al., 2023). Balanced and efficient fertilization, particularly involving nitrogen (N), phosphorus (P), potassium (K), and sulfur (S), is crucial for optimizing productivity and quality. The optimal fertilizer requirements for onions have been established within a broad range: 95 to 150 kg N, 13 to 57 kg P, and 42 to 150 kg K ha-1, as reported by various researchers (Lee et al., 2011; Meher et al., 2016; Khokhar, 2019; Mazumder et al., 2019; Mandal et al., 2020), resulting in yields ranging from 10 to 30 t ha^{-1}. However, the synergistic interaction between varying levels of NPKS and plant spacing under Agro-Ecological Zone 3 (AEZ-3), characterized by sandy loam soil, remains inadequately explored. Therefore, a systematic, location-specific study is imperative to identify the most effective combination of nutrient regimes and crop geometry to maximize onion yield, quality, and resource-use efficiency under AEZ-3 conditions.
Materials and methods	:	
Crop/Variety	:	Onion (BARI Piaz-4)
Design	:	RCBD
I. Treatment		Main plot factor (Nutrient levels): Crop geometrics

	F_1= RFD + 10% increase	G_1 = 10 cm × 7 cm
	F_2= RFD + 20% increase	G_2 = 10 cm × 10 cm
	F_3= RFD (FRG 2024)	G_3 = 12 cm × 10 cm
		G_4 = 12 cm × 7 cm
II. Replications		G_5 = 15 cm × 7 cm
		G_6 = 15 cm × 10 cm

		Three (3) Compact
Plot Size	:	40 m^2
Planting system/spacings	:	Five spacings combination will be executed.
Fertilizer dose and methods of application	:	The land will be prepared using standard tillage practices. Fertilizers will be applied as per treatment using urea, triple super phosphate (TSP), muriate of potash (MoP), and gypsum as sources of N, P, K, and S, respectively. All P, K, and S, along with half of the N, will be applied as basal, and the remaining N will be top-dressed in two equal splits.
Irrigated/Rainfed	:	Irrigated
Data to be recorded	:	Growth Parameters (30,45,60 DAP): Plant height (cm), leaves $plant^{-1}$, Leaf length (cm). Yield Attributes: Bulb diameter (cm), Bulb weight (g), Number of bulbs per m^2. Yield: Bulb yield per plot (kg), Bulb yield per hectare (t ha^{-1}). Quality Parameters: Total soluble solids (TSS, °Brix), Dry matter content (%)
Investigator(s)	:	Dr. Md. Akhter-Ul-Alam
Season	:	Rabi 2025
Date of initiation	:	October 2025
Date of completion	:	March, 2028
Expected output/benefit	:	Optimum fertilizer dose and crop geometry for onion cultivation will be identified. The results will contribute to improving productivity and resource use efficiency.
Location	:	On Station, Rangpur
Status	:	New
Program proposed from	:	OFRD, BARI, Rangpur
Priority	:	1st
Estimated cost	:	Tk. 160,000/-
Source of fund		BARI

Expt. 042. Influence of Tillage Practice and Nutrient Management on the Yield of Mustard

Activity	:	Component technology
Objective(s)	:	To evaluate the effect of tillage practice and nutrient management on the yield of mustard.
Rationale	:	Mustard (*Brassica spp*.) is one of the most important oilseed crops in Bangladesh, contributing significantly to national edible oil production, especially during the *rabi* season (BBS, 2023). Despite its importance, the average yield of mustard remains low, typically ranging between 1.0 to 1.2 t/ha, primarily due to suboptimal agronomic practices, including improper tillage operations and unbalanced nutrient management (Hossain et al., 2022). Tillage is a critical factor affecting soil physical properties, moisture conservation, and root penetration, which directly influence crop growth (Shilpa et al., 2021; Rana et al., 2020). Similarly, the source and management of nutrients play a vital role in determining mustard yield and quality. The exclusive use of chemical fertilizers has been linked to soil degradation and reduced microbial activity, while organic amendments like poultry manure and vermicompost have been shown to improve soil structure, enhance nutrient availability, and support long-term fertility (Rahman et al., 2020; Islam et al., 2023; Shilpa et al. 2023). Consequently, integrated nutrient management (INM), in conjunction with appropriate tillage methods (Kassam et al., 2019), offers a sustainable strategy to improve mustard productivity while preserving soil health. This study, therefore, aims to evaluate the interactive effects of tillage methods and nutrient sources on the yield and quality of mustard under the agro-ecological conditions of Bangladesh.
Materials and methods	:	
Crop/Variety	:	Onion (BARI Sarisha-18)
Design	:	RCBD
I. Treatment		Tillage Practices (3 Levels): T_1: Conventional Tillage (3 ploughings + laddering); T_2: Minimum Tillage (1 ploughing + laddering); T_3: Strip tillage (No ploughing, direct sowing) — Nutrient Sources (5 Levels): N_1: 100% RDF; N_2: IPNS with 2 t/ha vermicompost; N_3: IPNS with 3 t/ha CD
II. Replications		Four (4) Compact
Plot Size	:	40 m^2
Planting system/spacings	:	Row-to-row distance 30 cm.
Fertilizer dose and methods of application	:	Recommended dose: N: 100 kg/ha, P: 40 kg/ha, K: 60 kg/ha, S: 20 kg/ha (adjusted based on treatment) Organic manures will be applied based on their nutrient equivalence.
Irrigated/Rainfed	:	Irrigated
Data to be recorded	:	Growth Parameters: Plant height (cm), Leaves $plant^{-1}$, Days to 50% flowering and maturity Yield Components: Siliquae $plant^{-1}$, seeds $siliqua^{-1}$, 1000-seed weight (g), Seed yield (kg/ha), Biological yield (kg/ha) and Harvest Index (%)

		Quality Parameters: Oil content (%) measured via Soxhlet extraction; Protein content (%) via Kjeldahl method; Moisture content (%) at harvest and Fatty acid composition (optional, GC-MS if available).
Investigator(s)	:	Dr. Md. Akhter-Ul-Alam
Season	:	Rabi 2025
Date of initiation	:	October 2025
Date of completion	:	February 2028
Expected output/benefit	:	Identification of the most effective tillage and nutrient management practices for maximizing mustard yield and quality. Enhanced understanding of sustainable mustard production under varying soil management conditions in Bangladesh.
Location	:	MLT Site, Lalmonirhat
Status	:	New
Program proposed from	:	OFRD, BARI, Rangpur
Priority	:	1st
Estimated cost	:	Tk. 350,000/-
Source of fund	:	BARI

Expt. 043. Performance of Leafy Vegetables Intercropping with Brinjal at Rangpur Region

Activity	:	Component technology
Objective(s)	:	To find out suitable leafy vegetables for intercropping with brinjal. To analyze the economic profitability of different intercropping
Rationale	:	A popular and extensively grown vegetable crop in Bangladesh is brinjal (*Solanum melongena* L.). This crop has a life cycle of 240–280 days and is widely spread (100 cm x 80 cm). In its first growth stage, brinjal grows slowly and takes many weeks to establish a full canopy, while being a crop with a reasonably long lifespan. This privilege can be taken for growing various short duration (30-40 days) crops (mostly leafy vegetable) in between the rows as intercrops. Most of the green leafy vegetables like red amaranth, leaf amaranth, patshak and spinach are rich source of minerals including iron, calcium, potassium, magnesium and also provide important vitamins, including vitamins K, C, E, and many of the vitamins B (Natesh *et al*., 2017). Those crops can easily be intercropped with brinjal at early growth stage for their short stature and quick growing habit.
Materials and methods	:	
Crop/Variety	:	Brinjal : BARI Begun-12 Red amaranth : BARI Lalshak-1 Stem amaranth : BARI Datashak-1 Pathshak :BJRI Deshi Patshak-2 (Mehra) Spinach : BARI Palongshak-1
Design	:	RCRD
I. Treatment		T_1: Brinjal + Red amaranth T_2: Brinjal + Stem amaranth T_3 : Brinjal + Patshak T_4 : Brinjal + Spinach T_5 : Sole brinjal
II. Replications		Six (06) Dispersed
Plot Size	:	24 m^2

Planting system/spacings	:	Brinjal: Line sowing (100cm x 80cm), Leafy vegetables: Line sowing
Fertilizer dose and methods of application	:	As per recommended BARC, FRG / 2024
Irrigated/Rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations Yield and yield attributes of crop Pest and disease reaction Cost and return analysis Farmers' opinion
Investigator(s)	:	Ummay Kulsum Laily
Season	:	Rabi 2025
Date of initiation	:	October, 2025
Date of completion	:	April, 2028
Expected output/benefit	:	Suitable crop combination for increasing total productivity of farmers
Location	:	Shanerhat, Dhaperhat, MLT site, BARI, Rangpur
Status	:	New
Program proposed from	:	
Priority	:	1st
Estimated cost	:	Tk. 120,000/-
Source of fund	:	BARI

Expt. 044. Development of alternate cropping pattern (Early Potato-Potato-Sweet gourd-T. *Aman* rice) instead of Existing (Potato-Sweet gourd- T. *Aman* rice) cropping pattern in Thakurgaon

Activity	:	Cropping system
Objective (s)	:	To enhance productivity.
Rationale	:	The cropping patterns are the practice of integrating farming skills w technology to make use of available farm resources for production satisfy farmers' need. Zandstra *et al.* (1981) have defined the croppi pattern/systems as the crop production activities of a farm. The croppi pattern that has the property of productivity, stability, sustainability a equitability of productivity distribution among the human beneficiar is generally termed as cropping pattern. In subsistent farming, t cropping pattern unable to fulfil the basic requirement of the farmers a unadjustable to their resource and technology is subject to disappear. meet these challenges of food deficiency four of crops can be tried ir pattern to raise productivity of the patterns for producing more food a fetch high benefit. In Bangladesh, food production and farm income c be increased by spatial or temporal dimension or by both growing cro As the land resource is extremely limited. The only way to raise agı economic productivity of crop is to increase the production per unit ar per unit time. This can be achieved by increasing cropping intens through incommoding more number of crops in the pattern. Pota planted as the principal food crop in many countries in temperate a sub tropic. AEZ 1 is situated in the northern part of Bangladesh a farmers are interested and potato cultivation is more profitable and we adjusted to the climate and cropping systems. Sweet gourd is al

profitable vegetable to farmers and can be included in this croppi pattern without disturbing the major cropping pattern. Considering t profitability of this new pattern over the existing one this experiment to be undertaken.

Procedure/Methods : Treatment: Cropping pattern

1st Crop	2nd Crop	3rd Crop	4th Crop
Potato	Potato	Sweet gourd	T. *Aman* rice
1-5 oct.	7-10 Dec.	20-25 Jan.	1-5 July
50 cm x 15 cm	55 cm x 20 c m	3 m x 55 cm	20 cm x 20 cm
1-3 Dec.	5-7 Mar.	10-15 June	1-3 Oct.
60	90	120-125	90
5	3	After 35-40 days of potato sowing, Sweet gourd sows in potato row.	5

Variety : Potato: BARI Alu-90
Potato: BARI Alu-25
Sweet gourd: BARI Mistikumra-2
T. Aman: BRRI Dhan 75

Planting system : Line sowing

Design : RCBD

Replication : 3

Plot size : 6 m × 5 m

Fertilizer dose : 1st potato: 145-16-105-12-1.5-6-1-6000 NPKSMgZnBCD
2nd potato: 145-8-53 kg/ha NPK
T. *Aman* rice: 85-6-20-8-1-0-0 kg/ha of NPKSMgZnB

Methods of application : Potato: Half of NK and full dose of other fertilizer as basal. Rest NK will be top dressed at 30 DAP
T. *Aman* rice: 1/3rd N and full dose of other fertilizer as basal. Rest N will be top dressed at 30 and 60 DAT

Irrigated/ rainfed : Irrigated

Data to be recorded : Yield and yield component of each crop. Total pattern yield and economics, PE and LUE.

Investigator (s) : Md. Nuruzzaman, SO, S. Akter, SO, S. M. Abu Hena Mostofa Kamal, PSO

Season : Round the year

Date of initiation : First week of October/2025

Expt. Output/Benefit : Increased total productivity and cropping intensity

Location : Munshir Hat, MLT site, ARS, Thakurgaon

Status : new

Estimated cost : Tk.2,00,000/-

Source of fund : BARI

Priority : 1st

Expt. 045. Development of alternate cropping pattern (Potato- Maize- Yard long bean-T. *Aman* rice) instead of Existing (Potato-Maize- T. *Aman* rice) cropping pattern in Thakurgaon

Activity : Cropping system

Objective (s) : i) To increase productivity and economic return

Rationale : To meet the challenges of food deficiency three or more numbers of crops can be tried in a pattern to raise productivity of the patterns for producing more food and fetch high benefit. In Bangladesh, food production and farm income can be increased by spatial or temporal dimension or by both growing crops. And the land resource is extremely limited. The major cropping pattern in the AEZ 1 is Potato-Maize- T. Aman rice. This AEZ is situated in the northern part of Bangladesh is very suitable for any crops in any cropping systems. Farmers can manage more number of crops for their food security, farm income and excellent livelihood. In the highly intensive Rice-Rice cropping pattern both cultural manipulation and soil management are complex and complicated to accommodate a number of crops leaving reasonable turn around period, soil tilth preparation, planting technique adjustment, optimum plant establishment, intercultural operation, pest management etc. Farmers are continuing these operations in their own ways. Long yeard bean can climb on maize that means it can be used as supporting one. If we include one crop in Potato-Maize- T. Aman rice cropping system, then it will be a great opportunity to increase total productivity and employment in this area. And as it do not disturb the major cropping pattern it can easily be established.

Procedure/Methods : Treatment: Cropping pattern

1st Crop	2rd Crop	3rd Crop	4th Crop
Potato	Maize	Yard Long Bean	T. *Aman* rice
15 Nov.	1-5 Dec.	20-25 Apr.	10-15 July
50 cm x 15 cm	55 cm x 20 cm	55 cm x 20 cm	20 cm x 20 cm
10-20 Feb.	15-20 May.	15-20 June	25-25 Oct.
90	140-150	60-70	90
5	3	After 15-20 days before of maize harvesting this crop sows in maize row.	5

Variety : Potato: BARI Alu-90
Maize: Hybrid Maize
Yard Long Bean: BARI Borboti-2
T. Aman: BRRI Dhan 75

Planting system : Line sowing

Design : RCBD

Replication : 3

Plot size : 6 m × 5 m

Fertilizer dose : 1st potato: 145-16-105-12-1.5-6-1-6000 NPKSMgZnBCD
Maize: 210-36-75-30-3-3-1 kg/ha of NPKSMgZnB
Long yeard bean: 20-10-5-0-0-0-1.5 kg/ha of NPKSMgZnB
T. Aman rice: 85-6-20-8-1-0-0 kg/ha of NPKSMgZnB

Methods of application : Potato: Half of NK and full dose of other fertilizer as basal. Rest NK will be top dressed at 30 DAP
Maize: 1/3rd N and full dose of other fertilizer as basal. Rest N will be top dressed at 30 and 60 DAS
T. Aman rice: 1/3rd N and full dose of other fertilizer as basal. Rest N will be top dressed at 30 and 60 DAT

Irrigated/ rainfed : Irrigated

Data to be recorded : Yield and yield component of each crop. Total pattern yield and economics.

Investigator (s)	:	MD. Nuruzzaman, S. Akter, S. M. Abu Hena Mostofa Kamal
Season	:	Round the year
Date of initiation	:	First week of October/2025
Expt. Output/Benefit	:	Increased total productivity and cropping intensity
Location	:	Munshir Hat, MLT site, ARS, Thakurgaon
Status	:	new
Estimated cost	:	Tk.2,00,000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 046. Mixed cropping of Coriander with Chilli at charland of Jamalpur

Activity	:	**Mixed cropping**
Rationale	:	Mixed cropping reduces the risk of total crop failure as two or more crops are cultivated simultaneously in the same land. Chilli is one of the major spices crops grown in Bangladesh. Chilli is cultivated in 104858 ha land (both winter and summer) and produced 176000 ton annually. In Bangladesh total spices production is about 4.5 lakh tons and 11.5 lakh tones are imported to fulfill the national demand. A successful mixed cropping system gives higher economic return, greater total production per unit area, and more diversified crop production than sole cropping. In char areas of Jamalpur, farmers usually practiced mixed cropping chilli and coriander. However, they do not follow any specific seed ratio when sowing. They use their own ideas, which are different from farmer to farmer. They do not know the right proportion for mixed cropping. Therefore, the experiment will conduct to find out the suitable combination of chilli and coriander as mixed cropping for higher yield and economic return.
Materials and Method	:	
Crop/variety	:	Chilli: BARI Morich-6 and Coriander: BARI Dhania-1
Design	:	RCB
Replication	:	Three
Treatment	:	T1: Chilli (100%, 60 cm x 50 cm) + Coriander (10%) T2: Chilli (100%) + Coriander (20%) T3: Chilli (100%) + Coriander (30%) T4: Sole Chilli (100%) T5: Sole Coriander (100%)
Plot size	:	5 m × 4 m
Planting system/Spacing	:	Line sowing for chilli, Broadcast for coriander
Fertilizer dose	:	As per FRG, 2024
Methods of application	:	As per FRG, 2024
Irrigation/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations Yield and yield contributing characters Cost and return analysis Farmer's opinion
Investigator(s)	:	M.F. Islam, M.M. Rahman and A.K.M.Z.U.Noor
Season	:	Rabi
Date of initiation	:	November, 2025
Date of completion	:	March, 2026

Expected output/Benefit	:	Increased productivity and improved economic condition of farmers
Location	:	Islampur, Jamalpur
Status	:	New
Estimated cost	:	Tk. 70,000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 047. Effect of seed rate on yield of mustard under zero tillage conditions

Activity	:	**Crop management**
Objectives		To find out optimum seed rate and suitable mustard variety under zero tillage condition
Rationale	:	In Tangail district mustard cultivation under 34754 hectares area (BBS 2024). On the other hand Mustard – Fallow – T. *Aman* cropping pattern covered 76407 hectares (31.56 % of total cultivable land) area. Medium low land and low land occupied 60775 hectares (25% of total land) and 25587 ha (10 % of total land) area, respectively. These vast areas can't be able cultivate mustard due to land remain wet (moist) and muddy after flood, which delay to cultivating mustard. If zero tillage mustard cultivation may be practised under these area, mustard cultivation area will be increased. But now a days, after drop down of flood water some innovative farmers usually broadcast local mustard variety on moist soil under zero tillage condition with recommended seed rate and they get poor yield. But there is a scope to grow high yielding mustard varieties with optimum seed rate and proper management practices to ensure satisfactory yield. The crop production can be increased by inclusion of high yielding varieties under zero tillage conditions, mustard yield is significantly influenced by both the variety and the seed rate used. Modern varieties generally outperform against local ones, and appropriate seed rates are crucial for maximizing yield. So, by introducing Bangladesh Agricultural Research Institute (BARI)released high yielding mustard varieties and appropriate seed rate is only the way to increase productivity in these area of Tangail. Under these circumstances the experiment have been under taken to select suitable mustard variety and optimum seed rate under zero tillage condition.
Materials and methods	:	Treatment: **Variety:** T_1= BARI Sarisha-20, and T_2= BARI Sarisha-22 (alternate BARI Sarisha-14) **Seed rate:** T_1 = Recommended seed rate (RSR), T_2 = 10% higher of RSR, and T_3 = 20% higher of RSR
Crop/variety	:	Mustard
Design	:	RCBD
Plot size	:	10 x 10 m^2
Planting system/spacing	:	Broadcast
Fertilizer dose and methods of application	:	Recommended all fertilizer and 2/3rd of urea will be applied at the time of mustard seed broadcasting. Rest 1/3rd of urea will be applied at 20-25 days after sowing.

Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, Yield and yield attributes, Pest and disease reaction, Cost and return analysis and Farmers' opinion.
Investigators	:	M. A. Rahaman, G. Pal, K. Roy, and T. Tasmima
Season	:	Rabi, 2025-26
Date of initiation	:	1st week of November 2025
Date of completion	:	30 March 2027
Expected output	:	Optimum seed rate and suitable variety can be identified; ultimately productivity of the system will be increased.
Locations	:	MLT site, Mirzapur; MLT site, Bhuapur and FSRD site Atia, Delduar
Status	:	New

Expt.048. Development of Potato+Sweet gourd-Kenaf-T. *Aman* cropping pattern against Sweet gourd-Kenaf-T. Aman

Activity	:	Cropping system
Objectives	:	i. To increase land use efficiency and total productivity ii To increase farmers income and employment opportunity
Rationale	:	Bangladesh is one of the most densely populated countries of the world with population growth rate of 1.579%. The present cropping intensity of the country is 194%. Food requirement is estimated to be doubled in the next 25 years. Under such situations, it is very important to increase cropping intensity and productivity. Farmers of Hossainpur upazilla usually practice Sweet gourd-Kenaf-Fallow cropping pattern. If we sow potato before 10 to 15 days of sweet gourd we can easily fit another crop as an intercrop in this cropping pattern which will increase cropping intensity as well as farmers productivity and income. Considering the context, the present study will be undertaken.
Materials and methods		
Variety/Line(s)	:	Potato: BARI Alu-86, Jute: BJRI Kenaf HC95, Sweet gourd: BARI Hybrid mistikumra-2 and T. Aman: BRRI dhan49
Design	:	RCB
Treatments	:	Improved CP: (Potato (BARI Alu-86)(1st week of Nov.-1st week of Jan. and mid Nov. sweet gourd)+Sweet gourd(BARI Hybrid mistikumra-2)-Kenaf (HC95)-T. Aman Farmers CP: Sweet gourd-Kenaf-T. Aman
Replication	:	6 (Dispersed)
Plot dimension	:	10 decimal
Planting system	:	Potato (60 × 25 cm) and T. Aman (25× 15 cm)
Fertilizer dose	:	As recommended (FRG Guide BARC, 2024)
Methods of application	:	Full dose of NPK were applied as basal dose
Irrigated/Rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, yield and yield attributes, pest and disease incidence, cost and return, Farmer's opinion
Investigator	:	Md.Yeasinul Haque Rayhan, SOand Dr. M M Zaman, PSO, OFRD, Kishoreganj.
Season	:	Rabi 2025-26
Date of initiation	:	November, 2025
Date of completion		October, 2028
Expected output	:	Total productivity and income of farmers will increase at least 20%.
Location	:	Hossainpur, Kishoreganj
Status	:	1st year
Estimated cost	:	300,000/-

Source of fund	:	BARI
Priority	:	1st

Expt.049. Development of Potato-Lau shak - Fallow cropping pattern against Potato-Kenaf - Fallow

Activity	:	Cropping system
Objectives	:	To increase productivity and profitability.
Rationale		
Materials and methods	:	
Variety/Line(s)	:	Potato: BARI Alu-86,Jute: BJRI Kenaf HC95, Lau shak: BARI Lau-2
Design	:	RCB
Treatments	:	Improved CP: Potato-Lau shak-Fallow; Farmers CP: Potato-Kenaf-Fallow
Replication	:	6 (Dispersed)
Plot dimension	:	10 decimal
Planting system	:	Potato (60 × 25 cm)
Fertilizer dose	:	As recommended (FRG Guide BARC, 2024)
Methods of application	:	Full dose of NPK were applied as basal dose
Irrigated/Rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, yield and yield attributes, pest and disease incidence, cost and return, Farmer's opinion
Investigator	:	Md.Yeasinul Haque Rayhan, SOand Dr. M M Zaman, PSO, OFRD, Kishoreganj.
Season		Rabi 2025-26
Date of initiation	:	
Date of completion		April, 2028
Expected output	:	Total productivity and income of farmers will increase
Location	:	Nikli, Kishoreganj
Status	:	1st year
Estimated cost	:	100,000/-
Priority	:	1st

Expt. 050. Intercropping Radish with Maize in haor area of Kishoreganj

Activity	:	Intercropping
Objectives	:	To increase productivity and profitability.
Rationale	:	Bangladesh is a small country of 0.148 million km-2 but surprisingly it has to feed some 165 million people (BBS 2022). The population of Bangladesh is projected to be 192 million by 2030, with cereals (rice and wheat) requirements of 38.2 million tons (Mt), but with no scope for increasing the area under production (IFPRI, 2012). Changes in climate, population expansion, food scarcity, poverty, starvation, accelerated land cover change and environmental degradation are the foremost challenges of the 21st century (Neamatollahi et al., 2017). Therefore, to ensure food security for increasing people in the future we need to produce huge food on a reduced amount of land (Islam et al., 2015a&b). At

kursha union of Nikli Kishoreganj many farmers practice sole Maize cropping pattern thats why there is a great scope to insert leafy vegetables as an intrecrop into maize.If we can insert radish as an intercrop it will increase farm productivity as well as farmers income. Considering the context, the present study will be undertaken.

Materials and methods

Variety/Line(s)	:	Maize: (BWMRI Maize-2)/NK40, Radish (BARI mula-1)
Design	:	RCB
Treatments	:	T_1 = 100% Maize (60 cm x 20 cm) +60% Radish T_2 = 100% Maize+80% Radish T_3 = 100% Maize+100% Radish T_4 = 100% Maize
Replication	:	6 (Dispersed)
Plot dimension	:	10 decimal
Planting system	:	Maize (60x20 cm)
Fertilizer dose	:	As recommended (FRG Guide BARC, 2024)
Methods of application	:	Full dose of NPK were applied as basal dose
Irrigated/Rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, yield and yield attributes, pest and disease incidence, cost and return, Farmer's opinion
Investigator	:	Md.Yeasinul Haque Rayhan, SOand Dr. M M Zaman, PSO, OFRD, Kishoreganj.
Season	:	Rabi 2025-26
Date of initiation	:	November, 2025
Date of completion		April, 2026
Expected output	:	Total productivity and income of farmers will increase
Location	:	Nikli, Kishoreganj
Status	:	1st year
Estimated cost	:	100,000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 051. Development of cropping pattern of Mustard – Boro -T. *Aman* rice against Fallow- Boro- T. *Aman* in Narsingdi

Ativity		Cropping system
Objectives	:	1. To improve the existing cropping pattern 2. To increase economic return of farmers
Rationale	:	Fallow-Boro-T.Amancropping pattern is the existing cropping pattern in Narsingdi. The pattern covers around 14520 hectare of the total cultivated land in the AEZ 9in Narsingdi (DAENarsingdi, 2019). There is a scope to introduce oil seed crop before Boro riceand after Aman rice in the existing cropping pattern to fulfill the scarcity of eating oil in Bangladesh. BARI has developed high yielding modern oil seed crop variety, which may be introduced in the cropping pattern.
Materials and Methods	:	
Crop	:	Mustard
Variety	:	BARI Sarisha-20, BRRIdhan89, Binadhan-17

Treatments	:	1. Existing Cropping Pattern: Fallow-Boro-T. Aman 2. Alternate cropping pattern: Mustard (BARI Sarisha-20) – Boro (BRRI dhan89) - T.Aman rice (BINA Dhan17)
Design	:	RCB
Replications	:	6 (dispersed)
Unit plot size	:	600 m2
Seed rate (kg ha^{-1})	:	3600 m2
Fertilizer dose	:	As per recommendation by FRG-2018
Application of fertilizer	:	FRG'2024
Data to be collected	:	Dates of all operation Yield and yield contributing characters & equivalent yield Major disease and insect incidence Cost and return analysis Farmers' opinion
Investigator(s)	:	M. H. Rahman
Expected output	:	Cropping intensity will be increased
Status	:	On going
Date of initiation	:	November/2025
Date of completion	:	-
Estimated cost	:	100000/-
Source of fund	:	BARI
Location(s)	:	OFRD, BARI, Shibpur, Narsingdi.

Expt. 052. Effect of spacing on the yield of groundnut variety at coastal region

Activity		Component technology
Objective (s)	:	To increase plant population and yield To minimize yield lose
Rationale	:	Groundnut (*Arachishypogaea*L) is one of major oil seed crops in Bangladesh. One of the important agronomic techniques that affect groundnut development, yield, and quality is plant density. In order to maximize grain seed yield, optimal density guarantees that there is less interspecies competition and that growth resources are efficiently captured and used both above and below ground [10]. [11] states that closer spacing (30 cm × 10 cm) can enhance the yield of erect type of groundnuts, whereas a spacing of 40 cm × 20 cm will maximize the output of spreading or semi-spreading type of groundnuts. One of the groundnut cultivars used by smallholder farmers in Malawi, CG7, has suggested plant density of 89,000 plants per hectare (75 cm × 15 cm × 1 seed) [12]. The theoretical yield for CG7 at this spacing is 2500 kg/ha. One of the many factors that affect groundnut production, proper row spacing is essential in plantings. Planting density is one of the main factors that influence the development, productivity, and quality of peanuts. [13] observed that plant dry matter accumulation and branch formation were increased when the crop is cultivated with optimum spacing, and yield parameters like number of pod/plant, yield/plant, and 1000-grain weight were at their highest. In order to increase crop output, this research aims to explore the likelihood of high groundnut yield under various spacing conditions. This study

		investigated the effect of variety and plant spacing on yield and growth of groundnuts.
Materials and Methods	:	
Crop/variety	:	BARI Chinabadam-8, BARI Chinabadam-9, BARI Chinabadam-10
Design	:	RCBD
i. Treatment	:	Factor A- Spacing: 30 cm×10 cm, 30 cm × 15 cm, 30 cm × 20 cm, and 30 cm × 25 cm. Factor B- BARI Chinabadam-8, BARI Chinabadam-9 and BARI Chinabadam-10
ii. Replications	:	Six (Disperse)
Plot size	:	01 decimal for each unit plot:
Planting system/spacing	:	Line sowing
Fertilizer dose and methods of application		Crop wise fertilizer will be used. All fertilizer used as basal dose except urea.
Irrigated/rainfed	:	Rainfed
Data to be recorded	:	Yield and yield contributing characters, benefit & cost, disease and pest infestation and farmers opinion.
Investigator (s)		Concerned scientist of OFRD, Patuakhali, Ershadul Hoque, SSO, FMPE
Season		Rabi 2025-26
Date of Initiation		Crop wise
Date of completion		Crop wise
Expected output/benefit	:	Popularize BARI released varieties and make seed available of modern varieties
Location		Patuakhali & Barguna district

Status	1st year
Program proposed from	OFRD, BARI,Patuakhali
Estimated cost	Tk. 250000/-
Source of fund	BARI Main
Priority	1st

Expt. 053. Validation of Intercropping Coriander with Brinjal for Controlling Brinjal Shoot and Fruit Borer

Activity		Intercropping
Objectives	:	To reduce pest infestation and maximize the productivity & land use efficiency
Rationale	:	Introducing coriander (*Coriandrum sativum* L.) as an intercrop in brinjal fields across Gopalganj district offers a low-cost, eco-conscious solution to pest management while improving farm productivity. Agronomically, coriander thrives in the inter-row spaces, enhancing crop diversity and soil health, while naturally suppressing key pests like the brinjal fruit and shoot borer through its aromatic volatiles. Economically, farmers benefit from dual-crop revenue with increased brinjal yields and added income from coriander harvests boosting profit margins and benefit-

cost ratios. Ecologically, the reduced reliance on synthetic pesticides helps conserve beneficial insects and protects environmental quality. Implementing this program in Gopalganj will empower local growers with a sustainable and replicable model that enhances income security and agro-ecosystem resilience.

Materials and methods	:	
Crop/variety	:	Brinjal: BARI Begun-6 ; Coriander: BARI Dhonia-1
Design	:	RCBD
Replications	:	6 (dispersed)
Treatment		T_1=Sole brinjal T_3=Two rows coriander in between 2 rows brinjal T_4=Three rows coriander in between 2 rows brinjal T_5=Coriander broadcastin between 2 rows brinjal
Plot size	:	10 decimal per location
Planting system/spacing	:	Brinjal (100cm × 75cm)
Fertilizer dose & application methods	:	As per FRG 2018
Irrigation/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operation, Yield and yield contributing characters, Insect infestation, Cost and returns analysis & Farmers opinion
Investigator(s)	:	M M Howlader & D Halder
Season	:	*Rabi*
Date of initiation	:	November 2025
Date of completion	:	April 2028
Expected output/benefit	:	Reduced brinjal fruit and shoot borer infestation and increased brinjal yield per hectare compared to sole cropping
Location	:	FSRD site Gopalganj Sadar and MLT site, Tungipara and Muksudpur
Status	:	New
Estimated cost	:	Tk. 150000
Source of fund	:	OFRD, BARI
Priority	:	1st

Expt. 054. Effect of Vine Length on Sweet Potato

Activity		Component technology
Objectives	:	To find out the suitable vine length of sweet potato for higher yield.
Rationale	:	Sweet potato (*Ipomoea batatas* L.) is a nutritionally rich crop with strong potential to improve food security and livelihood resilience in Gopalganj, a region well suited to its cultivation. However, tuber yield and quality vary widely depending on planting material. Vine length is a critical growth parameter influencing photosynthetic capacity, nutrient allocation, and overall plant vigor. Longer vines may support greater leaf area, promoting carbohydrate synthesis essential for tuber development, while excessively long vines could divert energy away from tuber formation. Conversely, shorter vines might limit photosynthesis and reduce yield potential. Understanding this relationship is vital for developing cultivation strategies that balance vegetative growth with

tuber production. The optimal vine length can contribute to sustainable yield improvement, resource-efficient farming, and better economic returns for growers. This study aims to fill that knowledge gap of farmers. By generating location specific data, the research will guide farmers toward cost-effective, sustainable practices that increase productivity and soil health.

Materials and methods	:	
Crop/variety	:	Sweet Potato: BARI Mistialu-17
Design	:	RCBD
Treatments	:	Length of propagating material (vine cutting): T_1= 20 cm T_2= 30 cm T_3= 40 cm
Replications	:	6 (dispersed)
Spacing	:	60cm × 30cm
Fertilizer dose& application methods	:	As per FRG 2018
Irrigation/rain fed	:	Irrigated
Data to be recorded	:	Yield and yield contributing data
Investigator(s)	:	M M Howlader & D Halder
Season	:	*Rabi*
Date of initiation	:	December, 2025
Date of completion	:	April, 2027
Expected output/benefit	:	Optimum vine length for maximum yield.
Location	:	FSRD site, Gopalganj sadar and MLT site Pirojpur
Status	:	New
Estimated cost		Tk. 150,000
Source of fund		OFRD, BARI
Priority		1st

Expt. 055. Development of alternate cropping pattern Grasspea- Sesame-T. *Aman* against existing Grass pea-Fallow-T. *Aman* cropping pattern in Pirojpur district

Activity		Cropping system
Objectives	:	To introduce sesame as a new crop in the cropping pattern.
Rationale	:	The existing Grasspea–Fallow–T. Aman cropping pattern is a major cropping pattern in of Pirojpur district, under this pattern a remarkable area remain fallow after harvesting of grasspea from last week of February to mid-July. Where sesame can be easily introduced. Introducing Sesame as an extra crop between Grasspea and T. Aman offers a promising solution to maximize land use efficiency. Sesame is drought-tolerant, requires minimal inputs and fits well within the seasonal window. Its inclusion can enhance soil fertility, diversify farm income, and reduce economic risk through crop diversification. Moreover, sesame's market demand and export potential can contribute to improved livelihoods. This alternate pattern ensures continuous cropping, better resource utilization, and sustainable agricultural intensification. Therefore, developing and promoting the

Grasspea–Sesame–T. Aman sequence is both agronomically and economically justified for boosting productivity in the region.

Materials and methods	:	
Crop/variety	:	Sesame (BARI Til-4),
Design	:	RCBD
Treatments	:	Existing pattern: Grasspea–Fallow–T. Aman Improved pattern: Grasspea–Sesame–T. Aman
Replications	:	6 (dispersed)
Spacing	:	N/A
Fertilizer dose& application methods	:	As per FRG 2018
Irrigation/rain fed	:	Irrigated
Data to be recorded	:	Yield and yield contributing data
Investigator(s)	:	M M Howlader, D Halder & K N Islam
Season	:	*Rabi* season
Date of initiation	:	December, 2025
Date of completion	:	April, 2027
Expected output/benefit	:	The farmers income will be increased.
Location	:	Gopalganj and Pirojpur district, Patuakhali and Barguna
Status	:	New
Estimated cost		Tk. 2,00,000 Tk each location
Source of fund		OFRD, BARI
Priority		1st

Expt. 056. Selection of suitable crop in between watermelon and T. Aman in southern region

Activity		Intercropping
Objective (s)	:	To identify suitable crop in between watermelon and T. Aman for higher productivity.
Rationale	:	In southern Bangladesh, watermelon (Citrullus lanatus) is a major cash crop cultivated extensively during the dry rabi season, particularly in the coastal and char areas due to favorable soil and climatic conditions. According to the Department of Agricultural Extension, watermelon was cultivated on 83,000 hectares of land in Patuakhali district in the fiscal year 2024-25. Following watermelon harvest, a significant portion of arable land remains fallow during the subsequent period, primarily due to constraints such as limited soil moisture, salinity intrusion, lack of suitable crop choices, and low farmer awareness of short-duration or stress-tolerant crops. This underutilization of land not only represents a loss of potential income and food production but also undermines the sustainability of the cropping system in this region. Efficient use of fallow periods through the introduction of suitable short-duration crops can play a crucial role in improving land productivity, enhancing farmer livelihoods, and contributing to food and nutritional security. Crop intensification through the incorporation of an additional crop between the end of watermelon cultivation and the onset of the next cropping season is a promising strategy. However, selecting the right crops for this niche window requires careful

		screening based on adaptability to residual soil moisture, tolerance to prevailing climatic and edaphic stresses (especially salinity), and profitability.
Materials and Methods	:	
Crop/variety	:	Different Kharif season growing crops
Design	:	RCBD
i. Treatment	:	The treatments will be assigned as follows: T1- Mungbean: T2- Sesame; T3- Indian Spinach; T4- Stem Amaranth T5- Okra; T6: Kangkong, T7- D. Aus (PTOS)
ii. Replications	:	Six
Plot size	:	10 m x 8 m for each unit plot
Planting system/spacing	:	Line sowing
Fertilizer dose and methods of application		Treatment wise fertilizer will be used
Irrigated/rainfed	:	Rainfed
Data to be recorded	:	Yield and yield contributing characters, benefit & cost, disease and pest infestation, Salinity at 15 days interval and farmers opinion.
Investigator (s)		Concerned scientist of OFRD, Patuakhali
Season		Rabi, 2025-26
Date of Initiation		March to April 2026
Date of completion		Last week of July 2026
Expected output	:	suitable crops for effective utilization of fallow land
Location		Patuakhali & Barguna region
Status (1st year/2nd year/.....)		1styear
Estimated cost		Tk. 2,60,000/-
Source of fund		BARI Main
Priority		1st

Expt. 057. Validation of cropping pattern at MLT site Narail Sadar, Narail

Activity	:	On-Farm validation
Objectives	:	To find out the profitable cropping pattern
Rationale	:	Most of the farmer in Narail sadar cultivate boro rice during winter season. Several farmers in some pocket areas are trying to cultivate non-rice crop like mustard, lentils, garlic, onion, black cumin, potato, grasspea, fieldpea, coriander, radhuni and also vegetables during rabi season. Some farmers cultivate jute after winter crops, some farmers are trying to cultivate vegetables. Sometimes, they are following crop sequences. But there is no scientific study which crop sequence is profitable at present situation. Therefore, the present study will be conducted to find out the profitable crop sequences/ cropping patterns.
Materials and Methods	:	
Crop/varieties	:	
Design	:	

i)Treatment	:	T_1: Mustard (BARI Sarisha-14)-Jute (O-9897)-T. *Aman* T_3: Potato (BARI Alu-35)-Jute (O-9897)-T.aman T_4: Maize + Coriander (BARI Dhonia-1)-Jute (O-9897)-T.aman T_5: Garlic (BARI Rosun-1)-Jute (O-9897)-T.aman
ii)Replication	:	6 (dispersed)
Plot size	:	20 decimal per pattern per farmer
Planting system	:	-
Fertilizer dose and application method	:	FRG, 2024.
Irrigation/ rainfed	:	Irrigated
Data to be recorded	:	Dates of all operation, yield and yield contributing characters, major disease and insect incidence, cost and return analysis, farmers' opinion
Investigators	:	M H Rahman and K U Ahammad
Season	:	Rabi
Date of initiation	:	November 2025
Date of completion		November 2026
Expected output	:	Total productivity and economic return will be increased
Location	:	MLT site Narail Sadar, Narail
Status	:	New
Priority	:	1st
Program Proposed from	:	OFRD, RARS, Jashore
Estimated cost	:	Tk. 80,000/-
Source of fund	:	BARI

Expt.058. Development of Maize + Potato-Sesame- T. *Aman* cropping pattern against Tobacco-Fallow-T. *Aman* cropping pattern in Kushtia

Activity		Cropping system
Objective (S)	:	To replace tobacco.
Rationale	:	Tobacco has traditionally been cultivated as a Rabi cash crop in Kushtia, often followed by a fallow period and T. Aman. While lucrative, continuous tobacco cultivation leads to degradation of soil fertility, high input use and limited contribution to food security. Furthermore, the absence of crop diversity hampers sustainable land use. This research proposes a more productive and eco-friendlier alternative: Maize + Potato (intercrop) – Sesame – T. Aman. Against conventional Tobacco → Fallow → T.Aman sequence. This pattern ensures year-round land use, improves soil fertility and enhances cropping intensity. Maize, potato and sesame are profitable, less harmful to the environment and well-suited to Kushtia's agro-climatic conditions.
Materials/ Methods	:	This experiment will be conducted at farmer's field at Mirpur, Kushtia
Crop/variety	:	Maize (BARI Hybrid Buhtta-15/17), Potato (BARI Alu-13/61), Sesame (BRRI Til-4) & T. Aman (BRRI dhan87)
Design	:	RCB
Treatment	:	T1: Tobacco→ Fallow → T. Aman (existing pattern) T2: Maize + Potato → Sesame → T. Aman (proposed pattern)
Replication	:	4

Total plot	:	8
Plot size	:	15 decimals
Planting system/spacing	:	As per crop requirement
Fertilizer dose and methods of application	:	As per Fertilizer recommendation guide 2024
Irrigated/rained	:	Irrigated
Data to be recorded	:	**Crop Performance:** Crop duration, plant height, grain/bulb yield, harvest index, Land Equivalent Ratio (LER) for intercropping &Total system productivity (t/ha/year) **Soil Parameters:** Organic matter, pH, N, P, K (initial and final of study) **Economic Analysis:** Gross return, total cost of production, benefit-cost ratio (BCR)\
Investigators	:	Md. Mamun Hossain, SO & Dr. Jahan Al Mahmud, SSO
Season	:	Robi
Date of initiation	:	October 2025
Date of completion	:	September 2027
Expected output/Benefit	:	• Tobacco will be replaced with improved cropping
Location	:	Kushtia
Status	:	New
Program Proposed from	:	OFRD, Kushtia
Priority	:	1st
Estimated cost	:	1,00000/-
Source of fund	:	BARI

Expt. 059. Integrated Nutrient Management of mango at Bandarban Hill District

Activity	:	Component technology
Objective(s)	:	To determine the optimum integrated nutrient management package for BARI Aam-4 in the hilly areas of Bandarban.
Rationale	:	Mango is a major fruit crop in the Chittagong Hill Tracts, and BARI has developed several high-yielding varieties. However, proper nutrient management is crucial for maximizing yield and fruit quality. This experiment aims to develop and validate an integrated nutrient management package that is suitable for the soil conditions and farmer practices in Bandarban, promoting sustainable mango production.
Materials and Methods	:	
Crop/ variety	:	Mango
Design	:	RCB
Treatments	:	T_1: 100% of Recommended dose as per FRG-2024 T_2: 125% of Recommended dose as per FRG-2024 T_3: T_1 + 20% P

		T_4: IPNS+ 5 t ha^{-1} vermi-compost T_5: T_1 + Liming (dose
Replications	:	03 (dispersed)
Plot size	:	50 m x 20 m (1000 sq. m) or 40 x 25 (1000 sq. m)
Planting system/spacing	:	8 m x 8m
Fertilizer dose and methods of application	:	As per treatments
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Growth parameters (plant height, canopy spread), flowering and fruiting intensity, yield per plant, fruit quality parameters, soil nutrient status, farmer's opinion, economic return.
Investigator(s)	:	Dr. Salim, SSO, OFRD, BARI, Bandarban Md. Imam Hossain, SO, OFRD, BARI, Bandarban
Season	:	2025-26 and onwards
Date of initiation	:	June 2025
Date of completion	:	Continuous monitoring for several fruiting seasons
Expected output/benefit	:	An effective integrated nutrient management package will be identified, leading to higher mango yields, improved fruit quality, and sustainable production for farmers.
Location	:	Bandarban Sadar
Status	:	1st year
Program Proposed from		OFRD, BARI, Bandarban
Priority	:	1st
Estimated cost	:	Tk. 1,00,000/-
Source of fund	:	BARI

Expt. 060. Integrated Nutrient Management for Enhancing Yield and Quality of Coffee at Bandarban Hill District.

Activity	:	Component technology
Objective(s)	:	To improve yield and quality of coffee through nutrient management.
Rationale	:	BARI Coffee-1 (Robusta) is a key variety with potential for expanding coffee cultivation in the hilly regions of Bangladesh. This variety requires precise and balanced nutrition for optimal growth and high-quality bean production. The Bangladesh Agricultural Research Institute (BARI) has a recommended integrated fertilizer dose combining organic and inorganic sources. This experiment is designed to evaluate the efficacy of this recommended dose, as well as adjusted levels (increased and decreased by 25%), against the typical farmer's practice in Bandarban. The study aims to determine the optimal fertilizer strategy for BARI Coffee-1 to maximize growth, yield, and economic returns for farmers in the region.
Materials and Methods	:	
Crop variety	:	BARI Coffee-1
Design	:	Randomized Complete Block Design (RCBD).

		Number of Treatments: 4. T_1: 100% of BARI Recommended Dose: (Organic Fertilizer: 5 kg/plant, Urea: 45 g/plant, TSP: 35 g/plant, MoP: 30 g/plant) T_2: 125% of BARI Recommended Dose: (Organic Fertilizer: 6.25 kg/plant, Urea: 56.25 g/plant, TSP: 43.75 g/plant, MoP: 37.5 g/plant) T_3: 75% of BARI Recommended Dose: (Organic Fertilizer: 3.75 kg/plant, Urea: 33.75 g/plant, TSP: 26.25 g/plant, MoP: 22.5 g/plant) T_4: Farmers' Practice (Control). Replications: 4 (Farmer's field).
Plot size	:	12m x 9m
Planting system/spacing	:	3 m × 3 m. (1,112 plants/ha)
Fertilizer dose and methods of application	:	The BARI recommended annual fertilizer dose for BARI Coffee-1 is 5 kg Organic Fertilizer, 45 gm Urea, 35 gm TSP, and 30 gm MoP per plant. Fertilization is required four times a year. The first split application should be done in March (prior to flowering), the second in May (after flowering), the third in August (during the pinhead stage), and the fourth in October (before fruit ripening). Fertilizers will be applied using the ring method, creating a shallow circular trench around each plant (30–35 cm from the stem, extending outward), applying fertilizers evenly, and covering with soil. This method targets the root zone, enhancing nutrient availability and uptake.
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	The study will assess growth parameters such as plant height, stem girth and canopy spread at 6-month intervals. Yield parameters will include productive nodes per branch, berries per node, fresh cherry yield (kg/plant and kg/ha), parchment/dry cherry yield (kg/ha), bean size grading. Quality will be evaluated through bean density and 100-bean weight. Pest and disease incidence will be regularly monitored due to their impact on growth and yield. An economic analysis will be conducted using the cost-benefit ratio for each treatment, along with farmer feedback and participatory evaluation on growth and yield aspects.
Investigator(s)	:	Dr. Salim, SSO, OFRD, BARI, Bandarban Md. Imam Hossain, SO, OFRD, BARI, Bandarban
Season	:	Year round
Date of initiation	:	July 2025
Date of completion	:	January 2028
Expected output/benefit	:	Identification of the optimal and economically viable BARI recommended fertilizer dose for BARI Coffee-1. Practical recommendations to improve productivity and profitability in coffee cultivation in the Bandarban region.
Location	:	Bandarban Sadar
Status	:	1st year
Program Proposed from		OFRD, BARI, Bandarban
Priority	:	1st
Estimated cost	:	Tk. 1,20,000/-
Source of fund	:	BARI

Expt. 061. Integrated Nutrient Management for Enhancing Yield and Qualityof Cashew Nut at Bandarban Hill District

Activity	:	Cropping system
Objective(s)	:	To improve yield and quality of cashew nut through nutrient management.
Rationale	:	Cashew nut (*Anacardium occidentale L.)* is increasingly recognized as a high-value cash crop with considerable economic potential for farmers in the Bandarban Hill District. The Cambodian M23 variety, known for its promising yield and quality characteristics, is being promoted for cultivation. However, to realize the full productive potential of this variety and ensure sustainable production, a clear understanding and application of optimal nutrient management practices are crucial. While BARI has provided general fertilizer recommendations for cashew, there is a pressing need to validate and refine these recommendations specifically for the Cambodian M23 variety under the unique agro-ecological conditions of Bandarban. Current fertilizer use among farmers may be based on traditional practices or vary widely, potentially leading to suboptimal yields or inefficient resource use. This research, therefore, aims to systematically evaluate different levels of the BARI recommended fertilizer dose for established Cambodian M23 cashew nut trees. The study will identify a balanced and economically sound fertilization strategy to enhance tree vigor, maximize nut yield and quality, thereby improving the overall profitability and sustainability of cashew farming in the region.
Materials and Methods	:	
Crop variety	:	Cashew nut (Cambodian M23)
Design	:	Randomized Complete Block Design (RCBD). Number of Treatments: 4. • T_1: 100% of BARI Recommended Dose (Urea: 800 g/plant,TSP: 450 g/plant, MoP: 450 g/plant, Gypsum: 300 g/plant) • T_2: 125% of BARI Recommended Dose (Urea: 1000 g/plant, TSP: 562.5 g/plant, MoP: 562.5 g/plant, Gypsum: 375 g/plant) • T_3: 75% of BARI Recommended Dose (Urea: 600 g/plant, TSP: 337.5 g/plant, MoP: 337.5 g/plant, Gypsum: 225 g/plant) • T_4: Farmers' Practice (Control). Replications: 4 (Farmer's field).
Plot size	:	16m x 16m
Planting system/spacing	:	8m × 8m.
Fertilizer dose and methods of application	:	The BARI recommended annual fertilizer dose for established cashew nut plants forms the basis of T_1. This annual dose will be applied in two equal splits. The first split will be applied in May-June and the second split in September-October. Fertilizers will be applied using the ring method. A circular trench, 15cm deep, will be created around each plant at a distance of 1.5m from the stem, extending outward. The fertilizers for each split application will be

		applied evenly within this trench and then covered with soil. Irrigation will follow the application.
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Vegetative growth parameters, including stem girth and canopy spread, will be measured at appropriate intervals, such as annually, to assess tree development. Key yield parameters to be recorded will encompass the number of nuts per plant, the average weight of individual nuts (g), the total nut yield expressed in both kg per plant and kg per hectare, and the shelling percentage. Furthermore, nut quality will be assessed by determining nut size/grade, kernel weight, and the kernel recovery percentage. Regular monitoring for pest and disease incidence will be conducted to understand their potential impact on performance. Finally, an economic analysis focusing on the cost-benefit ratio for each fertilizer treatment will be carried out, complemented by farmer feedback and participatory evaluations to gauge the practical applicability and perceived benefits of the treatments.
Investigator(s)	:	Dr. Salim, SSO, OFRD, BARI, Bandarban Md. Imam Hossain, SO, OFRD, BARI, Bandarban
Season	:	Year round
Date of initiation	:	June 2025
Date of completion	:	June 2028
Expected output/benefit	:	Identification of the optimal and economically viable BARI recommended fertilizer dose for cashew nut in the region. Practical recommendations to improve productivity and profitability in cashew nut cultivation in the Bandarban region.
Location	:	Bandarban Sadar
Status	:	1st year
Program Proposed from		OFRD, BARI, Bandarban
Priority	:	1st
Estimated cost	:	Tk. 1,00,000/-
Source of fund	:	BARI

Expt. 062. Development of improved cropping pattern Brinjal-Yard long bean-T. *Aman* rice Against Brinjal-Fallow-T . *Aman* in Cumilla

Activity	:	Cropping system
Objective (s)	:	To increase productivity and farmers income
Rationale	:	Improvement of cropping pattern is necessary for increasing cropping intensity, crop productivity and raising for farmers income. According to source of the Department of Agriculture Extension, Comilla, 2025, under various types of cropping pattern in Cumilla, the area under Brinjal-Fallow-T.aman is comparatively large in Debidwar Upazila areas. The cultivation of Brinjal (BARI Begun-12) and yard long bean (BARI Barbati-2 (dwarf) will increase crop productivity and utilizing the fallow period. As a result, it is easily transformed to two-crop land into three crops. Therefore, the total production will be increased. As a result, there is an opportunity to increase farmers income. So, this experiment has been undertaken.

Materials and Methods	:	Stated as bellow
Crop/variety	:	Brinjal (BARI Begun-12) and Yard long bean (BARI Barbati-2), T.aman (BRRI dhan75)
Design	:	RCBD
(i) Treatment	:	T_1: Existing cropping pattern : Brinjal (Signath)-Fallow-T.aman (BRRI dhan49) and T_2: Improved cropping pattern : Brinjal (BARI Begun-10)-Yard long bean (BARI Barbati-2)-T. Aman (BRRI dhan75)
(ii) Replications	:	05 (dispersed)
Plot size	:	10 decimals for each treatments
Planting system/spacing	:	Recommended spacing for specific crop
Fertilizer dose and methods of application	:	FRG recommended dose or STB
Irrigated/rainfed	:	Irrigated/rainfed
Data to be recorded	:	Crop management practices, yield and pest, diseases reaction and farmers feedback
Investigators	:	M. J. Uddin
Season	:	Rabi & Kharif, 2025-26
Date of completion	:	November, 2026
Expected output/benefit	:	% increase of yield, % increase of cropping intensity, % increase of farmers income and farmers reaction
Location	:	Debidwar in Cumilla
Status (Date of initiation √New or 1st year/2nd year)	:	October, 2025
Programme proposed from	:	Bottom-up
Priority	:	1st
Estimated cost	:	90,000 (30,000/- per location)
Source of fund	:	BARI Main

Expt. 063. Performance of improved cropping pattern Mustard-Sesame-B. *Aman* rice against Mustard-Fallow-B. *Aman* in Brahmanbaria

Activity	:	Cropping system
Objective (s)	:	To increase productivity and farmers income
Rationale	:	Mustard and sesame is a promising oil crop, which can be easily grown in this area. On-farm research division has already tested its feasibility with BARI Sarisha-18 and BARI Til-4 in the existing cropping pattern of Mustard (Tori-7)- Fallow- B.aman (Local). BARI Til-4 performing well in the fellow period in Cumilla. After harvest of mustard, lands remain fallow until B. Aman rice cultivation. According Upazila agricultural officer, Nabinagar in Brahmanbaria Upazila, there is enough opportunity to introduce the improved cropping pattern i.e. Mustard (BARI Sarisha-18)-Sesame (BARI Til-4)- B. Aman (BRRI dhan91) for covering 100

		hectare of land. Mustard-Sesame-B.Aman rice pattern could be increase cropping intensity, crop productivity and farmers income. Potential adoption of this improved cropping pattern will change the scenario of the rural poor particularly for fallow land. Considering the above issues, the present experiment was undertaken.
Materials and Methods	:	Stated as bellow
Crop/variety	:	Mustard (BARI Sarisha-18), Sesame (BARI Til-4) and B. Aman (BRRI dhan-91)
Design	:	RCBD
(i) Treatment	:	T_1: Existing cropping pattern (Mustard (Tori-7)-Fallow-B. Aman (Local) and T_2: Improved cropping pattern (Mustard (BARI Sarisha-18-Sesame (BARI Til-4)-B. Aman (BRRI dhan91).
(ii) Replications	:	03 (dispersed)
Plot size	:	10 decimals for each treatments
Planting system/spacing	:	Recommended spacing for specific crop
Fertilizer dose and methods of application	:	FRG recommended dose or STB
Irrigated/rainfed	:	Irrigated/rainfed
Data to be recorded	:	Crop management practices, yield and pest, diseases reaction and farmers feedback
Investigators	:	M. J. Uddin
Season	:	Rabi & Kharif, 2025-26
Date of completion	:	December, 2026
Expected output/benefit	:	% increase of yield, % increase of cropping intensity, % increase of farmers income and farmers reaction
Location	:	Nabinagar Upazila in Brahmanbaria
Status	:	New
Date of initiation	:	October, 2025
Programme proposed from	:	Bottom-up
Priority	:	1st
Estimated cost	:	90,000 (30,000/- per location)
Source of fund	:	BARI Main

Expt. 064. Development of alternate cropping pattern Sunflower - Danta - T. *Aman* against farmers existing Fallow-Fallow-T. *Aman* cropping pattern in Chattogram region

Activity	:	Cropping system
Objectives	:	To develop improve cropping pattern
Rationale	:	Fellow -Fallow-T. Aman is a dominant cropping pattern covering more than 23 area in Chattagram region. In Chittagong district the pattern covered 48524 ha of lands. In the region oil crop production is very limited. During 2023-24 only 16005 ha lands were covered by oil which was only 2% of total cultivated land under this district (DAE, Chattagram Region). Irrigation water scarcity and draught are two most limiting factors affect rice cultivation. Therefore, only T. Aman cultivation practices here and after harvest the land remain fallow in Rabi season due to water shortage. Usually the lands of the region are medium high and transplantation of Aman rice completed within mid-

August and harvesting starts in early November. Mid November is high time for sunflower sowing. So, replacement of high water demanded Boro rice by low water required sunflower and introduce BARI Danta 1 in Kharif-1 season may intensify the existing pattern and increase farmers income. The seasonal fallow land will be taken under cultivation which increase the cropping intensity as well as increase the oil seed production. Considering the above facts an improve cropping pattern Sunflower-Danta-T. Aman was designed against farmers existing Fellow -Fallow-T. Aman cropping pattern.

Materials and methods	:	
Crop/variety	:	Sunflower = BARI Surjomukhi-3, Danta = BARI Danta 1 and T. Aman= BRRI dhan 103
Design	:	RCB
i. Replications	:	6 (dispersed)
ii.Treatment		Improved pattern: Sunflower – Danta- T. Aman Existing Pattern: Fellow - Fallow - T. Aman
Plot size	:	8x5 m2
Planting system/spacing	:	Sunflower- Sowing (50cm x 25cm), Danta – sowing (line sowing line to line 20 cm) and T. Aman - Transplanting (20 cm ×15cm).
Fertilizer dose & application methods	:	As per FRG 2018
Irrigation/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operation, Yield and yield contributing characters, Cost and returns analysis, & Farmers opinion
Investigator(s)	:	S Hossain and A S M H Rashid Khan
Season	:	Year round
Date of initiation	:	November-2025
Date of completion	:	December-2026
Expected output/benefit	:	New cropping pattern will be developed
Location	:	Hathazari, Fotikcharri and Satkania
Status	:	New
Proposed from	:	OFRD, RARS, BARI, Hathazari
Estimated cost	:	Tk. 150,000
Source of fund	:	BARI
Priority	:	1st

Expt. 065. Development of alternate cropping pattern Mustard- T. *Aman* against existing Fallow-Fallow-T. *Aman* cropping pattern in the coastal area of Chattogram region

Activity	:	Cropping system
Objectives	:	i) to develop a new cropping pattern ii) to increase farmers total income
	:	Fellow -Fallow-T. *Aman* is a dominant cropping pattern in Chattagram region especially in the coastal zone of this region. In Chittagong district the pattern covered 48524 ha of lands. In the region oil crop production is very limited. During 2023-24 only 16005 ha lands were covered by oil which was only 2% of total cultivated land under this district (DAE, Chattagram Region). Irrigation water scarcity and draught are two most limiting

factors affect rice cultivation during Rabi and Kharif seasons. Therefore, only T. Aman cultivation practices here and after harvest the land remain fallow in Rabi season due to water shortage. Usually the lands of the region are medium high and transplantation of Aman rice completed within mid-August and harvesting starts in early November. Mid November is high time for mustard sowing. In the coastal land of Chittagong are mainly sandy clay type soil which able to retain water in the soil even after late December. So, in this period a short duration crop like mustard can be easily cultivated with this available soil moisture. So, replacement of fellow land during rabi and kharif 1 by low water required mustard and introduce BARI Chinabadam 9 in Kharif-1 season may intensify the existing pattern and increase farmers income. The seasonal fallow land will be taken under cultivation which increase the cropping intensity as well as increase the oil seed production. Considering the above facts an improve cropping pattern Mustard- Groundnut- T. Aman was designed against farmers existing Fellow -Fallow-T. Aman cropping pattern for the coastal area of Chattogram region of Bangladesh.

Materials and methods	:	
Crop/variety	:	Mustard = BARI Sarisha-14, BARI Sarisha-18, BARI Sarisha-20,and T. Aman= BRRI dhan103
Design	:	RCB
i. Replications	:	6 (dispersed)
ii.Treatment		Improved pattern: Mustard- Groundnut- T. Aman Existing Pattern: Fellow – Fallow – T. Aman
Plot size	:	8x5 m^2
Planting system/spacing	:	Mustard – line Sowing (20cm), Ground nut – sowing (line sowing line to line 20 cm) and T. Aman – Transplanting (20 cm ×15cm).
Fertilizer dose & application methods	:	As per FRG 2018
Irrigation/rainfed	:	Irrigated
Data to be recorded	:	• Dates of all operation • Yield and yield contributing characters • Cost and returns analysis • Farmers opinion
Investigator(s)	:	S Hossain and A S M H Rashid Khan
Season	:	Year round
Date of initiation	:	November-2025
Date of completion	:	December-2026
Expected output/benefit	:	New cropping pattern will be developed
Location	:	Sandwip
Status	:	New
Proposed from	:	OFRD, RARS, BARI, Hathazari
Estimated cost	:	Tk. 150,000
Source of fund	:	BARI
Priority	:	1st

Expt. 066. Selection of oilseed and minor cereal crop variety for saline area

Activity	: Component technology
Objective(s)	: To find out salinity tolerant crop variety(s) for the coastal saline areas.
Rationale	: Soil salinity is one of the most critical abiotic stresses limiting crop productivity in the coastal and saline-prone regions of Bangladesh. The degradation of soil quality due to salinity, especially in the southern and south-western parts of the country, affects cropping intensity, biodiversity, and food security. Therefore, it is imperative to develop and screen salt-tolerant varieties of different crops that can sustain productivity under such adverse conditions. Bangladesh Agricultural Research Institute (BARI) has developed a range of minor cereal and oilseed crop varieties that show promising agronomic traits under normal environments. However, their performance under saline conditions requires thorough evaluation to determine their adaptability and salt tolerance levels. The screening of these varieties under varying salinity levels (e.g., EC 4–12 dS m^{-1}) will help in identifying suitable candidates for inclusion in cropping systems in saline-prone areas, thus enhancing productivity and resilience.
Materials and Methods	:
Crop/variety	: Different minor cereal and oilseed crop varieties
Design	: RCBD
i) Treatments	: Barley (BARI Barley-7, 10), Foxtail millet (BARI Kaon-2, 4), Proso millet (BARI Cheena-2), Mustard (BARI Sarisha-16, 18, 19), Linseed (BARI Tisi-1, 2), Groundnut (BARI Chinabadam-8, 9), Soybean (BARI Soybean-7)
ii) Replication	3 (dispersed)
Plot Size	: 5 m × 4 m
Planting system/spacing	: Recommended spacing for respective crop
Fertilizer dose and methods of application	: Recommended fertilizer dose and method of application for each crop (FRG 2024)
Irrigated/rainfed	: Irrigated
Data to be recorded	: Dates of all operations, crop duration, yield and yield attributes, major disease and insect incidence, soil salinity data, cost and return, farmer's opinion
Investigator(s)	: M.S. Islam, PSO and M.M. Bashir, SSO; OFRD, Noakhali
Season	: *Rabi* 2025
Date of initiation	: November 2025
Date of completion	: June 2026
Expected output/benefit	: Salinity tolerant minor cereal and oilseed crop variety(s) will be identified
Location	: Subarnachar, Noakhali
Status	: New
Estimated cost	: Tk. 90,000/-
Source of fund	: BARI
Priority	: 1st

Expt. 067. Development of Tomato-T. *Aus*-T. *Aman* cropping pattern against Fallow-T. *Aus*-T. *Aman* under AEZ-20 of Sylhet region

Activity	:	Cropping system
Objectives	:	To improve cropping pattern for higher productivity and profitability
Rationale	:	The world requires intensification of agriculture and increase food production in order to meet food demand for the ever-increasing global population. Improvement of the cropping system could play a significant role to enhance food productivity, production potential and economic returns (Nazrul et al., 2013; Shaheb et al., 2014). In Sylhet region, the existing Fallow-T.Aus-T.Aman covers 10,000 ha area of land (Approximately). Due to the decrease in agricultural lands for various reasons, the horizontal expansion for crop production is limited. However, crop yield and profitability could be achieved through vertical expansion. Several multi-year studies showed that the improvement of cropping systems through incorporating high yielding varieties and improved management practices in between T. Aman rice and T. Aus rice provided higher yield and economic profitability over farmers existing cropping patterns (Nazrul et al., 2013; Rahman et al., 2015). However, utilizing residual soil moisture after T. Aman rice, there is a potential scope to produce Tomato and short duration legumes (Nazrul and Shaheb, 2012; Shaheb et al., 2012). Therefore, incorporating Tomato during the fallow period of the farmers' existing fallow-T. Aus rice –T. Aman rice cropping pattern would provide additional produce and income as well as the best utilization of soils during winter. Hence, the study was undertaken to develop an alternate cropping pattern for increasing cropping intensity and productivity.
Materials & Methods	:	
Crop/varieties	:	Tomato, T. Aus and T. Aman BARI Hybrid Tomato-5; BRRI dhan48/98; BRRI dhan 75
Design	:	RCB
i)Treatments/Varieties		CP1: Fallow-T. Aus (BRRI dhan42)-T. Aman (BINA dhan-17) CP2: Tomato (BARI Hybrid Tomato-5)-T. Aus (BRRI dhan48/ BRRI dhan98)-T. Aman (BRRI dhan 17)
ii)Replication	:	6 dispersed
Plot size	:	8 m × 5 m
Planting system/ spacing	:	Line sowing
Fertilizer dose and methods of Application	:	As per BARC FRG 2024
Irrigated/rainfed	:	Rainfed
Data to be recorded	:	Dates of all operations, yield and yield contributing characters, disease and insect interaction, cost and return, farmers Opinion
Investigators	:	MD. Asaduzzaman and MD. Zulfiqar
Season	:	Robi 2025-2026
Date of initiation	:	October 2025
Date of completion	:	October 2027
Expected output	:	Economically viable cropping pattern will be developed/introduced. Utilization of fallow land will be ensured.
Location	:	MLT site, Gulapgonj and FSRD Site Kamalbazar, Sylhet
Status	:	1st year
Programme proposed from	:	OFRD, BARI, Sylhet

Priority	:	1st
Estimated cost	:	Tk.85,000/location
Source of fund	:	BARI

Expt. 068. Intercropping Danta and Radish with Sweet Gourd at Sylhet region

Activity	:	Intercropping
Objectives	:	To increase productivity of the intercrop system
Rationale	:	The farmers of haor areas of Sylhet region cultivating sweet gourd, Danta and Radish in separate fields. Both crops are economically very important for haor farmers. Winter is the best period to cultivate haor land because total kharif time the land remains under water. So farmers have very limited access to the field with many crops in the season. As a result intercrops and mixed intercrops can be the way to minimize their demand of different crops. Intercropping data and **radish** with **sweet gourd** is an effective method to enhance land productivity, maximize resource use, and increase farmers' income, especially in homestead and small-scale farming systems in Bangladesh. The two crops have different growth habits and nutrient demands: sweet gourd is a trailing, slow-maturing crop, while radish is erect and matures early. This complementary nature allows both crops to grow without significant competition. Moreover, radish is harvested before the sweet gourd vines spread extensively, thus avoiding interference. Some observational trial evidences that danta and Radish with sweet gourd can be grown as intercrop. In this context, the experiment was conducted to find out the suitable intercrop combination of danta and Radish with sweet gourd can be grown as intercrop for higher productivity and profitability.
Materials & Methods	:	-
Crop/varieties	:	Danta (BARI Danta-1), Radish (BARI Mula-1), Sweet Gourd(BARI Hybrid Mistikumra-2)
Design	:	RCB
Treatments/Varieties	:	T_1=Sole Mistikumra, T_2= Mistikumra + Radish, T_3= Mistikumra + Danta
Replication	:	6 dispersed
Plot size	:	8 m × 8 m
Planting system/ spacing	:	Line sowing
Fertilizer dose and methods of Application	:	As per BARC FRG 2024
Irrigated/rainfed	:	Rainfed
Data to be recorded	:	
Investigators	:	MD. Zulfiqar and MD. Asaduzzaman
Season	:	Robi
Date of initiation	:	November 2025
Date of completion	:	March 2027
Expected output	:	
Location	:	MLT site, Gulapgonj, Sylhet, FSRD site, Kamalbazer, Sylhet
Status	:	1st year

Programme proposed from	:	OFRD, BARI, Sylhet
Priority	:	1st
Estimated cost	:	Tk.50,000/location
Source of fund	:	BARI

Expt. 069. Intercropping of Bushbean with Felon in Cox'sbazar

Activity		Intercropping
Objective(s)		To test the performance of intercropping system
Rationale	:	Intercropping may allow increasing both the productivity and diversity of crop through efficient utilization of land in densely populated countries like Bangladesh where fertility of agricultural land is declining gradually. It is one of the techniques of vertical expansion of crop production that increase cropping intensity. In this system, two or more crops are grown together to increase productivity per unit area of land. Crop productivity may increase by cultivating short duration crop like bush bean with cowpea. Cowpea is one of the most important pulse crops in Bangladesh. In our country, more than 30% of the cultivated area is in the coastal area. Therefore this program is needed to execute to show the farmers reaction.
Materials and Methods	:	
Crop/variety	:	Cowpea and Bush bean
Design		
Treatments	:	T_1: 1 row Felon between 1 rows of Bush bean T_2: 1 row Felon between 2 rows of Bush bean T_3: Felon sole
Replications	:	6 farmer
Plot size	:	2000 m^2 for each farmer
Planting system/spacing	:	30 cm x 10 cm
Fertilizer dose and methods of application	:	As per FRG 2018 recommendation.
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	1. Dates of all operations, 2. Days to maturity, 3. Yield and yield components, 4. Cost and return analysis & 5. Farmers' opinion
Investigator(s)	:	Mostak Ahmed, SSO, OFRD, Coxsbazer
Season	:	Rabi season
Date of initiation	:	October 2025
Date of completion	:	April 2026
Expected output/benefit	:	Increased crop production and cropping intensity in the coastal area
Location	:	Chokoria and Coxsbazar sadar, Coxsbazar
Status	:	New
Estimated cost	:	80000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 070. Improvement of Cropping pattern Bitter gourd- Fallow- T. *Aman* against existing pattern Fallow-Fallow-T. *Aman* in coastal area of Bangladesh

Activity		Cropping system
Objective(s)		1. To improve cropping productivity and 2. To increase economic return of farmers
Rationale	:	Coastal area of Bangladesh is probably the most vulnerable area in context of agriculture. In this area total agricultural production as well as crops/varieties are limited due to various causes, like varying degree of soil and water salinity, drought, heavy clay soils, excess or less rainfall in the early or late crop season, unavailability of irrigation water in the dry season, cultivation of long duration of T.Aman, Cyclone, tidal inundation, high humidity, shorter winter period etc. are most common. T.Aman rice is the major crop in this region. Rabi crops are neglected here due to above mentioned environment hazards. Due to food crisis situation the national thrust is given to utilize the coastal fallow land in crop production. For this reason this trial is undertaken for fallow land utilization in coastal saline area.
Materials and Methods	:	
Crop/variety	:	Bittergourd (BARI Korola-1)
Design		
Treatments	:	Existing Pattern: Fallow- Fallow -T.Aman Improved Pattern: Bittergourd (BARI Korola-1)- Fallow - T.Aman
Replications	:	6 (dispersed)
Plot size	:	1 ha
Planting system/spacing	:	1.5 m × 2 m
Fertilizer dose and methods of application	:	As per recommendation by FRG 2018
Irrigated/rainfed	:	Rainfed
Data to be recorded	:	Dates of all operation Yield and yield contributing characters Major disease and insect incidence Economic analysis Farmers' opinion
Investigator(s)	:	Mostak Ahmed, SSO, OFRD, Coxsbazar
Season	:	Rabi
Date of initiation	:	December 2025
Date of completion	:	April 2026
Expected output/benefit	:	At least 50% income will be increased
Location	:	Chokoria and Coxsbazar sadar, Coxsbazar
Status	:	New
Estimated cost	:	Tk 60000/=
Source of fund	:	BARI
Priority	:	1st

Expt. 071. Performance of BARI Summer Hybrid Tomato varieties in late winter at Northern region of Bangladesh

Activity	:	
Objective(s)	:	To supply tomato for kharif season/off season. To identify suitable variety for specific time period.
Rationale	:	Farmers of Rangpur region specially Chirirbondor at Dinajpur,Tunirhat at Panchogore and Chilahati at Nilphamari practicing late tomato production and using Indian variety (Bipul Plus, Beautiful, Beauty Plus, Provensive). But BARI released variety BARI Hybrid Tomato 4, BARI Hybrid Tomato 8 and BARI Hybrid Tomato-11 are capable of producing higher yield compare to the Indian one. Besides, this BARI tomato varieties are somewhat tolerant to Bacterial wilt.
Materials and methods	:	
Crop/Variety	:	BARI released groundnut variety
Design		RCB
Treatment		**Factor A: Variety** BARI Hybrid Tomato-8, BARI Hybrid Tomato-11 & Indian variety (Bipul Plus/Provensive) **Factor B: Sowing date** 15 January, 1st February & 15 February
Replications	:	6 compacts (On-Station)
Plot Size	:	4.8 m ^ 1 m
Planting system/spacings	:	Line sowing, 60 cm ^ 40 cm
Fertilizer dose and methods of application	:	STB fertilizer dose for HYG
Irrigated/Rainfed	:	Irrigated
Data to be recorded	:	Data of all operation, Yield, yield contributing characters and quality, Pest and disease infestation & Cost and return.
Investigator(s)	:	Dr. Most. Ummay Salma Khatun, SSO and scientists of OFRD, Rangpur
Season	:	Kharif
Date of initiation	:	Kharif 2026
Date of completion	:	Kharif 2029
Expected output/benefit	:	Find out suitable tomato varieties during off period and thereby improving nutrient uptake system and farmer's income can be increased.
Location	:	On-Station
Status	:	New
Program proposed from	:	OFRD, BARI, Rangpur
Priority	:	1st
Estimated cost	:	Tk. 100000
Source of fund	:	BARI

Expt. 072. Improvement of Blackgram-Maize-Sesame cropping pattern in Charland of Bogura

Objectives	:	To evaluate the improved cropping pattern at Sariakandi To increase production and cropping intensity
Rationale	:	Blackgram-Maize-Till is one of the major cropping patterns in charland of Sariakandi. Most of the farmers cultivate local variety of blackgram and sesame variety. These varieties are comparative lower yielder and susceptible to pests. Recently BARI developed new blackgram and sesame variety. Replacing the local cultivars with modern varieties i.e. BARI Mash-3 for blackgram and BARI till-6 for sesame may contribute to 10-20% higher yield than the existing condition. Hence, the experiment has been taken under consideration.
Procedure/Methods		
Treatment		Improved cropping pattern Blackgram (BARI Mash-3)- Maize (BARI hybrid bhutta-14)-Sesame (BARI till-6) Existing cropping pattern Blackgram (local)- Maize (NK-40)-Sesame (local)
Planting system	:	The experiment will conducted on farmers' fields of Joypurhat
Investigators	:	Concerned scientists of OFRD, Bogura
Data to be collected		1. Dates of all operation 2. Yield and yield contributing characters 3. Major disease and insect incidence 4. Cost and return 5.Farmers' opinion
Design	:	RCBD
Spacing	:	Maize: Line sowing, Sesame and Blackgram: Broadcasting
Season	:	2024-25
Date of initiation	:	September 2024
Expected output	:	Total productivity as well as profitability will be increased.
Location	:	Farmers' fields of Sariakandi
Status	:	2nd year
Estimated cost	:	Tk
Source of Fund	:	BARI
Priority	:	First

Expt. 073. Development of Maize-Sesame -T. Aman-cropping pattern in Charland of Bogura

Objectives	:	1) To evaluate the developed cropping pattern at Sariakandi 2) To increase production and cropping intensity
Rationale	:	Bangladesh is one of the mostly densely populated countries of the world with population growth rate of 1.579%. The present cropping intensity of the country is 175.97%. The urgent need is to produce more food to feed the teeming populations. Food requirement is estimated to be doubled in the next 25 years (Islam and Haq 1999). Charland is a vulnerable and low yield of different crops. Under such situations, it is very important to increase cropping intensity and for this reason, more suitable crop(s) should be accommodated in charland. Replacing the local cultivars with modern varieties i.e. BARI hybrid bhutta-9 for maize, BARI till-5 for sesamae and Ganza dhan for T. Aman may contribute to 10-20% higher yield than the existing condition. Hence, the experiment has been taken under consideration.
Procedure/Methods		
Treatments	:	T_1= Alternate cropping pattern: Maize-Sesame -T. Aman rice T_2= Existing cropping pattern: Maize-Sesame -Fallow
Planting system	:	Sowing time: October (Maize- BARI hybrid bhutta-14), April (Sesame-BARI till-6) and August (Ganja dhan) Sowing method: Maize-Line sowing, Sesame- Broadcasting and Ganja dhan-Broadcasting
Investigators	:	Concerned scientists of OFRD, Bogura
Data to be collected		1. Dates of all operation 2. Yield and yield contributing characters 3. Major disease and insect incidence 4. Cost and return 5.Farmers' opinion
Replication	:	
Design	:	RCBD
Unit plot size		1 bigha
Season	:	2024-25
Date of initiation	:	October 2024
Expected output	:	Total productivity as well as profitability will be increased
Location	:	Sariakandi, Bogura
Status	:	2nd year
Estimated cost	:	Tk
Source of Fund	:	BARI
Priority	:	First

Expt. 074. Development of Maize-Mungbean -T. Aman-cropping pattern in Charland of Bogura

Objectives	:	1) To evaluate the developed cropping pattern at Bogura 2) To increase production and cropping intensity
Rationale	:	Bangladesh is one of the mostly densely populated countries of the world with population growth rate of 1.579%. The present cropping intensity of the country is 175.97%. The urgent need is to produce more food to feed the teeming populations. Food requirement is estimated to be doubled in the next 25 years (Islam and Haq 1999). Charland is a vulnerable and low yield of different crops. Under such situations, it is very important to increase cropping intensity and for this reason, more suitable crop(s) should be accommodated in char land. Replacing the local cultivars with modern varieties i.e. BARI hybrid bhutta-14 for maize and BARI Mung-6 for Mungbean may contribute to 10-20% higher yield than the existing condition. Hence, the experiment has been taken under consideration.
Procedure/Methods		
Treatments	:	T_1= Alternate cropping pattern: Maize-Mungbean -T.Aman rice T_2= Existing cropping pattern: Maize-Fallow -T. Aman rice
Planting system	:	Sowing time: November (Maize- BARI hybrid bhutta-14) April (Mungbean-BARI Mung-6) and August (Ganja dhan) Sowing method: Maize-Line sowing, Mungbean- Broadcasting and Ganja dhan-Broadcasting
Investigators	:	Concerned scientists of OFRD, Bogura
Data to be collected		1. Dates of all operation 2. Yield and yield contributing characters 3. Major disease and insect incidence 4. Cost and return 5.Farmers' opinion
Replication	:	6 (dispersed)
Design	:	RCBD
Unit plot size		1 bigha
Season	:	2024-25
Date of initiation	:	October 2024
Expected output	:	Total productivity as well as profitability will be increased
Location	:	Dhunut and Sherpur, Bogura
Status	:	2nd year
Estimated cost	:	Tk
Source of Fund	:	BARI
Priority	:	First

Expt. 075. Evaluation of Sesame based inter cropping systems with foxtail millet in char areas in the Jamuna River basin

Objective (s)	:	1. To find out the suitable intercrop combination of sesame with different millets (Foxtail millet/Proso-millet) for higher productivity and profitability 2. To make better utilization of resources and space in the char areas.
Rationale	:	Sesame (*Sesamum indicum* L.) is one of the most ancient oilseed crops grown for over 5000years. Sesame is also popularly known as sesame, til etc. and it is generally cultivated throughout the year, i.e., during

kharif and semi rabi and summer as a sole as well as mixed/inter crop. Sesame is a rich source of oil (46-52%) and protein (18-20%). The advantages of intercropping may be especially important because they are achieved not by means of costly inputs, but by the simple expedient of growing crops together. Spatial arrangement in intercropping is one of the most important factors for higher yield. In sesame + millets intercropping system, sesame is an oilseed crop. Sesame (Sesamum indicum L.) and millets (proso-millets and foxtail millets) are important food security crops in Northern char areas of Bangladesh. The two crops are often intercropped by farmers in the char areas where sesame is considered the main crop. This study was designed to determine (i) the optimum sesame population that can be incorporated into millet stands without decreasing finger millet yield significantly. (ii) the response of the sesame + finger millet additive intercropping in char areas. (iii) the overall biological productivity (based on LER) of the sesame + millets in the adaptive cropping system.

Materials and Methods	:	
Crop/variety	:	Sesame (BARI Til-6), Foxtail millet (BARI Kaon-4)/Proso-millet (BARI Cheena-1)
Design	:	RCBD
9.1 Treatment	:	T_1: Sesame Sole (30 cm *x* 15 cm) T_2: Foxtail millet/Proso-millet Sole (30 cm *x* 5 cm) T_3: Sesame+Millet (2:2) T_4: Sesame+Millet (4:2)
9.2 Replications	:	5 (Dispersed)
Plot size	:	100 m^2
Planting system/spacing	:	Sesame: Line sowing (30 cm *x* 15 cm) Millet: Line sowing (30 cm *x* 05 cm)
Fertilizer dose	:	FRG, 2018 (High Yield Goal basis)
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations Yield and yield attributes of crop SEY, LER Pest and disease reaction Cost and return analysis Farmers' opinion
Investigator (s)		Md. Jahangir Alam, SSO and Abdullah-Al-Mahmud, PSO
Season	:	Rabi and Kharif-1, 2024-25
Date of Initiation	:	February 2025
Date of completion	:	May 2026
Expected output	:	Suitable inter cropping combination will be find out of Sesame based intercropping with millets for higher productivity and profitability.
Location	:	Saghata, Gaibandha
Status	:	2nd year
Proposed from	:	OFRD, BARI, Gaibandha
Priority	:	1st
Estimated cost	:	Tk. 150000
Source of fund	:	BARI

Expt. 076. Development of Maize-Sesame-B. Aman cropping pattern against Maize-Jute-Fallow cropping pattern in char area of Active Jamuna Floodplain of Bangladesh

Objective (s)	:	1. To increase cropping intensity and system productivity 2. To increase crop yield and farmer's income
Rationale	:	Maize-Jute-Fallow is a cropping pattern covering about 21425 hectares (0.25% of NCA) in Bangladesh. In recent years, farmers in the char areas of Gaibandha are not interested in jute cultivation due to drought, especially during sowing. Besides, water is not always available to rot jute after harvest, as well as another reason for low profit. In contrast, lentils and sesame are other crops that require less irrigation than maize and jute. Lentils, being leguminous crops, have the ability to fix atmospheric nitrogen through symbiotic nitrogen fixation with rhizobia bacteria. This process enriches the soil with nitrogen, enhancing fertility and reducing the need for synthetic nitrogen fertilizers. This benefits subsequent crops like sesame and B. Aman rice, which utilize the nitrogen-rich soil for their growth. Sesame, being drought-tolerant, can efficiently utilize residual soil moisture after lentil cultivation, especially in regions with limited water availability. So, there is an opportunity of Lentil-Sesame-B. Aman cropping pattern in the char areas that will increase the system productivity as well as farmers income.
Materials and Methods	:	
Crop/variety	:	Maize, Sesame (BARI Til-4/6), B. Aman (BRRI dhan75)
Design	:	RCBD
Treatment	:	Existing cropping pattern: Maize-Jute-Fallow Improved Cropping pattern: Lentil-Sesame-B. Aman
Replications	:	5 (Dispersed)
Plot size	:	33 decimals
Planting system/spacing	:	Broadcasting
Fertilizer dose	:	FRG, 2018 (High Yield Goal basis)
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, Crop yield and system productivity, Pest and disease reaction, Cost and return analysis & Farmers' opinion
Investigator (s)		Abdullah-Al-Mahmud, PSO and Md. Jahangir Alam, SSO
Season	:	FY 2024-25 and FY 2025-26
Date of Initiation	:	November 2024
Date of completion	:	October 2026
Expected output	:	System productivity will be increased by 15-20% through using fallow period.
Location	:	Saghata, Gaibandha
Status	:	2nd year
Proposed from	:	OFRD, BARI, Gaibandha
Priority	:	1st
Estimated cost	:	Tk. 200000
Source of fund	:	BARI

Expt. 077 Effect of different sowing times for controlling white mold disease of mustard in farmer's field

Objective(s)	:	To find out suitable sowing date for controlling white mold disease of Mustard
Rationale	:	Mustard (*Brassica juncea, B.campestris* and *B.napus*) is an important oilseed crop in Bangladesh. The average yield of mustard is very low. Several reasons can explain this yield variation, which covers abiotic and biotic factors. Among the biotic factors, the unavailability of high-yielding varieties (Akber et al., 1994; Rerkasem et al., 1993) and the incidence of diseases and pests (Rajendra et al., 2003; Gupta et al., 1990) are important. Diseases play an important role in reducing the quantity and quality of mustard (Ahmed and Ahmed, 1994). Rapeseed-mustard, belonging to the Brassicaceae or Cruciferae family within the Brassica genus, ranks as Bangladesh's primary oilseed crop and holds global significance after soybean and groundnut (FAO 2012). In Bangladesh, it spans 3.308 lakh hectares of land, yielding 4.10 lakh tons (BBS 2022), crucially supplying one-third of the nation's cooking oil demand (Ahmed 2008). Mustard oil's nutritional value, influenced by its fatty acids, protein, amino acids, fiber, antioxidants, and compounds like glucosinolate, phytic acid, and sinapin, impart medicinal properties (Kaur et al. 2019). White mold, caused by *Sclerotinia sclerotiorum* (Lib.) de Bary, poses a significant threat to mustard production in Bangladesh. Initially considered minor, this necrotrophic fungal pathogen has emerged as a major disease since its first record in 2008 (Hossain et al. 2008). *S. sclerotiorum* infects over 408 plant species across 75 families, causing Sclerotinia stem and root rot, characterized by water-soaked lesions on leaves and stems necrotic tissues, and the formation of melanized sclerotia (Boland and Hall 1994). This disease inflicts substantial economic losses globally, estimated at $200 million annually in the United States alone (Bolton et al. 2006), with reported crop failure incidences ranging from 60% to 80% and yield losses varying from minimal to complete in economically vital crops (Mehta 2009, Shukla 2005). Management strategies against Sclerotinia rot encompass cultural, biochemical, and chemical approaches (Garg et al. 2008). Despite efforts, effective control remains challenging due to the pathogen's soil-borne nature and broad host range. Chemical treatments have shown varied success but no universally efficient solution has been achieved (Mehta et al. 2005). Bangladesh, with limited research on managing *S. sclerotiorum*-induced white mold disease, necessitates the exploration of optimum sowing time for control purposes.
Materials & Methods	:	
Crop/Variety	:	Mustard (BARI Sarisha-18)
Design	:	CRD
Treatment		Sowing dates: 20 October, 01 November, 10 November & 20 November
Replications		Four (4) Compact
Plot Size	:	40 m^2
Planting system	:	Line sowing, 30 cm × 15 cm
Fertilizer dose and methods of application	:	Crop will fertilize with 120-30-60-30-2-1 kg NPKSZnB per hectare, respectively. The sources of nutrients were urea, TSP, MOP, gypsum, zinc sulphate, and boric acid, respectively. The full amount of P, K, S, Zn, B, and half of N will be applied at the time of final land preparation. The remaining N will applied as top-dress before flowering.
Irrigated/Rainfed	:	Irrigated

Data to be recorded	:	Leaf infection (%), leaf area diseased (%), Siliqua infection (%), Spots/siliqua, Seed yield (kg/ha),
Investigator(s)	:	Dr. Md. Zannatul Ferdous
Season	:	Rabi 2024-25
Date of initiation	:	October, 2024
Date of completion	:	October, 2026
Expected output	:	Controlling white mold disease at the farmer's level
Location	:	On Station, Rangpur
Status	:	2nd year
Proposed from	:	OFRD, BARI, Rangpur
Priority	:	1st
Estimated cost	:	Tk. 160,000/-
Source of fund	:	BARI

Expt. 078. Development of management package for controlling stem fly in onion seed production

Objective(s)	:	To find out the effective management package for controlling stem fly in onion field
Rationale	:	Effectively managing the stem fly (Delia platura) in onion cultivation is crucial due to its significant impact on crop yields. This particular pest weakens onion seedlings, leading to decreased plant health and increased mortality rates, consequently posing a threat to the production of high-quality onion seeds. Recent stem fly outbreaks in Bangladesh, exacerbated by climatic challenges, have intensified the threat to onion production. While chemical pesticides have traditionally been the primary method for controlling this pest, there is now an urgent need to integrate effective and sustainable management strategies to mitigate crop losses and stabilize onion production. Taking a proactive approach to addressing stem fly infestations is essential to safeguard current yields and ensure the availability of high-quality onion seeds for future agricultural cycles.
Materials and methods	:	
Crop/Variety	:	Onion
Design	:	RCBD
Treatment		T_1 = Cadusafos (Ragbi) as Basal 10 kgha-1 T_2 =Basal Cadusafos + Split during 1st fertilizer application T_3 =Basal Cadusafos + Split during 1st fertilizer and 2nd fertilizer application T_4 =Basal Cadusafos + Split during 1st fertilizer, 2nd fertilizer and 3rd fertilizer application T_5 = Basal Cadusafos + two times spray of Coragen insecticide T_6 =Control
Replications		3 (Three) Compact
Plot Size	:	3m ×1.6 m
Planting system/spacings	:	Line sowing: 40cm×20cm
Fertilizer dose and methods of application	:	As per recommendation

Irrigated/Rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, crop duration, % insect infestation, yield and yield attributes and Cost and return.
Investigator(s)	:	M. E. Haque, M.Z. Ferdous, M. H. Rashid, M. Z. H. Pradhan and M. A. H. Talukder
Season	:	Rabi
Date of initiation	:	November, 2024
Date of completion	:	May, 2025
Expected output	:	Suitable management package for controlling stem fly in onion
Location	:	On station, OFRD, BARI, Rangpur
Status	:	2nd year
Proposed from	:	OFRD, BARI, Rangpur
Priority	:	1st
Estimated cost	:	Tk. 100,000/-
Source of fund	:	BARI

Expt. 079. Performance of yield of chilli and radish mix cropping at char land

Objective(s) : 1. To verify the agro economic performance of mix cropping of chilli with radish at char land
2. To introduce BARI released varieties in this mix cropping for higher yield and income

Rationale : Mixed cropping is a form of cropping pattern in which two or more crops are sown and grown in the same area at the same time. This practice minimizes the risk of failure of one of the crops and insures against crop failure due to abnormal weather conditions. The crops to be grown together should have a different maturation time and different water requirements. The nutrients required by one crop should be less than those required by the other. One crop should have deep roots, other's should be shallow. All these criteria lead to a successful mixed cropping pattern. A common agricultural practice in Bangladesh is mixed cropping, especially in the char ecosystem. The simultaneous cultivation of two or more crops on the same piece of land has several advantages (Karim *et al.* 2017; Rahman *et al.* 2021). It is one of the adaptation measures adopted by char dwellers to cope with hazards such as floods, erosion, droughts, hailstorms, and cold waves. In comparison to monoculture farming, mixed cropping uses less nutritional inputs, such as irrigation, fertilizers, pruning, and insect management. As a result, it is frequently more economical. Char ecosystem is a unique environment that demands unique solutions. In Bangladesh's history, environment, economy, and social life, chars have a special significance (Zaman and Alam 2021). The people living in chars are often marginalized and have limited rights to land and livelihood resources (Zaman and Alam 2021). Chilli is usually grown as sole and in some cases intercrop at farmer's field in various parts of Bangladesh including Rangpur region. Chilli is generally grown with wide row spacing about 40-50 cm, which makes it suitable for intercropping and mixed cropping. Mixed cropping of chilli with different root crops offers greater scope to utilize the land and other resources to the maximum extent. The review of research work done so far indicated that growth of chilli as intercrop or mixed crop is more beneficial than sole chilli in many situations (Aravazhi *et al*., 1997; Sadashiv, 2004).

		Radish (Raphanus sativus L.) is one of the most popular root vegetable crops, which is cultivated for its enlarged edible roots. It is a quick growing and short duration vegetable crop suitable for growing both in temperate and tropical climate. The average yield of chilli and maximum utilization of land can be increased through the mixed cropping of chilli with radish. Therefore, the ultimate objective of the current study is to verify the agro economic performance of mix cropping of chilli with radish and also ensuring introduce of BARI released varieties in this mix cropping for maximum yield and profit.
Materials and methods	:	
Crop/Variety	:	Chilli (BARI Morich -2), Radish (BARI Mula-1)
Design	:	RCBD
Treatment		1.Sole chilli 2.Sole radish 3.75% chilli+25% radish 4. 50% chilli+50% radish
Replications		5 (Dispersed)
Plot Size	:	40 m^2 (5 m *x* 8 m)
Planting system	:	Broadcast
Fertilizer dose and methods of application	:	Fertilizers will be apply in each plot at the rate of 97-66-100-1 kg ha^{-1} NPKS respectively, in the form of urea, triple super phosphate (TSP), muriate of potash (MOP), gypsum and boric acid as per recommendation of Mondal *et al.* (2014). Cowdung @ 10 t/ha will be apply as a blanket dose during final land preparation. The full amount of cow dung, TSP, gypsum, boric acid and one third MOP will be apply as basal at final land preparation. The rest amount of MOP and full dose of urea will be apply in three equal splits at 25, 50 and 70 days after planting (DAP)
Irrigated/Rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, Yield and yield attributes of crop Pest and disease reaction, Cost an return analysis, Farmers' opinion
Investigator(s)	:	Md. Khairul Islam, SSO and Scientist of OFRD, BARI, Rangpur
Season	:	Rabi, 2024-25
Date of initiation	:	October 2024
Date of completion	:	June 2026
Expected output	:	BARI released variety will be popularize in char land of chilli with radish mix cropping system.
Location	:	Char Bongram, Kurigram
Status	:	2nd year
Proposed from	:	OFRD, BARI, Rangpur
Priority	:	1st
Estimated cost	:	Tk. 150000
Source of fund	:	BARI

Expt. 080. Effect of seeding and planting time on the seedling mortality and yield of summer onion in Rajshahi

Objective(s)	:	To identify suitable seeding and planting date of summer onion
Rationale	:	Onion (*Allium cepa*) is one of the most significant profitable vegetable crops, which is used as spices in our daily meal in Bangladesh. Besides Bangladesh, it has also huge demand all over the world. It can be used in both mature and immature level as vegetable and spices, and increases the taste of food by its flavour that contains protein, calcium, carbohydrates and vitamin C. Onion is cultivated all over in Bangladesh extensively in winter season. Onion production may not fulfil the demand for our country due to increase in population day by day. As such, importation of onion from outside is being done very often. Bangladesh Agricultural Research Institute (BARI) has developed summer onion variety which opens the windows for boost up onion production. But recommended seeding time of summer onion is long starting from February and continues up to August.Very Hot and Dry weather in Rajshahi during March-May causing higher seedling mortality both in seed bed and field. So, seeding/planting time must be shorter and specific for a region considering local climatic and agricultural conditions. Considering the above facts, the trial was undertaken to find out suitable seeding and planting time for summer onion in Rajshahi.
Materials and Methods	:	
Crop/Variety	:	Onion (BARI Piaj-5)
Design	:	RCBD
Treatments	:	Date of seeding on seedbed: 15 May, 30 May, 15 June, 30 June, 15 July & 30 July
Replications	:	3
Plot Size	:	Unit plot size: 1×5 m
Planting System/Spacing	:	Recommended planting system and spacing (Planting time is 45 DAS of all corresponding seeding dates)
Fertilizer dose and methods of application	:	Land preparation and fertilization will be done as recommended way.
Irrigated and Rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, seedling mortality, crops yield, Disease incidence and economic data
Investigators	:	Dr. Nur-E-Alam Siddquie, Dr. Jahedul Islam, Dr. Sayedur Rahman
Season	:	Summer (Kharif-1 and Kharif-2)
Date of initiation	:	April, 2025
Date of completion	:	November, 2026
Expected output	:	Suitable seeding and planting date will be identified
Location	:	On-station, OFRD, Shyampur, Rajshahi
Status	:	2nd year
Estimated cost	:	Tk. 200000/year
Source of fund	:	BARI
Priority	:	1st

Expt. 081. Development of intensive onion based cropping patterns with summer onion and minor cereals against existing pattern

Objective(s) : To increase cropping intensity and profitability
To increase area and productivity of minor cereals

Rationale : Onion (*Allium cepa*) is one of the most significant profitable vegetable crops, which is used as spices in our daily meal in Bangladesh. Besides Bangladesh, it has also huge demand all over the world. Onion is cultivated in Bangladesh extensively in winter season. Onion production may not fulfil the demand for our country due to increase in population day by day. As such, importation of onion from outside is being done very often. Bangladesh Agricultural Research Institute (BARI) has developed summer onion variety which opens the windows for boost up onion production. Minor cereals cultivation in Bangladesh going to extinct due to the competition with other demandable high value crops in their growing season. In the view of crop diversification, now cropping intensity need to increase more to sustain food security of existing cropping patterns.
Considering the above facts, an onion based cropping pattern is improved and intensified with summer onion and valuable minor cereals to test the productivity and profitability against existing Onion (Bulb-bulb)-Onion (bulb)-Jute or Maize patterns.

Materials and Methods :

Crop/Variety : Onion (BARI Piaj-1, BARI Piaj-5), Foxtail millet (BARI Kaon-3), Proso millet (BARI China-1), and Jute (JRO 524)

Design : RCBD

Treatments :
1 Onion (Leaf+Bulb)- Onion (Bulb)- Kaon- Onion (Summer)
2 Onion (Leaf+Bulb)- Onion (Bulb)- China- Onion (Summer)
3. Onion (Bulb-bulb)- Onion (bulb)-Jute or Maize (existing pattern)

CP1	Onion (L+B)	Onion (Bulb)	Kaon	Onion (Summer)
Sowing	Oct. last week	Jan.1st Week	Apr. 2nd week	Jul. 3rd week
Harvesting	Dec. 3rd week	Apr. 1st week	Jul. 2nd week	Oct.2nd week
CP2	Onion (L+B)	Onion (Bulb)	China	Onion (Summer)
Sowing	Oct. last week	Jan.1st Week	Apr. 2nd week	Jul. 3rd week
Harvesting	Dec. 3rd week	Apr. 1st week	Jul. 1st week	Oct.2nd week

Replications : 3

Plot Size : Unit plot size: 4×5 m

Planting System/Spacing : Recommended and well-known planting system and spacing

Fertilizer dose and methods of application : Land preparation and fertilization will be done as recommended way. Onion (bulb-leaf) will be harvested 50-55 days after sowing with whole bulb with marketable green leaves.

Irrigated and Rainfed : Irrigated

Data to be recorded : Dates of all operations, component crops yield, Disease incidence and economic data

Investigators : Dr. Nur-E-Alam Siddquie, Dr. Jahedul Islam, Dr. Sayedur Rahman

Season : Winter (Rabi)- Summer (Kharif-1 and Kharif-2)

Date of initiation : November, 2024

Date of completion : November, 2026

Expected output : Above 25% yield and income will be increased from existing pattern

Location : On-station, OFRD, Shyampur, Rajshahi
Status : 2nd year
Estimated cost : Tk. 200000/year
Source of fund : BARI
Priority : 1st

Expt. 082. Development of four crop-based onion intensive cropping patterns with diversified summer crops against existing Onion-Jute- T Aman rice cropping pattern

Objective(s) : To increase cropping intensity, productivity and profitability

Rationale : Onion (Allium cepa) is one of the most significant profitable vegetable crops, which is used as spices in our daily meal in Bangladesh. Besides Bangladesh, it has also huge demand all over the world. In Bangladesh, onion ranks top among all the spice crops in production. Onion is cultivated all over the country extensively in winter season. Onion production may not fulfil the demand for our country due to increase in population day by day. As such, importation of onion from outside is being done very often. Bangladesh has supportive climate and adequate resources for onion production, processing, and marketing etc. In Bangladesh, high rates of population growth place increasingly more pressure on scarce land resources. The land area for agricultural production is essentially fixed; therefore, output can only be expanded through more intensive cropping. Now cropping intensity need to increase more to sustain food security through diversification and intensification of existing cropping patterns.

Considering the above facts, some four crop based improved cropping patterns are suggested for trial against existing Onion-Jute- T. Aman rice to screen suitable, productive and profitable patterns.

Materials and Methods :

Crop/Variety : Onion (BARI Piaj-1), Foxtail millet (BARI Kaon-3), Proso millet (BARI China-1), and Jute (JRO 524) and Rice (BRRI dhan75 and Shorna)

Design : RCBD

Treatments :

1. Onion (Leaf+Bulb)- Onion (Bulb)- Kaon- T. Aman
2. Onion (Leaf+Bulb)- Onion (Bulb)- China- T. Aman
3. Onion (Leaf+Bulb)- Onion (Bulb)- Sesame- T. Aman
4. Onion (Leaf+Bulb)- Onion (Bulb)- Mungbean- T. Aman
5. Onion (Bulb)- Jute- T. Aman

CP1	Onion (L+B)	Onion (Bulb)	Kaon	T Aman
Sowing	Oct. last week	Jan.1st Week	Apr. 2nd week	Jul. 3rd week
Harvesting	Dec. 3rd week	Apr. 1st week	Jul. 2nd week	Oct.2nd week
CP2	Onion (L+B)	Onion (Bulb)	China	T Aman
Sowing	Oct. last week	Jan.1st Week	Apr. 2nd week	Jul. 3rd week
Harvesting	Dec. 3rd week	Apr. 1st week	Jul. 1st week	Oct.2nd week
CP3	Onion (L+B)	Onion (Bulb)	Sesame	T Aman
Sowing	Oct. last week	Jan.1st Week	Apr. 1st week	Jul. 3rd week
Harvesting	Dec. 3rd week	Apr. 1st week	Jul. 2nd week	Oct.2nd week
CP4	Onion (L+B)	Onion (Bulb)		T Aman
Sowing	Oct. last week	Jan.1st Week	Apr. 3rdweek	Jul. 3rd week
Harvesting	Dec. 3rd week	Apr. 1st week	Jul. 1stweek	Oct.2ndweek

Replications : 3

Plot Size : Unit plot size: 4×5 m

Planting System/ : Recommended and well-known planting system and spacing

Fertilizer dose and methods of application	:	Land preparation and fertilization will be done as recommended way. Onion (bulb-vegetable) will be harvested 50-60 days after sowing with whole bulb with marketable green leaves.
Irrigated and Rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, component crops yield, Disease incidence and economic data
Investigators	:	Dr. Nur-E-Alam Siddquie, Dr. Jaheidul Islam, Dr. Sayedur Rahman
Season	:	Winter (Rabi)- Summer (Kharif-1 and Kharif-), 2024-25
Date of initiation	:	November, 2024
Date of completion	:	November, 2026
Expected output	:	Above 20% yield and income will be increased from existing pattern
Location	:	On-station, OFRD, Shyampur, Rajshahi
Status	:	2nd year
Estimated cost	:	Tk. 200000/year
Source of fund	:	BARI
Priority		1st

Expt. 083. Mixed cropping of Lentil, mustard with field pea

Objectives : 1. To verify the agronomic and economic performance of mixed cropping of lentil, mustard with field pea.
2. To ensure the maximum utilization of the land for higher yield and income.

Rationale : In Bangladesh, pulses play a vital role in agriculture as well as in human diets. Now-a-days national pulse production is declining dramatically day by day because of competition with other winter crops like wheat, maize, boro rice, potato and vegetables. But the demand of pulses and oils is increasing continuously. Lentil is the most popular pulse crop in Bangladesh. It plays an important role in human diets and also in improving soil fertility by fixing atmospheric nitrogen. Mustard is another top most demanding oil crop in Bangladesh. It plays important role in oil seed. On the other hand, field pea (locally known as motor) is very popular to the people of Rajshahi. Farmers' usually use local variety and get poor yield due to low yield potentiality. BARI has developed some high yielding varieties of lentil, mustard and field pea and it is needed to disseminate among the farmers. Lentil, mustard and field pea are cultivated as sole crop throughout the country in *Rabi* season and sometimes as mixed crop in farmers' field. It is observed that, some farmers of many regions cultivate Lentil as a mixed crop with mustard and field pea without determining benefit, cost and return and land use efficiency. The Farmers do not maintain proper seeding ratio, planting time and other management practices. Intercropping is the practice of growing two or more crops simultaneously in the same land area, particularly in the tropics. Successfully intercropping system gives higher cash return total production per unit area and diversified crop production than that of growing sole crop and provides greater resource use efficiency. Mixed cropping reduces the risk of total crop failure as two or more different crops are cultivated simultaneously in

the same field. The present study is, therefore, undertaken to identify the most profitable mixed crop combination.

Materials and Method :

Crop : Lentil, Mustard and field pea

Variety : BARI Mashur-8 BARI Sarisha 18 & BARI mator-2/3

Treatments : T_1 = Sole lentil (100%)
T_2 = Sole field pea (100%)
T_3= Sole mustard (100%)
T_4 = Lentil (100%) + mustard (10%) + 10% field pea
T_5 = Lentil (100%) +mustard (15%) + 15% field pea
T_6 = Lentil (100%) + mustard (20%) + 20% field pea

Design : RCB

Replications : 6 (dispersed)

Unit plot size : 40 m^2 (8 m × 5 m)

Seed rate (kg ha^{-1}) : Lentil (40 kg ha^{-1}), Mustard 8 kg ha^{-1} and field pea (45 kg ha^{-1})

Planting system : Broadcast

Fertilizer dose : 21-18-20-7-1.5-1.5 kg N-P-K-S-Zn-B ha^{-1}

Application of fertilizer : During final land preparation

Data to be collected : Dates of all operation
Yield and yield contributing characters & equivalent yield
Major disease and insect incidence
Cost and return analysis
Farmers' opinion

Expected output : Most profitable mixed crop combination will be identified.

Status : 2nd year

Date of initiation : November, 2024

Date of completion : 2026

Estimated cost : 50000/-

Source of fund : OFRD/BARI

Location : MLT site, Rajshahi

Investigators : Concerned scientists of the OFRD, BARI, Rajshahi

Expt. 084. The effect of tillage systems on the control of agronomic factors at mustard crop production in north-eastern Bangladesh

Objective : To analyze agronomic management in the production of mustard crops in different tillage systems.

Rationale : The seed yield of mustard crops in agriculture can be accurately predicted by effectively manipulating agronomic factors such as tillage, weed control, fertilization, and chemical growth regulation. Excessive the practice of tillage is rapidly being substituted with more streamlined farming techniques. Implementing both sustainable tillage techniques and sowing systems can enhance the energy efficiency and productivity of mustard agriculture. Different tillage practices can have an impact on weed infestation, which can significantly affect the potential yield of oilseed crops. Therefore, it is crucial to choose the most effective weed management method based on the specific tillage technique in order to get best results. Tillage might impact the development pattern of oilseed rape plants.

Materials and Methods :

Crop (s)/Variety (s) : Oilseed Crop: BARI Sharisha-14
Design : RCBD
Treatments :

Agronomic Factor	Level		
	0	1	2
Tillage	Bed Planting	Strip-tillage	Conventional tillage
Spring S rate (kg/ha)	0	40	80

Replications : 3 (Three)
Plot size : 5 m x 6m
Planting system/spacing : As per recommended
Frtilizer dose and methods of application : As per recommended
Irrigated/rainfed : Irrigated
1Data to be collected : Weather data, Phenological data and Yield components and Cost-benefit analysis
Investigator(s) : M.E.A. Pramanik and M. S. Hossain
Season : 2024-2025
Date of initiation : November 2024
Date of completion : February 2025

Expected output : Suitable tillage methods and S application effect in HBT
Location (s) : FSRD Site, Godagari, Rajshahi
Status : 2nd yar
Estimated cost : Tk. 100000/-
Source of Found : PARTNER Project
Proposed from : Bottom up
Priority : First

Expt. 085. Development of biorational based management packages against sucking pest of summer tomato in High Barind Tract

Objectives : To find out the effectiveness of different management options against sucking pest of summer tomato
To obtain a suitable management option against sucking pest of summer tomato

Rationale : Tomato (*Solanum lycopersicum* L.), a member of the Solanaceae family, is one of the commonly grown vegetables worldwide. In Bangladesh, the total tomato production in 2020 was 447,815.4 m tonnes and the area of cultivation was approximately 29,492.9 ha (BBS 2021). The yield of tomato in Bangladesh is very low because of the infestation of sucking insects. The major sucking insects of tomato are thrips (*Scirtothrips dorsalis*), aphids (*Aphis gossypi*),whiteflies (*Bemisia tabaci*), and jassids (*Amarasca biguttulabiguttula*). These insects suck sap from infested plants using their piercing and sucking type mouthparts, resulting in the curling and withering of leaves, followed by leaf and fruit drop. These pests can transmit different types of viruses that cause the leaf curl disease. Yield losses in tomato due to the direct and indirect damages caused by whiteflies and thrips were reported 20–100% and 23.7%, respectively. Therefore, in the present study, we aimed to determine the efficacy of some selected biopesticides against sucking insect pests of tomato and to evaluate the effectiveness of different management options against sucking

pest of summer tomato and To obtain a suitable management option against sucking pest of summer tomato.

Materials and Methods :

Design	:	RCBD
Treatments	:	T_1: YST+ Spraying (2) with Fizimite (10% Sodium Lauryl ether Sulphate) @ 1 ml/L of water T_2: Spraying of Tundra 50SP (Acetamiprid) @ 1 g/L of water T_3: Alternate spraying of Actara 25WG (Thiamethoxam) @ 0.5 g/L of water + Soap water+ Bio-clean (D-Limonene 5% SL) @ 1ml/L of water. T_4: YST+3 sprays of Neemoil and Kalomegh leaf extract @ 0.5 ml/L of water T_5: Farmers practice (3 sprays with Abamectin (Vertimec 1.8 EC) @ 1.2 ml/L of water and 5 sprays with Cypermethrin (Ripcord 10 EC @ 1ml/L of water). T_6: Control (Only water spray)
Rplications	:	3 (Three)
Plot size	:	5 m x 6m
Planting system	:	As per recommended
Fertilizer dose and methods of application	:	As per recommended
Irrigated/rainfed	:	Irrigated
Data to be collected	:	Incidence of insect pests status, Data on infested and healthy fruits,Yield data at crop harvest and Cost-benefit analysis
Investigator(s)	:	MEA Pramanik and MS Hossain
Season	:	2024-2025
Date of initiation	:	August 2025
Date of completion	:	December 2024
Expected output	:	Insect pests attacking summer tomato flower and fruits in Rajshahi region will be documented with control methods.
Location (s)	:	Godagari of Rajshahi
Status	:	2nd year
Estimated cost	:	Tk. 120000/-
Source of Found	:	PARTNER Project
Proposed from	:	Bottom up
Piority	:	First

Expt. 086. Performance of different mixed cropping systems with Barley, Mustard and Coriander

Objective(s)	:	To avoid the risk of single crop as well as to increase cropping intensity and diversity. To increase the land use efficiency as well as farmers' income.
Rationale	:	In modern agriculture, there is growing interest in **mixed cropping systems** as a way to enhance productivity, improve resource use efficiency, and ensure sustainable agricultural practices. Mixed cropping involves growing two or more crops in the same field during the same season, allowing farmers to diversify their production and reduce risks associated with monoculture farming. Crops like **barley, mustard,** and **coriander** offer a unique combination for mixed cropping systems due to their differing growth habits, nutrient requirements, and market value. This study aims to evaluate the performance of various mixed cropping systems involving barley, mustard, and coriander, assessing their potential to improve productivity, resource

		efficiency, and sustainability. The findings will support the development of strategies that help farmers optimize their cropping systems, reduce environmental impacts, and improve economic viability, ultimately contributing to more sustainable and resilient agricultural practices.
Materials and Methods	:	
Crop/variety	:	Barley (BARI Barley-9), Mustard (BARI Sarisha-17) and Coriender (BARI Dhonia-1)
Design	:	RCBD
Treatment	:	T_1= Mustard 50%+Barley 50% T_2= Mustard 50% + Coriander 50% T_3= Mustard 40%+ Barley 30%+ Coriander 30% T_4= Mustard 40%+ Barley 20%+ Coriander 40% T_5= Sole Mustard T_6= Sole Barley T_7= Sole Coriander
Replications	:	3
Plot size	:	5m X 4m
Planting system	:	Broadcasting
Fertilizer dose and application methods	:	Based on FRG-2018
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	i) Dates of all operations, ii) Yield and yield attributes of crops iii) Pest and disease reaction, iv) Cost and return analysis
Investigator (s)	:	Concern scientist of OFRD, Pabna
Season	:	Rabi
Date of initiation	:	10-15 November, 2024
Date of complition	:	20-30 March, 2025
Expected output	:	Cereal, oilseed and spices crops production as well as cropping intensity will be increased
Location	:	MLT site, Atghoria, Pabna
Status (New/2nd year)	:	2nd year
Estimated cost	:	30000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 087. Development of Four crops-based Cropping Pattern Potato/Sweet gourd-Sesame-T. Aman rice against Potato-Sesame-T. Aman rice

Objective(s)	:	i) To increase total system productivity and income of the farmers using mechanization. ii) To increase the land use efficiency as well as farmers' income.
Rationale	:	There is a direction from the government to increase the productivity and intensity of crops to ensure food and nutrition security. There are clear guide lines for doubling crop productivity to achieve SDG targets by 2030. By increasing cropping intensity, overall food production can be increased. There is an opportunity to convert one-crop land into two- crop land, two-crop land into three-crop land in different areas of the country. Pabna district is also a potential area where there is scope for introduction of improved cropping pattern. In some area of Pabna sadar upazila

		farmers usually practice Potato-Sesame-T. Aman rice where we can ealily incorporate relay sweet gourd which will increase the overall productivity of the crop and increase the farmer's income; hence this experiment has been undertaken.
Materials and Methods	:	
Crop/variety	:	Barley (BARI Alu-77/90), Sweet gourd (BARI Mistikumra-2), Sesame (BARI Til-4) and T. Aman rice (BRRI dhan75)
Design	:	RCBD
Treatment	:	T_1: Potato/Sweet gourd at 0 DAPP-Sesame-T. Aman rice T_2: Potato/Sweet gourd at 10 DAPP-Sesame-T. Aman T_3: Potato/Sweet gourd at 20 DAPP-Sesame-T. Aman rice T_4: Potato-Sesame-T. Aman rice (Binadhan-17) [Existing Pattern]
Replications	:	5
Plot size	:	10m X 8m
Planting system/spacing	:	Recommended
Fertilizer dose and application methods	:	Based on FRG-2018
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	i) Dates of all operations, ii) Yield and yield attributes of crops iii) Pest and disease reaction, iv) Cost and return analysis
Investigator (s)	:	Concern scientist of OFRD, Pabna
Season	:	Year round
Date of initiation	:	10-15 November, 2024
Date of completion	:	20-30 October, 2026
Expected output	:	Total system production as well as cropping intensity will be increased
Location	:	FSRD site Gangarampur, Pabna
Status (New/2nd year)	:	2nd year
Estimated cost	:	150000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 088. Performance of vegetables under drip and sprinkler irrigation system at homestead area

Objective(s)	:	To evaluate the irrigation systems for vegetables production in the open space bed at homestead area.
Rationale	:	Agriculture in Bangladesh, a predominantly agrarian country, is highly dependent on irrigation to maintain year-round crop production. The majority of rural households practice homestead gardening, contributing significantly to their food security and nutrition. However, traditional flood irrigation methods commonly used in these gardens lead to inefficient water usage, particularly during dry seasons when water resources are scarce. With climate change impacts exacerbating water availability issues, there is a pressing need for more efficient irrigation systems. Drip and sprinkler irrigation systems have been identified as water-efficient technologies that can optimize crop performance while reducing water wastage. Drip irrigation delivers water directly to the plant roots, minimizing evaporation and runoff, while sprinkler systems distribute water evenly over a wider

area. Both methods have been successfully applied in commercial farming but have not been extensively evaluated in small-scale homestead farming in Bangladesh, where space is limited but produced different leafy and fruity vegetables, and water resources are often constrained. Besides, some Fancy Farmers have pumps in homesteads for water uplift in the village area. If an easy and economical irrigation system can be developed, those farmers may come under a nutritious and safe vegetable production system in the homestead area. This study aims to evaluate the performance of vegetables under drip and sprinkler irrigation systems in homestead areas of Bangladesh. By doing so, it will provide critical insights into the potential benefits of these irrigation technologies in improving water efficiency, crop productivity, and food security in small-scale farming. This will also support the government's efforts to promote sustainable agriculture and climate resilience at the grassroots level.

Materials and Methods :

Crop/variety : Suitable varieties of selected crops

Design : RCBD

Treatment : Factor-A: Irrigation System
1. Drip irrigation system
2. Sprinkler irrigation system
3. Conventional irrigation system

Factor-B: Vegetables
1. Radish-Stem amaranth-Indian spinach
2. Cabbage-Brinjal- Red amaranth

Replications : 3

Plot size : 5m X 1m

Planting system/spacing : Recommended

Fertilizer dose and application methods : Based on FRG-2018

Irrigated/rainfed : Irrigated

Data to be recorded : i) Dates of all operations, ii) Irrigation water supplied iii) Soil moisture, iv) Yield and yield attributes of crops v) Pest and disease reaction, vi) Cost and return analysis

Investigator (s) : Concern scientist of OFRD, Pabna

Season : Year round

Date of initiation : 10-15 November, 2024

Date of completion : 20-30 October, 2026

Expected output : Total system production as well as water use efficiency will be increased

Location : FSRD site Gangarampur, Pabna

Status (New/2nd year) : 2nd year

Estimated cost : 150000/-

Source of fund : BARI

Priority : 1st

Expt. 089. Performance of Sesame and Blackgram Intercropping with Strip Planter under Changing Climate

Objective(s)	:	To avoid the risk of single crop as well as to increase cropping intensity and productivity
Rationale	:	Agriculture in many parts of the world, including Bangladesh, is under increasing stress due to the effects of climate change. Rising temperatures, unpredictable rainfall patterns, and extreme weather events are making traditional farming practices less reliable. In response, farmers need adaptive strategies to maintain productivity and ensure food security. One promising approach is intercropping, a method that involves growing two or more crops together in the same field, which can optimize resource use, improve soil health, and increase resilience to climatic stress. In this context, sesame and blackgram intercropping using a strip planter has emerged as an innovative solution that combines the benefits of intercropping with conservation agriculture techniques. This study aims to evaluate the performance of sesame and blackgram intercropping under strip planting, particularly in the face of changing climate conditions. This study will assess the performance of sesame and blackgram intercropping using strip planters under changing climate conditions. The results will provide vital insights into the potential of this system to enhance agricultural resilience, improve resource efficiency, and sustain productivity in the face of climate challenges. As climate change continues to threaten food security and farm livelihoods, this research is critical for identifying adaptive strategies that can benefit smallholder farmers and contribute to sustainable agricultural practices.
Materials and Methods	:	
Crop/variety	:	Sesame (BARI Til-4) and Blackgram (BARI Mash-3)
Design	:	RCBD
Treatment	:	T_1= 4 lines sesame + 4 lines black gram, T_2= 8 lines sesame + 8 lines black gram, T_3= 8 lines sesame + 4 lines black gram, T_4= 4 lines sesame + 8 lines black gram, T_5= Sole sesame & T_6= Sole black gram
Replications	:	4
Plot size	:	10m X 8m
Planting system	:	Recommended
Fertilizer dose and application methods	:	Based on FRG-2018
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	i) Dates of all operations, ii) Yield and yield attributes of crops iii) Pest and disease reaction, iv) Cost and return analysis
Investigator (s)	:	Concern scientist of OFRD, Pabna
Season	:	Kharif-1
Date of initiation	:	20-30 March, 2025
Date of completion	:	10-20 July, 2026
Expected output	:	Total system production as well as cropping intensity will be increased
Location	:	MLT site Atghoria, Pabna
Status (New/2nd year)	:	2nd year
Estimated cost	:	80000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 090. Effect of Planting Systems on the Performance of Different Crops

Objective(s)	: i) To evaluate the performance of farm machineries for producing different crops under climate change.
Rationale	: In an era of increasing pressure on agricultural systems, improving crop productivity while maintaining sustainability is critical. Climate change, water scarcity, soil degradation, and the need for more efficient resource use have challenged conventional farming practices. One area of focus for optimizing crop production is the choice of planting systems, which can significantly influence the performance of different crops. The planting systems of **strip planting, bed planting,** and **conventional tillage** each offer distinct advantages and limitations, making it essential to compare their effects on crop performance. This study aims to evaluate the effects of these three planting methods—strip planting, bed planting, and conventional tillage—on the performance of mustard, lentil and sesame. Understanding how these systems impact crop yields, resource efficiency, and sustainability is vital for developing more resilient and productive agricultural systems. This study will provide valuable insights into the trade-offs between these systems in terms of crop yields, resource use, soil health, climate resilience, and cost efficiency. The findings will help farmers, policymakers, and researchers develop strategies that optimize crop performance while addressing the challenges posed by climate change, resource scarcity, and environmental degradation.
Materials and Methods	:
Crop/variety	: Mustard (BARI Sarisha-17), Lentil (BARI Masur-8) and Sesame (BARI Til-4)
Design	: RCBD
Treatment	: T_1: Strip planting T_2: Bed planting T_3: Conventional system
Replications	: 4
Plot size	: 10m X 8m
Planting system/spacing	: Recommended
Fertilizer dose and application methods	: Based on FRG-2018
Irrigated/rainfed	: Irrigated
Data to be recorded	: i) Dates of all operations ii) Yield and yield attributes of crops iii) Pest and disease reaction iv) Cost and return analysis
Investigator (s)	: Concern scientist of OFRD, Pabna
Season	: Rabi and Kharif-1
Date of initiation	: 20-30 March, 2025
Date of completion	: 10-20 July, 2026
Expected output	: Total system production as well as cropping intensity will be increased
Location	: MLT site Atghoria, Pabna
Status (New/2nd year)	: 2nd year
Estimated cost	: 120000/-
Source of fund	: BARI
Priority	: 1st

Expt. 091. Effect of rice straw returning patterns on growth and yield of mustard under different tillage systems under changing climate

Objectives	:	• To compare the effects of different straw returning pattern on the growth and yield of mustard • To optimize the straw returning pattern of rice crop to increase crop growth and yield of mustard
Rationale	:	Over the past two years, based on long-term positive research findings, OFRD, BARI, Pabna has implemented numerous on-farm demonstration programs under C-SUCSeS project in the Pabna region using a strip planting system without crop residue retention for mustard cultivation. However, the yield performance in both strip and conventional tillage systems has not met expectations in some cases. To address these challenges, we hypothesize that adopting a strip planting and no-tillage system, combined with crop residue retention, can enhance crop yields and resolve the issues faced by farmers. Numerous studies conducted worldwide have demonstrated significant yield improvements in strip planting and no-tillage systems when residue retention is practiced. However, limited information is currently available regarding the impact of strip planting and no-tillage systems with rice residue retention on crop yield in the eastern Pabna area. Therefore, this proposed study aims to evaluate the effects of different tillage methods and crop residue retention patterns on mustard yield.
Materials and methods	:	Treatments (5) 1. Strip planting + Mulch straw 2. Strip planting + Standing straw 3. Strip planting + Remove straw 4. Conventional tillage + Mulch straw 5. Conventional tillage + Remove straw
Crop/variety	:	Mustard
Design	:	RCBD
Plot size	:	10 x 5 m^2
Planting system/spacing	:	30 cm
Intercultural operation	:	As per requirement
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Soil moisture, residue retention rate, soil chemical properties, water use efficiency, yield and yield components, production cost and return, and farmer's opinion
Investigators	:	Md. Ariful Islam, Md. Maniruzzaman, Md. Zahedul Hasan, Mehera Afroj Suborna, Md. Samim Hossain Molla
Season	:	Rabi
Date of initiation	:	November 2024
Date of completion	:	March 2025
Expected output	:	Adoption of suitable straw returning pattern under strip planting system will enhance mustard crop yield, improve soil health, conserve water, increase nutrient use efficiency, and promote sustainable farming practices
Locations	:	FSRD, OFRD, Pabna

Status : 2nd year
Estimated cost : Tk. 50,000
Source of fund : BARI
Priority : 1st

Expt. 092. Development of alternate cropping pattern Hybrid Maize-Panikachu (Latiraj) against farmers existing Hybrid Maize-Jute-Fallow at Manikganj

Objectives : 1. To introduce stolon producing panikachu in the existing cropping pattern replacing jute.
2. To increase cropping intensity and economic return of farmers.

Rationale : Maize (*Zea mays*) is the most profitable crop grown during rabi season at Manikganj. After harvesting of winter maize, farmers generally grow jute during the rainy season when this lands are inundated by seasonal flooding. But due to the adverse climate change, water do not enter in the no canals or lowlands during the last two years. Therefore. Jute growers cannot rot their jute fiber due to the lack of rain or flood water. As a result, farmers' kept their lands fallow. Stolon producing aroids (*Colocasia esculenta)* may be an option to utilize those lands replacing jute. Tuber Crops Research Center (TCRC) of BARI has developed several stolon producing variety of panikachu among those BARI Panikachu-1 (Latiraj) is a high yielding variety. This variety is also less susceptible to pests and diseases. Moreover, stolon and rhizome of aroids both are high value crops and have good demand in the market during Kharif-II season where there is a crisis of vegetables in the market. Thus, addition of Panikachu replacing jute could increase total productivity and profitability over farmers existing cropping pattern under the adverse climatic situation in the medium low lands of Manikganj.

Materials and Methods :

Crop : Winter Hybrid maize, Panikachu (for stolon)
Varieties Maize : Commercial hybrid, , Panikachu (BARI Panikachu-1)
Design : RCBD (6 dispersed)
Spacing : Maize : 60 cm x 25 cm, Panikachu: 60 cm x 45 cm
Treatments Improved pattern: Hybrid Maize – Panikachu (BRRI Panikachu-1)
Existing Pattern: Hybrid Maize – Jute (Bankim) – Fallow
Replication : 06 (dispersed)
Area : 5 decimal for each unit plot
Fertilizer Maize: 260-50-125-32-3.6-1.36 N-P-K-S-Zn-B
Panikachu: 150-35-150-20-4.3-2.0 N-P-K-S-Zn-B
Data to be recorded : Dates of all operation
Yield and yield contributing characters
Major disease and insect incidence
Cost and returns analysis
Farmers opinion
Investigators : Concern scientists Dr. Md. Ruhul Amin and Md. Emdadul Haque of OFRD, Manikganj
Expected output : New cropping pattern will be developed
Status : 2nd year
Initiation : November, 2025
Estimated cost : Tk. 80000/-
Source of fund : BARI
Location : Sadar and Saturia of Manikganj

Expt. 093. Development of Potato-Chilli-T. Aman cropping pattern against Wheat-Jute-T. Aman in Young Brahmaputra Jamuna Floodplain

Objective(s) : To increase cropping intensity and farm productivity.

Rationale : Bangladesh is a small country of 0.148 million km^{-2} but surprisingly it has to feed some 165 million people (BBS 2022). The population of Bangladesh is projected to be 192 million by 2030 but with no scope for increasing the area under production (IFPRI, 2012). Changes in climate, population expansion, food scarcity, poverty, starvation, accelerated land cover change and environmental degradation are the foremost challenges of the 21st century (Neamatollahi et al., 2017).In the world about 1 billion people keep on hungry every day due to the inadequate food supply and this number will rise up to 2 billion by 2050 (FAOSTAT, 2014). For the developing countries of Asia and Africa, this situation insists on the increasing momentum in agricultural production with more than 70 percent increase in the coming decades (Neamatollahiet al., 2017). To enhance agriculture productivity improved cropping patterns and better management practices are essential. Land and water resources are becoming very limited due to the rapid change in population and urbanization. Subsequently, to determine the optimal use of the available resources improved cropping pattern has been developed for exploiting the net profit subjected to some limitations (Osama et al., 2017). Bangladesh also suffers frequently from different normal disasters (Haq et al., 2012; Khatun et al., 2016; Islam et al., 2017a), that may get worse in the long run as a result of climate change (Hossain et al., 2016; Rokonuzzaman et al., 2018). Therefore, to declare food security for increasing people in the future we need to produce huge food on a reduced amount of land (Islam et al., 2015a&b). Two techniques need to be adopted to achieve this issue. Firstly it may be by increasing cropping intensity by producing more crops on the similar land during whole year and secondly by augmenting productivity of each crops (FAOSTAT, 2013; Dobermann et al., 2013; Datta et al., 2015; Ladha et al., 2016; Datta et al., 2017; Islam et al., 2017b). Bangladesh agriculture mostly consists of rice based cropping patterns (Haque, 1998). Different cropping pattern are available in Bangladesh and abroad and these are well reported. (Soni and Kaur, 1984; Malavia et al., 1986; Khan et al., 2005; Ferdous et al., 2011; Anowar et al., 2012;Nazrul et al., 2013; Anowar et al., 2015; Khatun et al.,2016 and Anwar et al., 2017) where a supplementary crops may be incorporated without substituting the accessible ones for significant enhancement of in general productivity and income of the farmers (Islam, 2012a &b). Only rice production is not sufficient and profitable for the farmers of this area. So an adaptation of alternative cropping patterns to support the most efficient use of the limited natural resources is a prime need for recent days. Potato is such a promising crop, which can be easily grown after T. aman harvest with residual soil moisture and requires less water in some cases. Chilli is a cash crop that can be grown after harvesting of potato during monsoon. So the proposed cropping pattern of this area may be Potato-Chilli-T.Aman. Considering these observations, the present study was designed to introduce to utilize uncultivated land properly during rabi (winter season) and Kharif I (monsoon) season minimizing water stress and waterlogging condition with improved cropping pattern Potato-Chilli-T.Aman as well as increase the production and meet the demand of that area.

Materials and Methods :

Crop/variety : Potato: BARI Alu-25, Chilli: BARI Morich-2/Pabuiya, and T. Aman: (BRRI dhan49/ BINA dhan17).

Design : RCBD

Treatment :

Replications	:	6 (dispersed)
Plot size	:	10 decimal
Planting system/spacing	:	Potato: 60x25 cm, Chilli: 60x50 cm, T.Aman:25x15 cm
Fertilizer dose and application methods	:	Recommended dose as per FRG-2018
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	i) Dates of all operations, ii) Yield and yield attributes of crops, iii) Pest and disease reaction, iv) Cost and return analysis
Investigator (s)	:	Dr. M. Mohiuddin and Md. Yeasinul Haque Rayhan
Season	:	Robi/2024
Date of initiation	:	November/2024
Date of completion	:	October/2027
Expected output	:	Cropping intensity and productivity will be increased
Location	:	MLT site, Hossainpur
Status	:	2nd year
Estimated cost	:	3,00,000
Source of fund	:	BARI
Priority	:	1s

Expt. 094. Integrated management of collar rot disease of Chilli with seed and soil treatments

Objective(s)	:	To develop collar rot disease management technology of chilli.
Rationale	:	Collar rot disease presents a formidable challenge to chili cultivation, threatening yields and economic viability worldwide. This fungal affliction, primarily instigated by pathogen *Sclerotiumrolfsii*, wreaks havoc on chili plants' root systems, disrupting water and nutrient uptake essential for growth and development. Manifesting initially as subtle symptoms of wilting and yellowing foliage, collar rot progressively advances, culminating in the decay of tissues and eventual plant demise. Factors exacerbating its impact include overwatering, poor soil drainage, and the presence of soilborne pathogens. Effective management strategies, including judicious irrigation practices, soil amendment for improved drainage, and targeted fungicidal treatments, are imperative for safeguarding chili crops against the debilitating effects of collar rot disease. Therefore, an attempt was made to access the effect of integrated diseases management modules with chemical treatments, organic amendments, and bio control agents on diseases incidence and yield of chilli in comparison with untreated control.
Materials and Methods	:	
Crop/variety	:	Chilli (Local variety/BARI Morich-2)
Design	:	RCBD
Treatment	:	T_1= Seed treatment with Provax 3gm/kg +Seedling treatment with Bio-shield 10gm/l; T_2= Seed treatment with Provax 3gm/kg +Seedling treatment with Autostin 2 gm/l; T_3= Seed treatment with Provax 3gm/kg +Seedling treated by Trichoderma10gm/l; T_4= Seed treatment with Provax 3gm/kg + Soil treated by Trichoderma 2.5 tha-1; T_5= Seed treatment with Provax 3gm/kg+Seedling treatment with Autostin 2 gm/l+ Soil treated by Trichoderma 2.5 tha-1; T_6= Farmers Practice
Replications	:	6 (dispersed)

Plot size	: 4m × 5m
Planting system/spacing	: Line sowing
Irrigated/rainfed	: Irrigated
Data to be recorded	: i) Dates of all operations, ii) Yield and yield attributes of crops, iii) Pest and disease reaction, iv) Cost and return analysis
Investigator (s)	: Md.Yeasinul Haque Rayhan and Dr. M. Mohiuddin
Season	: Robi
Date of initiation	: February/2025
Date of completion	: June/2028
Expected output	: Suitable management practice of collar rot of chilli will be developed
Location	: MLT site, Hossainpur
Status	: 2nd year
Estimated cost	: 100000/-
Source of fund	: BARI
Priority	: 1st

Expt. 095. Effect of different sowing dates on the yield of BARI Sarisha-14 and BARI Sharisa-18 in Kishoreganj

Objective(s)	: To compare the effect of sowing date on yield of BARI Sarisha-14 and BARI Sharisa-18 To select the best suitable sowing time To increase crop productivity
Rationale	: Now a day's mustard is ranked to first oil seed crop in Bangladesh. Current oil seed production can't keep peace with the current oil demand of the country. The farmers of Kishoreganj traditionally used to cultivate local variety (Tory-7) for mustard seed production which is low yield potential. BARI has developed a good numbers (about 18 varieties) of high yielding varieties and many of the farmers of this area don't know about these high yielding BARI variety. If short duration and high yielding BARI variety inserted in these area, cropping intensity and farmers' income may increase and reduce oil scarcity of the country. All the land of this area did not turn in to crop sowing condition because of diversified cropping practice in char area. So the present program has been taken to assess the performance of BARI Sarisha-14 and BARI Sarisha-18 at different sowing time in char area to meet up the oil scarcity as well as increase productivity.
Materials and Methods	:
Crop/variety	: Mustard (var. BARI Sarisha-14 and BARI Sarisha-18)
Design	: RCBD
Treatment	: T_1= Sowing on10 November for BARI Sarisha-14 T_2= Sowing on 10 November for BARI Sarisha-18 T_3= Sowing on 25 November for BARI Sarisha-14 T_1= Sowing on 25 November for BARI Sarisha-18 T_2= Sowing on 10 December for BARI Sarisha-14 T_3= Sowing on 10 December for BARI Sarisha-18
Replications	: 6 (dispersed)
Plot size	: 4m × 5m
Planting system/spacing	: Broadcasting

Fertilizer dose and application methods	: Recommended dose as per FRG-2018: Mustard:115-32-40-25-2-2,(N-P-K-S-Zn-B kg ha^{-1})
Irrigated/rainfed	: Irrigated
Data to be recorded	: i) Dates of all operations, ii) Yield and yield attributes of crops, iii) Pest and disease reaction, iv) Cost and return analysis
Investigator (s)	: Md.Y H Rayhan and Dr. M. Mohiuddin
Season	: Robi
Expected output	: Suitable sowing date with higher productivity will be developed
Location	: MLT site, Karimganj and Kishoreganj Sadar.
Status	: 2nd year
Estimated cost	: 90000/-
Source of fund	: BARI
Priority	: 1st

Expt. 096. Relay cropping of mustard with T. Aman against T. Aman-Fallow-Boro rice cropping pattern in Kishoreganj

Objective(s)	:	To insert a new crop between T. Aman and Boro rice. To study the performance of Mustard varieties as relay crop with T. Aman.
Rationale	:	The present cropping intensity of the country is about 195%. Food requirement is estimated to be doubled in the next 25 years. Under such condition, it is very important to increase cropping intensity and for this reason, more suitable crop (s) should be accommodated in the existing cropping pattern. One of the major cropping pattern is practiced by farmers' in Kishoreganj region is T.Aman-Fallow-Boro. After harvest of T.Aman and before going to transplanting Boro rice, around 70-75 days remains fallow. To increase the cropping intensity, this fallow period might be utilized by inclusion of any short duration crop like mustard. BARI released mustard var. BARI Sarisha-14 is a high value oil crop might be introduced after T. Aman harvesting without hampering the existing cropping sequence. Again, the productivity of existing pattern is low due to local varieties and poor management practices. However, introducing modern variety and improved technology of Boro and T.Aman offered the opportunity to overcome the situation. Hence, the study will be conducted Relay cropping of mustard with T. Aman against T. Aman-Fallow-Boro cropping pattern to increase yield and economic return.
Materials and Methods	:	
Crop/variety	:	T. Aman (BINA dhan17) and Mustard (BARI sarisha-14)
Design	:	RCBD
Treatment	:	T_1= Sowing of mustard 10 days before harvesting of T. Aman T_2= Sowing of mustard 15 days before harvesting of T. Aman T_3= Sowing of mustard 20 days before harvesting of T. Aman
Replications	:	6 (dispersed)
Plot size	:	8m × 10m
Planting system/spacing	:	Mustard: Broadcasting; T.Aman: 25x15 cm
Fertilizer dose and application methods	:	FRG 2018
Irrigated/rainfed	:	Irrigated

Data to be recorded	:	i) Dates of all operations, ii) Yield and yield attributes of crops, iii) Pest and disease reaction, iv) Cost and return analysis
Investigator (s)	:	Md. Yeasinul Haque Rayhan and Dr. M. Mohiuddin
Season	:	Kharif-2
Date of initiation	:	August/2024
Date of completion	:	November 2027
Expected output	:	Suitable sowing date of relay mustard with T.Aman for increasing farm productivity.
Location	:	MLT site, Kishoreganj sadar
Status	:	2nd year
Estimated cost	:	150000
Source of fund	:	BARI
Priority		1st

Expt. 097. Development of Potato + Bitter gourd + Sponge gourd - T. Aman rice cropping pattern against Potato - Boro - T. Aman

Objective(s)	: To improve the existing cropping pattern and increase cropping intensity and productivity To increase yield and economic return of farmers
Rationale	: Potato-Boro-T. Aman is the major existing cropping pattern at the MLT site, Dhanbari, Tangail. This pattern covered 1.59% (3844 ha) of the total cultivable land (242079 ha) of Tangail district (DAE, Tangail, 2023). After T. Aman harvests the farmers normally cultivate potato and after potato harvest they cultivate boro rice. Under this situation, bitter gourd/sponge gourd/snake gourd and pointed gourd/teasel gourd/pointed gourd cultivate with potato as intercrop. All cucurbits are cultivated on traily. On traily sponge gourd harvesting starts after the complete of bitter gourd harvest. Under this situation after bitter gourd farmers can easily grow sponge gourd before T. Aman rice transplanting. Thus this improve cropping is undoubtedly be highly productive and economically profitable than the existing cropping pattern. Hence, the trial may be conducted to improve the existing cropping pattern, increase cropping intensity, higher yield and economic return of the farmers.
Procedure/Methods	:
Treatments	: Improve CP: Potato (BARI Alu-44) + Bitter gourd (Tia) + Sponge gourd (BARIDhundol-1) - T. Aman (BRRI dhan75) Existing CP: Potato (BARI Alu-7)-Boro (BRRI dhan29)–T. Aman (BRRI dhan49)
Planting system	: Seeding/Transplanting
Design	: RCBD
Replications	: 06
Plot size	: 10 x 8 m
Fertilizer dose/rates	: As recommended (FRG, 2018)
Methods of Application	: As recommended
Irrigation/Rainfed	: Irrigated (As and when necessary)
Data to be recorded	: Dates of all operations, yield and yield attributes of crops, pest reaction, cost and return, farmers' assessment, and reaction
Season	: Rabi2024-25
Date of initiation	: November 2024

Expected output	: At least 20-25 % higher economic return could be possible than existing pattern
Status	: 2n year
Estimated cost	: Tk. 185000/ -
Source of fund	: OFRD, BARI
Priority	: 1st
Location	: MLT site, Modhupur (Dhanbari), Tangail
Investigator(s)	: Scientists of OFRD Tangail.

Expt. 098. Development of Cabbage + Sweet gourd (as intercrop) - Jute -T. Aman Rice cropping pattern against Cabbage - Jute-T. Aman rice cropping pattern

Objectives	: 1. To increase cropping intensity and productivity 2. To increase yield and economic return of farmers
Rationale	: Cabbage-Jute-T.Aman is an important existing cropping pattern at MLT site Ghatail. In this cropping pattern farmers use old crop varieties whose are poor yielding and susceptible to different pest and diseases. If this pattern is replaced by Cabbage + Sweet gourd (as Intercrop)-Jute-T.Aman cropping pattern and introduce modern varieties of the crops then it will be profitable to the farmers. Due to above reason swe want to introduce high yielding crop varieties i.e., BJRI Tosa Pat-8 instead of Falguni tosa and BRRI dhan75 instead of BRRI dhan49in Cabbage-Jute-T.Aman pattern and also add sweet gourd (BARI Mistikumra-2) as intercrop with Cabbage. Therefore, a trial may be conducted for the improvement of the existing cropping pattern and for higher yield and economic return.
Materials & Methods	:
Treatments	: **Improved pattern:** Cabbage (Atlas)+Sweet gourd (BARI Mistikumra-2)-Jute (BJRI Tosa Pat-8)-T.Aman (BRRI dhan75) **Existing Pattern:** Cabbage (var. Atlas)-Jute (Falguni tosa)-T.Aman (BRRI dhan49)
Replication	: 06 (dispersed)
Fertilizer	As recommended (FRG, 2018)/STB
Data to be recorded	: Yield and yield contributing characters, cost and return calculation
Investigators	: Concern scientists of OFRD, Tangail
Expected output	: New cropping pattern will be developed therefore crop yields will be increased and higher economic return will be achieved over the existing practice.
Status	: 2nd year
Initiation	: August 2024
Estimated cost	: Tk. 80000/-
Source of fund	: BARI
Location	: MLT site Ghatail, Dhanbari, Tangail

Expt. 099. Development of Garlic–Sesame–T. Aman cropping pattern against Garlic–Jute–T.Aman cropping pattern

Objectives	: 1. To increase cropping intensity and productivity 2. To increase farmers income

Rationale	:	About 160 million people are in Bangladesh now with the growth rate of 1.37% (BBS, 2011). To produce more food with limited area, improvement of existing cropping pattern is urgent by using optimum management practices and incorporation of modern varieties. Garlic–Jute–T.Aman is a major existing cropping pattern of FSRD site Atia and MLT site, Mirzapur in Tangail. Farmers normally cultivate their local, old or traditional varieties in this region. If this pattern is replaced by Garlic–Sesame–T.Aman cropping pattern and introduce modern varieties of the crops then it will be profitable to the farmers. Due to above reasons we want to introduce high yielding crop varieties i.e., BARI Rasun-3 instead of local and BRRI dhan75 instead of BRRIdhan49 in Garlic–Jute–T.Aman pattern and also replace jute (Falguni tosa) with sesame (BARI Til-4). Therefore, the trial may be conducted for the improvement of the existing cropping pattern and for higher yield and economic return.
Materials & Methods	:	
Treatments		Improved pattern: Garlic (BARI Rashun-3)–Sesame(BARI Til-4)–T.Aman (BRRI dhan75) Existing Pattern: Garlic (Local)–Jute (Falguni tosa)–T.Aman (BRRI dhan49)
Replication	:	06
Plot size	:	-
Fertilizer		As recommended (FRG, 2018)/STB
Data to be recorded	:	Yield and yield contributing characters, cost and return calculation
Investigators	:	Concern scientists of OFRD, Tangail
Expected output	:	New cropping pattern will be developed therefore crop yields will be increased and higher economic return will be achieved over the existing practice.
Status	:	2nd year
Initiation	:	October, 2024
Estimated cost	:	Tk. 80000/-
Source of fund	:	BARI
Location	:	FRSD site Atia, MLT site Mirzapur, Tangail

Expt. 100. Mixed cropping of Black cumin with onion in charland

Objectives	:	To find out suitable combination of onion and black cumin To ensure the maximum utilization of the land for higher yield and income
Rationale	:	Mixed cropping, also known as polyculture, inter-cropping, or co-cultivation, is a type of agriculture that involves planting two or more plants simultaneously in the same field, interdigitating the crops—like interlocking your fingers—so that they grow together. Since crops ripen during different seasons, planting more than one saves space and provides a wealth of environmental benefits including maintaining a balance of input and outgo of soil nutrients; weed, disease, insect pest suppression; resistance to climate extremes ie.wet, dry, hot, cold. An increase in overall productivity, and management of scarce land resources to its maximum potential. In

Bangladesh total spices production is about 4.5 lakh tons and 11.5 lakh tones are imported to fulfill the national demand. Black cumin is the condiment crop and cultivating sporadically in Bangladesh. Although it is a rabi crop and has a higher market price. Both Onion and black cumin are cultivated as the sole crop in the Rabi season. It is observed that some farmers of the Jamalpur region cultivate black cumin as a mixed crop with garlic and onion sporadically without determining a suitable combination and cost-benefit. Thus, there needs to determine a proper seed ratio to get a higher yield and income without affecting the main crop (onion). Therefore, the experiment has been taken under consideration to find out the suitable Combination of onion and black cumin as mixed cropping.

Materials and Methods:

Crop/Variety	:	Onion : BARI Piaj-4 , Black Cumin: BARI kalo zira-1
Design	:	RCB
i) Replications	:	Three
ii) Treatments	:	T1: (farmer's practice) Onion (90%) + Black cumin (10%) T2: Onion (80%) + Black cumin (20%) T3: Onion(70%)+Black cumin(30%) T_4: Sole Onion (100%) T5:Sole Black cumin (100%)
Plot size	:	6 m × 5 m
Planting system	:	Broadcast
Fertilizer dose and methods of application	:	Recommended fertilizer dose (FRG 2018) and methods will be followed.
Irrigated/ rainfed	:	Irrigated
Data to be recorded	:	Initial soil nutrient status, Dates of all operations, Yield performance of companion crops, Pest and disease reaction, Cost and return analysis
Investigators	:	Md. Mizanur Rahman, SSO, AKM Zonaed Ul Noor, SSO, and Dr. Md. Amraul Islam, SSO, OFRD, BARI, Sherpur.
Season	:	Rabi 2024-25
Date of initiation	:	November 2024
Date of completion	:	April 2025
Expected output	:	Suitable proportion of mixed crop will be detected and increase productivity
Location	:	Islampur, Jamalpur
Status	:	2nd year
Estimated cost	:	Tk. 50,000
Source of fund	:	BARI
Priority	:	1st

Expt. 101. Development of Mustard-Boro- Indian Spinach- T.aman cropping pattern over Mustard-Boro - T.aman in medium highland at Sherpur region

Objective (s)	:	1. To increase cropping intensity and productivity. 2. To increase farmer's income, access to food and nutrition.
Rationale	:	In the North Eastern region of Bangladesh, cropping intensity is relatively lower than other parts of Bangladesh. For instance, in Sherpur district, cropping intensity (CI) is about 211%. Three crop based cropping area is about 19901 ha from which 6250 ha. is under T.aman-Mustard- Boro cropping pattern. After harvest boro there is a gap around 45

days before Amon plantation. In this time only grow different types of weed. If short time vegetables grown in this fallow period cropping intensity will be increased as well weed can be controlled. In this point of view this experiment undertaken.

Materials and Methods

Crop/variety : T. Aman- Dhanigold(Hybrid), Mustard:BARI Sarisaha-14, Boro (Hybrid), Indian spinach(BARI Puishak-1/2).

Design : RCB

i) Treatments : **Existing cropping pattern**: Mustard-Boro - T.aman
Alternate cropping pattern: Mustard-Boro- Indian Spinach- T.aman

ii) Replications : 6 dispersed

Plot size : 1200 m^2

Planting system/spacing : Mustard - Broardcast, Aman and Boro spacing - 20 cm X 15 cm indian spinach broadcast

Fertilizer dose and methods of application : As per recommendation by FRG-2018/STB in individual crop

Irrigated/rainfed : As and when necessary

Data to be recorded : Dates of all operation, Yield and yield contributing characters, soil fertility, major disease and insect incidence, energy expenditure, cost and return & farmers' opinion

Investigator (s) : Md. Mizanur Rahman, SSO, AKM Zonaed Ul Noor, SSO, and Dr. Md. Amraul Islam, SSO, OFRD, BARI, Sherpur.

Season : Rabi 2024

Date of Initiation : November 2024

Date of completion : November 2025

Expected output / benefit : Cropping intensity will be increased as well as productivity and return

Location (s) : OFRD, BARI, Sherpur

Status : 2nd year

Estimated cost : Tk. 100,000 (for first cycle)

Source of fund : OFRD/BARI

Priority : 1st

Expt. 102. Determination of Seed Rate of Linseed with Groundnut Intercropping System

Objective(s) : To find out the suitable seed rate of linseed in Groundnut linseed intercropping arrangements
To find the land use advantage in the intercropping system

Rationale : Intercropping has been considered for increasing sustainability of crop production. Better intercrop production could be achieved through the choice of appropriate crops mixture, population density and planting geometry of component species/crops. Among the intercropping practices onion + black cumin intercropping practices is common and familiar practices to the farmers of char areas of Bangladesh. To optimize plant density, the seedling rate of each crop on the mixture has been suggested to adjust below the full rate to reduce competition from overcrowding. Groundnut showed their significant effects on soil and crop productivity after either sole or intercrop systems. Fertilizers are more efficiently used in an

		intercropping system, due to different rooting systems of the crops as well as differences in the amount of nutrients taken up. Earlier studies on intercropping of onion, garlic, coriander, green gram, black gram, soybean, chilli and cotton have been found to be remunerative. In spite of high demand of these oil seed in the local and foreign market farmers could not increase the total productivity either through sole or intercropping practices due to the lacking of proper combination of planting geometry. Therefore, the present study will be undertaken to find out the optimum plant density of coriander for intercropping with groundnut for higher productivity and economic return.
Materials and methods	:	
Crop/variety	:	Groundnut (var. BARI Chinabadam-9) and linseed (var. BARI Tishi-1)
Treatments	:	T1 = Sole Groundnut (100%) T2 = Sole linseed (100%) T3 = Groundnut + 20% linseed T4 = Groundnut + 40% linseed T5 = Groundnut + 60% linseed
Design and replications	:	RCB and 5 dispersed replications
Plot size	:	40m^2 for each treatment
Spacing	:	Line sowing & Broadcasting
Fertilizer dose and application method	:	STB or FRG, 2018/STB
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Days to maturity, plant population/m^2, Yield and yield attributes of groundnut and linseed, disease and insect reaction, cost and return analysis and farmer's opinion.
Investigators	:	AKM Zonaed Ul Noor, SSO, Md. Mizanur Rahman, SSO,and Dr .Md. Amraul Islam, SSO, OFRD, BARI, Sherpur
Season	:	Rabi 2024-25
Date of initiation	:	November 2024
Date of completion	:	April 2025
Expected output	:	The most profitable intercrop combination will ascertained.
Location	:	Char area of sherpur and Jamalpur.
Status	:	2nd year
Estimated cost	:	Tk.70,000/-
Source of fund	:	BARI

Expt. 103. Development of alternate cropping pattern Mustard-Boro-T. Aman against Fallow-Boro- T. Aman rice

Objective(s)	:	i. To increase the cropping intensity and system productive efficiency ii. To develop a new cropping pattern
Rationale	:	The one of the major cropping pattern is practiced by farmers' in medium lowland of Faridpur region is based on T.aman-Fallow-Boro. This pattern covers 6000 ha of land which is 4% of total cropping pattern practiced in Faridpur. After harvest of *T.aman* and before going to transplanting boro rice, around 90-95 days remained fallow. To increase the cropping intensity and economy of the whole country, this fallow period might be utilized by inclusion of any short duration crop like relay sowing of mustard. BARI released BARI Sarisha-18 is a high value oil crop might be introduced as relay with T.Aman (mustard seed will be relayed 10 days before harvesting of T.Aman) without hampering the existing cropping sequence. Again, the productivity of existing pattern is low due to local varieties and poor management practices. However, introducing modern variety and improved technology of boro and *T.aman* offered the opportunity to overcome the situation. The study will be therefore, initiated with above objectives.
Materials & Methods	:	
Crop	:	Boro, T.Aman and Mustard
Variety		Existing: T.Aman (BRRI dhan39)-Fallow- Boro (BRRI dhan28) Alternate: T.Aman (BRRI dhan75)/mustard (BARI Sarisha-18) - Boro (BRRI dhan-89)
Design	:	RCB
Treatment	:	T_1 (Existing CP): Fallow- Boro-T.Aman T_2 (Alternate CP): Mustard - Boro- T. Aman
Replication	:	6 dispersed replications
Unit Plot size	:	33 dec
Seed rate (kg ha^{-1})	:	Rice: 50 kg/ha. Mustard: 8 kg/ha
Planting system/spacing	:	Rice: line sowing, Mustard: Relay sowing with T.Aman
Fertilizer dose	:	Alternate pattern: T.Aman: $N_{80}P_{16}K_{40}S_9Zn_{1.2}B_0$, Boro: $N_{160}P_{25}K_{50}S_{12}Zn_2B_0$, Mustard: $N_{120}P_{36}K_{40}S_{15}Zn_2B_1$
Methods of application	:	T.Aman and Boro: All the phosphorus, potassium, Sulphur, zinc and one third of nitrogen will be applied as broadcast and incorporated during final land preparation. The rest nitrogen will be applied in two equal splits and top dressed at rapid tillering stage (25-30 DAT) and at panicle initiation stage (40-45 DAT). Mustard: Half of nitrogen and all the phosphorus, potassium, sulphur, zinc and boron will be applied as broadcast. Remaining half nitrogen will be applied before flower initiation (25 to 30 DAS) as top dress followed by irrigation.
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operation, Yield and yield contributing characters, soil fertility, major disease and insect incidence, cost and return related data & farmers' opinion
Status	:	New
Season	:	Rabi 2024-25
Date of Initiation	:	Jan 2024
Date of completion	:	Feb 2026

Expected output	:	Alternate cropping pattern will be find out for higher productivity and return
Estimated cost	:	Tk. 100,000
Source of fund	:	OFRD/BARI
Priority	:	1st
Location (s)		FSRD site Faridpur
Investigator (s)	:	Concerned scientists of OFRD, Faridpur

Expt. 104. Effect of plant density and variety on sunflower yield in Southern Bangladesh

Objective(s)	:	To find out the yield potentiality of different sunflower varieties under different plant density
Rationale	:	Sunflower is an important oil seed crop for the southern coastal region of Bangladesh. The area under this crop is increasing day by day and gains popularity among the farmers of south western region. Sunflower seed is highly nutritious containing about 20% protein and 40 to 50% vegetable oil associated with a very high calorific value. Planting density is one of the most important factors that influence the growth and yield of sunflower and it varies from variety to variety in a species. So, it is necessary to know the optimum spacing of different variety of sunflower for higher yield. Therefore, the experiment was designed to determine the optimum spacing of different variety of sunflower at farmer`s level in southern part of Bangladesh.
Materials and methods	:	
Crop/variety	:	Sunflower (Hysun-33 and BARI Surjomukhi-3)
Design	:	RCBD
i) Treatment	:	Factor 1:(Variety-02) Hysun-33, BARI Surjamukhi-3 Factor 2:(Plant density-03) 40 cm × 25 cm, 50 cm × 25 cm and 75 cm × 25 cm
ii) Replication	:	6 (Dispersed)
Plot size	:	8m × 5m
Spacing		As per treatment
Fertilizer dose and methods of application	:	FRG-2018 and recommended methods
Irrigation/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, Yield and yield attributes Major disease and insect incidence Cost and return analysis & Farmers opinion
Investigator(s)	:	M. M. Howlader, SSO and D. Halder, SO
Season		Rabi 2024-25
Date of initiation	:	December, 2024
Date of completion	:	May 2025
Expected output	:	Suggestion can be made on planting spacing in respect of variety.
Location	:	Farmers field of Gopalganj and Pirojpur district
Status	:	2nd year
Estimated cost	:	75000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 105. Performance of different intercropping system of sunflower with vegetables

Objectives	: To identify suitable intercropping combination of sunflower and vegetable. To increase productivity and economic return by intercropping system
Rationale	: Intercrops have the potentials to give higher yield than sole crops and efficient use of nutrients (Seran and Brintha, 2010). Furthermore, better weeds control and improvement of quality of crop. While the overall target is to increase return and avoid risks of production. Sunflower (*Helianthus annuus* L.) is a edible oilseed crops which could meet up to 26% of the country's cooking oil demand and its area is rapidly increase in Bangladesh as well as different areas of southern part. Farmers of this area feel risk sunflower cultivation as a sole crop and they cultivate some leafy vegetables and spices with sunflower. But till to now there is no research work was done on intercropping of vegetables and sunflower to identify the best sunflower and vegetable intercropping system in respect of southern part of Bangladesh. Considering the above circumstances the program will be taken to evaluate the performance of different intercropping system sunflower with vegetables in southern part of Bangladesh.
Materials and methods	:
Crop	: Sunflower (BARI Surjomukhi-2)
Design	**:** RCB
Treatment	**:** T_1: Sunflower + Spinach T_2: Sunflower + Red amaranth T_3:Sunflower + Knolkhol T_4: Sole sunflower
Replications	**:** 6 (dispersed)
Plot size	**:** 4 decimal (unit plot 8m x 5m)
Planting system/ Plant spacing	**:** Sowing (60cm × 40 cm)
Fertilizer dose and application methods	: FRG-2018 and recommended methods
Irrigation/rainfed	: Irrigated
Data to be recorded	: Dates of all operation, Yield and yield attributes Major disease and insect incidence, Cost and return analysis Farmers opinion
Investigator(s)	M. M. Howlader, SSO and D Halder, SO
Season	Rabi
Date of initiation	December 2024
Date of completion	May 2025
Expected output	Suitable sunflower and vegetable intercropping system will be found in respect of southern part of Bangladesh and Farmers will be benefited
Location	MLT Site, Pirojpur
Status	2nd year
Estimated cost	Tk. 90,000
Source of fund	OFRD, BARI
Priority	1st

Expt. 106. Effect of planting time on the yield BARI Lau-4 at water hyacinth made bed under Floating Agriculture System

Objectives	:	To find out the suitable planting time of BARI Lau-4 for floating agriculture system.
Rationale	:	Floating agriculture is a practice to grow crops especially vegetables for the utilization of water logging area. It is a conventional practice in southern part of Bangladesh where most of the land remains waterlogged for longer period of time. Different vegetable crops (cucumber, bottle gourd, bitter gourd, tomato, brinjal, snake gourd, yard long bean etc.) are grown on floating bed under submerged ecosystem and it is a promising alternative method of vegetable production to meet the food security in the southern part of the country. However, Planting time is one of the most important factors that greatly influence the growth and yield of crop. Planting time has an important role in physiological activities and fruit setting. So, it is necessary to know the optimum planting time of BARI Lau-4 under Floating Agriculture System. That's for we want to perform this experiment on floating bed in Gopalganj.
Materials and methods	:	
Crop	:	Bottle Gourd
Design	:	RCB
Treatment	:	T1= 1st September T2= 1st November T3= 1st January T4= 1st March
Replications	:	6 (dispersed)
Plot size	:	30 feet x 4.5 feet
Planting system/ Plant spacing	:	Transplanting (60cm × 40 cm)
Fertilizer dose and application methods	:	-
Irrigation/rainfed	:	Irrigated
Data to be recorded	:	1. Days to 50% flowering, 2. Days to 1st and last harvest 3. No. of fruits/plant, 4. Individual fruit weight (g) 5.Yield/plant (kg/bed), 6.Yield/bed (kg) 7. Other insect/disease problem, 8.Cost and return analysis 9. Farmer's reaction
Investigator(s)		M M Howlader and D Halder
Season		Rabi
Date of initiation		1st September 2024
Date of completion		June 2027
Expected output		Increase the yield of bottle gourd at floating bed by suitable planting time and farmers will be benefited
Location		Tungipara and Gopalganj Sadar
Status		2nd year
Estimated cost		Tk. 90,000
Source of fund		OFRD, BARI
Priority		1st

Expt. 107. Effect of seedling age and seedling growing method for sunflower cultivation in coastal region

Objective (s)	:	1. To identify suitable seedling growing methods and age for sunflower cultivation 2. To utilize the fallow land and overcome salinity stress at seed germination stage
Rationale	:	Sunflower is a potential oil seed crop at Rabi season for coastal areas as they are moderately tolerant to salinity. According to DAE, Patuakhali and Borguna had about 1.4 thousand hectares of coastal lands were under Sunflower cultivation during 2022-23. The area coverage is increasing day by day. But their yield is not up to the national average due to some constrains of soil. The major constraints identified that impede yield of maize are soil salinity and moisture stress. Sunflower plant lodging during maturity stage due to more height is another problem in coastal areas. It is evident that aged seedling transplantation reduces height of Sunflower plant. So, seedling transplanted in the main field is a good option to overcome the above mention stresses in coastal region. Therefore the experiment has been design with the above objectives.
Materials and Methods	:	
Crop/variety	:	Sunflower (BARI Surjamukhi-2)
Design	:	RCB
i. Treatment	:	The treatments will be assigned as follows: T_1 = 10 days age tray seedling T_2 = 10 days age seedling T_3= 15 days age tray seedling T_4= 15 days age tray seedling & T_5= Direct seed sowing
ii. Replications	:	Six
Plot size	:	8 m x 5 m for each unit plot
Planting system/spacing	:	Line sowing, 50 cm x 25 cm
Fertilizer dose and methods of application		105-40-60-25-2, N-P-K-S-B kg ha^{-1} . All fertilizer used as basal dose except urea.
Irrigated/rainfed	:	Rainfed
Data to be recorded	:	Yield and yield contributing characters, benefit & cost, disease and pest infestation, Salinity at 15 days interval, LAI, HI and farmers opinion.
Investigator (s)		Concerned scientists of OFRD, Patuakhali
Season		Rabi, 2024-25
Date of Initiation		First week of December 2024
Date of completion		Last week of May 2025
Expected output	:	Increase sunflower production and income of the farmers in coastal lands
Location		Dumki, Bauphal & Kuakata, Patuakhali
Status		**1st** year
Estimated cost		Tk. 100000/-
Source of fund		BARI
Priority		1st

Expt. 108. Intercropping of Sweet gourd with potato in Bhola

Objectives	:	1. To investigate the adaptability of BARI Hybrid Mistikumra variety as an intercrop with potato in late winter season 2. To increase productivity and farmers income
Rationale	:	Potato is a very popular crop among all tubers over the world. At present near about 8690 ha area are occupied under potato cultivation in Bhola (2019-Source-DAE-Bhola). On the other hand, sweet gourd cultivation is increasing day by day in Bhola. Both of those crops are grown at Rabi season in the region. But farmers cultivate this crop singly. It can be possible to intercrop with these crops for several benefits. Sweet gourds can be used for intercropping with potato due to their dissimilar growing patterns, morphology, phenology and nutrient requirement. Increased competition may be for water, nutrients, light or any combination of the three, ultimately leading to changes in crop productivity levels. In some areas farmers locally practice intercrop sweet gourd with potato. With this view the trial will be undertaken to investigate the adaptability of BARI Hybrid Mistikumra and increase the total productivity and farmers income.
Materials & Methods	:	
Crop	:	Potato and Sweet gourd
Design	:	RCBD
Treatments/ Varieties		BARI Hybrid Mistikumra-2 BARI Alu-72
Replications	:	03 (Disperse)
Area	:	10mx10m for each unit plot
Fertilizer		As recommended (FRG-2018)
Data to be recorded	:	Dates of all operation, Yield and yield contributing characters, Major disease and insect incidence, Cost and returns analysis and Farmers opinion
Investigators	:	Gazi Nazmul Hasan , Rashidul Hasan Anik & Md. Mominul Islam
Expected output	:	Total productivity in same land will be increased by 15%
Status	:	2nd year
Initiation	:	November 2024
Estimated cost	:	Tk. 50000/-
Source of fund	:	BARI
Location	:	Dawlatkhan and Tajumuddin

Expt. 109. Intercropping Sunflower with Soybean in the Coastal Area

Objective(s)	:	To find out suitable intercropping combination To increase total production
Rationale	:	Due to late start of *Rabi* season farmers have very limited access to the field with many crops in the season. Sunflower is one of the most important oil seed crops. Recently the popularity of sunflower oil for cooking is increasing due to learning of the quality of sunflower oil. But the increasing of sunflower area is very difficult for competition with other *Rabi* crops. To overcome this situation to some extend mixed or intercropping with other crops may be an option. The farmers of Noakhali region are used

to cultivate soybean in their fields widely. The total area of soybean in Noakhali region was 57875 hectare (DAE, 2024). Intercropping sunflower with soybean may be a good option for increasing sunflower production without hampering soybean production.
With this point of view, an experiment will be conducted to find out the suitable intercrop combination of sunflower with soybean for higher productivity and profitability.

Materials and methods	:	
Crop/ Variety	:	Soybean: BARI Soybean-5, Sunflower: BARI Sunflower-2
Design	:	
i) Treatments	:	T_1: Sole soybean (30cm × continuous) T_2: one row sunflower (plant to plant 25cm) after two rows of soybean T_3: one row sunflower (plant to plant 50cm) after two rows of soybean T_4: one row sunflower (plant to plant 25cm) after three rows of soybean T_5: one row sunflower (plant to plant 50cm) after three rows of soybean
ii) Replications	:	06 (dispersed)
Plot size	:	8m × 5m
Planting system/spacing	:	Soybean: 30cm × continuous, sunflower: as per treatment
Fertilizer dose and methods of application	:	Sole soybean: Khamari App (BARC), intercropping: soybean dose + 10% of sunflower dose
Irrigated/rainfed	:	Rainfed/ one irrigation if possible
Data to be recorded	:	Dates of all operation, yield and yield contributing characters, major disease and insect incidence, applied input and output price, farmers' opinion
Investigator(s)	:	MM Bashir, SSO & MS Islam, PSO
Season	:	Rabi 2024-25
Date of initiation	:	Mid December 2024
Date of Completion		May 2025
Expected output	:	New cropping pattern will be developed
Location	:	Subarnachar, Noakhali and Kamalnagar, Lakshmipur
Status	:	2nd year
Proposed from	:	OFRD, BARI Noakhali
Priority	:	1st
Estimated cost	:	Tk. 50,000/-
Source of fund	:	BARI

Expt. 110. Late planting potentiality of onion varieties for bulb production in Noakhali region

Objective(s)	:	To find out suitable transplanting date of onion for Noakhali region To increase onion production and farmers' income
Rationale	:	Onion is one of the most important spices crop, commercially grown in some parts of the country. It is used in every kitchen daily as a seasoning for a wide variety of dishes. Mild flavored

and/or colorful bulb onions are often chosen for salads in raw form. It is also used in processed form like flakes, powder, paste, crush and making pickles. In Bangladesh there is an acute shortage of onion compared to its total annual production. Every year 7-8 t onion is imported to meet up the shortage. BARI has developed six onion varieties which are high yielder and less susceptible to pest and diseases. But in Noakhali, the field become ready for onion in late even after transplanting time. Considering the condition of Noakhali, the present study should be undertaken to evaluate the late transplanting potential of onion for bulb production in this region.

Materials and methods	:	
Crop/ Variety	:	Onion: BARI Peaj-2, 3 & 5
Design	:	
i) Treatments	:	T_1: 30 December T_2: 10 January 2025 T_3: 20 January 2025 T_4: 30 January 2025
ii) Replications	:	06 (dispersed)
Plot size	:	5m × 4m
Planting system/spacing	:	10cm × 5cm
Fertilizer dose and methods of application	:	110-52-75 N-P-K kg ha^{-1} and 1 t ha^{-1} vermicompost. As per *Krishi Projukti Hatboi* (2020)
Irrigated/rainfed	:	Three-four irrigation
Data to be recorded	:	Dates of all operation, yield and yield contributing characters, major disease and insect incidence, applied input and output price, farmers' opinion
Investigator(s)	:	MM Bashir, SSO & MS Islam, PSO
Season	:	Rabi 2024-25
Date of initiation	:	December 2024
Date of Completion		May 2025
Expected output	:	Suitable transplanting date of onion for bulb production in Noakhali region will be identified
Location	:	Sadar and Subarnachar, Noakhali
Status	:	2nd year
Proposed from	:	OFRD, BARI Noakhali
Priority	:	1st
Estimated cost	:	Tk. 50,000/-
Source of fund	:	BARI

Expt. 111. Improvement of cropping pattern Mustard-Boro-T.Aus-T.Aman as against existing pattern Potato –Maize- T. Aman rice

Objective (s)	:	(i) to increase cropping intensity and productivity (ii) to increase farmers income.
Rationale	:	Improvement of cropping pattern is necessary for increasing cropping intensity, crop productivity and raising for farmers income. According to farmers opinion at Purbohatila, Hazigonj in Chandpur, they practicing the pattern Cucumber (Khira)-Boro-T. Aus covering much more areas in Hazigonj.They are showing interest to cultivate Mustard-Boro-T.Aus-T.Aman pattern for intensifying crop diversity and increasing cropping

		intensity.Short durated BARI Sarisha-14 can be easily cultivated before Boro.As a result, it is easily transformed to three-crop land into four crops.Therefore, the total production will be increased. As a result, there is an opportunity to increase farmers income.So, this experiment has been undertaken.
Materials and Methods	:	Stated as bellow
Crop/variety	:	BARI Sarisha-14, BRRI dhan58, BRRI dhan98, BRRI dhan71
Design	:	RCBD
(i) Treatment	:	Existing pattern (T_1): Potato (BARI Alu-7)–Maize (Duranto)- T. Aman (BRRI dhan49) and Improved pattern (T_2): Mustard (BARI Sarisha-14)-Boro (BRRI dhan58)-T. Aus (BRRI dhan-98)-T.aman (BRRI dhan71)
(ii) Replications	:	05
Plot size	:	10 decimals for each treatments
Planting system/spacing	:	Recommended spacing for specific crop
Fertilizer dose and methods of application	:	BARI recommended dose or STB
Irrigated/rainfed	:	irrigated/rainfed
Data to be recorded	:	Yield and contributing chareaters, crop management data, cost-return etc.
Investigators	:	M. Jamal Uddin, PSO, OFRD, Cumilla and R. Islam, PSO, OFRD, Gazipur
Season	:	All seasons
Date of initiation	:	Novemver, 2024
Date of completion	:	October, 2025
Expected output	:	% increase of yield, information on crop management practices, % increase ofcropping intensity, % increase of farmers income and livelihood improvement
Location	:	Purbohatila, Hazigonj Upazila,Kachua, Matlab uttor, Faridganj in Chandpur
Status (New or 1st year/2nd year)	:	2nd year
Programme proposed from	:	Bottom up (OFRD, Cumilla)
Priority	:	1st
Estimated cost	:	80,000/-
Source of fund	:	BARI main

Expt. 112. Improvement of Cropping Pattern Mustard-Boro-T. Aus-T. Aman against existing pattern Boro-T. Aus-T. Aman rice

Objective (s)	:	(i) to increase cropping intensity and productivity (ii) to increase farmers income.
Rationale	:	Improvement of cropping pattern is necessary for increasing cropping intensity, crop productivity and raising farmers income. According to farmers opinion at Chandina in Cumilla, they are practicing the pattern Boro-T.Aus-T.Aman covering much more areas 56,244 ha in Cumilla (DAE, Cumilla, 2024).They are showing interest to cultivate Mustard-Boro-T.Aus-T.Aman pattern for intensifying crop diversity and increasing cropping intensity. Short durated BARI Sarisha-14 can be easily cultivated before Boro. As a result, it is easily

transformed to three-crop land into four crops. Therefore, the total production will be increased. As a result, there is an opportunity to increase farmers income. So, this experiment has been undertaken.

Materials and Methods	:	Stated as bellow
Crop/variety	:	BARI Sarisha-14, BRRI dhan58, BRRI dhan98, BRRI dhan71
Design	:	RCBD
(i) Treatment	:	Existing pattern (T_1): Boro (Local))-T. Aus (BRRI dhan-49)-T.Aman and Improved pattern (T_2): Mustard (BARI Sarisha-14)-Boro (BRRI dhan58)-T. Aus (BRRI dhan-98)-T.aman (BRRI dhan71)
(ii) Replications	:	05
Plot size	:	10 decimals for each treatments
Planting system/spacing	:	Recommended spacing for specific crop
Fertilizer dose and methods of application	:	BARI recommended dose or STB
Irrigated/rainfed	:	irrigated/rainfed
Data to be recorded	:	Yield and contributing chareaters, crop management data, cost-return etc.
Investigators	:	M. Jamal Uddin, PSO, OFRD, Cumilla and R. Islam, PSO, OFRD, Gazipur
Season	:	All seasons
Date of initiation	:	Novemver, 2024
Date of completion	:	October, 2025
Expected output	:	% increase of yield, information on crop management, % increase ofcropping intensity, % increase of farmers income and livelihood improvement
Location	:	Chandina in Cumilla
Status	:	2nd year
Programme proposed from	:	Bottom up (OFRD, Cumilla)
Priority	:	1st
Estimated cost	:	90,000/-
Source of fund	:	BARI main

Expt. 113. Improvement of Cropping Pattern Mustard-Sesame-T .Aus-T. Aman asagainst existing pattern Mustard-Fallow-T. Aus-T. Aman rice

Objective (s)	:	(i) to increase cropping intensity and productivity (ii) to increase farmers income.
Rationale	:	Improvement of cropping pattern is necessary for increasing cropping intensity, crop productivity and raising farmers income. In Brahmanbaria district, the cropping intensity was found to be 180.80% in 2023-24 (DAE, Brahmanbaria, 2024). According to farmers opinion at Kasba in B.Barai, they are practicing the pattern Mustard (Tori-7)-Fallow-T.Aus (BRRI dhan58)-T.Aman (BRRI dhan49.They are showing interest to cultivate Mustard (BARI Sarisha-14)-Sesame (BARI Til-6)-T.Aus (BRRI dhan91)-T.Aman (BRRI dhan71) pattern for intensifying crop diversity and increasing cropping intensity. Short durated BARI Sarisha-14 and BARI Til-6 (Kalo til) can be easily cultivated before T. Aus.As a result, it is easily

		transformed to three-crop land into four crops. Therefore, the total production will be increased. As a result, there is an opportunity to increase farmers income. So, this experiment has been undertaken.
Materials and Methods	:	Stated as bellow
Crop/variety	:	BARI Sarisha-14, BARI Til-6, BRRI dhan98, BRRI dhan71
Design	:	RCBD
(i) Treatment	:	Existing pattern (T_1): Mustard (Tori-7)-Fallow-T. Aus (BRRI dhan58)- T.Aman (BRRI dhan49)and Improved pattern (T_2): Mustard (BARI Sarisha-14)-Sesame (BARI Til-6)-T. Aus (BRRI dhan-98)-T.aman (BRRI dhan71)
(ii) Replications	:	05
Plot size	:	10 decimals for each treatments
Planting system/spacing	:	Recommended spacing for specific crop
Fertilizer dose and methods of application	:	BARI recommended dose or STB
Irrigated/rainfed	:	irrigated/rainfed
Data to be recorded	:	Yield and contributing chareaters, crop management data, cost-return etc.
Investigators	:	M. Jamal Uddin, PSO, OFRD, Cumilla and R. Islam, PSO, OFRD, Gazipur
Season	:	All seasons
Date of initiation	:	Novemver, 2024
Date of completion	:	October, 2025
Expected output	:	% increase of yield, information on crop management, % increase ofcropping intensity, % increase of farmers income and livelihood improvement
Location	:	Kasba in Brahmanbaria
Status	:	2nd year
Programme proposed from	:	Bottom up (OFRD, Cumilla)
Priority	:	1st
Estimated cost	:	90,000/-
Source of fund	:	BARI main

Expt.114. Intercropping short duration vegetables with BARI Begun-12 in Cumilla Region

Objective (s)	: (i) to identify the suitable combination of intercropping systems of BARI Begun-12 with short duration vegetables; (ii) to increase vegetable production, gaining additional income for farmers and best utilization of land.
Rationale	: BARI Beguin-12 is new and popular variety of Brinjal. In Cumilla, Brahmanbaria and Chandpur areas farmers are cultivating BARI Begun-12 as a sole crop. In order to maximum utilization of land and for gaining additional income for farmers it might be a option to cultivate short duration vegetables i.e red ameranth, coriandar and spinach as intercrop. Farmers are interested to cultivate such type of intercropping system for getting additional income. Therefore, the adaptive trial has been undertaken in Cumilla region.
Materials and Methods	: Stated as bellow
Crop/variety	: BARI Begun-12, BARI Lalshak-1, BARI Coriandar-1 and Spinach
Design	: RCBD

(i) Treatment	: 04 (T1: BARI Begun-12 + BARI Lalshak-1; T2: BARI Begun-12+ BARI Coriander-1; T3: BARI Begun-12+ Spinach; T4: BARI Begun-12 (Sole)
(ii) Replications	: 05
Plot size	: 5 decimals for each treatments
Planting system/spacing	: Recommended spacing for specific crop
Fertilizer dose and methods of application	: BARI recommended dose or STB
Irrigated/rainfed	: irrigated/rainfed
Data to be recorded	: Yield and contributing chareaters, crop management data, cost-return etc.
Investigators	: M. Jamal Uddin, PSO, OFRD, Cumilla and R. Islam, PSO, OFRD, Gazipur
Season	: Rabi
Date of initiation	: Novemver, 2024
Date of completion	: May, 2025
Expected output	: % increase of yield, utilization of land, % increase of farmers income , pest and disease incedence and cost-return etc.
Location	: Chandina, Debidwar in Cumilla, Kasba in Brahmanbaria and Hajigonj in Chandpur
Status	: 2nd year
Priority	: 1st
Estimated cost	: 90,000/-
Source of fund	: BARI main

Expt. 115. Improvement of existing Potato-T. Aus-T. Aman rice cropping pattern

Objective(s)	:	To increase productivity and farmer's income.
Rationale	:	Improvement of cropping pattern is necessary for increasing cropping intensity, crop productivity and raising for farmer's income. New cropping pattern, potato- T. aus-T.aman rice developed by Nazrul et al., (2013) getting popularity and practiced by the farmers. At present, it is necessary to alter the variety or varieties and improve management practices of existing cropping pattern for higher productivity and income of the farmers. So, this experiment has been undertaken.
Materials and methods	:	
Crop/ Variety	:	BARI Potato-77/78, BRRI dhan98 and BRRI dhan57
Design		RCB
i) Treatments	:	T1(Improved pattern): Potato (BARI Alu-77/78)-T. aus (BRRI dhan75)- T. aman (BRRI dhan103) and T2 (Existing pattern): Potato (BARI Alu-7)-T. aus (BRRI dhan48)- T. aman (BRRI dhan49).
ii) Replications	:	6 dispersed
Plot size	:	20 m2
Planting system/spacing	:	Line
Fertilizer dose and methods of application	:	As per BARC FRG 2018
Irrigated/rainfed	:	Rainfed
Data to be recorded	:	Dates of all operation, yield and yield contributing characters, major disease and insect incidence, applied input and output price, farmers' opinion

Investigator(s)	:	Md. Jamal Uddin
Season	:	Rabi 2024-25
Date of initiation	:	November 2024
Date of Completion		December 2025
Expected output	:	% increase of yield, farmers income and livelihood improvement
Location	:	Cumilla
Status	:	2nd year
Proposed from	:	OFRD, BARI Sylhet
Priority	:	1st
Estimated cost	:	Tk. 90,000/location
Source of fund	:	BARI

Expt. 116. Development of Blackgram- Boro-T.Aus rice cropping pattern against Fallow-Boro-T.Aus rice in Barind area

Objectives	:	To compare the recommended pattern's productivity to the existing one in order to assess its effectiveness
Rationale	:	Fallow-Boro-T.Aus is one of the major cropping patterns in north-western part of Chapainawabganj district, which is under High Barind Tract (AEZ-26). As a part of Barind tract, it is supposed to prevail underground water scarcity. So, it needs to discourage for cultivating the huge water required crop like rice. Besides of food security, nutritional security is also desirable. Moreover, cropping intensity and productivity needs to increase for more sustainability in the limited land holder but overpopulated country. On the basis of the preceding findings, blackgram could be an appropriate alternative to fallow. The production of blackgram, on the other hand, will provide a chance to grow rich in nutrients cropswith reduced production cost. However, the present cropping intensity of the country is 214%. In the next 25 years, the world's food demand is predicted to double. Under such situation, it is very important to increase cropping intensity and for this more suitable crop(s) should be accommodated in the existing cropping pattern. Hence, Blackgram is a crop with a 69–73-day maturation period. They can thus be cultivated in the area left fallow between T. Aus and Boro rice. The current study is being conducted with the aforementioned considerations in mind in order to optimize cropping patterns and boost productivity and profitability.
Procedure/methods	:	
Crop/Variety	:	Blackgram: BARI Maskalai-3, Boro rice: BRRI dhan81, T.Aus: BRRI dhan98
Design	:	RCBD
Treatments	:	T_1: Blackgram- Boro-T.Aus rice T_2: Fallow- Boro-T.Aus (check)
Replications	:	6 (dispersed)
Planting system	:	As per recommended
Plot size	:	10 m x 10 m
Fertilizer dose & Methods of application	:	Recommended doses for all corps. When the final field preparation is complete, all inorganic fertilizers will be applied and combined with the soil for rice varieties **Boro and T. Aus.** After 10, 25 and 40 days have passed since transplantation, the urea will be top-dressed.

For **Blackgram**: At the time of final land preparation, full applications of all inorganic fertilizers will be made according to each individual plot.

Irrigated/ rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, crop duration, yield and yield attributes, Cost and return, farmers opinion.
Investigator(s)	:	MEA Pramanik and M. S. Hossain
Season	:	2023-2024
Date of initiation	:	September, 2023
Date of completion		August, 2026
Expt. Output	:	Suitable three crops-based cropping pattern will be developed
Location	:	MLT Site Chapanawabganj
Status	:	3rd year
Estimated cost	:	Tk. 60,000/-
Source of fund	:	BARI
Priority	:	First

Expt. 117. Effect of Planting Techniques and Phosphorus Levels on Mustard-Sesame-T. Aman Rice Cropping Pattern

Objectives	:	To use BARI developed machinery in the agricultural operations. To compare the farmers' practice with the mechanized cultivation
Rationale	:	In order to achieve the sustainable development goals (SDG) farm mechanization has been accepted as a frontier tool by the government. In the national agricultural mechanization policy of Bangladesh, it is acknowledged that mechanized agriculture is the future of Bangladesh agriculture. Rahman *et al.* (2021) reported that among the operations related to crop establishment, our country has attained sufficiency in land preparation, irrigation and spraying. Among the postharvest activities, threshing and processing are also mechanized. However, in other crucial operations like planting, weeding, fertilization and harvesting, the percentage of mechanization is negligible. In order to fulfil the targets of mechanization in the coming years, it is necessary to apply machines in every agricultural operation. BARI had developed power tiller operated seeder, bed planter, weeder, reaper etc. Development of mechanized crop production packages for different cropping systems is necessary for advocating the best combinations to the farmers.
Materials and methods	:	BARI seeder, upland weeder, reaper will be used in the rice based cropping patterns in Pabna. Farmers' practice will be compared with the mechanized operations. Opinions of the farmers will be collected to assess the impact of the machines.
Crop/variety	:	Mustard, sesame, black gram, rice
Design	:	T-test Treatment: 1. Sowing, weeding and harvesting by BARI machines, 2. Conventional practice (manual) Replication: 06
Plot size	:	N/A
Planting system/spacing	:	Line sowing
Fertilizer dose and methods of application	:	N/A

Irrigated/rainfed	: Irrigated
Data to be recorded	: Field Efficiency, Total Cost, BCR
Investigators	: M. Z. Hasan, M. Maniruzzaman, M. A. Suborna and M. A. Islam
Season	: Rabi and Kharif-1
Date of initiation	: 1st week of October 2023
Date of completion	: 30 June 2025
Expected output	: Drudgery and costs related to manual practices will be reduced.
Locations	: PabnaSadar, Atghoria, Gangarampur
Status	: 2nd year
Estimated cost	: Tk. 40,000
Source of fund	: BARI
Priority	: 1st

Expt. 118. Performance evaluation of a modified power weeder for narrow-row crops

Objectives	:	To modify a petrol engine powered light weight weeder for crops sown in rows at 15-30 cm apart To evaluate performance of the weeder in the experimental fields On-farm evaluation and fine tuning of the weeder based on field performance
Rationale	:	Weeds remain one of the most significant agronomic problems associated with arable crop production. Weeds can significantly reduce crop yield and quality in conventional and organic crops alike. Competition between crops and weeds is a serious challenge to crop production; weeds compete with crops for nutrients, light, space and water, therefore weed control between rows is necessary and important to achieve maximum productivity. Mechanical weed control is effective in controlling weeds as well as it benefits the crop by breaking up the surface crust, aeration of soil, stimulating the activity of soil microflora, reducing the evaporation of soil moisture and facilitating the infiltration of rainwater. To address the weeding problem, BARI developed manual and mechanical weeders for upland crops. But the BARI power weeder is suitable only for wide-row (60-70 cm) crops. Therefore, a power weeder is required for narrow-row crops (15-30 cm) to reduce drudgery of manual weeding and reducing the use of chemicals for weed control.
Materials and methods	:	A petrol engine operated brush cutter will be procured from the market. Brush cutters can accommodate different attachments on its end. Among these there is a weeding attachment (25 cm wide) consisting of 16 tines.
Crop/variety	:	Pulses (lentil, mungbean, black gram), mustard, onion, garlic
Design	:	RCBD Treatment: 1. Weeding by modified weeder, 2. Manual weeder, 3. Conventional weeding (by hand) Replication: 04
Plot size	:	N/A
Planting system/spacing	:	N/A
Fertilizer dose and methods of application	:	N/A
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Field Capacity, Weeding Efficiency, Plant Damage, Performance Index
Investigators	:	M. Z. Hasan, M. Maniruzzaman, M. A. Suborna and M. A. Islam
Season	:	Rabi and Kharif-1
Date of initiation	:	1st week of October 2023

Date of completion	:	30 June 2025
Expected output	:	Drudgery and costs related to manual weeding will be reduced.
Locations	:	PabnaSadar, Atghoria and Ishurdi
Status	:	3rd year
Estimated cost	:	Tk. 60,000
Source of fund	:	BARI
Priority	:	1st

Expt. 119. Performance evaluation of an inflatable solar dryer for pulse and oilseed crops

Objectives	:	To use the solar bubble dryerfor drying plant and grain samples To compare the conventional practice with the solar bubble dryer
Rationale	:	The Solar Bubble Dryer (SBD) is the latest low-cost drying technology developed by IRRI, Hohenheim University and GrainPro. The SBD is mobile and is completely independent from fuel or the power grid, and therefore has very low operating cost.The first version of the Solar Bubble Dryer was commercialized in September 2014. It comes in two sizes with 1t and 0.5t capacity. IRRI used this dryer for mainly drying paddy. However, it can be used for drying other crops also. In Bangladesh use of dryers cannot be found among the farmers. Farmers spread the grains or plants (pulses and oilseeds) in the open fields, roads, roofs or yards of their houses for sun drying which causes loss or deterioration of the grain's quality by means of animals, dust, re-wetting by rainwater etc. Commercially available dryers are bulky, costly and require fuels to operate. Solar bubble dryer is free from these drawbacks and actually improves the drying method of the farmers. Therefore, performance evaluation of a solar bubble dryer should be done to assess its efficiency and suitability for different plant and grain samples.
Materials and methods	:	A solar bubble dryer will be procured or fabricated to test for paddy, oilseeds, pulses, oilseeds and plant samples. This dryer will be compared with the open sun drying method.
Crop/variety	:	Paddy, pulses, oilseeds
Design	:	T-test Treatment: 1. Solar bubble dryer, 2. Conventional practice (open sun drying) Replication: 06
Plot size	:	N/A
Planting system/spacing	:	N/A
Fertilizer dose and methods of application	:	N/A
Irrigated/rainfed	:	N/A
Data to be recorded	:	Solar Radiation, Temparature, Relative Humidity, BCR
Investigators	:	M. Z. Hasan, M. Maniruzzaman, M. A. Suborna and M. A. Islam
Season	:	Rabi and Kharif-1
Date of initiation	:	1st week of October 2023
Date of completion	:	30 June 2025
Expected output	:	Post harvest losses in open sun drying will be eliminated.
Locations	:	Pabna
Status	:	3rd year
Estimated cost	:	Tk. 50,000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 120. Development of alternate cropping pattern Mustard-Danta-T.Aus-T.Aman rice against Boro-Fallow-T. Aman rice cropping pattern in Narsingdi

Objectives	:	To improve the existing cropping pattern To increase economic return of farmers To increase productivity of oil seed crop and cropping intensity To increase T.Aus rice areas in Narsingdi
Rationale	:	Boro-Fallow-T.Aman cropping pattern is one of the major cropping pattern in Narsingdi district. The pattern covers around 14520 ha of the total cultivated area of the Narsingdi (DAE, Narsingdi 2018). Some pocket area is comparatively possessing scarcity of irrigation water to cultivate Boro rice. Where mustard can be grown easily with low inputs. It can play partial role in fulfill the oil crisis of Bangladesh. On the other hand vegetable cultivation is increasing day by day in Narsingdi. There is a scope of introduce any T.Aus rice in the cropping pattern during fallow period. BRRI has developed high yielding modern T.Aus varieties, which may be introduced in the cropping pattern. In order to produce more food within a limited area. To increase the cropping intensity, producing four or more crops on the same land around the area. After harvesting the vegetable (danta) land remained fallow in some days before sowing of T. Aman rice which can be grown T. Aus rice. Then the alternate cropping pattern Mustard-Danta-T. Aus-T. Aman rice is done properly.
Materials and Methods	:	
Crop	:	Sarisha, Danta, Rice
Variety	:	BARI sarisha-18, BARI danta-2, T.Aus: BRRI dhan98, T.Aman: BRRI dhan71
Date of sowing	:	Mustard-November/2023, Danta-February/2024, T.*Aus*-May/2024, T.*Aman*-August/2024
Design	:	RCBD
Treatment	:	(a) Existing cropping pattern: Boro-Fallow-T.Aman rice (b) Alternate cropping pattern: Mustard-Danta-T.Aus-T.Aman rice
Fertilizer dose	:	STB dose of fertilizers following FRG 2018
Replication	:	6 dispersed
Unit plot size	:	1200 sq. m
Data to be recorded	:	Dates of all operation Yield and yield contributing characters and equivalent yield Major disease and insect incidence Farmers' opinion
Investigator(s)		Dr. Md. Asaduzzaman, PSO, Dr. Md. Hafizur Rahman, SSO of OFRD, Shibpur, Narsingdi
Spacing	:	20cm × 15cm
Expected output	:	Cropping intensity will be high.
Locations	:	MLT sites of Narsingdi
Status	:	3rd year
Source of fund	:	Tk. 40,000/-
Priority	:	First

Expt. 121. Effect of spacing on the yield and yield attributes of dwarf sunflower in northeastern part of Bangladesh

Objectives	:	To accommodate the optimum number of plants in a unit area for maximum yield To see pest and disease reaction
Rationale	:	Sunflower is one of the important oil seed crops grown through the world for various purposes. As Sunflower oil is free of cholesterol, health benefit of consuming sunflower oil is better than traditional oils in the market. At present sunflower are growing popularity in sylhet region. But their yield is not up to the mark due to some constrains like irrigation, fertilizer along with proper spacing and other intercultural operations. So, it is the appropriate time to find out suitable spacing for increasing yield of sunflower in north eastern region. For better yield spacing and fertilizer of variety is very important. Proper spacing also facilitates inter-cultural operations. Again, farmers apply huge amount of fertilizer especially N and P in the form of DAP. The present study will be undertaken to find out appropriate spacing with increased fertilizer dose for higher productivity of BARI Sunflower-3 in north-eastern area.
Materials and methods	:	
Crop/Variety	:	BARI Sunflower-3
Design	:	RCBD
i) Treatment	:	S_1= 50 cm x 15 cm, S_2= 50 cm x 20 cm, S_3= 50 cm x 25 cm S_4= 50 cm x 30 cm and S_5= 50 cm x 35 cm
ii) Replication	:	7
Plot size	:	40 m^2
Planting system/spacing	:	Sowing of seeds in bed planting method
Fertilizer dose and methods of application	:	As per recommendation (FRG 2018)
Irrigated/rainfed	:	Both irrigated and rinfed
Data to be recorded	:	Date of all operation; leaves/plant, Plant height, Stem diameter, Seeds per head, wt. of filled seeds and unfilled seeds, Single head wt. yield/plant, yield/ha, major disease, and insect infestation; farmers opinion and weather data.
Investigator (s)	:	Md. Zulfiqar and M. I. Nazrul
Season	:	Robi
Date of initiation	:	November 2023
Date of completion	:	March 2024
Expected output	:	Optimum number of plant population will be ascertain for the better growth and yield of sunflower
Location	:	FSR site, Kamalbazar and all MLT sites
Status	:	3rd year
Estimated cost	:	Tk. 20000/-
Sources of fund	:	BARI
Priority	:	1st

Expt. 122. Effect of Planting Date on Yield of Summer Hybrid Tomato in the Northwest Bangladesh

Objective	:	To find out the suitable planting date of summer hybrid tomato To know the days to phenology Yield performance of tomato with different planting dates
Rationale	:	In Bangladesh, tomato is one of the major vegetable crops, comprising a good source of vitamins and minerals as well as

containing 93.1% water, 0.6% minerals, 0.7% fiber, 1.9% protein, 0.1% fat, and 3.6% carbohydrate per 100 g of edible portion. It is more popular in urban areas.Farmers usually grow tomato in winter season in Bangladesh. On the contrary, it is grown in a limited area of the country during the summer season. Contrarily, BARI released some summer tomato hybrids which are extensively cultivated in the south-west part of Bangladesh, specially Satkhira, Jashore etc. As summer tomato can be marketed in the off-season, farmers get a comparatively higher price and more profit. Time of sowing is the most important non-monetary factor for obtaining the potential yield of a variety since it ensures the complete harmony between the vegetative and reproductive phases (Dhingra and Sekhon, 1988). But little information is available on summer hybrid tomato with time of planting particularly of North-West Bangladesh. In these circumstances, the present study was undertaken to find out the suitable planting date of summer hybrid tomato in different locations of North-West Bangladesh.

Materials and Methods	:	
Crop (s)	:	Tomato
Variety (s)	:	BARI Hybrid Tomato-11
Treatments	:	S1: 20 July, S2: 05 August, S3: 20 August and S4: 05 September
Design	:	RCB
Replications	:	3 (three)
Unit Plot size	:	5 m x 6m
Fertilizer dose	:	STB: 300-90-150-30-1.50 kg N-P-K-S-Zn-B ha^{-1}+ 10 ton CD ha^{-1}
Application of fertilizer		Cow dung and all the inorganic fertilizers except urea will be applied and mixed with soil at the time of final land preparation. The urea will be split 5-7 times at vegetative and fruiting stage.
Data to be collected	:	Yield and yield components, pest and disease, cost and return
Expected output	:	Suitable planting date will be identified
Status	:	3rd year
Date of initiation	:	July 2022
Date of completion	:	October 2025
Estimated cost	:	Tk. 100000/-
Source of Found	:	BARI
Location (s)	:	Rangpur
Investigator(s)	:	Respective scientist of OFRD station

On-Farm Trials with Advanced Lines and Technologies

JUSTIFICATION

BARI is conducting research on different discipline through its 22 programs and 16 divisions. Those programs and divisions are generating a good number of technologies including new cultivars/different management techniques/machines etc. for the farmers of Bangladesh. However, before transferring those to extension agencies/NGOs and farmers they need On-Farm verification/test or fine-tuning to fit into the farmers existing socio-agro-economic environments. Moreover, through On-Farm trial valuable farmers' feedback is obtained to modify technology or to develop new technology. BARI has given this noble responsibility to OFRD to test those developed On-Station technologies directly to the farmers' field. Hence, On-Farm trials with advance lines and technologies are regarded as an important component of OFRD program. Most of the

Expt. 123. On-farm trial of Cumin

Objectives	:	To study the performance of cumin variety To popularize new cumin variety among the farmers to promote their adoption
Rationale	:	Cumin (*Cuminum cyminum* L.) belongs to the family Umbellifereae and is believed to be a native of the Mediterranean and near Eastern regions. It is mainly cultivated in India, Egypt, Libya, Pakistan and Mexico. Cumin seeds are used as spice in culinary for flavoring soups, sauces, pickles and for seasoning breads and cakes. It is an exotic and new spice crop in our country. It is a tropical plant can be grown in sub-tropical climate too. Cumin can be cultivated in all types of soils but well drained sandy loam and medium soils are suitable for the crop. In 2015-16, financial year we imported 14242 tons cumin from abroad which is 70-75% more than the previous year (The Daily Kaler Kanta, 11 May, 2017). There is one cumin variety BARI jira-1in Bangladesh which developed by spices research center, BARI, Bogura to meet up our national demand. Adaptability trial of released variety felt an urgent need in our country. Considering the fact as stated above, the present study will be under taken to study the performance of cumin variety.
Procedure/methods	:	
Crop/Variety	:	BARI Jira-1
Design	:	RCB
Treatment	:	
Replications	:	6 dispersed
Planting system	:	25cm x continuous sowing
Plot size	:	20m x 10m
Fertilizer dose	:	Cowdung- 5 t/ha, N69 P24 K50 kg/ha. The entire quantity of cowdung, P and K will be applied during final land preparation. N will be applied in two equal splits at 30 and 50 days after sowing
Irrigated/ rainfed	:	Irrigated
Data	:	Days of germination, Emergence percent, Plant height(cm), Number of primary branch, Number of umbel/plant, Number of umbel let/plant, Number of seeds/umbel, Number of seeds/plant, Number of population/m2, 1000 seed weight (g), Seed yield/plot, seed yield/ha, Pest and disease infestation
Investigator(s)	:	M. M. Hasan , M.T. Hasan and M.R.A. Mollah
Season		Rabi
Date of initiation	:	November 2025
Date of completion		March-2026
Expt. output/ benefit	:	To meet up our national demand. Adaptability trial of released variety felt an urgent need in our country.
Location	:	Bogura, Gaibandha, Barind-Rajshahi, Shampur-Rajshahi, Pabna, Dinajpur, Thakurgaon and Rangpur
Status	:	New
Program proposed from	:	OFRD, Bogura
Priority	:	1st
Estimated cost	:	Tk.250,000/-
Source of fund	:	BARI

Expt. 124. Observation trial of BARI Watermelon varieties at char area of Gaibandha

Objective (s)	:	To find out the suitable watermelon variety in char area To popularize BARI released Watermelon varieties among the farmers of Gaibandha.
Rationale	:	Watermelon (*Citrullus lanatus*) is a nutrient-rich fruit with relatively low calories. It's a good source of vitamins A and C, potassium, and antioxidants like lycopene. Watermelon cultivation in the char (riverine island) areas of Gaibandha district presents a strategic opportunity for sustainable agricultural development and rural livelihood enhancement. The soil of char land is sandy loam which is ideal for watermelon root development. It requires low irrigation, warm temperature and clear sunshine which condition is available in char area. Bangladesh Agricultural Research Institute has released two watermelon varieties which can be cultivated in any area throughout the year. Compared to other crops it required low input but give higher return. Watermelon cultivation in the char areas of Gaibandha is both agronomically appropriate and socioeconomically beneficial. That`s for we want to perform on farm trial of BARI released Watermelon varieties at char area of Gaibandha.
Materials and Methods	:	
Crop/variety	:	Watermelon
Design	:	RCBD
9.1 Treatment	:	T1: BARI Tarmuj-01 T2: BARI Tarmuj-02 T3: Black baby (Commercial Hybrid)
9.2 Replications	:	4 (Dispersed)
Unit plot size	:	100 m^2
Planting system/spacing	:	Pit to Pit (2m × 2m)
Fertilizer dose	:	FRG, 2024 (High Yield Goal basis)
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, yield and yield attributes of crop, pest and disease reaction, cost and return analysis
Investigator (s)		Concerned scientists of respective site.
Season	:	Kharif 1 / Offseason
Date of Initiation	:	February/March, 2026
Date of completion	:	June, 2026
Expected output/benefit	:	Suitable Watermelon variety for char areas will be identified
Location	:	Gaibandha and Noakhali
Status	:	New
Program proposed from	:	Gaibandha and Noakhali
Priority	:	1st
Estimated cost	:	Tk. 70000
Source of fund	:	BARI

Expt. 125. On-Farm Trial of BARI short duration Mustard varieties at char area of Gaibandha

Objective (s)	:	To find out the suitable Mustard variety in char area To Popularize the BARI released short duration Mustard varieties among the farmers of Gaibandha.
Rationale	:	Mustard (*Brassica rapa*) is an important oil seed crop both globally and locally (e.g., in Bangladesh) due to its economic, nutritional, agronomic, and environmental benefits. Every year national needs of edible oil about 24 lac tons but in our country the national production of edible oil is about 3 lac tons. Bangladesh government wants to meet 40 percent of total edible oil with mustard oil by cultivating the fallow land, char area and saline area. Mustard plant is drought tolerant and required less irrigation and fertilization. Introduction of mustard crop in char area improve the soil health and reduce the risk from mono cropping and enhance the farmer's income as well as national production. Bangladesh Agricultural Research Institute has released short duration modern Mustard varieties which can be cultivated in char area. That`s for we want to perform on farm trial of BARI released short duration Mustard varieties at char area of Gaibandha.
Materials and Methods	:	
Crop/variety	:	Mustard
Design	:	RCBD
Treatment	:	T1: BARI Sarisha-14 T2: BARI Sarisha-17 T3: BARI Sarisha-20 T4: BARI Sarisha-22 T5: BARI Sarisha-23
Replications	:	3 (Dispersed)
Unit plot size	:	5 decimal
Planting system/spacing	:	Broadcasting
Fertilizer dose	:	FRG, 2024 (High Yield Goal basis)
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, Yield and yield attributes of crop Pest and disease reaction, Cost and return analysis
Investigator (s)		Md. Akhtaruzzaman, SO and Md. Jahangir Alam, SSO
Season	:	Rabi, 2025-26
Date of Initiation	:	November 2025
Date of completion	:	February 2026
Expected output/benefit	:	Suitable short duration Mustard variety in char area will be identified
Location	:	MLT site Saghata, Vorothkhali, Gaibandha & MLT sites of OFRD Rangpur
Status	:	New
Program proposed from	:	OFRD, Gaibandha, OFRD Rangpur
Priority	:	1st
Estimated cost	:	Tk. 70000
Source of fund	:	BARI

Expt. 126. Performance of BARI developed Bottle gourd varieties

Objectives	:	To introduce high yielding BARI released Bottle gourd varieties To increase yield and income of farmers.
Rationale	:	Bottle gourd is an important vegetable in Bangladesh. Farmers grow local low yielding varieties. BARI has developed some high yielding bottle gourd varieties that have significant yield advantage over local. Popularization of high yielding BARI variety in farmer's field will bring the improvement of the farmer's livelihood. Considering the above facts, the trial is undertaken to meet the present need of farmers as well as ensure higher yield.
Materials and methods	:	Are as below
Crop/Variety	:	Bottle gourd
Design	:	RCBD
i)Treatments	:	V1: BARI Lau-4 V2: BARI Lau-6 V3: Local
ii)Replication	:	6 (dispersed)
Plot size	:	2.5 x 10 m (5 plants)
Planting system/spacing	:	Seed sowing: October 2025, Transplanting:15-17 days old seedlings
Fertilizer dose and methods of application	:	N80P 45K87S25Zn4B2 kg ha-1
Irrigated/ rainfed	:	Irrigated
Data to be recorded	:	Days to 1st harvest, Fruits/plant, Fruit length (cm) and diameter (cm), Average wt. of fruit (kg), Yield plant-1 (kg), Fruit shape, Insect reaction (% fruit fly infestation).
Investigator (s)	:	M.S. Huda
Season	:	Rabi
Date of initiation	:	October, 2025
Date of completion	:	April, 2026
Expt. Output/Benefit	:	BARI released varieties will be popularized among the farmers
Location	:	Dinajpur
Status	:	New
Program Proposed from	:	Regional
Priority	:	1st
Estimated cost	:	Tk. 50,000/-
Source of fund	:	BARI

Expt. 127. On- Farm Trial of stolon producing Panikachu varieties

Objectives	:	To evaluate the stolon production potential, adaptability and farmer acceptability of different Panikachu varieties
Rationale	:	Panikachu (Colocasia esculenta L.) is an important edible aroid in Bangladesh. It is one of the popular vegetables at summer season. Its an excellent source of dietary fiber and good carbohydrates, which both improve the function of our digestive system and can contribute to healthy life. In Dinajpur production of panikachu in 2023-24 was 531 M. Ton under the area of 149 acre. The area can be increased, because it's a low land crop and it can tolerate water

		stagnant where most of the crops can not. BARI released improved varieties of Panikachu for stolon production but only BARI Panikachu-1 (Latiraj) has become popular to the farmers. Some local cutivars are being also cultivated by the farmers. The newly released varieties are not well known to them. So, it is necessary to disseminate these varieties through on farm trials.
Materials and methods	:	Are as below
Crop/Variety	:	Panikachu
Design	:	RCBD
i)Treatments	:	V1: BARI Panikachu-1 (Latiraj) V2: BARI Panikachu-2 V3: BARI Panikachu-8 V4: BARI Panikachu-9 V5: Local
ii)Replication		6 (dispersed)
Plot size	:	9 m × 4.5 m
Planting system/spacing	:	60 × 45 cm
Fertilizer dose and methods of application	:	The crop will be fertilized with a dose of 350-175-300-125-14-10 kg/ha of Urea-TSP-MOP- Gypsum- Zinc sulphate- Boric acid, respectively and 15 t/ha of cowdung. Half of MOP and full dose of TSP, Gypsum, Zinc sulphate, Boric acid and cowdung will be applied in plot during the final land preparation. One fifth of Urea was top dressed started from 20-25 days after planting (DAP) and other 4 installments will be applied at an interval of 25-30 days after that 1sttop dressed. Rest of MOP will be top dressed at 50-60 DAPS with the second top dressed of Urea.
Irrigated/ rainfed	:	Irrigated
Data to be recorded	:	Harvesting period of stolon, No. and wt. of stolon/plant, Yield and yield contributing characters
Investigator (s)	:	M.S. Huda
Season	:	Rabi
Date of initiation	:	December, 2025
Date of completion	:	September, 2026
Expt. Output/Benefit	:	Improved Panikachu variety(s) will be identified by the farmers
Location	:	Dinajpur
Status	:	New
Program Proposed from	:	ARS, Dinajpur
Priority	:	1st
Estimated cost	:	Tk. 50,000/-
Source of fund	:	BARI

Expt. 128. On-Farm trial of BARI Sesame varieties

Objectives	:	To evaluate the performance of high yielding BARI released Sesame varieties at the farmer's field To increase yield and income of farmers.
Rationale	:	Sesame is an important oilseed crop in Bangladesh, valued for its oil quality and economic benefits. Farmers grow local low yielding varieties. BARI has developed some high yielding sesame varieties that have significant yield advantage over local. Popularization of

		high yielding BARI variety in farmer's field will bring the improvement of the farmer's livelihood. Considering the above facts, the trial is undertaken to meet the present need of farmers as well as ensure higher yield.
Materials and methods	:	Are as below
Crop/Variety	:	Sesame
Design	:	RCBD
i)Treatments	:	V1: BARI Til-4 V2: BARI Til-5 V3: BARI Til-6 V4: Local
ii)Replication	:	6 (dispersed)
Plot size	:	4.5 m x 5 m
Planting system/spacing	:	30cm x 5 cm
Fertilizer dose and methods of application	:	120, 140, 45, 105, 5 and 10 kg ha-1 of Urea, TSP, MP, Zinc sulphate and Boric acid. Half of urea and all other fertilizers will be used as basal dose and rest half of urea just before flowering.
Irrigated/ rainfed	:	Irrigated
Data to be recorded	:	Days to maturity, plant population/m2 (at harvest), plant height, no. of pods/plant, no. of seeds/pod, seed yield/plot (kg), seed yield (kg ha-1), disease and insect reaction, farmer's reaction.
Investigator (s)	:	M.S. Huda and M Asaduzzaman
Season	:	Kharif
Date of initiation	:	Mid. February to Mid. March 2026
Date of completion	:	June, 2026
Expt. Output/Benefit	:	BARI released varieties will be popularized among the farmers
Location	:	Dinajpur & Sylhet
Status	:	New
Program Proposed from	:	Dinajpur & Sylhet
Priority	:	1st
Estimated cost	:	Tk. 50,000 per location
Source of fund	:	BARI

Expt. 129. On-Farm Trial of Turmeric varieties in Mango orchard of Rajshahi region

Objectives	:	To evaluate the performance of BARI turmeric varieties To increase productivity and income of the agro-forestry systems
Rationale	:	In Rajshahi, farmers commonly establish fruit orchards, which provide income mainly during fruiting seasons. Between tree rows, crops can be grown for up to 10–12 years, but as canopies expand, shading reduces land use. Often, the area remains fallow or is underutilized with traditional spices. Turmeric, a vital kitchen spice with medicinal properties, faces a supply shortage in Bangladesh. To meet rising demand, cultivation of high-yielding turmeric varieties is essential. BARI's Spice Research Center has developed improved turmeric varieties with better yield and disease resistance. This study aims to evaluate suitable turmeric varieties against local types in the Rajshahi region.
Procedure/methods	:	

Crop/Variety	:	Turmeric, Mango
Design	:	RCBD
i)Treatment	:	BARI Halud-4, BARI Halud-5, Local
ii) Replications	:	06 (six) dispersed
Planting system	:	Transplanting
Plot size	:	9.0 m × 4.5 m
Fertilizer dose	:	140-60-60-30-3-1.5N-P-K-S-Zn-B Kg ha^{-1} + CD 5 t ha^{-1} (Recommended dose FRG' 2023)
Irrigated/ rainfed	:	Irrigated
Data	:	Yield and yield attributes, Pest and disease reaction, Farmers' opinion
Investigator(s)	:	M. M. I. Chowdhury, M. N. A. Siddquie, and M. J. Islam
Season	:	2025-26
Date of initiation	:	April' 2026
Date of completion	:	January' 2027
Expt. output/ benefit	:	Suitable Turmeric varieties will be ascertained for mango orchard of Rajshahi
Location	:	MLT site, Shibpur & Paba, Rajshahi
Status	:	New
Program proposed from	:	OFRD, BARI, Shyampur, Rajshahi
Priority	:	1st
Estimated cost	:	Tk. 80,000/-
Source of fund	:	BARI

Expt. 130. On-Farm Trial of summer Tomato varieties in Thakurgaon region

Objectives	:	To evaluate the performance of summer tomato varieties in farmers' field To popularize summer tomato varieties among the farmers.
Rationale	:	Tomato (*Solanum lycopersicum*) is one of the most important and popular vegetables in Bangladesh that grown widely round the year. A wide range of variability of different characters is found in this crop. It is also a rich source of vitamin A and K, Mg, Ca and Fe. In Thakurgaon and Northern part of the country many farmers are cultivating some Indian summer tomato varieties and consumer preference being dependent upon fruit color, size and shape. BARI has recently developed some varieties of summer tomato which are supposed to be high yielding and less susceptible to pest and diseases. The present study will be undertaken to evaluate the performance of BARI released summer tomato varieties under farmer's field condition and popularize those varieties among the farmers to promote their adoption.
Materials and methods	:	Are as below
Crop/Variety	:	Summer tomato
Design	:	RCBD
Treatments	:	BARI Hybrid tomato-8, BARI Hybrid tomato-11, Bahuboli (Local)
	:	and Bipul plus (Local)
Replication	:	3
Plot size	:	10 m × 5 m

Planting system/spacing	:	50 cm x 15 cm
Fertilizer dose and methods of application	:	FRG
Irrigated/ rainfed	:	Irrigated
Data to be recorded	:	No. of tuber/plant, tuber weight (g), Yield/plant (kg) and per hectare (ton), Virus infestation (%),Insect/disease problem.
Investigator (s)	:	MD. Nuruzzaman, SO, S. Akter, SO, S. M. Abu Hena Mostofa Kamal, PSO
Season	:	Summer
Date of initiation	:	March , 2025
Date of completion	:	June, 2026
Expt. Output/Benefit	:	Farmers will be benefited by locally adapted varieties
Location	:	Munshirhat, ARS, Thakurgaon
Status	:	New
Program proposed from	:	Thakurgaon
Priority	:	1st
Estimated cost	:	Tk. 100,000/-
Source of fund	:	BARI

Expt. 131. On-Farm Trial of early Potato varieties in Thakurgaon region

Objectives	:	To evaluate the performance of early potato varieties in farmers' field **i.** To popularize early potato varieties among the farmers.
Rationale	:	Potato (*Solanum Tuberosum*) is one of the most important and popular vegetables in Bangladesh. A wide range of variability is found in this crop. Farmers of Thakurgaon district cultivate local cultivars of potato. BARI released early potato varieties are suitable for this region. On the otherhand early potato variety can be sold at high price which can increase their income. BARI has recently developed some varieties of early potato which are supposed to be high yielding and less susceptible to pest and diseases. The present study will be undertaken to evaluate the performance of BARI released early potato varieties under farmer's field condition and popularize those varieties among the farmers to promote their adoption.
Materials and methods	:	Are as below
Crop/Variety	:	Potato
Design	:	RCBD
Varieties	:	BARI Alu-79, BARI Alu-90, BARI Alu-72, BARI Alu-62, BARI Alu-44 and Local (Seven)
Replication	:	5 farmers
Plot size	:	5 decimal each variety
Planting system/spacing	:	50 cm x 15 cm
Fertilizer dose and methods of application	:	FRG

Irrigated/ rainfed	:	Irrigated
Data to be recorded	:	No. of tuber/plant, tuber weight (g), Yield/plant (kg) and per hectare (ton), Virus infestation (%),Insect/disease problem.
Investigator (s)	:	MD. Nuruzzaman, SO, S. Akter, SO, S. M. Abu Hena Mostofa Kamal, PSO
Season	:	Rabi
Date of initiation	:	October, 2025
Date of completion	:	December, 2026
Expt. Output/Benefit	:	Farmers will be benefited by locally adapted varieties
Location	:	MLT Site, Munshir hat, ARS, Thakurgaon
Status	:	New
Program proposed from	:	ARS, Thakurgaon
Priority	:	1st
Estimated cost	:	Tk. 80,000/-
Source of fund	:	BARI

Expt. 132. On-Farm Trial of Blackgram varieties in Thakurgaon region

Objectives	:	To evaluate the performance of blackgram varieties in farmers' field To popularize black gram varieties among the farmers.
Rationale	:	Blackgram (*Vigna mungo*) is one of the most important and popular pulse in Bangladesh. Cultivating BARI-released blackgram varieties in Thakurgaon is preferred over local ones due to their superior yield, disease resistance, and adaptability to the region's agro-climatic conditions. These improved varieties, developed by the Bangladesh Agricultural Research Institute (BARI), mature faster and fit well into the district's cropping pattern, allowing farmers to grow additional crops in a year. They are also more resistant to pests and diseases such as mungbean yellow mosaic virus, which reduces the need for chemical inputs and lowers production costs. Additionally, BARI varieties produce uniform, high-quality grains that fetch better market prices compared to local types. With technical support and certified seeds readily available through agricultural extension services, BARI blackgram varieties offer a more profitable and sustainable option for farmers in Thakurgaon. The present study will be undertaken to evaluate the performance of BARI released black gram varieties under farmer's field condition and popularize those varieties among the farmers to promote their adoption
Materials and methods	:	Are as below
Crop/Variety	:	Black gram
Design	:	RCBD
i)Treatments	:	I. BARI Mash-3 II. BARI Mash-4 III. Local
ii)Replication	:	5 farmers
Plot size	:	5 decimal each variety per farmer
Planting system/spacing	:	roe- row:30 cm

Fertilizer dose and methods of application	:	FRG
Irrigated/ rainfed	:	Irrigated
Data to be recorded	:	population/m^2, No. of fruits/plant, Individual fruit weight (g), Yield/plant (kg) and per hectare (ton), Virus infestation (%), Insect/disease problem. 1000 seed wt (g)
Investigator (s)	:	MD. Nuruzzaman, SO, S. Akter, SO, S. M. Abu Hena Mostofa Kamal, PSO
Season	:	Rabi
Date of initiation	:	August, 2025
Date of completion	:	November, 2025
Expt. Output/Benefit	:	Farmers will be benefited by locally adapted varieties
Location	:	MLT Site, Munshir hat, ARS, Thakurgaon
Status	:	New
Program proposed from	:	ARS, Thakurgaon
Priority	:	1st
Estimated cost	:	Tk. 30,000/-
Source of fund	:	BARI

Expt. 133. On-Farm Trial of winter Tomato varieties in Thakurgaon region

Objectives	:	To evaluate the performance of winter tomato varieties in farmers' field To popularize winter tomato varieties among the farmers.
Rationale	:	Tomato (*Solanum lycopersicum*) is one of the most important and popular vegetables in Bangladesh that grown widely round the year. A wide range of variability of different characters is found in this crop. It is also a rich source of vitamin A and K, Mg, Ca and Fe. In Thakurgaon district there are some local varieties are cultivated in summer and consumer preference being dependent upon fruit color, size and shape. BARI has recently developed some varieties of summer tomato which are supposed to be high yielding and less susceptible to pest and diseases. The present study will be undertaken to evaluate the performance of BARI released summer tomato varieties under farmer's field condition and popularize those varieties among the farmers to promote their adoption.
Materials and methods	:	Are as below
Design	:	RCBD
Varieties	:	BARI Tomato-1, BARI Tomato-14, BARI Tomato-15, BARI Tomato-21, BARI Tomato-22 & BARI Tomato-23
Replication	:	5 farmers
Plot size	:	5 decimal each variety
Planting system/spacing	:	50 cm x 15 cm
Fertilizer dose and methods of application	:	FRG
Irrigated/ rainfed	:	Irrigated

Data to be recorded	:	No. of fruits/plant, Individual fruit weight (g), Yield/plant (kg) and per hectare (ton), Virus infestation (%), Insect/disease problem.
Investigator (s)	:	MD. Nuruzzaman, SO, S. Akter, SO, S. M. Abu Hena Mostofa Kamal, PSO
Season	:	Rabi
Date of initiation	:	November, 2025
Date of completion	:	February, 2026
Expt. Output/Benefit	:	Farmers will be benefited by locally adapted varieties
Location	:	MLT Site, Munshir hat, ARS, Thakurgaon
Status	:	New
Program proposed from	:	ARS, Thakurgaon
Priority	:	1st
Estimated cost	:	Tk. 70,000/-
Source of fund	:	BARI

Expt. 134. On-Farm Trial of Chili varieties in Thakurgaon region

Objectives	:	To evaluate the performance of chili varieties in farmers' field To popularize chili varieties among the farmers.
Rationale	:	BARI released chili varieties are cultivated in Thakurgaon instead of local one because they offer high yield, better disease and pest resistance, and improved adaptability to local climate condition. Farmers of this region practice chili cultivation. But quality of local varieties is degraded day by day. In contrast, BARI released varieties produce uniform, high quality fruits with good pungency, which fetch better market prices and suit both fresh and dried chilly markets. Local varieties often suffer from low productivity, inconsistent fruit quality, and high susceptibility to disease. Overall, BARI chilly varieties ensure more profitable and reliable cultivation for farmers in the region.
Materials and methods	:	Are as below
Crop/Variety	:	Chili
Design	:	RCBD
Treatments	:	BARI Morich-2, BARI Morich-4 & Local (Bindu, Bashdaia, Hok master, Pabna)
Replication	:	3
Plot size	:	3 decimal each variety
Planting system/spacing	:	50 cm x 60 cm
Fertilizer dose and methods of application	:	

Fertilizer	Amount (kg/ha)	
	Basal	Top dress
Urea		1st : 70 (10 days after transplanting) 2nd: 70 (25 days after transplanting) 3rd: 70 (40 days after transplanting)
TSP	300	
MoP	0.17	1st: 50; 2nd: 50; 3rd: 50
Gypsum	110	
Boron	1.5	
Zinc Sulphate	1	

Irrigated/ rainfed	:	Irrigated

Data to be recorded	:	No. of fruits/plant, Individual fruit weight (g), Yield/plant (kg) and per hectare (ton), Insect/disease problem.
Investigator (s)	:	MD. Nuruzzaman, SO, S. Akter, SO, S. M. Abu Hena Mostofa Kamal, PSO
Season	:	Rabi
Date of initiation	:	December, 2025
Date of completion	:	February, 2026
Expt. Output/Benefit	:	Farmers will benefit by locally adapted varieties
Location	:	Munshirhat, Thakurgaon & Kishoreganj
Status	:	New
Program proposed from	:	ARS, Thakurgaon
Priority	:	1st
Estimated cost	:	Tk. 50,000/-

Expt. 135. On Farm trial of stolon producing Panikachu varieties in Mymensingh region

Activity	:	Panikachu varietal trial
Objective(s)	:	To find a suitable variety for panikachu production To increase crop productivity and farmers income
Rationale	:	Taro (*Colocasia esculenta* L.) called Panikachu is an aqua edible aroids belonging to the family Araceae. It is an important summer vegetable grown all parts of Bangladesh. The crop is highly nutritional specially the stolon. Leaf blade and leaf stalk. Most of the farmers cultivate the local varieties although BARI has developed several high yielding panikachu varieties which are less susceptible to disease and insect. Among the BARI developed varieties some are only stolon producing, some are rhizome producing even those of some are both stolon and rhizome producing which need to study the adaptability to the locality of Bangladesh. Considering the above fact, the study has undertaken to introduce the BARI released varieties to increase the yield and farmers income.
Materials and methods	:	
Crop/Variety	:	Panikachu
Design	:	RCBD
(i) Treatment		05 T_1: BARI Panikachu-1, T_2: BARI Panikachu-2, T_3: BARI Panikachu-8, T_4 : BARI Panikachu-9and T_5 : local
. (ii) Replications		06 six) dispersed
Plot Size	:	$80m^2$
Planting system/spacing	:	Line sowing with 60 cm × 45 cm
Fertilizer dose and methods of application	:	160-30-135-15-2-1.4 kg NPKSZnB ha^{-1} plus 3 ton organic fertilizers (OF) per hectare Full dose of OF, P, S and half of K should be applied as basal during final land preparation. The remaining K will be applied at 60 days after planting (DAP). The N should be applied as 6 splits, starting at 30 DAP and then at 15-20 days intervals.
Irrigated/Rainfed	:	Irrigated

Data to be recorded		Dates of all operations, crop duration, yield and yield attributes, the gross return and gross margin, the total variable cost, and the benefit cost ratio (BCR) and farmers' opinion.
Investigator(s)	:	Concerned scientists of respective site.
Season	:	Rabi 2024-25
Date of initiation	:	October, 2025
Date of completion	:	July, 2026
Expected output/benefit	:	The findings could lead to select a suitable panikachu variety for the location to boost up panikachu demand and to increase total vegetable production and farmers income
Location	:	Tarakanda MLT site
Status	:	New
Program proposed from	:	Mymensingh, Dinajpur and Tangail
Priority	:	1st
Estimated cost	:	Tk. 50000/- per location
Source of fund	:	BARI

Expt. 136. On farm trial of Chrysanthemum varieties in Mymensingh region

Activity	:	Chrysanthemum varietal trial
Objective(s)	:	1. To observe the performance of chrysanthemum at farmers level 2. To popularize the flower production in Mymensingh region 3.To increase farmers income
Rationale	:	Chrysanthemum (*Chrysanthemumsp*.) is a highly attractive and charming flower plant belonging to Asteraceae family. Chrysanthemums are used either as cut flowers or grown in pots. The flower yield and quality are primarily influenced by varietal characteristics are also impact by climatic factors. A numerous number of chrysanthemum cultivars are found in Bangladesh including BARI developed four chrysanthemum varieties (BARI, 2020). The growth and flowering performance of these cultivars have not been evaluated by the growers. With the view to above circumstances the study has undertaken to evaluate the performance of different varieties in Mymensingh region.
Materials and methods	:	
Crop/Variety	:	Chrysanthemum
Design	:	RCBD
(i) Treatment		03 T_1 : BARI Chandramollika-1, T_2 : BARI Chandramollika-2 and T_3 : BARI Chandramollika-3
(ii) Replications		06 (six) dispersed
Plot Size	:	60 m^2
Planting system/spacing	:	Line sowing with 30 cm × 20 cm
Fertilizer dose and methods of application	:	200-75-120-15-4-2 kg NPKSZnB ha^{-1} along with 3 ton organic fertilizer (OF) per hectare (FRG' 2024) All of inorganic and chemical fertilizers except N should be applied as basal during final land preparation, The N should be applied in three equal installment at 25, 45 and 65 days after transplanting (DAT).
Irrigated/Rainfed	:	Irrigated

Data to be recorded		Dates of all operations, crop duration, yield and yield attributes, the gross return, the gross margin, the total variable cost, and the benefit-cost ratio (BCR) and farmers' opinion.
Investigator(s)	:	Dr. Nargis Sultana
Season	:	Rabi 2025-26
Date of initiation	:	October, 2025
Date of completion	:	March, 2026
Expected output/benefit	:	The findings could lead to select a suitable chrysanthemum variety for the location to boost up flower demand.
Location	:	Gouripur and Mymensingh sadar
Status	:	New
Program proposed from	:	OFRD, BARI, Mymensingh
Priority	:	1st
Estimated cost	:	Tk. 80000/-
Source of fund	:	BARI

Expt. 137. On-Farm trial of Chilli varieties at Trishal, Mymensingh

Activity	:	Chilli varietal trial
Objectives	:	To select suitable winter type chilli variety for specific location for higher productivity.
Rationale	:	Chilli (*Capsicum annuum* L.) is one of the most widely used spice crop in Bangladesh. All over the country people are using this crop for their everyday consumption. It is widely cultivated throughout the year. It is a self-pollinated crop but chance of cross-pollinated are very high. It has wide variability especially on shape, size, skin color, hotness etc. In Bangladesh, the area of chilli is 1.03 lakh hectare and the total production is 1.41 lakh metric tons (dry chilli) with an average yield of 1.37 t ha^{-1} (BBS, 2018). Dry chilli powdered or ground into paste and even green chillies are used for savory dishes. It is a rich source of Vit-A and Vit-C.The existing BARI released varieties has higher yield potential but still Bangladesh is well short in production than expected demand. The present study will be undertaken to evaluate the performance of BARI developed chilli varieties in the farmer's field to increase production and economic return of farmers.
Materials and Methods	:	
Crop	:	Chilli
Variety/ Lines	:	BARI Morich-4, BARI Morich-5 and Local Variety (Balizuri)
Design	:	RCBD
Replications	:	06
Plot size	:	5m × 4m
Spacing	:	50 cm × 50 cm
Fertilizer dose	:	The crop was fertilized with recommended dose of cowdung5 t ha^{-1}, N_{100}, P_{52}, K_{100}, S_{22} Zn_3 B_2 kg ha^{-1}.
Application of fertilizer	:	The entire quantity of cowdung, TSP and half of MoP are applied during final land preparation. Full amount of urea and rest half of MoP were applied at three equal splits at 25, 50 and 75 days after transplanting.
Irrigated/Rainfed	:	Irrigated

Data to be recorded	:	Dates of all operation, yield and yield attributes, pest and diseases reaction, farmers opinion.
Expected output	:	Farmers will be benefited by getting a suitable variety for chilli cultivation
Status	:	New
Date of initiation	:	October 2025
Date of completion	:	April 2026
Estimated cost	:	Tk. 40,000/-
Source of fund	:	BARI
Location (s)	:	Trishal, Mymensingh
Priority	:	1st
Investigator(s)	:	Nazma Akther, M. Abdul Helim Khan, Shammi Akhtar

Expt. 138. On-farm trial with newly released potato varieties

Activities	:	Potato varietal trial
Objectives	:	To find out the suitable potato variety for Mymensingh region To popularize the BARI released varieties among the farmers
Rationale	:	BARI has recently introduced several improved potato varieties that exhibit strong resistance to both late blight and viral diseases which are the major constraints in potato production. These newly developed varieties not only offer higher yields but also show significant advantages in terms of post-harvest qualities such as yield, storability, keeping quality, and transportation capacity. Therefore, this study will be undertaken to promote these varieties and to explore farmers' responses to them.
Materials and Method	:	
Crop/Variety	:	Potato
Design		RCB
i. Treatments	:	i. BARI Alu-53 ii. BARI Alu-62 iii. BARI Alu-90 iv. BARI Alu-25 (Check)
ii Replication		06 (dispersed)
Unit plot size	:	v. 8 m × 5 m
Spacing (cm)	:	vi. 60 cm × 25 cm
Fertilizer dose	:	vii. As per recommended (FRG/2024)
Application of fertilizer	:	viii. Half amount of N and full dose of other fertilizers will be applied during final land preparation. The rest amount of N should be applied as a side dressing in two equal splits at 15-20 and 40-45 days after emergence.
Irrigated/rainfed	:	ix. Irrigated
Data to be collected	:	Dates of all operation Yield and yield contributing characters Major disease and pest incidence Cost and return analysis x. Farmers' opinion
Expected output	:	To increase productivity and farmer's income
Status	:	1st year
Season	:	Rabi
Program Proposed from	:	OFRD, BARI, Mymensingh

Date of initiation	:	November, 2025
Date of completion		February, 2026
Estimated cost	:	Tk. 80000/-
Source of fund	:	BARI
Location	:	MLT siteTrishal, Mymensingh
Investigator(s)	:	Dr. Shammi Akhtar, SSO and Dr. Abdul Helim Khan PSO, OFRD, BARI, Mymensingh

Expt. 139. On farm trial of BARI released chilli varieties at Jamalpur and Sherpur region

Activity	:	Chilli varietal trial
Objectives	:	To evaluate the performance of chilli varieties in farmers field. To increase the productivity and farmers income.
Rationale	:	Chilli (*Capsicum annuum* L.) is the major spices crops grown in Bangladesh. Chilli is an important crop and is considered and almost indispensable spice in daily life (Paul and Eric, 2013). Chilli is cultivated in 104858 ha land (both winter and summer) and produced 176000 ton annually. Generally, farmers use their local, old or traditional varieties. Yield potentiality of local/old/traditional variety is poor and susceptible to different types of pest and diseases. Thus, they get lower yield and economic return. BARI has developed several modern varieties of chilli, which are supposed to be higher yielder and less susceptible to insect and diseases. Therefore, an adaptive trial with BARI developed chilli varieties was conducted to popularize them in the locality and to get higher yield and economic return.
Materials & Methods	:	
Materials	:	BARI Morich-4, BARI Morich-6 and local variety as check
Design	:	RCB
Replications	:	6 (six) dispersed
Plot size	:	3 m × 2m
Plant spacing	:	50 cm × 50 cm
Fertilizer dose and application methods	:	FRG, 2018
Irrigation/rainfed	:	Irrigated
Planting date		October, 2025
Plant protection measures	:	As and when necessary
Data to be recorded	:	1. Dates of all operations, 2. Yield and yield contributing characters 3. Cost and return analysis, 4. Farmer's opinion
Expected output	:	Increased productivity and improved economic condition of farmers
Season	:	Rabi
Investigator(s)	:	M.F. Islam, M. M. Rahman and A.K.M.Z.U.Noor
Date of initiation	:	October, 2025
Date of completion	:	March, 2026
Location	:	Jamalpur and Sherpur
Status	:	New
Estimated cost	:	Tk. 100000
Source of fund	:	OFRD, BARI
Priority	:	1st

Expt. 140. On-farm trial of BARI Tomato variety in Sherpur

Activity	:	Tomato varietal trial
Objectives	:	To evaluate the performance of BARI released winter tomato variety in farmers' field To increase the productivity and farmers income
Rationale	:	Tomato (*Lycopersicum esculentum* L.) is one of the major vegetable crops in Bangladesh. It is a good source of vitamins and minerals. It contains 93.1% water, 0.6% minerals, 0.7% fiber, 1.9% protein, 0.1% fat and 3.6% carbohydrate per 100 g of edible portion. The area under tomato in Bangladesh is 24.69 thousand hectares and its production is 231.68 thousand metric ton and the average yield is 9.39 t ha^{-1} (BBS, 2011). This production is very low compared to other tomato growing countries of the world. Farmers of Sherpur region usually grow the traditional or commercial variety of tomato which is low yielding and susceptible to diseases and pest. As a result, yield is decreasing day by day. BARI has developed some newly released high yielding tomato varieties which are less susceptible to bacterial wilt and leaf curl virus. Their yield performance, storage, keeping quality and transportation capacity is excellent over existing variety. A few farmers are cultivated BARI released variety in the very limited scale. But there is a lot of scope to cultivate the BARI released high yielding variety of tomato in this area. Hence, the study has been under taken to evaluate the performance of BARI released Tomato varieties for Sherpur region and to popularize the BARI Tomato varieties among the farmers.
Materials & Methods	:	
Materials	:	BARI Tomato-17, BARI Tomato -18, BARI Tomato -19, BARI Tomato-21 and Local
Design	:	RCB
Replications	:	6 (six) dispersed
Plot size	:	5 m × 4 m
Plant spacing	:	60 cm × 40 cm
Fertilizer dose and application methods	:	FRG, 2018
Irrigation/rainfed	:	Irrigated
Planting date		Seed sowing- 1st week of October, 2025 Planting- 1st week of November, 2025
Plant protection measures	:	As and when necessary
Data to be recorded	:	1. Dates of all operations, 2. Yield and yield contributing characters 3. Cost and return analysis and 4. Farmer's opinion
Expected output	:	Increased productivity and improved economic condition of farmers
Season	:	Rabi
Investigator(s)	:	Concerned scientists of respective site'
Date of initiation	:	October, 2025
Location	:	Sherpur, Faridpur, Bhola, Barishal, Gopalganj, Khulna, Kushtia, Jashore & Patuakhali
Status	:	New
Estimated cost	:	Tk. 90,000
Source of fund	:	OFRD, BARI
Priority	:	1st

Expt. 141. On-Farm trial of lilium (Lilium spp.) in Tangail

Activity	:	Lilium varietal trial
Objectives	:	1To evaluate the performance and adaptability of Lilium varieties under field conditions in Tangail. To promote high-value floriculture for income diversification among farmers
Rationale	:	Lilium (*Lilium spp.*), commonly known as lily, is one of the most elegant and high-demand cut flowers globally, especially valued for its attractive blooms, fragrance, and long vase life. In Bangladesh, its cultivation is still limited and largely concentrated around controlled environments near Dhaka. With increasing market demand, there is strong potential for its expansion in other regions. Tangail, with favourable winter temperatures and light soils, offers a promising environment for Lilium cultivation. However, adaptive trials are needed to assess varietal performance, flowering behaviour economic viability under open-field conditions. This experiment aims to generate locally relevant recommendations for Lilium production and support diversification in the floriculture sector.
Materials and Methods:		
Crop		Lilium (*Lilium spp.*)
Treatment		T_1: BARI Lilium-1, T_2: BARI Lilium-2, and T_3: BARI Lilium-3
Design	:	RCBD
Replications	:	6 dispersed replications
Area	:	2 m × 1.5 m per plot
Spacing (m)	:	20 cm × 20 cm.
Soil preparation and Fertilization	:	Well-drained loamy soil with pH 6.0–6.5, Organic manure: Cowdung 3 t/ha, Basal dose: N-P-K-S:150-100-150-20 kg/ha, Micronutrients as required based on visual symptoms
Irrigated		Irrigation as per requirement (critical at flower bud initiation and blooming stage)
Data to be collected	:	Days to sprouting and flowering, Plant height and number of leaves, Number and size of flowers per plant, Stem quality and vase life, Pest and disease occurrence, Farmer's preference and market feedback and Cost-benefit analysis.
Expected output	:	• Identification of high-performing Lilium varieties for Tangail • Package of practices for successful Lilium production • Increased farmer interest in high-value floriculture
Investigator(s)	:	K. Roy, M. A. Rahaman, G. Pal, and T. Tasmima
Status	:	1nd year
Date of initiation	:	October, 2025
Date of completion	:	June, 2027
Estimated cost	:	Tk.100000/-
Location(s)	:	MLT site Atia, Tangail
Source of fund	:	BARI
Priority	:	1st

Expt. 142. On farm trial of BARI released Late Blight Resistant Potato Varieties in Kishoreganj

Activity	:	Relevant activities on priority crops
Objective(s)	:	To select the suitable variety To popular and disseminate BARI variety
Rationale	:	BARI released many Potato varieties like; BARI Alu-46, BARI Alu-90 BARI Alu-91 with high yield potentials and late blight resistant quality. On-farm trial will help to popularize the variety among the farmers of Kishoreganj.
Materials and Methods	:	
Crop/variety	:	BARI Alu-46, BARI Alu-90, BARI Alu-91and locally available potato variety (as check)
Design	:	RCB
Treatment	:	V_1 = BARI Alu-46 V_2 = BARI Alu-90 V_3 = BARI Alu-91and V_4=locally available potato variety (as check)
Replications	:	6 (dispersed)
Plot size	:	10 decimal
Planting system/spacing	:	Potato (60 × 25 cm)
Fertilizer dose and application methods	:	Recommended dose as per FRG-2024
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	No. of tuber/plant, individual tuber weight (g), tuber yield/plant (kg) and yield/hectare (ton), virus infestation (%), bacterial wilt infestation (%), other insect/disease problem, farmer's reaction
Investigator (s)	:	Concerned scientists of respective site.
Season	:	Robi
Date of initiation	:	November 2025
Date of completion	:	February 2026
Expected output	:	BARI released potato varieties will be popularized among the farmers of Kishoreganj and production will be increased
Location	:	Kishoreganj and Narsingdi
Status	:	New
Program proposed from		OFRD, Kishoreganj
Priority		1st
Estimated cost	:	160000/-
Source of fund	:	BARI

Expt. 143. On-farm trial of winter onion bulb production in Narsingdi

Activity	:	**Onion varietal trial**
Objectives	:	To evaluate the performances of BARI winter onion varieties To increase yield and economic return
Rationale	:	Onion is one of the most important spices crop, commercially grown in all parts of the country. There is enough scope for cultivation of onion bulb at Narsingdi. About 30 thousand hectare land is occupied with onion production through seedling. Different local and HYV named LalTeer king is cultivated most of the land. SRC. BARI has developed four winter onion varieties which are high yielder and less susceptible to pest and diseases. The performance of those varieties is not studied at these areas. Considering the above fact, the present study will be undertaken to evaluate the performance of winter onion varieties at Narsingdi.
Materials and Methods	:	
Crop /Variety	:	Winter onion (var. Bari Piaj-1,4,6 and LalTeer king)
	:	-
Treatments	:	1. BARI Piaj-1 2. BARI Piaj-4 3. BARI Piaj-6 4. LalTeer king
Design	:	RCB
Replications	:	6
Unit plot size	:	5m×8m
Planting system/spacing		15cm×10cm
Fertilizer dose	:	As per FRG,2018
Application of fertilizer	:	
Data to be collected	:	Dates of all operation Yield and yield contributing characters & equivalent yield Major disease and insect incidence Cost and return analysis Farmers opinion
Investigtor(s)	:	M.H.Rahman
Expected output	:	Farmers will be benefited for high yield.
Status	:	On going
date of initiation	:	October, 2025
Date of completion	:	February, 2026
Estimated cost	:	Tk. 80,000/-
Source of fund	:	BARI
Location(s)	:	Narsingdi

Expt. 144. Adaptive trial of BARI released Coriander varieties in plain land of Shibpur in Narsingdi

Activity	:	Coriander varietal trial
Objectives	:	To evaluate the performance of BARI coriander varieties at farmer's field To popularize the BARI varieties among the farmers.
Rationale	:	Under-utilized as minor spices, Coriander is an important spice crop in Bangladesh. Farmers usually grow local varieties scattered, as a result they get low yield. BARI has developed high yielding varieties of coriander. The average yield of coriander can be increased by using high yielding varieties. This program is a good way to disseminate the high yielding variety among the farmers.
Materials and Methods	:	
Planting system	:	Line sowing
Variety	:	BARI Dhania-1, BARI Dhania-2 and local variety
Replication	:	6 dispersed
Plot size	:	20m × 10m
Fertilizer dose	:	STB dose of fertilizers following FRG 2018
Irrigation/ Rainfed	:	Irrigated
Data to be recorded	:	Yield, major disease and insect incidence, cost, return and farmer's opinion
Season	:	Rabi
Date of initiation	:	November 2025
Date of completion	:	April 2026
Expected output	:	Yield as well as income of the farmers will increase in the farmer's field
Estimated cost	:	TK. 70000/-
Locations	:	Shibpur and Monohardi MLT sites of Narsingdi
Status	:	New
Priority	:	1st
Investigator(s)	:	M.H.Rahman

Expt. 145. On-farm trial of BARI Ginger varieties in Narsingdi

Activity	:	Ginger varietal trial
Objectives	:	To evaluate the performance of BARI Gingar varieties at farmer's field
Rationale	:	BARI Ada-2 and BARI Ada-3 were released as high yielding potential varieties which need to popularize among the farmers. As such on-farm trial will help to popularize the variety to the farmers.
Materials and Methods	:	
Design	:	RCB
Variety	:	BARI Ada-2, BARI Ada-3 and a local variety.
Replication	:	6 dispersed
Plot size	:	4m × 5m
Plant spacing		50×25
Fertilizer dose	:	STB dose of fertilizers following FRG 2018
Irrigation/ Rainfed	:	Irrigated

Data to be recorded	:	Dates of all operations, Diseases and pest information, yield and economics
Season	:	Rabi
Date of initiation	:	February, 2026
Date of completion	:	-
Estimated cost	:	TIK. 100000/-
Locations	:	Narsingdi
Status	:	New
Priority	:	First
Investigator(s)	:	M. H. Rahman

Expt. 146. On-farm trial of BARI Pointed gourd varieties at Manikganj

Activity	:	Adaptive trial
Objectives	:	To evaluate the yield performance of BARI developed pointed gourd varieties in the farmers' field. To disseminate and popularize the varieties among the farmers.
Rationale	:	Pointed gourd (*Trichosanthesdioica*)is a vital summer vegetable in Bangladesh. It is cultivated and consumed in almost every district of the country. It is a perennial crop and sold at the end of other alternative vegetables. Pointed gourd is a good source of vitamins and minerals. It is a good source of carbohydrates, vitamin A, and vitamin C. It also contains major nutrients and trace elements (magnesium, potassium, copper, sulfur, and chlorine). In general, pointed gourd is grown in trailies for long term harvesting but in charlands this crop is grown in bed with straw mulch. BARI has developed several varieties of pointed gourd those are high yielding and less susceptible to pest and diseases. The experiment was therefore undertaken to evaluate the BARI developed pointed gourd varieties to promote their adoption and to increase farmers income.
Materials and methods	:	
Crop/variety	:	Pointed gourd
Design	:	RCBD
i) Treatment	:	BARI Potol-1 and BARI Potol-2 and Local variety
ii) Replications	:	6 (dispersed)
Plot size	:	6m x 5m
Planting system/spacing	:	Plant spacing: 1 m and breadth of the bed is: 1.25 m. Pit size: 50cm x 50 cm x 50cm.
Fertilizer dose and application methods	:	N-P-K-S-Zn-B @ 60-35-65-12-1.9-2 kg ha^{-1}, respectively. TSP to be applied @ 60g/pit during planting of vines. Both urea and potash to be applied in each pit @ 20-25 g in equal splits at 20, 60 and 90 DAP. Well decomposed cowdung to be applied @ 3-4 kg in each pit during planting of vines. After each harvest urea @ 18 kg ha^{-1}, TSP @ 25 kg ha^{-1} and 14 kg ha^{-1} to be applied.
Irrigation/rainfed	:	Irrigation to be given as and when necessary
Data to be recorded	:	Dates of all operations, Yield and yield contributing characters, Major disease and insect incidence, Cost and return analysis Farmers' opinion

Investigator(s)		Dr. Md. Ruhul Amin (PSO), OFRD, BARI, Manikganj
Season	:	Rabi, 2025-2026
Date of initiation	:	October 2025
Date of completion	:	September, 2026
Expected output/benefit	:	Farmers will be benefited by growing the BARI developed variety(s) and yield will be increased by 20-30%.
Location	:	Singair and Daulatpurupazila of Manikganj
Status	:	New
Program proposed from	:	OFRD, BARI, Manikganj ,
Estimated cost	:	Tk. 35,000/- per location
Source of fund	:	DG, BARI
Priority	:	1st

Expt. 147. On-Farm Trial of BARI Released Barley (Hull-less) varieties in Bhola

Activity	:	Variety Improvement
Objectives	:	To evaluate the performance of turmeric variety in farmers' field
Rationale	:	Barley has great potential in Bangladesh for food, feed, and health-promoting products due to its high nutritional value, easy processing, and market demand.In coastal areas like Bhola, where salinity, low input use, and climate variability pose significant challenges, farmers still rely on traditional crops with limited income returns.BARI has developed improved hulless varieties that are nutrient-rich,better adapted to stress-prone environments.These varieties have shown promising results under controlled research conditions but have not yet been widely tested or adopted in the unique agro-climatic conditions of Bhola.The current study aims to conduct adaptive trials of BARI-released hulless varieties under farmer field conditions in Bhola to evaluate their yield performance and suitability, and to promote their adoption among local farmers for income diversification and nutritional security
Materials & Methods	:	
Crop/varieties	:	Turmeric
Design	:	RCB
Treatments/Varieties		T_1= BARI Barley-7, T_2= BARI Barley-8 and T_3= BARI Barley-10
Replication	:	06 (dispersed)
Plot size	:	5m x 4m
Planting system/ spacing	:	Line sowing
Fertilizer dose and methods of Application	:	As recommended (FRG-2022)
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operation, Yield and yield contributing characters, Major disease and insect incidence, Cost and returns analysis and Farmers opinion
Investigators	:	Rashidul Hasan Anik & Md. Mominul Islam
Season	:	New
Date of initiation	:	November,25
Date of completion	:	March,26

Expected output	:	Suitable Barley variety for this region will be find out.
Location	:	Charfashion, Dawlatkhan & Bhola Sadar
Status	:	New
Programme proposed from	:	OFRD, BARI, Bhola
Priority	:	1st
Estimated cost		Tk. 50000/-
Source of fund		BARI

Expt. 148. Performance of BARI released turmeric varieties within Betelnut orchard in Bhola

Activity	:	Variety Improvement
Objectives	:	To evaluate the performance of turmeric variety in farmers' field
Rationale	:	Farmers in betel nut (supari) orchard areas of Bangladesh often leave the space between trees underutilized, leading to inefficient land use. Turmeric, a high-value spice crop, has the potential to be grown successfully in the partial shade of betel nut orchards. However, most farmers do not adopt turmeric cultivation in orchards due to lack of awareness and technical knowledge. BARI has developed improved turmeric varieties that are high-yielding and suitable for shaded conditions. The present study will be undertaken to evaluate the performance of improved turmeric varieties within betel nut orchard and to encourage their adoption among farmers and to increase income through integrated orchard-based cropping systems.
Materials & Methods	:	
Crop/varieties	:	Turmeric
Design	:	RCB
Treatments/Varieties		T1= BARI Halud-3, T2= BARI Halud-4 and T3= BARI Halud-5, T4= local
Replication	:	06 (dispersed)
Plot size	:	5m x 4m
Planting system	:	Line sowing
Fertilizer dose and methods of Application	:	As recommended (FRG-2022)
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operation, Yield and yield contributing characters, Major disease and insect incidence, Cost and returns analysis and Farmers opinion
Investigators	:	Rashidul Hasan Anik & Md. Mominul Islam
Season	:	New
Date of initiation	:	March ,26
Date of completion	:	
Expected output	:	Appropriate Variety will be ascertained in betelnut orchard
Location	:	Charfashion, Dawlatkhan & Bhola Sadar
Status	:	New
Programme proposed from	:	OFRD, BARI, Bhola
Priority	:	1st
Estimated cost		Tk. 50000/-
Source of fund		BARI

Expt. 149. Adaptive Trial of Country bean varieties at AEZ-18

Activity	**:**	Varietal Improvement
Objectives	:	To evaluate the performance of Country bean variety in farmers' field
Rationale	:	Country bean (*Lablab purpureus*) is a popular legume in Bangladesh, valued for its edible pods and high market demand, especially during the winter season. However, in coastal areas like Bhola, production is limited due to salinity, poor soil fertility, and lack of access to improved varieties.The Bangladesh Agricultural Research Institute (BARI) has developed several high-yielding, pest-tolerant country bean varieties with wider adaptability. These varieties have not yet been extensively evaluated under Bhola's unique coastal agro-ecological conditions.This adaptive trial aims to assess the performance, yield potential, and suitability of BARI-developed country bean varieties in Bhola's farmer fields to promote their adoption, improve income, and support year-round vegetable production.
Materials & Methods	:	
Crop/varieties	:	Country bean
Design	:	RCB
Treatments/Varieties		T_1 = BARI sheem-1, T_2 = BARI sheem-6 T_3 = BARI sheem-8
Replication	:	06 (dispersed)
Plot size	:	5m x 4m
Planting system/ spacing	:	Line sowing
Fertilizer dose and methods of Application	:	As recommended (FRG-2022)
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operation, Yield and yield contributing characters, Major disease and insect incidence, Cost and returns analysis and Farmers opinion
Investigators	:	Md. Mominul Islam & Rashidul Hasan Anik
Season	:	New
Date of initiation	:	September, 2025
Date of completion	:	February,2026
Expected output	:	Suitable Country bean variety for this region will be find out.
Location	:	Charfashion, Dawlatkhan & Bhola Sadar
Status	:	New
Programme proposed from	:	OFRD, BARI, Bhola
Priority	:	1st
Estimated cost		Tk. 50000/-
Source of fund		BARI

Expt. 150. On-farm trial of Sweet potato varieties in Faridpur region

Activity	:	Varietal Performance
Objectives	:	To select suitable Sweet potato varieties in Faridpur region To popularize BARI released Sweet potato varieties among the farmers
Rationale	:	Sweet potato (*Ipomoea batatas*) is a carbohydrate rich root crop, which can be used as substitute of cereal crops in Bangladesh to meet up the food shortage. Generally, the poor people are the consumers to sweet potato. It is the main source of carbohydrate and carotene for their survival. Sweet potato grows well in different char areas and hilly region but yield is very low due to cultivation of local varieties which yield is low and contain less carotene. BARI has developed some new varieties of sweet potato that have high yielding ability and also contain high amount carotene. These varieties are needed to be an adaptive trial to evaluate their performance and to identify the suitable variety in Faridpur region. On-farm trial will help to popularize the variety to the farmers. Therefore, this study will be under taken to evaluate the performance of BARI released high yielding tomato varieties and to popularize those varieties among the farmers.
Materials and Methods	:	
Crops/Variety		BARI released sweet potato varieties and local
Design	:	RCB
Treatment	:	T_1: BARI Misti alu-14 T_2: BARI Misti alu-15 T_3: BARI Misti alu-16 T_4: BARI Misti alu-17 T_5: local
)Replication	:	6 (dispersed)
Plot size	:	6m × 5 m (unit plot)
Planting system/spacing	:	60 × 30 cm
Fertilizer dose and methods of application	:	130-34-130-15-4.5-1.3-1.1 NPKSZnB Kgha-^{1} Half of N & K and rest of all fertilizer used as basal during final land preparation. Rest of N & K will be used as side dressing after 30-40 DAT .
Irrigation/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operation, Yield and yield contributing characters, Major disease and pest incidence, Cost and return analysis , Farmers' opinion
Investigators	:	Md. Mahmudur Rahman, PSO, OFRD, Faridpur
Season	:	Rabi 2025-26
Date of initiation	:	October, 2025
Date of completion	:	March, 2026
Expected output/benefit	:	Suitable sweet potato variety will be selected for this region.
Locations	:	FSRD Site, Faridpur
Status	:	New
Priority	:	1st
Estimated cost	:	Tk. 50000/-
Source of fund	:	BARI

Expt. 151. Adaptive Trial of Different Taro (*Colocasia esculenta*) Varieties in Gopalganj and Pirojpur

Activity		Varietal performance
Objectives	:	To evaluate the yield potential and adaptability of various taro varieties.
Rationale	:	Taro is an important staple and cash crop valued for its high carbohydrate content, nutritional benefits, and market demand. It thrives in marginal lands and contributes to food security, income generation, and crop diversification especially in flood-prone areas where other crops struggle. Although BARI-released *MukhiKochu* varieties are high-yielding, their performance may vary across different soil types, rainfall patterns, and waterlogged environments typical of these districts. The adaptive trial of different Taro (*Colocasia esculenta*) varieties in Gopalganj and Pirojpur is crucial for identifying cultivars best suited to the region's unique agro-ecological conditions. This trial will assess varietal adaptability, yield stability, and resistance to pests and diseases under local conditions. The findings will guide farmers toward more resilient and profitable cultivation practices, enhancing livelihoods and supporting sustainable agriculture. Promoting taro cultivation aligns with national goals for rural development and climate-smart farming systems.
Materials and methods	:	
Crop/variety		Taro (*Mukhikochu*)
Design	:	RCBD
Treatments	:	**T_1**= BARI Mukhikochu-1 (Bilashi) **T_2**= BARI Mukhikochu-2 (Meherchandi) **T_3**= BARI Mukhikochu-3 **T_4=** Local variety
Replications	:	6 (dispersed)
Spacing	:	60 cm × 45 cm (In single row)
Fertilizer dose& application methods	:	As per FRG 2018
Irrigation/rain fed	:	Irrigated
Data to be recorded	:	Yield and yield contributing data
Investigator(s)	:	M M Howlader & D Halder
Season	:	*Rabi* season
Date of initiation	:	February 2026
Date of completion	:	February 2028
Expected output/benefit	:	Suitable variety will be identified for Gopalganj region
Location	:	Gopalganj and Pirojpur district
Status	:	New
Estimated cost		Tk. 150,000
Source of fund		OFRD, BARI
Priority		1st

Expt. 152. Adaptive Trial of Different Yard Long Bean Varieties on Banks of Gher in Gopalganj

Activity		Varietal performance
Objectives	:	To evaluate the yield potential and adaptability of yard long bean varieties.
Rationale	:	As Gopalganj is a low-lying bill region, a large area is occupied by fishing gher. In this area farmers traditionally use these banks of gher for integrated fish–vegetable farming. Gher banks provide fertile, well-aerated soil with consistent moisture, making them ideal for cultivating vegetables like Yard Long Bean. This trial aims to evaluate multiple bean varieties to identify those best suited to the local agro-climatic conditions focusing on yield potential, disease resistance, and adaptability. By leveraging the unique micro-environment of gher banks, the study promotes efficient land use and sustainable farming practices. The findings will guide farmers in selecting high-performing cultivars that enhance productivity and profitability. Additionally, successful bean cultivation on gher banks can contribute to crop diversification, improve year-round food availability, and strengthen nutritional security in the region. This approach aligns with local agricultural development goals and supports resilient, eco-friendly farming systems in Gopalganj.
Materials and methods	:	
Crop		Yard Long Bean
Design	:	RCBD
Treatments	:	$\mathbf{T_1}$= BARI Borboti-1 $\mathbf{T_2}$= BARI Borboti-2 (dwarf variety) $\mathbf{T_3}$= Local Variety
Replications	:	6 (dispersed)
Spacing	:	60 cm × 30 cm (In single row)
Fertilizer dose& application methods	:	As per FRG 2018
Irrigation/rain fed	:	Irrigated
Data to be recorded	:	Yield and yield contributing data
Investigator(s)	:	M M Howlader & D Halder
Season	:	*Rabi* season
Date of initiation	:	February 2026
Date of completion	:	June 2028
Expected output/benefit	:	High-yielding yard long bean variety/varieties will be identified.
Location	:	Gopalganj district
Status	:	New
Estimated cost		Tk. 150,000
Source of fund		OFRD, BARI
Priority		1st

Expt. 153. On-Farm Trial of Off-Season Watermelon Varieties on *Gher boundary* in Gopalganj

Activity		Varietal performance
Objectives	:	To evaluate the yield potential and adaptability of various watermelon varieties
Rationale	:	The On-Farm Trial of Off-Season Watermelon Varieties on gher areas in Gopalganj is a pioneering initiative to unlock new agricultural potential by utilizing the elevated, well-drained edges of traditional gher systems. These zones, typically reserved for integrated fish–crop farming, offer a favorable microclimate for cultivating watermelon beyond its usual season. By evaluating high-yielding, climate-resilient varieties, the trial seeks to enhance productivity, generate higher off-season market returns, and maximize year-round land use. This approach not only diversifies cropping patterns but also empowers smallholder farmers with a profitable, low-risk alternative. It contributes to food security, reduces seasonal supply gaps, and aligns with sustainable agricultural development goals. The trial holds promise for transforming Gopalganj's gher landscape into a hub of innovation and resilience in off-season horticulture. The farmers of gopalganj traditionally use local cultivar, in the meantime BARI has developed two year round cultivable water melon varieties. The experiment is designed to evaluate the performance of the BARI released variety and to popularize these varieties among the farmers.
Materials and methods	:	
Crop	:	Water melon
Design	:	RCBD
Treatments	:	**T_1**= BARI Tormuj-1(Red Flesh) **T_2**= BARI Tormuj-2(Yellow Flesh)
Replications	:	6 (dispersed)
Spacing	:	60 cm × 30 cm (In single row)
Fertilizer dose& application methods	:	As per FRG 2018
Irrigation/rain fed	:	Irrigated
Data to be recorded	:	Yield and yield contributing data
Investigator(s)	:	M M Howlader & D Halder
Season	:	*Rabi* season
Date of initiation	:	Jan, May, Sept 2026
Date of completion	:	4 Months after sowing
Expected output/benefit	:	High-performing off-season watermelon varieties suitable for gher conditions will be identified.
Location	:	Gopalganj district
Status	:	New
Estimated cost		Tk. 150,000
Source of fund		OFRD, BARI
Priority		1st

Expt. 154. Adaptive Trial of BARI Released High Yielding Potato Varieties in Greater Kushtia Region

Activity		Varietal Performance
Objective (S)	:	To evaluate the adaptability and yield performance of BARI-released high-yielding potato varieties in the agro-ecological conditions of Meherpur, Kushtia, and Chuadanga districts. To identify the most suitable varieties for wider dissemination in the greater Kushtia region.
Rationale	:	Potato is one of the major staple crops in the greater Kushtia region including Meherpur, Kushtia, and Chuadanga districts. Farmers in this area have long been engaged in extensive potato cultivation due to favorable agro-climatic conditions. However, a significant portion of the local farmers still rely on traditional and old potato varieties with relatively low yield potential. In contrast Bangladesh Agricultural Research Institute (BARI) has developed several high-yielding potato varieties that are better suited to current climatic conditions, disease resistance requirements and market demands. These improved varieties can produce almost double the yield compared to older local cultivars. Despite their potential, the adoption of these BARI-released varieties in the greater Kushtia region remains minimal. This gap is mainly due to a lack of localized demonstration and adaptability trials that could build farmers' confidence in these new varieties. Therefore, conducting adaptive trials of selected high-yielding potato varieties developed by BARI is essential to showcase their performance under the local environmental and management conditions of the Kushtia region. This will help in generating scientific data, assessing variety suitability and encouraging widespread adoption by farmers.
Materials/ Methods	:	
Crop/variety	:	BARI Released Potato Varieties
Design	:	RCBD
Treatment	:	T_1: BARI Alu-7, T_2: BARI Alu-8, T_3: BARI Alu-25, T_4: BARI Alu-37, T_5: BARI Alu-41, T_6: BARI Alu-62, T_7: BARI Alu-90, T_8: BARI Alu-92, T_9: BARI Alu-96 & T_{10}: BARI Alu-100
Replication	:	3
Total plot		21
Plot size	:	15 decimals
Planting system/spacing	:	60 cm x 30 cm
Fertilizer dose and methods of application	:	As per Fertilizer recommendation guide 2024
Irrigated/rained		Irrigated
Data to be recorded	:	Plant height and canopy coverage Number of tubers per plant Average tuber weight Total yield per plot (converted to t/ha) Farmer preference and feedback Flesh color (white, orange, purple) Dry matter content (%) Disease & pest Incidence

Investigators	:	Md. Mamun Hossain, SO & Dr. Jahan Al Mahmud, SSO
Season	:	Robi
Date of initiation	:	October 2025
Date of completion	:	April 2026
Expected output/Benefit	:	Selection of one or more high-yielding and climate-resilient sweet potato varieties suitable for char land.
Location	:	Kushtia, Meherpur & Chuadanga
Status	:	New
Program Proposed from	:	OFRD, Kushtia
Estimated cost	:	150000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 155. Adaptive Trial of BARI Released Sweet Potato Varieties in Char Land of Kushtia

Activity		Varietal Performance
Objective (S)	:	To evaluate the performance of BARI-released sweet potato varieties in char land conditions. To identify the most suitable variety (ies) in terms of yield, adaptability and quality.
Rationale	:	Sweet potato (*Ipomoea batatas*) is a highly nutritious, drought-tolerant root crop that contributes significantly to food security and income generation, especially in marginal environments. Char lands—formed by riverine sedimentation—are among the most vulnerable and underutilized agro-ecological zones in Bangladesh. Despite their potential, crop productivity in these areas remains low due to erratic rainfall, sandy-loam soils, and lack of crop varieties adapted to such conditions. The Bangladesh Agricultural Research Institute (BARI) has developed several improved sweet potato varieties with higher yield potential, tolerance to abiotic stress, and better nutritional quality. However, these varieties need to be tested for adaptability and performance in the unique conditions of char lands. This adaptive trial aims to identify suitable BARI-released sweet potato varieties for sustainable production in char environments.
Materials/ Methods	:	
Crop/variety	:	BARI Released Sweet Potato Varieties
Design	:	RCBD
Treatment	:	T_1: BARI Mistialu-12 T_2: BARI Mistialu-13 T_3: BARI Mistialu-14 T_4: BARI Mistialu-15 T_5: BARI Mistialu-16 T_6: BARI Mistialu-17 T7: BARI Mistialu-18
Replication	:	3
Total plot		21

Plot size	:	15 decimals
Planting system/spacing	:	60 m x 30 cm
Fertilizer dose and methods of application	:	As per Fertilizer recommendation guide 2024
Irrigated/rained		Irrigated
Data to be recorded	:	Emergence rate (%) Vine length (cm) No. of branches/plant Number of tubers per plant Average tuber weight (g) Average tuber length (cm) Marketable yield (t/ha) Flesh color (white, orange, purple) Dry matter content (%) Disease & pest Incidence
Investigators	:	Md. Mamun Hossain, SO & Dr. Jahan Al Mahmud, SSO
Season	:	Robi
Date of initiation	:	October 2025
Date of completion	:	April 2026
Expected output/Benefit	:	Selection of one or more high-yielding and climate-resilient sweet potato varieties suitable for char land.
Location	:	Kushtia Sadar & MLT Site Bheramara
Status	:	New
Program Proposed from	:	OFRD, Kushtia
Estimated cost	:	80,000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 156. Evaluation of chilli lines in Coastal area

Activity	:	Varietal performance
Objectives	:	1. To evaluate the performance of chilli lines in coastal areas 2. To increase the chilli production in coastal areas
Rationale	:	Chilli (*Capsicum annuum* L.) is a member of the Solanaceae family, originated from South and Central America. Chilli is becoming an important crop worldwide due to its wide diversity and high quality in flavor, concentration of vitamins and other antioxidants. In Bangladesh Chilli is one of the common spices as well as a major cash crop. The agro-ecological condition favors the production of chilli throughout the year. Spices research centre (SRC) has developed four chilli varieties which has higher yield potentiality and tolerant to insect and disease attack. Adaptability trial of released varieties felt an urgent need in coastal area. Considering the fact as stated above, the present study will be under taken to study the performance of chilli varieties at costal area.
Materials and methods	:	
Crop/variety	:	Chilli
Design	:	RCBD
Treatment	:	i. Five lines ii. BARI Morich-1 will be used as check

iii. local (Bulet)

Replications	:	3
Plot size	:	2m x 3m
Spacing	:	50 cm x 50 cm
Fertilizer dose and Methods	:	Cowdung-5 t/ha, N100 P52 K100 S22 kg/ha. Entire quantity of cowdung, P, 1/3 k and S will be applied at the time of final land preparation. N and K will be applied in three equal splits at 25, 50 and 70 days after planting.
Irrigation/ rainfed	:	Irrigated
Data to be recorded	:	Plant height (cm), number of fruits/plant, weight of single fruit (g), fruit length and breadth (cm), fruit colour (green and ripe stage), yield/plant (kg), number of seeds per fruit, 1000-seed weight (g), disease and pest infestation etc.
Investigator(s)	:	M.K.Islam, T.Z. Munmun and, M.K. Shahadat and M.Rahman OFRD, BARI, Khulna and PGRC Scientist
Season	:	2025-26
Date of initiation	:	August, 2025
Date of completion	:	July, 2026
Expected output/ Benefit	:	Chilli production area with yield will be increased
Locations	:	On-station
Status	:	New
Estimated cost	:	50000 Tk
Source of fund	:	BARI
Program Proposed from	:	OFRD, BARI, Khulna
Priority	:	First

Expt. 157. Evaluation of fielpea lines in Coastal area

Activity	**:**	Varietal performance
Objectives	:	To evaluate the performance of fieldpea lines in coastal areas To increase the field pea production in coastal areas
Rationale	:	Salinity is one of the most important abiotic stress that affects plant productivity worldwide. About 20% of the global land area and over 50% of agricultural irrigated land is salt-affected soils (Cheng et al., 2016). It is also estimated that about 50% of agricultural land will be affected by salt in 2050 (Mahajan et al., 2005; Yan et al., 2005). In Bangladesh, over 30% of the net cultivable areas lie in the coastal area, which approximately 53% are affected by varying degrees of salinity (Haque, 2006). Field pea is a cool-season grain legume from the widespread Pisum genus that is produced for fresh or dried seed and fodder in over a hundred nations. According to BBS in 2023, 8131.99 metric tons of field pea were produced in Bangladesh in 2023–2024. The increased demand for low-cost, high-quality protein as well as the importance of field pea in rotational farming is reviving interest in this plant. To benefit from symbiotic nitrogen fixation and lower crop water usage, field pea is typically cultivated in rotation with cereals. Field pea is becoming more popular as an intercrop plant. Field pea can be introduced in salt intrusion land which remain fallow or can be planted with rice as relay or intercropping.

		Therefore, the study was conducted to fulfill the following objectives- To identify the salt tolerant variety.
Materials and methods	:	
Crop/variety	:	Fieldpea
Design	:	RCBD
Treatment	:	i. Six lines ii. BARI Motor-3 and BARI Motor-4 (check)
Replications	:	3
Plot size	:	4m x 3m
Spacing	:	line-line 35cm, plant-plant 7cm
Fertilizer dose and Methods	:	As per recommended dose from Fertilizer Recommendation Guide (BARC, 2024).
Irrigation/ rainfed	:	
Data to be recorded	:	Plant height (cm), number of pods/plant, pod length and breadth (cm), fruit colour, Days to 1st flowering, Days to 1st pod harvest, Days to maturity, Branch/plant, number of seeds per pod, 1000-seed weight (g), yield/plant (kg), disease and pest infestation etc.
Investigator(s)	:	M.K.Islam, T.Z. Munmun and, M.K. Shahadat and M.Rahman OFRD, BARI, Khulna and PGRC Scientist
Season	:	2025-26
Date of initiation	:	Last week of October to first week of November, 2025
Date of completion	:	February, 2026
Expected output/ Benefit	:	Fielpea production area with yield will be increased
Locations	:	On-station
Status	:	New
Estimated cost	:	50000 Tk
Source of fund	:	BARI
Program Proposed from	:	OFRD, BARI, Khulna
Priority	:	First

Expt. 158. Adaptive trial of relay mustard in Barishal and Jhalokathi

Activity		Varietal performance
Objective(s)	:	To find out the best mustard/rapeseed variety for relay sowing in southern Bangladesh
Rationale	:	Mustard production in southern Bangladesh is declining due to late T. Aman rice harvest. Although mustard production dependent on climatic conditions, some of the recently developed BARI released varieties are adapted to withstand adverse environmental conditions. Most of the areas of southern region relay mustard is the sole way to cultivate mustard. Relay mustard will enhance productivity by fallow land utilization with low input. Therefore, the adaptive trial will be taken to find out the best mustard/rapeseed variety for southern Bangladesh.

Materials and methods	:	Mustard/rapeseed will be relayed with T. Aman rice used in different locations in the production program. Quality seeds of the different BARI released Mustard varieties will be distributed. The seeds will be broadcasted @ 10.0 kg ha^{-1} mixing with sand and ash. Half of N and all other fertilizers were applied during existing T. aman rice field 2-5 days before harvesting. The rest of N will be top-dressed at 33 days after sowing (DAS). For controlling the *Alternaria* leaf spot, Rovral will be spraying twice at the rate of 0.2 percent at 10 days interval from 45 DAS. For controlling aphid Malathion and Rison will be sprayed @ 0.3 percent.
Crop/variety	:	Mustard/rapeseed
Design	:	RCBD
i) Treatment	:	T_1 : BARI Sarisha-18 T_2 : BARI Sarisha-20 T_3 :BARI Sarisha-21 and T_4: BARI Sarisha-23
ii) Replication	:	6 (Dispersed)
Plot size	:	100 decimal
Spacing		Broadcasting
Fertilizer dose and methods of application	:	FRG-2018 and recommended methods
Irrigation/rainfed	:	Rainfed
Data to be recorded	:	Dates of all operation Yield and yield attributes Major disease and insect incidence Cost and return analysis Farmers opinion
Investigator(s)	:	R. Uddin, SO, H. M. Bashar, SSO and M. S. I. Khan
Season		Rabi 2025-26
Date of initiation	:	November, 2025
Date of completion	:	May, 2026
Expected output/benefit	:	Fallow land will be utilized Cropping intensity will increase
Location	:	Banaripara, Barishal, Rajapur and Kathalia, Jalokathi
Status	:	New
Estimated cost	:	50000/- Bdt
Source of fund	:	BARI
Priority	:	1st

Expt. 159. Validation trial on sunflower cultivation through seedling transplanting in Southern Bangladesh

Activity		Validation trial
Objective(s)	:	To validate sunflower cultivation through seedling transplanting with zero tillage at farmers level
Rationale	:	Sunflower is a major oilseed crop in southern Bangladesh. In southern region prospect, due to late harvesting of T. Aman rice Rabi season crops cannot be cultivated, sunflower can be a better option. But, cultivation of sunflower is usually initiated in late Rabi season. Due to late seeding, sunflower yield and productivity is declining day by day. Moreover, natural calamities like irregular rainfall and cyclones delayed the seeding time of sunflower. On the other hand, late harvesting of sunflower causes yield declines due to lodging and flash flood. With a view to overcoming the shortcomings of sunflower cultivation, a tool has been developed by agronomy division of RARS, Rahmatpur, Barishal. Transplanted 14 days old seedlings at 40 cm × 25 cm spacing along with proper fertilizer management causes yield increment in research findings. The technology should be tested in farmer's field condition of Barishal and Patuakhali. Therefore, the program has been taken to validate sunflower cultivation through seedling transplanting with zero tillage.
Materials and methods	:	
Crop/variety	:	BARI Surjomukhi-2
Design	:	RCBD
i) Treatment	:	T_1: Transplanting 14 days old seedlings T_2: Farmers Practice
i) Replication	:	3 (Dispersed)
Plot size	:	8m × 5m
Spacing		Broadcasting
Fertilizer dose and methods of application	:	FRG-2018 and recommended methods
Irrigation/rainfed	:	Rainfed
Data to be recorded	:	Dates of all operation, Yield and yield attributes, Major disease and insect incidence, Cost and return analysis & Farmers opinion
Investigator(s)	:	R. Uddin, SO and M. S. I. Khan
Season		Rabi 2025-26
Date of initiation	:	November, 2025
Date of completion	:	May, 2026
Expected output/benefit	:	Eligibility and potentiality of sunflower seedling transplanting technology will be verified Adoption of this technology will ensure early sowing and maximum productivity
Location	:	Banaripara, Barishal, Rajapur and Kathalia, Jalokathi
Status	:	New
Estimated cost	:	1,00000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 160. Validation on controlling of major betel vine diseases in Khulna and Barisal region

Activity	:	Disease pest Management
Objective (s)	:	The technology would contribute substantially in reducing leaf spots, lesions and stem lesions infestation.
Rationale	:	The betel vine is highly susceptible to diseases, pests and natural calamities (Sayeduzzaman 1988). Humid and moist shaded conditions are favorable for betel vine growth, which also favor a variety of root and foliage disease development (Goswami et al. 2002). Thus the betel vine growers incurred huge loss due to different diseases of betel vine. The most important diseases of betel vine plants are foot and root rot disease, leaf spot disease, powdery mildew disease and leaf rot disease. Biological control of soil borne pathogens offers environmentally safe, durable and cost effective alternative to chemicals. Many species of fungi and bacteria are reported to be effective bio-control agents against soil borne plant pathogens. Trichoderma spp. are known antagonists of plant pathogenic fungi and have been shown to be very potential bio-control agents of several soil borne plant pathogenic fungi under both greenhouse and field conditions. Especially, Trichoderma spp. was found to be effective against different sclerotia forming fungi including Rhizoctonia solani and Sclerotium rolfsii (Hadar et al. 1979).
Materials and Methods	:	-
Crop	:	Betel vine
Design	:	-
Treatment	:	Tricoderma should be applied 8 to 10 kg/Bigha of land during land preparation and Tricoderma powder (0.02%) should be applied by spray 3 times at 12 days intervals.
Replication	:	-
Plot size	:	-
Planting system/spacing	:	-
Fertilizer dose and methods of application	:	-
Irrigation	:	-
Data to be recorded	:	Dates of all operation, yield, cost and return and farmers' opinion.
Investigator (s)	:	M K Islam SSO, TZ Munmun SSO and M Rahman SO OFRD, Khulna, R Uddin, SO, Barisal
Season	:	2025-26
Date of Initiation	:	November 2024 October (1st week harvest to July)
Date of completion	:	May 2025
Expected output / benefit	:	It would help increase the productivity of betel vine crop.
Location (s)	:	OFRD, BARI, Khulna and Barisal.
Status	:	1st year
Estimated cost	:	Tk. 50,000 in each location
Source of fund	:	BARI
Priority	:	1st

Expt. 161. Adaptive Trial of Summer Country Bean in Bandarban Hill District

Activity	:	Adaptability test
Objective(s)	:	To evaluate the performance and suitability of BARI summer country bean varieties in Bandarban Hill District.
Rationale	:	Country bean (*Lablab purpureus*) is an important legume vegetable. While traditionally grown in the Rabi season, the development of summer varieties offers potential for year-round production and increased farmer income. Adaptive trials are crucial to identify suitable BARI varieties for the specific agro-climatic conditions of the Bandarban hill region, considering its unique soil and rainfall patterns.
Materials and Methods	:	
Crop	:	Summer Country Bean
Variety		
Design	:	RCB
Treatments		V_1: BARI Sheem-3 V_2: BARI Sheem-7
Replications	:	061 (dispersed)
Plot size	:	0 m x 8 m
Planting system/spacing	:	Line to line= 1.5 m Plant to plant= 1.5 m
Fertilizer dose and methods of application	:	As per FRG 2024
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Date of all operations, yield and yield contributing characters. Farmer's opinion, pest incidence, economic return etc.
Investigator(s)	:	Dr. Md. Salim, SSO, OFRD, BARI, Bandarban Md. Imam Hossain, SO, OFRD, BARI, Bandarban
Season	:	Kharif-1 season of 2025-26
Date of initiation	:	August 2025
Date of completion	:	February 2026
Expected output/benefit	:	Suitable summer country bean varieties will be identified, providing farmers with options for off-season cultivation and increased profitability.
Location	:	Bandarban Sadar
Status	:	1st year
Program Proposed from		OFRD, BARI, Bandarban
Priority	:	1st
Estimated cost	:	Tk.80000/-
Source of fund	:	BARI

Expt. 162. Adaptive Trial of Hybrid Sweet Gourd Varieties in Bandarban Hill District

Activity	:	Adaptability test
Objective(s)	:	To evaluate the performance of different sweet gourd varieties in the hilly areas of Bandarban.
Rationale	:	Sweet gourd (*Cucurbita moschata*) is a popular vegetable and a good source of vitamins and minerals. Identifying high-yielding and adaptable sweet gourd varieties for the Bandarban hill district can contribute to food security and diversify agricultural production. Local farmers often use traditional varieties, and introducing improved BARI varieties can significantly boost productivity.
Materials and Methods	:	
Crop variety	:	Sweet Gourd
Design	:	RCB Treatment: 03 V_1: BARI Hybrid Mistikumra-1 V_2: BARI Hybrid Mistikumra-2 V_2: BARI Hybrid Mistikumra-3 Replications: 06 (dispersed)
Plot size	:	10 m x 8 m
Planting system/spacing	:	Pit to pit= 2m x 2m
Fertilizer dose and methods of application	:	As per FRG 2024
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Date of all operations, yield and yield contributing characters. Farmer's opinion, pest incidence
Investigator(s)	:	Dr. Md. Salim, SSO, OFRD, BARI, Bandarban Md. Imam Hossain, SO, OFRD, BARI, Bandarban
Season	:	Kharif-1 season of 2025-26
Date of initiation	:	June 2026
Date of completion	:	September 2026
Expected output/benefit	:	Suitable sweet gourd varieties will be identified for the hilly areas, leading to increased yield and farmer income.
Location	:	Bandarban Sadar
Status	:	1st year
Program Proposed from		OFRD, BARI, Bandarban
Priority	:	1st
Estimated cost	:	Tk.80000/-
Source of fund	:	BARI

Expt. 163. Adaptive Trial of Groundnut Varieties in Bandarban Hill District

Activity	:	Adaptability test
Objective(s)	:	To assess the performance and adaptability of improved groundnut varieties in the hilly areas of Bandarban.
Rationale	:	Groundnut (*Arachis hypogaea L.*) is a significant oilseed and legume crop grown in many parts of Bangladesh for its nutritional and economic value. Despite its potential, productivity remains low in the hilly regions like Bandarban due to various constraints, including suboptimal variety selection, limited adaptability, and unfavorable agro-ecological conditions. The Bangladesh Agricultural Research Institute (BARI) has developed several improved groundnut varieties with enhanced yield potential, pest and disease resistance, and adaptability to diverse environments. To evaluate the performance of these improved varieties under the unique environmental conditions of the Bandarban Hill District, adaptive trials are essential. These trials aim to identify the most suitable varieties that can thrive in local soil and climatic conditions while meeting the needs of local farmers. This study focuses on the performance assessment of BARI released groundnut varieties in Bandarban to recommend appropriate varieties for sustainable cultivation and improved productivity in the region.
Materials and Methods	:	
Crop/ variety	:	Groundnut
Design	:	RCB
Treatments		BARI Chinabadam-9, BARI Chinabadam-11 & Local (Ruma local)
Replications		06 (dispersed)
Plot size	:	10 m x 8 m
Planting system	:	Line to line = 30 cm, plant to plant = 15 cm
Fertilizer dose and application	:	As per FRG 2024 recommendations
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Date of all operations, plant height, number of capsules/plant, 100-seed weight, yield and yield contributing characters, oil content, farmer's opinion, pest incidence.
15.Investigator(s)	:	Dr. Salim, SSO, OFRD, BARI, Bandarban Md. Imam Hossain, SO, OFRD, BARI, Bandarban
Season	:	Rabi season of 2025-26
Date of initiation	:	October 2025
Date of completion	:	January 2026
Expected output/benefit	:	Suitable high-yielding groundnut varieties will be identified for the hilly areas, promoting oilseed production and increasing farmer's income.
Location	:	Bandarban Sadar
Status	:	1st year
Program Proposed from		OFRD, BARI, Bandarban
Priority	:	1st
Estimated cost	:	Tk. 75,000/-
Source of fund	:	BARI

Expt. 164. Adaptive Trial of Hybrid Bitter Gourd Varieties in Bandarban Hill District

Activity	:	Adaptability test
Objective(s)	:	To assess the performance and adaptability of improved bitter gourd varieties in the hilly areas of Bandarban.
Rationale	:	Bitter gourd (*Momordica charantia L*) is a high-value, nutrient-rich vegetable crop widely consumed across Bangladesh for its medicinal and dietary benefits. However, its production in the hilly terrains of Bandarban remains limited due to a lack of suitable, climate-resilient varieties. This adaptive trial was conducted to evaluate the performance of different bitter gourd varieties under the agroecological conditions of Bandarban Hill District. The trial aimed to identify varieties with superior yield potential, disease resistance, and adaptability to the region's unique topography and climatic challenges. Findings from this study are expected to support the promotion of improved bitter gourd cultivation among local farmers, contributing to income generation and nutritional security in hill communities.
Materials and Methods	:	
Crop	:	Bitter Gourd
Design	:	RCB Treatment: 03 V_1: BARI Hybrid Korola-2 V_2: BARI Hybrid Korola-3 V_3: Commercial variety Replications: 06 (dispersed)
Plot size	:	10 m x 8 m
Planting system/spacing	:	1.5m x 1.5m
Fertilizer dose and methods of application	:	As per FRG 2024 recommendations
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Data of all parameters including plant height, number of fruits/plant, fruit length, fruit diameter, yield and yield contributing characters, farmer's opinion, pest incidence
Investigator(s)	:	Dr. Salim, SSO, OFRD, BARI, Bandarban Md. Imam Hossain, SO, OFRD, BARI, Bandarban
Season	:	Kharif-1 season of 2025-26
Date of initiation	:	April 2026
Date of completion	:	August 2026
Expected output/benefit	:	Suitable high-yielding bitter gourd varieties will be identified for the hilly areas, promoting vegetable production and increasing farmer's income
Location	:	Bandarban Sadar
Status	:	1st year
Program Proposed from		OFRD, BARI, Bandarban
Priority	:	1st
Estimated cost	:	Tk. 75,000/-
Source of fund	:	BARI

Expt. 165. On-farm trial of newly released sweet potato varieties in Cumilla region

Activity	:	Adaptation of suitable varieties
Objective (s)	:	To evaluate the yield performance and popularize the newly released sweet potato varieties in Cumilla, Brahmanbaria and Chandpur
Rationale	:	Sweet potato, it is a known crop gifted with high potential to tolerant adverse environmental conditions such as drought, low soil fertility, high rainfall and it requires very little labour and care compared to other crops. Fresh sweet potato provides about 50% more calories than Irish potato. Apart from its high caloric content, sweet potato is also one of the cheapest potential sources of vitamin A to alleviate problem of night blindness and infant mortality. In Cumilla region, sweet potato is cultivated with local varieties. The yield potentiality of local variety is low and this is also susceptible to different pest and diseases. Thus they get very poor economic return. Moreover they follow traditional planting system. This research was done with the objectives to find out the suitable sweet potato varieties and to disseminate and popularize the variety among the farmers level.
Materials and Methods	:	Stated as bellow
Crop/variety	:	BARI Misty Alu-12, BARI Misty Alu-17 and BARI Misty Alu-18 and Local best one (as check)
Design	:	RCBD
(i) Treatment	:	Variety (4)
(ii) Replications	:	06 (dispersed)
Plot size	:	8m x 5 m
Planting system/spacing	:	Recommended spacing for specific crop
Fertilizer dose and methods of application	:	FRG recommended dose or STB
Irrigated/rainfed	:	Irrigated/rainfed
Data to be recorded	:	Crop management practices, yield and yield contributing characters, pest and diseases incidence.
Investigators	:	Concerned scientists of respective site.
Season	:	Rabi 2025-26
Date of completion	:	April, 2026
Expected output/benefit	:	# % increase of yield, % increase of farmers income; pest and diseases incidence, cost-return and farmers feedback
Location	:	Cumilla, Brahmanbaria, Chandpur and Hathazari
Status (Date of initiation √New or 1st year/2nd year)	:	November, 2025
Programme proposed from	:	Bottom-up
Priority	:	1st
Estimated cost	:	1,20,000 (20,000/- per replication)
Source of fund	:	BARI Main

Expt. 166. Validation trial of biolife BHAT-01 Wp for controlling bacterial wilt in BARI Eggplant variety

Activity	:	Demonstration
Objective (s)	:	To control the bacterial wilt
Rationale	:	Wilting is the serious devastating disease in eggplant vegetables that hampers yield production. Our farmers are suffering a lot not to control the wilting by using chemical pesticides. They are failure to control the wilting. Bacterial wilting of solanaceous vegetables by *Ralstonia solanacearum* is serious threat in our country Bangladesh. No effective control measures had been implemented. However, a number of Bacillus species were successful in controlling the plant diseases (Hossain et al., 2019). We produced formulated compounds by the *Bacillus* species that controlled bacterial wilt in our earlier research. In response to the DAE Chattogram's request, a validation trial will be conducted in this year using effective microbial species by BIOLIFE BHAT-01
Materials and Methods	:	Formulation product of BIOLIFE BHAT-01 made by *Bacillus oryzicola* YC7007 and *Bacillus velezensis* BvHat 01 will be packed from RARS, Hathazari. One time in the rhizosphere at 15 days prior to planting and should be sprayed four times every 20 days after planting by the 1 gm/L of formulated BIOLIFE BHat-01.
Crop/Variety	:	BARI Bt Begun 12
Design	:	RCBD
i. Treatment	:	2, (BIOLIFE BHAT-01 WP and control)
ii. Replication	:	3
Plot size	:	NA
Planting system/Spacing	:	70 x 90 cm^2
Fertilizer dose and method of application	:	BARI recommended dose and application
Irrigated / rainfed	:	Recommended doses as per BARI hand book
Data to be recorded	:	Following the disease rating scale, severity index, % mortality rate, ROS (H_2O_2) accumulation will be measured.
Investigator (s)	:	M. T. Hossain, S. Hossain, and A. S. M. H. Rashid
Season	:	Rabi and partially Kharif
Date of initiation	:	November 2025
Date of completion	:	2026
Expected outcome/benefit	:	Researchers and farmers will be benefited
Location	:	Fatikchari, Noakhali, Hathazari, Sitakund
Status (New or1st year/2nd year..)	:	New
Program Proposed from	:	RARS, Hathazari
Priority	:	Ist
Estimated Cost	:	150,000/-
Source of fund	:	BARI

Expt. 167. Adaptive Trial of BARI Developed winter Chilli varieties in Noakhali Region

Objective(s)	: To study the performance of the improved varieties of Chilli at farmers' level. To popularize BARI developed varieties.
Rationale	: The coastal region of Noakhali, characterized by its distinct agro-ecological conditions including salinity, waterlogging, and erratic rainfall patterns, presents unique challenges for vegetable cultivation. Despite these adversities, the region holds significant potential for winter vegetable production, especially chilli (*Capsicum annuum L.*), which is a high-value spice and vegetable crop with increasing demand in both domestic and export markets. Chilli is sensitive to environmental stressors such as salinity, excessive soil moisture, and low temperature during early growth stages. Traditional varieties often fail to perform consistently under these conditions, resulting in reduced yield and quality. In response, the Bangladesh Agricultural Research Institute (BARI) has developed several winter chilli varieties with improved traits such as high yield potential, disease resistance (e.g., to leaf curl virus and powdery mildew), and adaptability to varied agro-climatic zones. However, before these varieties can be widely recommended for commercial cultivation in Noakhali, their adaptability and performance must be validated under real farm conditions through adaptive trials. Such trials are crucial to assess genotype × environment interactions, farmer acceptability, and practical management compatibility in the coastal context.
Materials and Methods	:
Crop/variety	: Chilli varieties
Design	: RCBD
i) Treatments	: Variety: BARI Marich-1, BARI Marich-2, BARI Marich-3, BARI Marich-
ii) Replication	: 4, BARI Marich-5, BARI Marich-6 and Local check 6 (dispersed)
Plot Size	: 8 m × 5 m
Planting system/spacing	: 60 cm × 45 cm
Fertilizer dose and methods of application	: 100-48-120-18-3.5-2 N-P-K-S-Zn-B kg/ha (FRG-2024) and recommended method
Irrigated/rainfed	: Irrigated
Data to be recorded	: Dates of all operations, crop duration, yield and yield attributes, major disease and insect incidence, soil salinity data (for saline area), cost and return, farmer's opinion
Investigator(s)	: M.S. Islam, PSO and M.M. Bashir, SSO; OFRD, Noakhali
Season	: *Rabi* 2025-26
Date of initiation	: November 2025
Date of completion	: June 2026
Expected output/benefit	: Improved chilli variety(s) will be identified by the farmers.
Location	: Sadar & Subarnachar, Noakhali and Sadar, Feni
Status	: New
Estimated cost	: Tk. 90,000/-
Source of fund	: BARI
Priority	: 1st

Expt. 168. Adaptive Trial of BARI Developed colored sweet potato varieties in Noakhali Region

Objective(s)	: To study the performance of the improved varieties of sweet potato at farmers' level. To popularize BARI developed varieties.
Rationale	: The Noakhali coastal region of Bangladesh is a vulnerable agro-ecological zone, frequently affected by salinity intrusion, waterlogging, and low soil fertility. Despite these constraints, it possesses potential for the expansion of climate-resilient, nutrient-rich crops that can ensure food and nutritional security for its population. Among these, colored sweet potato (*Ipomoea batatas* L.) varieties are emerging as a promising candidate due to their adaptability, high nutritional value, and multiple uses. Colored sweet potatoes, especially those with purple or orange flesh, are rich in beta-carotene (pro-vitamin A) and anthocyanins, which are essential in combating micronutrient deficiencies. In Bangladesh, sweet potato is traditionally grown in small areas, but its consumption and demand are increasing due to its health-promoting properties, high energy content, and suitability for processed food industries. To meet this growing demand and promote diversified cropping systems, the Bangladesh Agricultural Research Institute (BARI) has developed several high-yielding, early-maturing, and colored-fleshed sweet potato varieties. However, before large-scale dissemination, these varieties must be tested for suitability and adaptability in specific regions, particularly in challenging environments like Noakhali.
Materials and Methods	:
Crop/variety	: Sweet potato varieties
Design	: RCBD
i) Treatments	: Variety: BARI Mishti Alu-12, 13, 15, 16, 17 & 18 and Local one
ii) Replication	: 6 (dispersed)
Plot Size	: 8 m × 5 m
Planting system/spacing	: 60 × 30 cm
Fertilizer dose and methods of application	: 160-48-160-15-42-4.5-2.4 N-P-K-Mg-S-Zn-B kg/ha (FRG-2024) and recommended method
Irrigated/rainfed	: Rainfed
Data to be recorded	: Dates of all operations, crop duration, yield and yield attributes, major disease and insect incidence, soil salinity data (for saline area), cost and return, farmer's opinion
Investigator(s)	: M.S. Islam, PSO and M.M. Bashir, SSO; OFRD, Noakhali
Season	: *Rabi* 2025
Date of initiation	: December 2025
Date of completion	: May 2026
Expected output/benefit	: Suitable sweet potato variety(s) will be identified by the farmers.
Location	: Sadar & Subarnachar, Noakhali and Sadar, Feni
Status	: New
Estimated cost	: Tk. 90,000/-
Source of fund	: BARI
Priority	: 1st

Expt. 169. On-farm trial of winter hybrid Tomato varieties in Sylhet region

Activity	:	Adaptability test
Objectives	:	To find out suitable tomato varieties for this region.
Rationale	:	An on-farm trial was conducted to evaluate the performance of selected winter hybrid tomato varieties under farmers' field conditions in the Sylhet region. The main objective of the trial was to identify high-yielding, disease-tolerant, and market-preferred tomato hybrids suitable for local cultivation during the rabi (winter) season. Sowing of seeds was done in late October, and seedlings were transplanted in mid-November. Standard crop management practices, including fertilizer application, staking, irrigation, and pest and disease control, were followed uniformly across treatments. his on-farm trial helped validate the adaptability and profitability of improved hybrid tomato varieties in the Sylhet region and provided practical recommendations for local farmers. Data on important agronomic and economic parameters such as days to flowering, number of fruits per plant, average fruit weight, total and marketable yield, disease incidence (notably late blight and bacterial wilt), and farmers' preferences were recorded. Due to its higher yield and income, these varieties need to be tested in the farmers' field. Hence, the present experiment has been undertaken to test and select suitable BARI developed winter hybrid tomato varieties to improve the profitability and livelihood of the farmers.
Materials & Methods	:	-
Crop/varieties	:	Winter hybrid Tomato varieties
Design	:	RCB
Treatments/Varieties		V1 = BARI Hybrid Tomato-5 V2 = BARI Hybrid Tomato-7 V3= BARI Hybrid Tomato-9 V4 = Locally (Mongolraja/Epoc)
Replication	:	6 dispersed
Plot size	:	8 m × 5 m
Planting system/ spacing	:	Line sowing
Fertilizer dose and methods of Application	:	As per BARC FRG 2024
Irrigated/rainfed	:	Rainfed
Data to be recorded	:	Date of all operation, yield and yield contributing characters, Major disease and insect infestation, Cost and return, Farmers opinion
Investigators	:	MD. Zulfiqar and MD. Asaduzzaman
Season	:	Robi
Date of initiation	:	October 2025
Date of completion	:	October 2027
Expected output	:	
Location	:	MLT sites, Moulvibazar and FSRD site, Kamalbazar
Status	:	1st year
Programme proposed from	:	OFRD, BARI, Sylhet
Priority	:	1st
Estimated cost	:	Tk.50,000/location
Source of fund	:	BARI

Expt. 170. Adaptive trial of different sunflower varieties in coastal areas

Activity		Adaptive Trial
Objective(s)		To evaluate the performances of BARI developed varieties in the saline area. To increase production and economic return
Rationale	:	Sunflower (*Helianthus annuus*) is the second most important oil crop in the world after Soybean in terms of acreage and production. Sunflower contains 42-44% oil. It also contains 40-50% linoleic acid and 20-22% protein. One kg Sunflower seed brings 500-600 ml oil which is greater than any other oil seeds. Bangladesh has to import huge amount of vegetable oil every year to meet up the deficiency. It is cultivated in different region of the world and getting popularity due to its high quality edible oil. Sunflower in Bangladesh is cultivated since 1975 and cultivated in limited area of Patuakhali, Jashore, Kushtia, Natore, Pabna, Gazipur and Tangail district. Therefore this program is undertaken.
Materials and Methods	:	
Crop/variety	:	Sunflower
Design	:	
i) Treatments	:	Sunflower variety: BARI Surjomukhi-2, BARI Surjomukhi-3 and Hysan-33
ii) Replications	:	6 (dispersed)
Plot size	:	1 Acre
Planting system/spacing	:	50 cm × 25 cm
Fertilizer dose and methods of application	:	N-P-K-S-Zn-B @ 90-40-75-24-3.5-2 kg ha^{-1} along with cowdung @ 10 t ha^{-1}. Total amount of all fertilizers and half of the total urea would be applied as basal during final land preparation. Rest of the urea would be applied at 20 and 45 DAP as top dressing.
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations Yield and yield attributes Major disease and pest incidence Economic analysis Farmers' opinion Soil salinity
Investigator(s)	:	Mostak Ahmed, SSO, OFRD, Cox'sbazar
Season	:	Rabi season
Date of initiation	:	November, 2025
Date of completion	:	March, 2026
Expected output/benefit	:	Increased oil production and cropping intensity in the coastal area
Location	:	Chokoria, Ramu and Cox'sbazar sadar, Cox'sbazar
Status (New or 1st year/2nd year/……)	:	New
Estimated cost	:	100000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 171. Adaptive trial of different varieties of Mungbean in coastal areas

Activity	:	Adaptive Trial
Objective(s)	:	To popularize BARI developed varieties in coastal areas. To increase crop production and farmers income.
Rationale	:	Mungbean (*Vigna radiata*) is one of the most important pulse crops of Bangladesh. It is a rich source of nutrient and is considered healthy food. Its seeds are a good source of dietary protein and contains higher levels of folate and iron than most other legumes (Keatinge et al., 2011). On dry weight basis, mungbean contains 22-28% protein, 1.0-1.5% fat, 3.5-4.5% fiber, 4.5- 5.5% ash and 60-65% carbohydrate. It is also a rich source of essential amino acids like isoleucine, leucine, lysine and phenylalanine (Lambrides and Godwin, 2007). On an average, it fixes @ 300 kg ha^{-1} of atmospheric nitrogen annually (Sharar et al., 2001), which not only meet its own nitrogen need, but also benefits following crops (Ali and Gupta, 2012). Mungbean is usually grown in low to medium altitudes in the tropics as a rainfed crop. Mungbean can be grown as manure, straw, cover crop, and forage or intercropped in cereals, sugarcane, sunflower or jute. Yield of green gram seeds decreases when it is intercropped, but the total productivity and land use efficiency of the system is significantly increased through intercropping (Ali, 1992). Farmers commonly grow mungbean by one ploughing and scarcely use fertilizer due to its low yield and lack of proper information. Thus, the yield becomes low. Among many other crop production constraints, suitable varieties are the most important, which they contribute significantly to the production of mungbean (Ismail and Hall, 2000; Khan et al., 2001). Already, Bangladesh Agricultural Research Institute (BARI) and Bangladesh Institute of Nuclear Agriculture (BINA) have released a good number of improved varieties of mungbean, which have been tested in the different areas, and performance was highly satisfactory over local varieties. But the improved varieties are not yet introduced to farmers in coastal area. Therefore, this program is undertaken to evaluate the performance of mungbean varieties and to increase yield in coastal areas.
Materials and Methods	:	
Crop/variety	:	Mungbean
Design		
Treatments	:	Mungbean variety: BARI Mung-6, BARI Mung-8, BINA Mung-7 and BINA Mung-8
Replications	:	6 farmers
Plot size	:	2000 m^2 for each farmer
Planting system/spacing	:	30 cm × 10 cm
Fertilizer dose and methods of application	:	N-P-K-S-Zn-B @ 23-17-17.5-10-3.5-2 kg ha^{-1} respectively and cowdung @ 10 t ha^{-1}. Entire cowdung, urea, TSP, gypsum, zinc, boric acid and MoP would be applied during final land preparation.
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, Yield and yield attributes, Major disease and pest incidence, Economic analysis, Farmers' opinion & Soil salinity
Investigator(s)	:	Mostak Ahmed, SSO, OFRD, Cox'sbazar
Season	:	Late Rabi season
Date of initiation	:	January, 2026
Date of completion	:	April, 2026
Expected output/benefit	:	Increased crop production and cropping intensity in the coastal area

Location	:	Chokoria, Ramu and Cox'sbazar sadar, Cox'sbazar
Status	:	New
Estimated cost	:	80000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 172. Adaptive trial of Pointed gourd varieties in different locations

Objective (s)	:	To find out the suitable pointed gourd variety for this region
Rationale	:	Pointed gourd (*Trichosanthes dioica Roxb*) is an important and popular dioecious vegetable crop belonging to the family Cucurbitace. Though, vegetables are growing in this region during winter Acute vegetable crisis occurred in summer; so cultivation of summer vegetable could be a good option for the farmers. This summer crop pointed gourd is highly demanded vegetable in Sylhet always importing from other parts of the country. BARI has developed three-pointed gourd varieties which can be tested in farmer's field. Again, pointed gourd is cultivated once, through proper management, crops can be obtained for up to three years as ratoon crop. Its production cost is also very low. Hence, farmers are interested in cultivating BARI developed high-yielding pointed gourd varieties (BARI Patol-1 & BARI Patol-2) in addition to their local varieties. In Daspara of Barura Upazila of Comilla district, a significant number of farmers have been cultivating local variety of pointed gourd. Hence, the experiment will be undertaken to select suitable pointed gourd variety for Sylhet and Cumilla region.
Materials and Methods	:	
Crop/variety	:	Pointed gourd
Design	:	RCB
Variety(s)	:	BARI Patol-1, BARI Patol-2, BARI Hybrid Patol-1 and Local
(ii) Replications	:	6 (Dispersed)
Plot size	:	8 m ×5 m
Planting system	:	Pit system; Pit size (50 cm × 50 cm × 50 cm)
Fertilizer dose and methods of application	:	As per recommendation by FRG'2023/STB.
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, yield and yield contributing characters, disease and insect interaction, cost and return and farmers opinion
Investigators	:	M. Jamal Uddin
Season	:	Kharif
Date of initiation	:	October 2024
Date of completion	:	November 2025
Expected output	:	Suitable variety of Pointed gourd will be selected for Cumilla region.
Location	:	Cumilla
Status	:	2nd year
Programme proposed from	:	OFRD, Cumilla
Estimated cost	:	Tk. 50000
Source of fund	:	BARI
Priority	:	1st

Expt. 173. On-Farm Trial of Winter Type Country Bean Varieties in Gopalganj

Objectives	:	To evaluate the performance of BARI country bean variety in farmers field
Rationale	:	Country bean (*Lablab purpureus*) is one of the most important leguminous winter vegetables in Bangladesh. Country bean is delicious and rich in protein and normally grown in rabi or winter season in Bangladesh. Every year in Gopalganj a remarkable area is cultivated with country bean especially on the ghair boundary and homestead area. But famers usually cultivate traditional local variety which has prolonged vegetative period and poor yield potential. Beside this, local variety is more susceptible to disease and insect infestations. In the meantime, BARI has developed some high yielding country bean varieties with good quality. These varieties have been popularized in some areas of the country but till now there is no trial was done on country bean varieties in Gopalganj region. Therefore, it is necessary to evaluate the performance of BARI released country bean varieties in Gopalganj so that famers can be more benefitted.
Materials and methods	:	
Crop	:	BARI developed country bean varieties with local check
Design	:	RCBD
Treatment	:	1. BARI Sheem-6 2. BARI Sheem-8 3. BARI Sheem-9 4. Local cultivar as check
Replications	:	6 (dispersed)
Plot size	:	7.5m x 6.0m
Planting system/ Plant spacing	:	1.5m x 1.5m
Fertilizer dose and application methods	:	As recommended (FRG, 2023) / STB
Irrigation/rainfed	:	Irrigated
Data to be recorded	:	Dates of operations, Yield and yield component, Disease and pest incidence, Economic analysis
Investigator(s)	:	M M Howlader and D Halder
Season	:	Rabi
Date of initiation	:	October 2024
Date of completion	:	April 2026
Expected output	:	Farmers will be benefited by growing country bean in some identified location.
Location	:	MLT Site, Tungipara; MLT Site, Pirojpur; FSRD Site, Sadar.
Status	:	2nd year
Estimated cost	:	Tk. 60,000/- (20000/- per location)
Source of fund	:	BARI
Priority	:	1st

Expt. 174. On-Farm Trial of Sunflower varieties in char land of Sherpur

Objectives	:	To find out the suitable sunflower varieties for char areas of Sherpur.
Rationale	:	Sunflower is a promising oilseed crop in Bangladesh. Sunflower seeds contain 40-45% linolic acid, and it does not contain harmful erucic acid. In Bangladesh sunflower cultivation is in a limited scale but there is a scope to enhance the sunflower cultivation. There's no proper guideline for the farmers to cultivate sunflowers. BARI developed three varieties of sunflower. Therefore, this experiment is undertaken to identify the suitable sunflower variety in Sherpur region. N.B. Highlight char area
Materials and methods	:	
Crop		Sunflower
Design	:	RCBD
Treatment	:	Variety: 3 BARI Surjomukhi-2 BARI Surjomukhi-3 Hysun 33 (check)
Replication	:	6 (Dispersed)
Plot dimension	:	8 m x 5 m
Planting system	:	Line sowing
Fertilizer dose	:	115-30-110 kg ha^{-1} NPK (FRG,2023 / STB
Methods of application	:	50% N and full dose of PK were applied as basal dose and rest 50% N was applied as top dressing at 25 and 45 DAS
Irrigated/Rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, Plant population, Plant height (cm), head size, seed number/ head, seed size, yield(t/ha), pest and disease reaction, no bird damage, cost and return, Farmer's assessment
Investigator	:	AKM Zonaed Ul Noor, Md. Mizanur Rahman, and Dr. Md. Amraul Islam,
Season	:	Rabi2024-25
Date of initiation	:	November'2024
Date of completion	:	March'2025
Expected output	:	Farmers of char land will be benefited by growing mustard with 20-30% extra income.
Location	:	Charland of Sherpur.
Status	:	2nd year
Estimated cost	:	Tk. 40,000 per location
Source of fund	:	BARI
Priority	:	1st

Expt. 175. Adaptive Trial of Sesame in Southern Part of Bangladesh

Objective (s)	:	To identify suitable sesame varieties for the southern region of Bangladesh, to promote sesame cultivation.
Rationale	:	Sesame is one of the important oilseeds in Bangladesh. A lot of foreign exchange is spent every year for importing edible oils and oilseeds to meet domestic demand (Myint, 2020; Eleuch et al., 2021). The country producing only 20% oilseed so, 80% are imported to meet the demand. The area, production and productivity of sesame at 2019-20 were 33656.89-hectare, 31786 m tons, and 944 kg per hectare, respectively (BBS, 2021). A study on financial analysis of sesame cultivation aimed at determining the input use and cost return to aid farmers improve/increase their profitability. Some relevant studies were conducted to find out the profitability of sesame cultivation, but this study was conducted to estimate the cost and return data for major sesame varieties of Bangladesh specially for updating the database. BARI has developed many sesame varieties that are saline, drought and water submergence tolerant variety. These new and HYV varieties need to disseminate and popularize to the farmers.
Materials and Methods	:	
Crop/variety	:	Sesame
Design	:	RCBD
i. Treatment	:	Varieties- 03 (BARI Till-4, BARI Till-5, BARI Till-6)
ii. Replications	:	6 (Six), Dispersed
Plot size	:	8 m x 5 m for each unit plot
Planting system/spacing	:	Line sowing, 30 cm x 10 cm
Fertilizer dose and methods of application	:	40-15-15-0 kg/ha NPKS + 5 t/ha Cowdung. All fertilizer used as basal dose except urea.
Irrigated/rainfed	:	Rainfed
Data to be recorded	:	Yield and yield contributing characters, benefit & cost, disease and pest infestation, Salinity at 15 days interval and farmers opinion.
Investigator (s)	:	Concerned scientist of OFRD, Patuakhali
Season	:	Kharif-1, FY 2024-25
Date of Initiation	:	First week of February 2026
Date of completion	:	Last week of May 2025
Expected output	:	BARI sesame will be disseminated in coastal region.
Location	:	2 (Amtoli, Barguna, Sadar, Dumki, Bauphal & Kuakata, Patuakhali) and Manikganj
Status	:	2nd year
Estimated cost	:	Tk. 100000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 176. On-Farm Trial of Groundnut varieties in Bhola

Objectives	:	To evaluate the performance of the groundnut variety in farmers' field in Bhola.
Rationale	:	Groundnut (Arachis hypogaea L.) is an important oil, food and feed crop of the world. It contains high quality edible oil (48 %), easily digestible protein (26%) and carbohydrates (20%) therefore considered asking of oilseed‟ among the oilseed crops and botanically

		classified in family Fabaceae (Das et al., 2005). Farmers of charland (coastal region) areas of Bangladesh usually grow Groundnut with local variety which produce lower yield and susceptible to pest and disease. BARI has developed some modern varieties of Groundnut, which are supposed to be higher yielder and less susceptible to pest and disease. The present study will be undertaken to evaluate the performance of BARI released groundnut varieties under farmer's field condition and popularize those varieties among the farmers to promote their adoption.
Materials & Methods	:	
Crop/varieties	:	Groundnut
Design	:	RCB
Treatments/Varieties		BARI Chinabadam-8 BARI Chinabadam-9 BARI Chinabadam-10 BARI Chinabadam-11
Replication	:	06 (dispersed)
Plot size	:	5m x 4m
Planting system/ spacing	:	Line sowing
Fertilizer		As recommended (FRG-, 2023)
Data to be recorded	:	Dates of all operation, Yield and yield contributing characters, Major disease and insect incidence, Cost and returns analysis and Farmers opinion
Investigators	:	Gazi Nazmul Hasan, Rashidul Hasan Anik & Md. Mominul Islam
Season	:	New
Date of initiation	:	November, 2024
Date of completion	:	March, 2025
Expected output	:	Suitable Groundnut variety for coastal region will be find out.
Location	:	1 (Bhola Sadar)
Status	:	2nd year
Estimated cost		Tk. 50000/-
Source of fund		BARI
Priority		1st

Expt. 177. On-Farm Trial of Turmeric Varieties

Objectives	:	To select suitable turmeric varieties and to popularize BARI turmeric varieties for the selected location
Rationale	:	Turmeric (*Curcuma longa* L.) is an important spice crop. It is used as a seasoning in every kitchen every day in Bangladesh. It has a high medicinal value in case of dizziness and coronary heart disease. It is one of the major spice crops in Bangladesh. However, there is an acute shortage of turmeric about its requirement. This higher demand of turmeric can be met up by increasing areas and cultivating high yielding variety. Spice Research Center of BARI has developed a few varieties of turmeric which are high yielding and less susceptible to pests and diseases. Therefore, the present study will undertake to find a suitable variety of turmeric against local cultivar at Muktagacha, Mymensingh region.
Materials and Methods	:	
Crop	:	Turmeric

Variety/ Lines	:	BARI Halud-4, BARI Halud-5, Local
Design	:	RCBD
Replications	:	06 (six) dispersed
Unit Plot size	:	9.0 m × 4.5 m
Spacing	:	60 cm x 25 cm
Fertilizer dose	:	140-60-60-30-3-1.5N-P-K-S-Zn-B Kg ha^{-1} + CD 5 t ha^{-1} (Recommended dose FRG' 2023)
Application of fertilizer	:	All organic manures, phosphorus and sulphur should be applied as basal during final land preparation. Nitrogen should be applied as side dressing in two equal splits at 50, 80 and 110 days after emergence.
Data to be collected	:	Yield and yield attributes, Pest and disease reaction, Cost and return analysis Farmers' opinion
Expected output	:	Suitable Turmeric varieties will be ascertained for Mymensingh
Status	:	2nd year/New
Date of initiation	:	April' 2025
Date of completion	:	January' 2026
Estimated cost	:	Tk 80,000/-
Source of fund	:	BARI
Location (s)	:	Mymensingh and Narsingdi
Investigator(s)	:	Concerned scientists of respective sites.

Expt. 178. Adaptive Trial of Onion Varieties in Sherpur

Objectives	:	To select suitable onion varieties and to popularize BARI onion varieties for the selected location
Rationale	:	Onion (*Allium cepa* L.) is an important spice crop. It is used as a seasoning in every kitchen every day in Bangladesh. It has a high medicinal value in case of diabetes and coronary heart diseases. It is one of the major spice crops in Bangladesh ranks first in production 2.1 M ton (BBS, 2018). However, there is an acute shortage of onions in relation to its requirement. This higher demand of onion can meet up by increasing areas and cultivating high yielding variety. Spice Research Center of BARI has developed onion varieties which are high yielding and less susceptible to pests and diseases. Therefore, the present study will undertake to find the suitable varieties of winter onion in different locations in Bangladesh.
Materials and Methods	:	
Crop	:	Onion
Variety/ Lines	:	BARI Piaz-1, BARI Piaz-4, BARI Piaz-6 and Commercial variety
Design	:	RCBD
Replications	:	06 (six) dispersed
Unit Plot size	:	8.0 m × 4.5m
Spacing	:	10cm x 5cm
Fertilizer dose	:	140-60-60-30-3-1.5N-P-K-S-Zn-Bkg ha^{-1} + CD 5 t ha^{-1} (Recommended dose FRG' 2023)
Application of fertilizer	:	All organic manures, phosphorus and sulphur should be applied as basal during final land preparation. Nitrogen should be applied as side dressing in two equal splits at 25 and 50 days after emergence.

Data to be collected	:	Dates of all operations, Yield and yield attributes, Pest and disease reaction Cost and return analysis, Farmers' opinion
Expected output	:	Farmers will be benefited by getting a suitable variety for onion cultivation
Status	:	2nd year
Date of initiation	:	November, 2024
Date of completion	:	April, 2025
Estimated cost	:	Tk 80000
Source of fund	:	BARI
Location (s)	:	Char of Sherpur and Jamalpur
Priority	:	1st
Investigator(s)	:	Nazma Akhter, Shammi Akhtar, Nargis Sultana, Md. Mizanur Rahman, AKM Zonaed Ul Noor, Md. Amraul Islam,

Expt. 179. On-farm trial of Coriander varieties for seed yield in Tangail

Objectives	:	i. To popularize the BARI released coriander varieties in Tangail ii. To increase economic return of farmers
Rationale	:	Coriander (*Coriandrum sativum)* is an important spice crop in our country. It is used in kitchen, bakery, pickles and medicine. The crop has good potential for production. SRC, BARI has developed a coriander variety which is suitable for cultivation all over Bangladesh in Rabi season. BARI Tangail has enough work in char land on coriander cultivation. Madhupur areas have enough scope for coriander production. So, this study will be undertaken with a view to promote and to explore the farmer's response regarding the new ones. N.B. Tangail location to be highlighted
Materials & methods	:	
Varieties	:	BARI Dhonia-1, BARI Dhonia-2, and Local variety
Design	:	RCB
Replication	:	03 (dispersed)
Plot size	:	600 m^2 per farmer
Spacing	:	30 cm x 40 cm
Fertilizer	:	FRG, 2018
Irrigated/Rainfed:	:	Irrigated
Data to be recorded	:	Dates of all operations Yield and yield attributes of crops Pest and disease infestation Economics
Investigator	:	Scientists of OFRD, BARI, Tangail
Date of initiation	:	October 2024
Date of completion	:	
Expected output		Crop yields will be increased and thus the higher economic return will be achieved over the existing practice
Location	:	MLT site Madhupur, MLT site Bhuapur Tangail
Status	:	2nd year
Estimated cost	:	Tk. 40000/-
Source of fund	:	BARI
Priority		1st

Expt. 180. Adaptive Trial with High Yielding Potato Varieties in different locations

Objective	:	-To evaluate the yield performance of the **high yielding** potato varieties at farm level for location specific variety selection. -To collect feedback from the grower of those selected varieties.
Rationale	:	Introduction and release of new potato varieties through several different trials is a routine program of TCRC. In a true sense, end users are the decision maker for the fate of a new variety. So, this study was undertaken with a view to promote and to explore the farmer's response regarding the new ones.
Material and methods	:	Around 10 latest potato varieties will be included. Two farmers in each district. Each farmer will receive 20 kg tubers of each variety for each farmer (two farmers of each district). Field days may be arranged. Farmers will be selected by the help of OFRD/DAE/RARS/ARS/TCRC stations. Preference will be given to those farmers who were successful last year in producing potatoes.
Crop/Variety	:	Potato
Design:	:	RCBD
i) Treatment		Selected varieties.
ii) Replications		3 (Dispersed)
Plot size	:	50 m x 20 m (1000 sq. m) or 40 x 24 (1000 sq. m) Note: Area is not fixed.
Planting system/spacing	:	Row planting, 60cm × 25 cm
Fertilizer dose and Method of application	:	Fertilizers will be applied @ 325-220-250-120 kg/ha of urea, TSP, MOP and gypsum, respectively
Irrigated /rainfed	:	Irrigated
Data to be recorded	:	Recording the date of planting, harvesting, fungicide & insecticide spraying and number of intercultural operations. Collection data on (i) Emergence % at 30 DAP, (ii) No of stem/hill at 45 DAP, (iii) Plant height (cm) at 50 DAP, (average of 10 hill), (iv) disease and insect reaction, and (v) tuber yields (t/ha) and (vi) Farmer's opinion for all the tested varieties.
Investigator (s)	:	A.T.M.T. Islam, M.A. Kawochar, S. Naznin, T. Jahan M.M.H.Molla, M.M.Islam and M.m. Rahman and all other scientists of TCRC, concerned OFRD/BARI scientist of the respective area and DAE personnel.
Season	:	Rabi 2024-2025
Date of initiation	:	October 2024
Date of completion	:	July 2025
Expected output	:	Locally adapted varieties will be identified by the farmers.
Location	:	Kushtia, Tangail and Bogura
Status	:	On-going
Estimated cost	:	Tk. 25,000 per trial
Source of fund	:	PARTNER project
Proposed from	:	OFRD, BARI, Gazipur
Priority	:	1st

Expt. 181. Adaptive trial of Mukhikachu varieties in hilly areas of Bandarban

Objective(s)	:	To evaluate the performance of mukhikachu varieties
Rationale	:	In Bandarban, Mukhikachu occupied 256 acres of land and produced 432.70 metric tonnes (BBS, 2022). Malnutrition affects Bandarban's rural populations not due to their socio-economic standing, but because they are unable to receive enough nutrients from the readily available, nutrient-dense vegetables to meet their daily needs. Therefore, using taro could improve food security, reduce zinc deficiency, and contribute financially to the nation's income. Taro is cultivated by small-scale farmers, particularly tribal women in Bandarban. The area under mukhikachu cultivation has been decreasing rapidly because of poor yield and lack of high yielding variety. Mukhikachu is found to be a very suitable dry land Rabi crop with residual soil moisture conditions. BARI has developed two improved varieties of Mukhikachu a.i. BARI Mukhikachu-1 (Bilashi) BARI Mukhikachu-2. Some local varieties are being also cultivated by the farmers. The newly released variety is not well known to them. However, a suitable variety needs to be identified for the hilly areas of Bandarban. Considering this view, the present research will be undertaken to identify the suitable Mukhikachu variety for hilly areas.
Materials and Methods	:	
Crop variety	:	Mukhikachu
Design	:	RCB
Treatments	:	V_1: BARI Mukhikachu-1(Bilasi), V_2: BARI Mukhikachu-2 V_3: Local varieties
Replications		06 (dispersed)
Plot size	:	10 m x 8 m
Planting system/spacing	:	60 cm x 35 cm
Fertilizer dose and methods of application	:	As per FRG 2023/ STB
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Date of all operations, yield and yield contributing characters. Farmer's opinion, pest incidence, profitability
Investigator(s)	:	Md. Imam Hossain, SO, OFRD, BARI, Bandarban Mohammad Tanharul Islam, SO, OFRD, BARI, Bandarban
Season	:	Rabi to Kharif
Date of initiation	:	February 2025
Date of completion	:	September 2025
Expected output	:	Suitable variety will be identified, and farmers will be benefited
Location	:	Bandarban Sadar
Status	:	2nd year
Priority	:	1st
Estimated cost	:	Tk.100000/-
Source of fund	:	BARI

Expt. 182. Adaptive trial of Panikachu varieties in Noakhali

Objective (s)	:	To select suitable panikachu variety for acidic soil
Rationale	:	Taro is underutilized aquatic crops locally called panikachu belongs to Colocasia, is the staple food in many countries. Colocasia esculenta is an important exportable in Sylhet region, mainly grown in kharif season. The corm, petiole and leaves are edible and rich in proteins, vitamins A and C and minerals like phosphorus, calcium and iron are available in the market (Bhuiyan and Ahmed, 2001). Farmers mainly cultivate the local (Mura kachu) and BARI Panikachu-1, but BARI developed other varieties that have important qualities for various aspect of utilization. So, it needs to be tested in acidic soil condition to know the performance at farmer's field.
Materials and Methods	:	
Crop/variety	:	Taro/all panikachu varieties
Design	:	RCB
(i) Treatment	:	Variety 9 (BARI Panikachu-1, BARI Panikachu-2, BARI Panikachu-3, BARI Panikachu-4, BARI Panikachu-5, BARI Panikachu-6, BARI Panikachu-7, BARI Panikachu-8 and BARI Panikachu-9)
(ii) Replications	:	6 (Six) (Dispersed)
Plot size	:	40 m2
Planting system/ spacing	:	Line/60 cm × 45 cm
Fertilizer dose and methods of application	:	As per recommendation by FRG'2023/ STB
Irrigated/rainfed	:	Rainfed
Data to be recorded	:	(i) date of transplant and harvest (ii) first and last harvest of stolon (iii) number and weight of stolon per plant (iv) yield of stolon and rhizome (v) disease and insect pest reaction and (vi) farmers' opinion.
Investigators	:	Concerned scientists of respective sites
Season	:	Kharif
Date of initiation	:	January 2025
Date of completion	:	November 2025
Expected output	:	Suitable panikachu variety(s) will be selected by the farmers
Location	:	Noakhali
Status	:	2nd year
Priority	:	1st
Estimated cost	:	Tk. 50000/location
Source of fund	:	BARI

Expt. 183. Collection, isolation and identification of the pathogen of stem rot of Betel vine

Objective(s)	:	To isolate and identification of the pathogen
Rationale	:	Betelvine (*Piper betle* L.) is a kind of dioecious perennial creeper vine belonging to the family Piperaceae. It is cultivated largely for its leaves. It is an important cash crop of Bangladesh. Different diseases are the limiting factors of betelvine production. Among the diseases stem rot is the most devastating disease that decreases the production of betel leaf to a great extent. Huge number of betelvine garden 'Baroj' ruined every year due to the severe attack of stem rot disease. If such a situation continued,

		the betelvine cultivation would face a great threat and the country will lose a huge foreign income. Thus, the problem needs to give an argent attention. To save the crop and it's growers, development of economic management tactics are required. Under the above facts the present piece of research was undertaken to isolate and identify of *stem* rot pathogen of betelvine collected from different growing regions of Bangladesh
Materials and methods	:	Betelvine
Crop/variety	:	-
Design	:	NA
i) Treatments	:	NA
ii) Replications	:	NA
Plot size	:	NA
Planting system/spacing	:	NA
Fertilizer dose and methods of application	:	NA
Irrigated/rainfed	:	-
Data to be recorded	:	1. Incidence 2. Seveirity
Investigator(s)	:	M. H. Rahman and R. Momotaz
Season	:	Kharif
Date of initiation	:	1st week of February, 2025
Date of completion	:	2nd week of August 2025
Expected output/benefit	:	Growers income will be increased with disease management of the pathogen
Locations	:	Narsingdi
Status	:	2nd year
Program proposed from	:	OFRD, Narsingdi
Priority	:	1st
Estimated cost	:	80,000/-
Source of fund	:	BARI

Expt. 184. On farm trial of turmeric variety in hilly region at Sherpur

Objectives	:	To see the performance of turmeric varieties at the farmer's field of Sherpur. To popularize the newly released turmeric varieties among the farmers.
Rationale	:	Turmeric is one of the most important spice crop commercially grown in all parts of the country. It is an indispensable component in daily life, mostly in kitchen. The crop has good potential for production because of it's of diversified use. It has medicinal value also. Spices Research Center, BARI has developed five new turmeric varieties (BARI Halud-1, BARI Halud-2, BARI Halud-3, BARI Halud-4andBARI Halud-5) which are high yielder, virus free and less susceptible to pest and diseases. Considering the fact as stated above, the present study will be under taken to study the performance of turmeric varieties in hilly area of Sherpur region.
Materials and methods	:	
Crop	:	Turmeric
Variety	:	BARI Halud-2, BARI Halud-3, BARI Halud-4, BARI Halud-5 and a local cultivar

Design	: RCBD
Replication	: 6 (disperse)
Plot size	: 5 m x 3 m
Plant spacing	: 50 cm x 25 cm
Fertilizer dose and methods of application	: As per recommendation
Irrigated/rainfed	: Irrigated
Data to be recorded	: Growth parameters (plant height, stem diameter, number and size of leaves etc), Weight and size of finger, Yield and storability, Disease and insect reaction, price of all inputs and output, farmers opinion
Investigators	: M.M. Rahman, M.A. Rahman and A.K.M.Z.U. Noor, OFRD, Sherpur
Season	: Kharif 2024
Date of initiation	: April, 2024
Date of completion	: October 2024
Expected output	: Production of turmeric will be increased in hilly region of Sherpur.
Location	: MLT site, Nalitabari and Jhinaigati, Sherpur.
Status	: 3rd year
Estimated cost	: Tk. 50000/-
Source of fund	: BARI
Priority	: 1st

Expt. 185. Performance of Country bean varieties in summer season

Objectives	:	To observe the yield of the BARI released summer country bean varieties To popularize the country bean varieties during summer for raising farm income.
Rationale	:	Country bean (*Lablab purpureus*) is one of the most important leguminous winter vegetables in Bangladesh. Availability of country bean in winter is very high but very scanty during summer. This crop is also very costly in summer season. Due to its photo sensitive nature this crop is mostly grown in winter season in Bangladesh. Some of photo insensitive country bean varieties are grown in Bangladesh but their pod bearing potentiality is very poor. BARI has developed BARI Sheem-3 and BARI Sheem-7 photo insensitive country bean varieties having high yielding potentiality during summer. Therefore, the present study will be undertaken for adaption of promising country bean varieties for summer season in Narsingdi region.
Design	:	RCBD
Replication	:	6 (Dispersed)
Variety	:	BARI Sheem-3, BARI Sheem-7 and a local variety
Plot size	:	2.5m × 10m
Plant spacing	:	1.5m × 1.5m
Irrigation/ Rainfed	:	Irrigated
Data to be recorded	:	Days to first harvest, Fruit/plant, Fruit length and diameter (cm), Yield/plant (kg), Major disease and insect infestation, Cost and return analysis and Farmers' opinion
Investigator(s)		Dr. Md. Asaduzzaman, PSO, Dr Md. Hafizur Rahman, SSO of OFRD, Shibpur, Narsingdi
Season	:	Kharif
Date of initiation	:	Kharif, 2024

Expected output	:	Popularized, disseminate BARI developed summer country bean varieties and increase productivity
Locations	:	Shibpur and Monohardi MLT sites of Narsingdi
Status	:	3rd year
Source of fund	:	Tk. 40,000/-
Priority	:	First

Expt. 186. Performance of BARI Sajina-1 in homestead area of Tangail

Objectives	:	To observe the yield performance of the BARI released Sajina variety. To popularize BARI Sajina-1 variety for its nutritional value raising farmers income.
Rationale	:	*Sajina (Moringa oleifera)* is commonly referred to Drumstick tree while less frequently referred to as 'The Tree of Life' or 'Miracle Tree' due to its economical importance and versatility. Moringa oleifera is referred to as "Moringa", it is considered one of the world's most useful trees. Almost every part of moringa tree can be used for food or other beneficial applications. The leaves, fruits, flowers and immature pods of this tree are edible. Moringa is rich in nutrition owing to the presence of a variety of essential phytochemicals present in its leaves, pods and seeds. In fact, moringa is said to provide 7 times more vitamin C than oranges, 10 times more vitamin A than carrots, 17 times more calcium than milk, 9 times more protein than yoghurt, 15 times more potassium than bananas and 25 times more iron than spinach. BARI has developed BARI Sajina-1 varieties having high yield potentiality. Therefore, the present study will be undertaken to observe the yield performance of the BARI released Sajina varieties and to popularize BARI Sajina-1 varieties for its nutritional value and raising farmer's income.
Materials and Methods	:	
Design	:	RCBD
Replication	:	6 farmers
Variety	:	BARI Sajina-1 and Local
Plant spacing	:	3.5 m x 3.5 m
Fertilizer dose and methods of application	:	As recommended by FRG, 2018
Data to be recorded	:	Dates of all operation, Yield and yield contributing characters, Major disease and insect incidence, Cost and return analysis and Farmers' opinion
Date of initiation	:	Kharif, 2023
Location	:	FSRD site, Atia, and MLT site, Dhonbari, Tangail
Expected output	:	Popularized, disseminate BARI developed Sajina varieties and increase productivity.
Status	:	3rd year
Investigator	:	G. Paul, SO; M. A. Rahaman, SSO; T. Tasmima, SO; S. Roy, SO; K. Roy, SSO, OFRD, BARI, Tangail
Source of fund	:	BARI
Estimated cost	:	Tk. 75, 000/-
Priority	:	1st

Expt. 187. Dissemination of a low cost two-wheel tractor operated potato harvester in farmers field of Tangail

Objectives	: To popularize potato planter and harvester among the farmers of Tangail area To compare the cost of production of potato planter and harvester with farmers practice
Rationale	: Potato is economically potential crop. Now a day's mechanization is very much important for our agriculture. Mechanization reduces the production cost, time, labor. Potato planter and harvester is a unique invention of Farm Machinery and Postharvest Process Engineering division, BARI, Gazipur. It's new technology for potato planting and harvesting. The planter and harvester reduce the production cost, time, labor compare to traditional practice. It also reduces both the irrigation cost and time about 25%. Traditionally most of our farmer harvest potato with spade. In some locality farmers use country plough operated by hand or bullock to harvest potato. In both process considerable amount of potato remains under soil. That need to be harvested again which is time consuming and requires high labor cost. If timely potato cannot be harvested then the un-harvested potato damaged by rain which results economic loss of farmers. To eliminate these problems the potato harvester has been invented so that farmers can harvest potato on short time and cost. For that the experiment has undertaken to popularize potato planter and potato harvester among the farmers.
Materials and Methods	:
Crop	: Potato
Variety	: BARI Alu-8 (Cardinal) , BARI Alu-40, BARI Alu-41
Treatments	: T_1. Potato planter and potato harvester T_2. Farmers practice
Design	: RCB
Replications	: 06 (dispersed) as six farmers
Unit plot size	: 400 m^2 per farmer
Seed rate (kg ha^{-1})	: 1500
Spacing (cm)	: 60 cm x 25 cm
Fertilizer dose	: 145-30-90-15-3-1 kg N-P-K-S-Zn-B ha^{-1} + CD 5 t ha^{-1} (FRG, 2018)
Data to be collected	: Dates of all operation, Yield and yield contributing characters, Major disease and insect incidence, Cost and return analysis and Farmers' opinion
Expected output	: Yield and economic return will be increased by at least 30-35 %
Status	: 3rd yar
Season	: 2023-24
Date of initiation	: Rabi, 2023-24
Estimated cost	: Tk. 80,000/-
Source of fund	: BARI
Location(s)	: MLT site, Mirzapur & Madhupur and FSRD site Atia, Tangail
Investigator(s)	: K. Roy, SSO; M. A. Rahaman, SSO; S. Roy, SO; T. Tasmima, SO; and G Paul, SO, BARI, Tangail
Priority	: 1st

Expt. 188. Establishment of fruit orchard at Madhapur tract in Tangail district

Objectives	:	To increase fruit production by using the BARI developed HY fruit crop varieties along with BARI developed suitable technology. To increase fruit consumption and economic return
Rationale	:	Fruits are called the protective foods, rich in vitamins and minerals and it is very essential for maintenance of human health. In Bangladesh most of the fruits are seasonal, only a few are produced round the year. Therefore, availability of fruits in Bangladesh is very poor beyond summer and rainy season. Current production of fruit is considerable below the domestic requirement. There is, therefore, a big gap between the fruit production estimated at about 3.25 million MT and the national requirement estimated at 4.45 million MT. The consumption of fruit per head per day is only 60g as against the minimum requirement of 85g per head per day which indicates that the present production can meet up only 70% of requirement. So, the present production of fruits in our country is far below than the requirement. There is a scope to increase the production of fruits through establishing fruit orchard of high yielding varieties as well as taking proper management practices of trees. An effort of fruit tree plantation in homesteads can also play an important role in this regard. Therefore, an attempt will be undertaken to grow some high yielding quality fruits in the farmer's homesteads to investigate the growth, yield and quality of fruit and to increase income of the poor and marginal farmers.
Materials & Methods	:	
Crop &Variety	:	Mango: BARI Aam-3 and 4 Jack druit: BARI Kanthal-1, 2, 3 and 4 Litchi :BARI Litchi-2, 3, 4 and 5 Guava : BARI Payara-2, 3 and 4 Ber :BARI Kul-1, 2, 3, 4 and 5 Pummelo:BARI Batabilebu-3, 4, 5 and 6 Papaya : Shahi pepe Malta : BARI Malta-1 Amra : BARI Amra-2
No. of farmers		8- 10
Total plot size		Depends on locations & land availability
Fertilizer dose	:	As recommended by FRG' 2018 for HYG
Data to be recorded	:	Survival percentage, Yield and yield contributing characters, Major disease and insect incidence, Cost and return analysis and Farmers opinion
Investigators	:	G. Paul, SO; M. A. Rahaman, SSO; T. Tasmima, SO; S. Roy, SO; K. Roy, SSO, OFRD, BARI, Tangail
Date of initiation	:	July to August 2023
Expt. Output	:	Farmers as well as country will be benefited through wide scale production of different high yielding fruit crop varieties and production technologies developed by HRC, BARI in Tangail District and economic return will be increased by at least 30-40 %.
Location	:	MLT site, Madhupur, Tangail
Status	:	3rd year
Estimated cost (Tk.)	:	Tk. 50000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 189. On-Farm Trial of Sesame Varieties in Different Locations of Bangladesh

Objectives	:	To select the suitable sesame variety. To popularize sesame variety among the farmers
Rationale	:	Sesame is one of the most important summer oil crops grown in Bangladesh. It plays an important role in human diet. In Bhola more than 280 ha area remain under sesame cultivation (DAE-Bhola). Farmers use the traditional varieties those are low yielding and susceptible to diseases and pests. As a result, yield is decreasing day by day. Oil crop research center of BARI has developed some sesame varieties which are supposed to be high yielding and less susceptible to pest and diseases. The present study will be undertaken to evaluate the performance of BARI developed sesame varieties at different locations and to increase production and economic return of farmers.
Materials & Methods	:	
Crop/varieties	:	BARI developed sesame varieties with local cultivar as check
Design	:	RCB
Treatments/Varieties		BARI Til-3, BARI Til-4, BARI Til-5, BARI Til-6 & Local as check
Replication	:	6 (disperse)
Plot size	:	01 decimal for each unit plot
Planting system/ spacing	:	Line sowing, spacing
Fertilizer		Recommended as per FRG Guide, 2018/ STB
Irrigated/rainfed		Rainfed
Data to be recorded	:	Dates of all operation, Yield and yield contributing characters, Major disease and insect incidence, Cost and returns analysis and Farmers opinion
Investigators	:	Concerned scientist of different locations, Q. Naher and M.F. Hossain of OFRD, Gazipur
Season	:	*Kharif* 2023
Initiation	:	Last week of January 2023
Date of completion		Last week of May 2024
Expected output	:	Suitable Seasame variety in *Kharif* season will be ascertained
Location	:	Manikganj and Gopalgan
Status	:	2nd year
Estimated cost		Tk. 50000/location
Source of fund		BARI
Priority		1st

Expt. 190. On-Farm Trial of Soybean Varieties in Saline Area

Objective (s)	:	To evaluate performance of soybean varieties in saline areas To popularize soybean crops among the farmers of tested locations
Rationale	:	About 0.82 million hectares of lands are estimated as Char lands in Bangladesh and is highly dynamic as it is disappeared or reappeared due to river erosion or accretion. Cultivated soils of chars are mostly sandy loam to silty loam with slightly acidic to slightly alkaline in reaction and deficient in plant nutrients as well as organic matter content. Generally top soils of charland are dried quickly but sub-soils remain wet for longer time. Soybean has a fairly wide range of adaptation involving a wide array of climatic, soil, and growth conditions though it is mostly grown on rain-fed land (Fageria, 1997). Soybean (Glycine max L.) is the most important oil seed crop of the world in terms of its use in human foods and livestock. Farmers of char areas grow soybean after receding flood water. Therefore, present trail was undertaken to select suitable soybean variety for charland under rainfed condition.
Materials and Methods	:	
Crop/variety	:	Soyabean
Design	:	RCB
Treatment	:	BARI Soybean-5, BARI Soybean-6, BARI Soybean-7, Binasoybean-8 & Local variety
Replications	:	Six dispersed
Plot size	:	8 m x 5 m for each unit plot
Planting system/spacing	:	Line sowing, 30 cm x 10 cm
Fertilizer dose and methods of application		Fertilizer @ 35-40-60-25-2 kg, N-P-K-S-B ha^{-1}. All fertilizer as basal dose
Irrigated/rainfed	:	Rainfed
Data to be recorded	:	Yield and yield contributing characters, benefit & cost, disease and pest infestation and farmers opinion.
Investigator (s)		Concerned scientist of OFRD, Patuakhali, Q. Naher and M.F. Hossain of OFRD, Gazipur
Season		Rabi, 2022-23
Date of Initiation		First week of December 2022
Date of completion		Last week of May 2024
Expected output/benefit	:	Increase soybean production and income of the farmers in char lands
Location	:	Noakhali
Status	:	3rd year
Estimated cost	:	Tk. 75000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 191. On-Farm Trial of Tomato Varieties during Winter Season in Different Location of Bangladesh

Objectives	:	To select suitable tomato variety for winter season. To disseminate among the farmers of the tested areas.
Rationale	:	Tomato (*Solanum lycopersicum*) is the most important vegetables crop in Bangladesh cultivated during the rabi season. It is a good source of vitamins and minerals. This average yield of tomato is very low compared to other tomato growing countries of the world. Farmers use the traditional varieties those are low yielding and susceptible to diseases and pests. As a result, yield is decreasing day by day. BARI has recently developed some tomato varieties which are supposed to be high yielding and less susceptible to pest and diseases. The present study will be undertaken to evaluate the performance of BARI developed tomato varieties at different locations and to increase production and economic return of farmers.
Materials & Methods	:	
Crop/varieties	:	BARI developed tomato varieties with local cultivar as check
Design	:	RCB
Treatments/Varieties		i. BARI Tomato-14 ii. BARI Tomato-15 iii. BARI Tomato-16 iv. BARI Tomato-17 v. BARI Tomato-18 vi. BARI Tomato-19 vii. BARI Tomato-21 viii. Local as check
Replication	:	04 (dispersed) each location
Plot size	:	01 decimal for each unit plot
Planting system/ spacing	:	Line sowing
Fertilizer		Recommended fertilizer as per FRG, 2018 i.e. 253-90-125-22-6-2 kg, N-P-K-S-Zn-B ha^{-1} plus 10 tha^{-1} CD. Half of the quantity of cow dung, half amount of P and entire amount of S and B will be applied during final land preparation. The remaining half of cow dung and P are to be applied during pit preparation before a week of planting. The entire N and K are to be applied in 3 equal installments of 21, 35 and 50 days after seedling transplanting.
Irrigated/rainfed		Irrigated
Data to be recorded	:	Dates of all operation, Yield and yield contributing characters, Major disease and insect incidence, Cost & returns analysis and Farmers opinion
Investigators	:	Concerned scientists of different sites and Q. Naher
Season	:	New
Initiation	:	November 2022
Date of completion		Last week of June 2024
Expected output	:	Suitable tomato variety will be selected.
Location	:	Faridpur, Kushtia, Tangail and Narsingdi
Status	:	2nd year
Estimated cost		Tk. 350000/-
Source of fund		BARI
Priority		1st

Expt. 192. On-Farm Trial of Watermelon Varieties in Different Locations of Bangladesh

Objective (s)	:	To evaluate the performance of BARI watermelon varieties To popularize these varieties among the farmers.
Rationale	:	Watermelon (*Citrullus lanatus*) is a highly nutritious fruit under the Cucurbitaceae family. It is a good source of vitamins, minerals, and antioxidants. 100 g of watermelon contains 92% water, 30 kcal energy, 0.61 g protein, 0.15 g fat, 0.4 g fiber, 6.2 g carbohydrate, 112 mg potassium, 7 mg calcium, 11 mg phosphorus, 0.24 mg Fe, 230 mg carotene, 569 IU vitamin A, 0.498 mg vitamin-B, 8.1 mg vitamin-C (Gebharrdt and Thomas, 2002). BARI recently released two open pollinated watermelon varieties namely BARI Tormuj-1 and BARI Tormuj-2. The dependence, as well as the import cost of hybrid seeds, may be minimized if these OP varieties become popularized among the farmers. The famers of different areas of Bangladesh produces watermelon using imported hybrid seeds in a limited area. So, there is a huge scope to cultivate the BARI developed high yielding watermelon varieties. But still, the performance was not studied of watermelon at farmer's field condition. Therefore, the trial has been undertaken to find out the suitable variety(s) of watermelon in the tested location.
Materials and Methods	:	
Design	:	RCB
variety	:	BARI Tarmuj-1, BARI Tarmuj-2 and Local as check
ii) Replications	:	6 (Six)
Plot size	:	6m ×3 m
Planting system/spacing	:	Plant to plant 1.5 meter and line to line 2 meter.
Fertilizer dose and methods of application		Cowdung 10 ton, urea 250 kg, TSP 250 kg, MoP 200 kg, gypsum 100 kg, zinc sulphate 10 kg and boric acid 14 kg to be applied per hectare. Entire cowdung, TSP, gypsum, zinc, and boric acid and half of the total MoP to be applied during final land preparation. Rest of the MoP and entire urea are to be applied in 4 equal splits at 15 days interval.
Irrigated/rainfed	:	Irrigated (3-4)
Data to be recorded	:	Date of all operations, yield and yield contributing characters, pest incidence, Farmer's opinion
Investigator (s)	:	Concern scientist of respective sites
Season		Kharif-1, 2022-23
Date of Initiation		March 2023
Date of completion		June 2023
Expected output	:	Suitable BARI developed variety
Location		Tangail and Bogura
Status		2nd year
Estimated cost		Tk. 210000/-
Source of fund		BARI
Priority		1st

Expt. 193. Evaluation of Pineapple Germplasm at Madhupur

Objectives		• To evaluate the performance of pineapple varieties • To popularize the pineapple varieties and farmers' income.
Rationale	:	Pineapple (*Ananas comosus*) is one of the most popular fruits in Bangladesh. It incredibly delicious, healthy tropical fruit. On an average, around two lakh tons of pineapple is produced in the country each year. It is an important cash crop of Madhupur, Ghatail and Shakhipur hilly area of Tangail. According to DAE in Madhupur upazila, pineapples were cultivated on around 6,500 hectares of land in the region. Similarly, more than 3,000 hectares of land in the adjacent Ghatail upazila and Shakhipur upazila are used to grow pineapple. About 85 percent pineapples grown in the region are the Giant Q variety, locally known as Calendar, of the rest 5 per cent are the Honey Queen variety, locally called Joldungi, and 10 per cent are the Ashwina variety but the shelf life of these varieties is much shorter. A large amount of locally grown pineapples is left to rot each year due to shorter shelf life and lack of preservation facilities. So, the growers are fallen problem when all fruit ripens together causes problems in marketing. Recently, an exotic variety MD-2 which has highest storability among all the varieties (3-4 weeks) but the yield performance of this variety is not studied at these areas. So, present study will be undertaken to evaluate the performance of MD-2 against local cultivar in respect of fruit yield and storbilty.
Materials and Methods:		
Crop		Pineapple
Variety	:	MD-2, Ghorashal and Honey Queen
Replications	:	6 dispersed replications
Area	:	40 m^2 for each variety in each replication
Spacing (m)	:	Two pair pineapple should be planted in one-meter-wide bed where, row to row distance is 50 cm and plant to plant distance is 50 cm.
Fertilizer dose	:	Cowdung: 5 t/ha and N-P-K-S-B: 225-85-150-30-1.5 kg/ha, respectively.
Application method	:	Cowdung, Gypsum and TSP fertilizer should be applied during the bed preparation. Urea and MOP fertilizer should be divided into 5 equal split and applied starting from 4-5 months after planting.
Irrigated/rainfed		Irrigation should be provided in dry season
Data to be collected	:	Dates of all operation, Yield and yield contributing characters. Major disease and insect incidence, Cost & return analysis and Farmers' opinion
Expected output	:	Farmers will be benefited to increase at least 25% of their production
Investigator(s)	:	Scientists of OFRD, Tangail and Q. Naher & M.F. Hossain of OFRD, Gazipur
Status	:	3rd year
Date of initiation	:	October, 2022
Date of completion	:	June, 2024
Estimated cost	:	Tk. 100000/-1
Location(s)	:	MLT site Madhupur, Tangail
Source of fund	:	BARI
Priority	:	1st

Expt. 194. Validation of biofertilizer on different legumes (Mungbean, lentil, chickpea, groundnut, soybean etc.)

Objective(s)	:	To popularize the rhizobium biofertilizer technology for producing pulse and oilseed legumes in the farmer's level.
Materials and methods	:	
Crop/variety	:	Mungbean: BARI Mung-6 Lentil: BARI Masur-6 Chickpea: BARI Chola-5 Groundnut: BARI Chinabadam-7 Soybean: BARI Soybean-6 ***Rhizobium* strains:** Mungbean: BARI RVr-403 Lentil: BARI RLc-104 Chickpea: BARI RCa-203 Groundnut: BARI RAh-801 Soybean: BARI RGm-901
Design	:	RCBD
Treatment	:	1. Without *Rhizobium* inoculant + PKSZn 2. With *Rhizobium* inoculant + PKSZn 3. NPKSZn
Replication	:	4 (Dispersed)
Plot size	:	10 m × 15 m
Fertilizer dose and methods of application	:	Mungbean: $P_{22}K_{42}S_{20}Zn_5$ kg ha^{-1} Lentil: $P_{22}K_{42}S_{20}Zn_5$ kg ha^{-1} Chickpea: $P_{22}K_{42}S_{20}Zn_5$ kg ha^{-1} Groundnut: $P_{22}K_{42}S_{40}Zn_5$ kg ha^{-1} Soybean: $P_{22}K_{42}S_{40}Zn_5$ kg ha^{-1} ***Rhizobium* biofertilizer: 1.5 kg ha^{-1}** Nitrogen: 50 kg N kg ha^{-1} for mungbean, lentil, chickpea and 100 kg N kg ha^{-1} for groundnut and soybean
Investigator(s)	:	M.E. Ali, SSO, SSD, M. Rahman, SO, SSD, M.F.A. Anik, SO, SSD, H.M. Naser, CSO, SSD, M.M. Anwar, CSO, OFRD, Joydebpur and Concerned Scientists of OFRD, BARI substation
Season	:	Mungbean: First week of March 2024 at Kushtia, Satkhira, Sylhet & Faridpur; Mid-January to Mid February 2024 at Patuakhali, Bhola and Cox's Bazar. Lentil : November 2023 Chickpea : November 2023 Groundnut : November 2023 Soybean : December 2023
Expected output/benefit	:	Application of biofertilizer will reduce the dependence of nitrogenous fertilizers. Farmers will benefit through use of low cost biofertilizer. Woman income generation will be increased by picking mungbean pod and harvesting of crops.
Location	:	Kushtiai
Status	:	On going
Estimated Cost	:	Tk. 2,00,000/- (Tk. 8,000/- for each location & for each crop)
Source fund	:	BARI
Priority	:	1st

Expt. 195. Adaptive trials with Sweet potato varieties

Objective	: To popularize the newly released improved sweet potato varieties. To collect feedback of the newly released varieties.
Rationale	: Introduction and release of new sweet potato varieties through several different trials is a routine PROGRAMME of TCRC. In true sense, end users are the decision maker for the fate of a new variety. So, this study was undertaken with a view to promote and to explore the farmer's response regarding the new ones.
Material and methods	: BARI Mistialu-12, BARI Mistialu-14, BARI Mistialu-15, BARI Mistialu-16 and BARI Mistialu-17
Crop/Variety	: Sweet Potato
Design	: -
Treatment	: BARI Mistialu-12, BARI Mistialu-14, BARI Mistialu-15, BARI Mistialu-16 and BARI Mistialu-17
Replication	: -
Plot size	: 6 m × 3 m
Planting system/spacing	: 60 cm × 30 cm
Fertilizer dose and Method of application	: The crop will be fertilized with a dose of 260-150-250-75-12-10 kg/ha of Urea-TSP-MOP-Gypsum-Zinc Sulphate-Boric acid, respectively and 10 t/ha of cow dung. Half of Urea and MOP and full dose of TSP, Gypsum, Zinc sulphate, Boric acid and cow dung will be applied in plot during the final land preparation. Rest of Urea and MOP will be top dressed at 30-40 days after planting (DAP) followed by earthing up and irrigation.
Irrigated/rainfed	: Irrigated
Data to be recorded	: Farmer's name, Father's name, Address with Mobile Number, Date of planting, Plant establishment (%) at 30 DAP, disease and insect data. Date of Harvesting, Tuber No. & wt./plant/plot, Tuber yields (t/ha), Farmer's opinion for all the tested varieties.
Investigator(s)	: Concerned scientists of respective sites
Season	: Rabi 2023-24
Date of initiation	: October 2023
Date of completion	: April, 2024
Expected output/benefit	: Locally adapted varieties will be identified by the farmers.
Locations	: Kushtia and Gopalganj
Status	: 2nd year
Estimated cost	: Tk. 80,000/-
Source of fund	: BARI
Priority	: 1st

Expt. 196. Demonstration of BARI Released Varieties of Panikachu

Objective	: To study the performance of the improved varieties of Panikachu at farmers' level. To know the farmer's choice among the varieties
Rationale	: There are six released improved varieties of Panikachu but only BARI Panikachu 1 (Latiraj) has become popular to the farmers. Some local cultivars are being also cultivated by the farmers. The newly released varieties are not well known to them. So, it is necessary to disseminate these varieties through demonstration.
Materials and Methods	: Farmers will be selected by the OFRD personnel of the respective areas. The suckers of the newly released Panikachu varieties will

		be supplied to the selected farmers Farmer(s) will be selected by the OFRD/TCRC personnel of the respective areas. The suckers of the Panikachu varieties will be supplied to the selected farmers.
Crops/variety	:	Panikachu
Design	:	Non replicated
Treatment	:	Set I : Stolon producing Panikachu
	:	BARI Panikachu 1 (Latiraj) and BARI Panikachu 2 Set II : Rhizome producing Panikachu BARI Panikachu 3, BARI Panikachu 4, BARI Panikachu 5 and BARI Panikachu 6
Replication		N/A
Plot Size	:	The plot size will be (±) 12 m × 18 m for each variety (20 lines, 40 plants/line = 800 seedlings per variety; around 5.33 decimal/variety)
Planting system/spacing	:	The plant spacing will be 60 × 45 cm.
Fertilizer dose and methods of application	:	The crop will be fertilized with a dose of 350-175-300-125-14-10 kg/ha of Urea-TSP-MOP- Gypsum- Zinc sulphate- Boric acid, respectively and 15 t/ha of cowdung. Half of MOP and full dose of TSP, Gypsum, Zinc sulphate, Boric acid and cowdung will be applied in plot during the final land preparation. One fifth of Urea was top dressed started from 20-25 days after planting (DAP) and other 4 installments will be applied at an interval of 25-30 days after that 1sttop dressed. Rest of MOP will be topdressed at 50-60 DAPS with the second top dressed of Urea.
Irrigated/rainfed	:	N/A
Data to be recorded	:	(i) Name, Father's name and address of farmer(s) with mobile number (ii) Date of planting (iii) Harvesting period of stolon (date of First and Last harvest), (iv) No. and wt. of stolon/plant (v) Yield of stolon and marketable rhizome (t/ha), (vi) Disease and insect pest reaction and (vi) Farmers' comments on acceptability.
Investigator(s)	:	Concerned scientists of respective sites
Season	:	Rabi to Kharif
Date of initiation	:	December, 2023 to January, 2024
Date of completion	:	September 2024
Expected output/benefit	:	Improved Panikachu variety(s) will be identified by the farmers.
Locations	:	Narsingdi and Kushtia
Status	:	2nd year
Estimated cost	:	Tk. 5,00,000/- (20,000/- for each trial, No. 25)
Source of fund	:	Kachuphasoler ... Kormosuchi, TCRC, BARI
Program proposed from	:	OFRD, BARI
Priority	:	1st

Expt. 197 Adaptive trial of Barley varieties in saline zones

Objective (s)	:	- To find out suitable barley variety for coastal region - To introduce barley in coastal region
Rationale	:	Saline soils are mostly found in the southern coastal areas of Bangladesh. According to MPO 1985, the country's total saline area is around 0.88 million hectares, of which 0.22 million hectares are in Patuakhali, where in soil both saline and drought prevail. Although saline environments are not conducive to crop development, certain crops, for instance - millet, barley demonstrated the ability to be grown in these unfavorable conditions. Due to these viewpoints, the trial has been implemented with the described objectives.
Materials and Methods	:	
Crop/variety	:	Barley
Design	:	RCB
i. Treatment	:	The treatments will be assigned as follows: Barley Varieties- 03 BARI Barley-6, BARI Barley-7 and BARI Barley-9
ii. Replications	:	Six
Plot size	:	8 m x 5 m for each unit plot
Planting system/spacing	:	Line sowing, 30 cm x 10 cm
Fertilizer dose and methods of application		40-15-15-0 kg/ha NPKS + 5 t/ha Cowdung. All fertilizer used as basal dose except urea.
Irrigated/rainfed	:	Rainfed
Data to be recorded	:	Yield and yield contributing characters, benefit & cost, disease and pest infestation, Salinity at 15 days interval and farmers opinion.
Investigator (s)		Concerned scientist of OFRD, Patuakhali
Season		Rabi, 2024-25
Date of Initiation		First week of December 2024
Date of completion		Last week of May 2025
Expected output/benefit	:	BARI Barley will be disseminated in coastal region.
Location		Amtoli, Barguna & Kuakata, Patuakhali
Status (1st year/2nd year/.....)		2nd year
Program proposed from		OFRD, BARI,Patuakhali
Estimated cost		Tk. 170000/-
Source of fund		BARI Main
Priority		1st

Expt. 198. Adaptive trial of Chia varieties in saline zones

Objective (s)	: - To find out most suitable chia variety for coastal region - To introduce chia in coastal region
Rationale	: Chia (*Salvia hispanica* L.) is a high valued medicinal plant is a member of Lamiaceae family, native to Mexico and Guatemala. Since seeds contain considerably more proteins, lipids, carbs, and fiber than other major grains and cereals including rice, oats, corn, wheat and barley, it has drawn attention recently. Furthermore, chia proteins are a wonderful source of vitamins, minerals, and antioxidants and are gluten-free, making them a viable option to celiac disease. Omega-3 fatty acids, antioxidants, and fiber included in chia help to slow down cellular aging and prevent cardiovascular diseases. Tropical and subtropical climates are ideal for its natural growth. Grown between latitudes 20 and 30, it is regarded as a short-day plant. The plant is well suited to arid and semiarid environments and has a low water consumption rate. Because of its diverse environmental adaptability, there is a new hope that it will be grown in Bangladesh as a new crop and provide farmers with a source of income. At the moment, chia is grown in Argentina, Bolivia, Guatemala, Mexico, Peru, and Australia.In Bangladesh, saline soils are mostly prevailed in the southern region. According to MPO 1985, the country's total saline area is around 0.88 million hectares, of which 0.22 million hectares are in Patuakhali, where salinity and drought predominate. Although saline regions are not encouraging to crop development, a screening program conducted by OFRD, BARI, Patuakhali revealed that certain crops have the potential to be grown in these unfavorable environments. In light of these opinions, the trial was conducted with the aforementioned goals.
Materials and Methods	:
Crop/variety	: Chia
Design	: RCB
i. Treatment	: The treatments will be assigned as follows: Varieties- 02 BARI Chia-1 and Local
ii. Replications	: Six
Plot size	: 8 m x 5 m for each unit plot
Planting system/spacing	: Line sowing, 30 cm x 10 cm
Fertilizer dose and methods of application	40-15-15-0 kg/ha NPKS + 5 t/ha Cowdung. All fertilizer used as basal dose except urea.
Irrigated/rainfed	: Rainfed
Data to be recorded	: Yield and yield contributing characters, benefit & cost, disease and pest infestation, Salinity at 15 days interval and farmers opinion.
Investigator (s)	Concerned scientist of OFRD, Patuakhali
Season	Rabi, 2024-25
Date of Initiation	First week of December 2024
Date of completion	Last week of May 2025
Expected output/benefit	: BARI Chia will be disseminated in coastal region.
Location	Amtoli, Barguna&Kuakata, Patuakhali
Status	2nd year

Program proposed from	OFRD, BARI,Patuakhali
Estimated cost	Tk. 140000/-
Source of fund	BARI Main
Priority	1st

Expt. 199. Adaptive trial of Sesame in southern region of Bangladesh

Objective (s)	:	- To find out the most suitable sesame variety for coastal region - To utilize fallow land in coastal region
Rationale	:	Sesame is one of the most leading oilseeds in Bangladesh. To meet domestic demand, a significant amount of foreign cash is spent annually on importing edible oils and oilseeds (Myint, 2020; Eleuch et al., 2021). Only 20% of oilseed is produced here; the remaining 80% is imported to satisfy demand. In 2019–20, 33656.89 hectares, 31786 m tons, and 944 kg per hectare were the area, production, and productivity of sesame, accordingly (BBS, 2021). In order to boost farmer's profitability, a study on the financial assessment of sesame production pursued to ascertain the input, consumption and cost return. The purpose of this statistical analysis was to estimate the cost and return for the major sesame varieties in Bangladesh, specifically for database update; however other pertinent studies were carried out to determine the profitability of sesame farming. The main focus of the study were (i) to determine the level of input use of sesame cultivation at farm level; (ii) to estimate the cost and return of sesame production; and (iii) to identify the major problems of sesame cultivation. An in-depth analysis is needed to explore the causes of low adoption and find out the ways for the expansion of oilseed cultivation. With these views the trial has been undertaken with the above objectives.
Materials and Methods	:	
Crop/variety	:	Sesame
Design	:	RCB
i. Treatment	:	The treatments will be assigned as follows: Varieties- 03 BARI Till-4, BARI Till-5, BARI Till-6
ii. Replications	:	Six
Plot size	:	8 m x 5 m for each unit plot
Planting system/spacing	:	Line sowing, 30 cm x 10 cm
Fertilizer dose and methods of application		40-15-15-0 kg/ha NPKS + 5 t/ha Cowdung. All fertilizer used as basal dose except urea.
Irrigated/rainfed	:	Rainfed
Data to be recorded	:	Yield and yield contributing characters, benefit & cost, disease and pest infestation, Salinity at 15 days interval and farmers opinion.
Investigator (s)		Concerned scientist of OFRD, Patuakhali
Season		Rabi, 2024-25
Date of Initiation		First week of December 2024
Date of completion		Last week of May 2025

Expected output/benefit	:	BARI sesame will be disseminated in coastal region.
Location		Amtoli, Barguna&Kuakata, Patuakhali
Status (1st year/2nd year/.....)		2nd year
Program proposed from		OFRD, BARI,Patuakhali
Estimated cost		Tk. 150000/-
Source of fund		BARI Main
Priority		1st

Expt. 200. Adaptive trial of BARI Groundnut varieties in southern region

Objective (s)	:	To find out the most suitable Groundnut varieties for coastal areas To increase the groundnut production and productivity in coastal areas
Rationale	:	One of the most important oil seed crops in Bangladesh is groundnut (*Arachishypogaea*L). Infact, it is the most common oil crop in the southern region, even if its oil is not used for cooking. In the southern region, there is a lot of potential to increase groundnut output at char areas throughout the winter. The Oilseed Research Center (ORC) has developed a number of varieties that are resistant to disease and insect attacks and has a higher potential yield. However, the Dhaka 1 variety, which is quite old and has very low output, is typically grown by farmers in this area. There was an urgent need to spread the current groundnut varieties in coastal areas, according to an adaptability analysisof recently released varieties.Considering the fact, the goal of the current study is to identify the best groundnut varieties for coastal regions.
Materials and Methods	:	
Crop/variety	:	BARI Chinabadam-8, BARI Chinabadam-9, BARI Chinabadam-10 and BARI Chinabadam-11
Design	:	
i. Treatment	:	Different varieties
ii. Replications	:	Six(Disperse)
Plot size	:	10 decimal for each unit plot:
Planting system/spacing	:	Line sowing
Fertilizer dose and methods of application		Crop wise fertilizer will be used. All fertilizer used as basal dose except urea.
Irrigated/rainfed	:	Rainfed
Data to be recorded	:	Yield and yield contributing characters, benefit & cost, disease and pest infestation, Salinity at 15 days interval and farmers opinion.
Investigator (s)		Concerned scientist of OFRD, Patuakhali
Season		Rabi 2024-25
Date of Initiation		Crop wise
Date of completion		crop wise
Expected output/benefit	:	popularize BARI released varieties and make seed available of modern varieties
Location		Patuakhali&Barguna district

Status (1st	2nd year
Program proposed from	OFRD, BARI,Patuakhali
Estimated cost	Tk. 150000/-
Source of fund	BARI Main
Priority	1st

Expt. 201. Adaptive trial of Sweet potato varieties in saline zones

Objective (s)	:	- To find out suitable sweet potato variety for coastal region
Rationale	:	A routine program of TCRC is the introduction and dissemination of new sweet potato varieties through a number of trails. Indeed, the destiny of a novel variety is decided by its end users. Therefore, the purpose of this study was to promote and investigate the farmers' reaction towards the new variety.
Materials and Methods	:	Preference will be given to those farmers who were successful last year in producing sweet potato. The plot size will be 8m ×5m. The spacing will be 60×25 cm. Manure, fertilizers,insect, disease control and other intercultural operations will be applied asTCRC recommendation.
Crop/variety	:	Sweet potato
Design	:	RCB
i. Treatment	:	The treatments will be assigned as follows: Sweet potato Varieties- 04 (Set -1) at Amtoli, Barguna BARI Misti Alu-12, BARI Misti Alu-17,BARI Misti Alu-18 and Local Sweet potato Varieties- 09 (Set -2) at Bauphal, Patuakhali BARI Misti Alu-4, BARI Misti Alu-5, BARI Misti Alu-6, BARI Misti Alu-7, BARI Misti Alu-8, BARI Misti Alu-9, BARI Misti Alu-11, BARI Misti Alu-14, BARI Misti Alu-15
ii. Replications	:	Six
Plot size	:	8m ×5m for each unit plot for set 1 5m ×4mm for each unit plot for set 2
Planting systems	:	Line sowing, 30 cm x 10 cm
Fertilizer dose and application		As per recommendation
Irrigated/rainfed	:	Rainfed
Data to be recorded	:	Yield and yield contributing characters, benefit & cost, disease and pest infestation, Salinity at 15 days interval and farmers opinion.
Investigator (s)		Concerned scientist of OFRD, Patuakhali
Season		Rabi, 2024-25
Date of Initiation		First week of December 2024
Date of completion		Last week of May 2025
Expected output/benefit	:	BARI Sweet potato will be disseminated in coastal region.
Location		Amtoli, Barguna&Bauphal, Patuakhali
Status		2nd year
Program proposed from		OFRD, BARI,Patuakhali
Estimated cost		Tk. 100000/-
Source of fund		BARI Main
Priority		1st

Expt. 202. Adaptative yield trial of *Brassica rapa* (yellow seeded).

Programme	:	Crops Improvement
Project	:	Oilseed Crops Improvement
Activity	:	Rapeseed-Mustard Improvement
Experiment-25	:	**Adaptive Yield Trial of *Brassica rapa* (Yellow seeded)**
Objective(s)	:	To select high yield potential lines with early maturity those can be grown in between T. Aman and Boro rice.
Rationale	:	T. Aman-fallow-Boro is the major cropping pattern in Bangladesh. To fit the rapeseed in between two rice crop; early mature lines is essential.
Procedure/Methods	:	
a). Crop/Variety	:	7 lines with check (1. BC-100614(4)-2, 2.BC-100614(8)-7, 3. BC-100614(3)-1, 4. BC-100614(8)-4 5. BC-100614(4)-7, 6. BS-15-YF-01, 7. BS-20 (Check)
b). Design	:	RCB
i) Treatment	:	8
ii) Replication	:	3
c). Plot size	:	2.1 x 4 m
d). Planting system/ spacing	:	Spacing 5 x 30 cm
i) Line to line	:	
ii) Row to row	:	
e). Fertilizer dose and methods of application	:	260:170:90:160:5 and 10 kg/ha as urea, TSP, MOP, Gypsum, Zn oxide and boric acid. All fertilizers and half urea will applied as basal and remaining half at flower initiation.
f). Irrigated/rainfed	:	As and when necessary
g). Data to be recorded	:	Days to flower, Days to mature, No pod/plant, Seed/pod, pest infestation. Yield/plot.
Investigator(s)	:	D.R. Datta, M.H. Rashid and Concern Scientists of OFRD
Season	:	Robi 2025-2026
Date of initiation	:	Later week of October 2025
Date of completion	:	Mid February 2026
Expected output/benefit	:	Early mature lines with high yield will be developed.
Location	:	Pabna, Netrakona and Tangail
Status (New/1st year/2nd year/....)	:	Continuous
Proposed Research From	:	ORC, BARI, Gazipur
Priority (I/II/III)	:	1st
Estimated cost	:	25,000/- per location
Source of fund	:	EPOC' Project

Integrated Farming

JUSTIFICATION

In integrated farming studies, effort is being made to package the available/proven technologies of the component sub-systems in whole farm perspectives to develop integrated farming system modules for different environment and clientele groups to improve whole farm system operation to maximize farm productivity, farmers' income and farm resource use efficiency as well as for eventual transfer of these modules to the target farmers.

Three distinct phases of Integrated Farming Research and Development are identified. ***The 1st phase*** *involves generation/ evelopment and validation of location/clientele specific technologies for different enterprises of each sub-system, which is being done through continuous efforts in FSRD approach for a substantially long period of time at each site.* ***The 2nd phase*** *involves the development of Integrated System Modules through integration of technologies developed/ validated in 1st phase with the available farm resources in the context of farmers' needs and priorities.* ***The 3rd phase*** *involves dissemination /transfer the system modules to the target farmers.*

Expt. 203. Integrated Farming for Improving Livelihood of Resource Poor Farm Households in a Participatory Approach

Objectives :
1. Optimization of homestead land use for the availability of vegetable round the year
2. Utilization of family labour and inclusion of new and profitable technologies as Income Generating Activities (IGA).
3. Improvement of human nutrition by supplying required vitamin A, C, iron, calcium and thiamin
4. Incorporation of leguminous crops in the existing cropping pattern
5. Strengthen linkage among researchers, extension agents and farmers to expedite technology transfer process.

Rationale : BARI is conducting research on different discipline through its 22 programs and 16 divisions. Those programs and divisions are generating a good number of technologies including new cultivars/different management techniques/ machines etc. for the farmers of Bangladesh. However, before transferring those to extension agencies/NGOs and farmers they need On-Farm verification/test or fine-tuning to fit into the farmers existing socio-agro-economic environments. Moreover, through On-Farm trial valuable farmers feed-back is obtained to modify technology or to develop new technology. BARI has given this noble responsibility to OFRD to test those developed On-Station technologies directly to the farmers' field. Some technology developed by NARS Institute on farming system which will be verified at different locations for dissemination of the technology.

Procedure/Methods :

Step 1. Identification of proven/recommended technologies: A comprehensive list of all packages of recommended technologies of crops, livestock, fisheries and other components of the farming system for specific location/environment will be prepared to help selection of appropriate technologies for intervention.

Step 2. Selection of cooperator farmer: The cooperator farmers representing small and marginal holdings with farming as major profession, sizable homestead under single ownership will be selected at each site. The number of farmers selected at different sites ranged from 4 to 6.

Step 3. Accounting of pre-intervention status: The pre-intervention status of the selected farms to be evaluated through case studies. In the process, the existing farm resources, assets, liabilities, existing farming practices and technologies used, level of input use and outputs obtained, performances of enterprises, farm income and expenditure, etc. to be assessed for each farm.

Step 4. Analysis of existing system and selection of technologies for intervention: Based on the pre-intervention status, the system performance to be analyzed in the context of existing biophysical and socio-economic environment of the farm and constraints and potentials will be identified. To ensure maximum utilization of existing farm resources, alternate/new packages of technologies for different enterprises to be identified and finally selected on the basis of farmers' option. It may be mentioned that in the intervention plan, some of the farmer's earlier adopted practices to be retained while some new practices replaced the traditional practices. To use the unexploited resources/opportunities, a large number of new practices will be also included.

Step 5. Implementation of intervention and performance evaluation: After finalizing the proposed interventions, the farmers will be motivated

through all possible ways to utilize their own resources to adopt the interventions. However, in implementing some new technologies, a few critical inputs will be provided free of cost and/or on credit. Throughout the implementation period, regular technical support should be provided on as and when necessary and the performance of interventions will be monitored regularly and necessary data will be collected directly using standard methods.

Data to be recorded :
- Disposal pattern of vegetable and fruits (month-wise): i) own consumption, ii) distribution to relatives & iii) yearly gross margin (income)
- Calorie intake by the members of the family (nutritional status)
- Employment opportunity

Indication of success
- Improving rural livelihoods for resource poor male and female farmers through sustainable use of all available resources through farming systems research and development.
- Application of integrated systems approach, would benefit the women farmers through involvement in farming activities e.g. fruits and vegetable production, poultry, dairy and goat raising, fish production etc. and marketing of agricultural products, processed items, and suitable off-farm/non-farm activities for income generation.
- Reduction of nutrient deficiency of the farm households through integrated homestead gardening.

Investigator(s) : Concerned scientist of respective sites

Expected output :
- Resource poor farm households' income, nutritional status, employment and social status will be enhanced. Productivity of farm unit will be increased through integrated/holistic approach.
- Income generation round the year through scientific use of land for crops, ponds for fisheries and proper utilization of homestead area for vegetables, quick growing fruit plants.
- Modern farming systems will be demonstrated; beneficiaries will gather sufficient knowledge on modern agro-farming with appropriate proven technologies for improve crop husbandry, livestock and fisheries.
- Awareness about environment friendly technologies and sustainable agricultural development would be raised.
- The ultimate purpose of the project would increase the production, income, employment opportunity, nutrition, etc. and ultimately enhance livelihood status of the target farmers towards poverty elimination.

Season : Round the year

Date of initiation : 2012

Status : On-going

Estimated cost : Tk. 18,00,000/-

Source of fund : BARI

Location : FSRD sites of Rangpur, Barind (Rajshahi), Pabna, Faridpur, Noakhali, Patuakhali, Sylhet, Tangail, and Sherpur

Investigators : Concerned scientists of respective sites.

Priority : 1st

Socioeconomic Studies

JUSTIFICATION

Farming in Bangladesh is mainly at subsistence level. The socio-economic condition of the farm households has an importance in the national economic development. Improvement of agriculture is to increase the human productivity and their resource potential needed to develop the socio-economic environment at the rural households. For these, socio-economic study provides research feedback related to adaptability of a new technology in a farmers' field, biological and socioeconomic constraints, benchmark information for establishment of a new project and potentiality of a technology in the selected area of the country. Impact, crop production, profitability and adoption related survey will be conducted in different areas of Bangladesh during the year of 2025-26.

Expt. 204. Profitability of Garlic and watermelon relay cropping in Chalan Beel areas of Natore district

Objectives	:	To document the input use level of garlic and watermelon relay cropping To estimate the profitability of garlic and watermelon relay cropping To explore the problems and potentiality of relay cropping
Rationale	:	Garlic is one of the most important and ancient species. It is the second most widely used Alium after onion. Farmers saw the clove usually by dabbling method in Chalanbeel area and covered with rice straw.On the other hand, they sow watermelon after 40-45 days after planting of garlic as relay cropping. Farmers do not keep record of their production. No effort was given yet before to consolidate the relevant information on cost and return of the relay cropping in the study area. The study is undertaken to fulfill the objective of this study.
Methodology	:	A pre-tested interview schedule will be used to collect necessary data. Data will be collected from 80 sample farmers in the study area. Descriptive statistics and tabular analysis will be employed to analyses and describe the socio-economic characteristics of the system adopters, management practices and their variability, crop yields and environmental, technological and socio-economic problems associate with the production. The collected data will be coded, edited, summarized, tabulated and analyzed to fulfill the objectives of the study. The profitability will be estimated using gross margin, net return and benefit cost ratio analysis.
Status	:	New
Date of initiation	:	December 2025
Date of completion	:	March 2026
Expected output		The study will generate data and useful information related to socioeconomic characteristics of farmers, profitability and constraints to Garlic water melon relay cropping.
Estimated cost	:	Tk. 50000/ per location
Source of fund	:	OFRD, BARI
Locations	:	Gurodashpur of Natore district
Investigator(s)	:	Md. Akhtar Hossain PSO and and concerned scientist of the respective sites.
Priority	:	1st

Expt. 205. Input use and profitability of different crops under major cropping patterns in some selected areas of Bangladesh

Objectives	:	To document the input use level of different crops under major cropping patterns. To estimate the profitability of the crops in major cropping pattern.
Rationale	:	Information about input use level, yield cost and return of different crops in major cropping pattern play a significant role in agriculture sector of Bangladesh. It is also important and demand full to researchers, extension workers, policy makers and NGOs to plan new enterprises for future agriculture production. The wage rate, price of different inputs and output are changing over the time. So, current and updated information is needed to calculate the cost and return of different major crops. No effort was given yet before to consolidate the relevant information on cost and return of different crops in major cropping patterns. Therefore, the present study is under taken to meet up the objectives.
Methodology	:	Data will be collected from 960 sample farmers (80 farmers from each location) in the study area. Interview and FGD method will be applied to collect necessary information with the help of pre tested survey schedule.
Expected output/benefit		This study will identify major cropping pattern, input use level of different crops, production cost, profitability of whole cropping pattern and identify the problem
Status	:	New
Date of initiation	:	December, 2025
Estimated cost	:	Tk. 50000/- per location
Source of fund	:	OFRD, BARI
Locations (9)	:	All FSRD sites (12)
Investigator(s)	:	M Akhtar Hossain, PSO and concerned scientist of the respective sites.

Expt. 206. Adoption and Profitability of BARI Panikachu Varieties in Cumilla district of Bangladesh

Objectives	:	1. To know the level of adoption of BARI released panikachu varieties at farm level; 2. To know the farmers perceptions for cultivating those cultivars; 3. To determine the level of input use and estimate the cost and return of panikachu cultivation; and 4. To find out the constraints to its higher production.
Rationale	:	Panikachu (*Calocasis esculenta L. schott*) is an important edible aroid in Bangladesh. It contributes to the total supply of bulky vegetables during the summer when the supply of other vegetables becomes scarce in the market. Panikachu is generally grown almost all over Bangladesh, but its production is more concentrated in the districts of Chittagong, Norail, Serajgonj, Bogura, Joypurhat, Pabna, Tangail, Dinajpur, Jessore, Jamalpur, Sylhet and Kishoregonj (BBS, 2008; Haque et al, 2013). The total panikachu area is 475 ha and production is 10475 M. tons in Kishoreganj (DAE, 2022). It contains over 25% carbohydrates (Rashid and Danichi, *1979*). Most parts of this vegetable, such as leaves, stolon, rhizome and stems contain protein, carbohydrate and calorie. The soil and climatic condition of Bangladesh are highly favourable for panikachu cultivation. Farmers are cultivating this crop from their innovative ideas regarding adaptability of local cultivars, fertilizer dose and other agronomic practices. Not only that, due to lack of information at farmers' level on panikachu production, the researchers are facing difficulties to formulate adequate research design for its varietal improvement as well as for the development of a complete technology package. With this view in mind, the present study has been designed with the above objectives:
Materials and methods	:	A total of 60 farmers will be selected for the present study. Data for the present study will be collected from sample panikachu farmers through face to face interview method using a pre-tested interview schedule and this collected data will be analysis by using descriptive and statistical method. Adoption index will be calculated according to Gupta and Chowdhury, 2002 formula.
Investigator	:	M. Jamal Uddin, PSO, M Akhtar Hossain, PSO and K U Ahammad, CSO, OFRD
Date of initiation	:	January 2026
Date of completion		March 2026
Expected output	:	Information provided to policy makers and researchers for proper policy guidelines
Location	:	Cumilla district
Status	:	New
Estimated cost	:	80,000/-
Source of fund	:	BARI
Priority		First

Transfer of Technology

Expt. 207. Pilot production program of Garden pea using biofertilizer (rhizobium + vermicompost)

Activity	:	Production Program
Objectives	:	To scale up the production of BARI Motorshuti-3 in Mymensingh
Rationale	:	Garden pea (*Pisum sativum* L.) is a popular vegetable crop in the world, which is rich in protein, carbohydrate, vitamin A and C (Dhall,2016). In Bangladesh, it is grown in winter season for using fresh pods, edible green seeds, and is also used as dry seed crop. The garden pea is highly nutritious, tasty. Dry seed of garden pea contains 15-35% protein, 20-25% starch, 4-10% sugar, 0.6-1.5% fat and 2-4% minerals. Cultivation of this crop is highly profitable and preferable to the farmers for its short duration. Inclusion of garden pea helps in improvement of soil fertility by nitrogen fixation. The soils of Muktagacha region of Mymensingh district are very suitable for garden pea production and farmers of the region do not follow the balanced fertilizers and used to cultivate the locally available variety. However, last two season of biofertilizer trial proved that using rhizobium inoculum and vermicompost instead of urea fertilizer can improve the soil health as well as the yield. Therefore, this study will undertake for large-scale production of BARI Motorshuti-3 using rhizobium inoculum and vermicompost biofertilizer to produce garden pea in Muktagacha, Mymensingh region.
Materials & Methods	:	
Crop	:	Garden pea
Variety/ Lines	:	BARI Motorshuti-3
Seed rate (kg/ha)	:	80
Unit Plot size	:	7.5 m × 6 m
Spacing	:	30 cm x 15 cm
Fertilizer dose	:	48-24-30 P-K-S Kg ha^{-1} + CD 5 t ha^{-1} (Recommended dose FRG' 2024), Rhizobium (BARI RPS-501 @ 1.5 kg/ha) and vermicompost (5 t/ha)
Application of fertilizer	:	All organic manures, phosphorus and sulphur should be applied as basal during final land preparation.
Data to be collected	:	Dates of all operations, Yield and yield attributes, Pest and disease reaction Cost and return analysis, and Farmers' opinion
Expected output	:	Farmers will be benefitted by getting a suitable variety and fertilizer dose for garden pea cultivation
Status	:	New
Date of initiation	:	October' 2025
Date of completion	:	January' 2026
Estimated cost	:	Tk 80,000/-
Source of fund	:	BARI
Location (s)	:	Muktagacha, Mymensingh
Investigator(s)	:	Dr. Shahana Sultana, SSO, and Dr. MAH Khan, PSO, OFRD, Mymensingh

Expt. 208. Pilot Production Program of BARI hybrid Begun-6 at Manikganj

Activity		Production Program
Objective(s)	:	To disseminate BARI hybrid Begun-6 among the farmers.
Rationale	:	Brinjal (*Solanummelongena*) is the most important vegetable crop in our country cultivated mostly during *Rabi* season. The area of brinjal at Manikganj district is low and total production is also low. The acreage of *Kharif*brinjal in Manikganj district was 873.92 acres and production 2957.21 metric tons and Rabi brinjal was 1614.92 acres and production 11048.14 metric tons during 2021-22 (BBS,2022).This declining in area and production is probably associated with variety, climatic change, and improper management decreasing soil fertility, deficiency of micronutrient and quality seed availability during the sowing time. Farmers generally used to cultivate local variety of brinjal which is low yielder and susceptible to pest and diseases. Some advance farmers grow commercial hybrid varieties but the seeds are very costly that cause economic loss to the farmers. Horticulture Research Centre of BARI has developed some winter hybrid varieties of brinjal those are supposed to be higher yielder and less susceptible to pest and diseases. The present study was undertaken to evaluate the performance of BARI hybrid begun-6 in the farmers' field of Manikganj and to popularize the varieties among the farmers to promote their adoption.
Materials Methods	:	
Crop/variety	:	Hybrid brinjal (BARI Hybrid Begun-6)
Design	:	RCBD
Replications	:	6 (dispersed)
Plot size	:	10 decimal per farmer
Planting system	:	100cm×80cm
Fertilizer dose and methods	:	The experimental plots were fertilized with 140-50-100-20-2-1.5 kg ha^{-1} N-P-K-S-Zn-B along with 5.0 t ha^{-1} of cowdung. The whole amount of cowdung, TSP, MOP, Gypsum, Zinc sulphate, Boric acid and half of urea to be applied during final land preparation. The remaining urea to be applied in four equal splits at 30, 45, 60 and 75 DAS. Potash was applied in two equal splits at 45 and 60 DAS.
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operation, Yield and yield contributing characters Major disease and insect incidence Cost and returns analysis Farmer's opinion
Investigator(s)	:	Dr. Md. Ruhul Amin (PSO) of OFRD, Manikganj
Season	:	Rabi
Date of initiation	:	2nd week of October, 2025
Date of completion	:	Last week of June, 2026
Expected output/benefit	:	BARI hybrid begun-6 will be popularized among the farmers and production will be increased by 20-30%.
Location	:	SadarManikganj and Saturiaupazila of Manikganj
Status	:	New
Program proposed from	:	BARI
Priority	:	1st
Estimated cost	:	Tk. 50000/- per location
Source of fund	:	BARI

Expt. 209. Production Program of Mustard at Manikganj

Activity		Production Program
Objective(s)	:	To disseminate BARI Sarisha-20 among the farmers. To increase production and farmers income.
Rationale	:	Oilseed crops play an important role in Bangladesh Agriculture. The total oilseed production can meet-up only one-third of the total demand of edible oil. The acreage of rapeseed and mustard in Manikganj district was 18338 hectares and total production was recorded 22281 metric tons during 2020-21 (BBS, 2022). Mustard is the main edible oilseed crops in our country covering 2.34 lac hectares of land and 2.03 lac tons of oil is produced from the produces. BARI Sarisha-20 is a newly released variety of mustard developed by oilseed Research Centre of BARI. The seed yield of this variety is about 10% higher compared to BARI Sarisha-14 and field duration is also similar to BARI Sarisha-14. Farmers generally choose a crop and its variety considering the field duration of the crop to fit well in the existing cropping pattern to get higher yield and economic return. Manikganj is one of the important mustard growing areas in Bangladesh. It was assumed that after harvesting of BARI Sarisha-20 farmers will be able to cultivate Boro rice. The experiment was therefore undertaken to evaluate BARI released short duration and high yielding mustard variety to fit in the existing cropping pattern to increase production of oilseed crops.
Materials and Methods	:	
Crop/variety	:	Mustard (BARI Sarisha-20)
Design	:	RCBD
Replications	:	06 (dispersed)
Plot size	:	01 bigha per farmer
Planting system/spacing	:	Broadcast
Fertilizer dose and methods	:	The experimental fields of mustard to be fertilized with 115.2-34-42.5-24-2.68-1.27 kg ha^{-1}NPKSZn and B, respectively in the form of urea, triple super phosphate, muriate of potash and gypsum, zinc sulphate, boric acid, respectively. Half of urea and all TSP, MoP, Gypsum, Zinc and Boron will be applied during final land preparation. The remaining half of urea to be top dressed at pre-flowering stage of crop.
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operation, Yield and yield contributing characters, Major disease and insect incidence, Cost and returns analysis Farmers' opinion
Investigator(s)	:	Dr. Md. Ruhul Amin (PSO) of OFRD, Manikganj
Season	:	Rabi, 2025-26
Date of initiation	:	November 2025
Date of completion	:	Last week of February 2026
Expected output/benefit	:	The yield of mustard will be increased by 20-30%.
Location	:	SadarManikganj, Ghior, Shibaloya and Daulatpurupazila of Manikganj
Status (New or 1st year/ 2nd year/.....)	:	New
Program proposed from	:	OFRD, BARI, Manikganj
Priority	:	1st
Estimated cost	:	Tk. 80000/-
Source of fund	:	BARI

Expt. 210. Production Program of BARI Released Pulses, Oil seed crops and vegetable Varieties in different areas of Bangladesh

Activity	:	Production Program
Objective(s)	:	To popularize and disseminate the BARI released Pulses and Oil crops among the farmers
Rationale	:	Last few years different improved varieties of cereals, pulses, oilseeds, vegetables and spices crops performed well in the farmer's field of Bhola region. These well performed varieties need to be familiar with the farmers field of Bhola to increase production and farmers' income.
Materials and methods	:	
Crop/Variety	:	Mungbean, Khesari, Cowpea, Mustard, Sunflower, Groundnut, Soybean, Bottle gourd, Brinjal, Sweet gourd, Cuntry bean, Potato
Design	:	
Treatment	:	**Bhola:** BARI Mung-6, BARI Mung-8, BARI Felon-1, BARI Khesari-2, BARI Khesari-3, BARI Sarisha-14, BARI Sarisha-18, BARI Soybean-5, BARI Soybean-6, BARI Surjomukhi-3, BARI Chinabadam-8, BARI Chinabadam-9, BARI Lau-4, BARI Begun-12, BARI Bt Begun-2, BARI Alu 62, BARI Alu-72, BARI Sheem -5 **Jashore:** BARI Begun-12, BARI Bt Begun-2, BARI Bt Begun-4, BARI Borboti-2, BARI Lau-4 **Patuakhali:** BARI Mung-6, BARI Mung-8, BARI Felon-1, BARI Khesari-2, BARI Khesari-3, BARI Sarisha-14, BARI Sarisha-18, BARI Surjomukhi-2/3, BARI Chinabadam-8, BARI Chinabadam-9, BARI Lau-4, BARI Begun-12, BARI Bt Begun-2/4, BARI Alu 62, BARI Alu-72, BARI Sheem -5 **Khulna:** BARI Mung-6, BARI Mung-8, BARI Felon-1, BARI Khesari-2, BARI Khesari-3, BARI Sarisha-14, BARI Sarisha-18, BARI Surjomukhi-2/3, BARI Chinabadam-8, BARI Chinabadam-9, BARI Lau-4, BARI Begun-12, BARI Bt Begun-2, BARI Alu 62, BARI Alu-72, BARI Sheem -5 **Gopalganj:** BARI Mung-6, BARI Mung-8, BARI Khesari-2, BARI Khesari-3, BARI Sarisha-14, BARI Sarisha-18, BARI Surjomukhi-2/3, BARI Chinabadam-8, BARI Chinabadam-9, BARI Lau-4, BARI Begun-12, BARI Bt Begun-2/4, BARI Alu 62, BARI Alu-72, BARI Sheem -5 **Barisal:** BARI Mung-6, BARI Mung-8, BARI Khesari-2, BARI Khesari-3, BARI Sarisha-14, BARI Sarisha-18, BARI Surjomukhi-2/3, BARI Chinabadam-8, BARI Chinabadam-9, BARI Lau-4/6, BARI Begun-12, BARI Bt Begun-2, BARI Alu 62, BARI Alu-72, BARI Sheem -5 **Faridpur:** Onion bulb (BARI Piaz-4), Lentil (BARI Masur-8), Blackgram (BARI Mas-3 & 4), Grasspea (BARI Khesari-2), Chickpea: (BARI Chola-9), Field pea (BARI Motor-1), Barley (BARI Barley-9), Mustard (BARI Sarisha-20), Sesame (BARI Til-4 & 6), Groundnut (BARI Badam8 & 9) and Brinjal (BARI Begun-12)
Replications	:	06
Plot size	:	01 ha
Planting system/spacing	:	BARI Recommended spacing

Fertilizer dose and methods of application	:	As per recommendation
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Dates of all operations, Crop duration, Yield and yield attributes, Cost and return, Farmer's opinion.
Investigators	:	Concerned Scientists of respective station
Season	:	Rabi 2025-26
Date of initiation	:	November, 2025
Date of completion	:	March, 2026
Expected out put	:	Popularize BARI Varieties in farmers field
Location	:	Bhola, Patuakhali, Gopalganj and Jashore
Status	:	New
Programme proposed from	:	OFRD, BARI, Bhola, Patuakhali and Gopalganj
Priority	:	1st
Estimated cost	:	
Source of fund	:	BARI

Expt. 211. Validation trial on sunflower cultivation through seedling transplanting in Southern Bangladesh

Activity		Validation trial
Objective(s)	:	To validate sunflower cultivation through seedling transplanting with zero tillage at farmers level
Rationale	:	Sunflower is a major oilseed crop in southern Bangladesh. In southern region prospect, due to late harvesting of T. Aman rice Rabi season crops cannot be cultivated, sunflower can be a better option. But, cultivation of sunflower is usually initiated in late Rabi season. Due to late seeding, sunflower yield and productivity is declining day by day. Moreover, natural calamities like irregular rainfall and cyclones delayed the seeding time of sunflower. On the other hand, late harvesting of sunflower causes yield declines due to lodging and flash flood. With a view to overcoming the shortcomings of sunflower cultivation, a tool has been developed by agronomy division of RARS, Rahmatpur, Barishal. Transplanted 14 days old seedlings at 40 cm × 25 cm spacing along with proper fertilizer management causes yield increment in research findings. The technology should be tested in farmer's field condition of Barishal and Patuakhali. Therefore, the program has been taken to validate sunflower cultivation through seedling transplanting with zero tillage.
Materials and methods	:	
Crop/variety	:	BARI Surjomukhi-2
Design	:	RCBD
Treatment	:	T_1: Transplanting 14 days old seedlings T_2: Farmers Practice
Replication	:	3 (Dispersed)
Plot size	:	8m × 5m
Spacing		Broadcasting

Fertilizer dose and methods of application	:	FRG-2018 and recommended methods
Irrigation/rainfed	:	Rainfed
Data to be recorded	:	Dates of all operation, Yield and yield attributes, Major disease and insect incidence, Cost and return analysis, and Farmers opinion
Investigator(s)	:	R. Uddin, SO and M. S. I. Khan
Season		Rabi 2025-26
Date of initiation	:	November, 2025
Date of completion	:	May, 2026
Expected output/benefit	:	Eligibility and potentiality of sunflower seedling transplanting technology will be verified Adoption of this technology will ensure early sowing and maximum productivity
Location	:	Banaripara, Barishal, Rajapur and Kathalia, Jalokathi
Status	:	New
Estimated cost	:	1,00000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 212. Up-scaling of intercropping winter vegetables with Bt brinjal

Activity	:	Production Program
Objectives	:	To minimize soil salinity effect on Bt-brinjal through intercropping
Rationale	:	In coastal area of Bangladesh, soil salinity and lack of fresh irrigation water set back farmers from cultivating their land. Salinity is impacted in around 0.83 million hectares of the southern belt of Bangladesh (BARC, 2018). During Rabi season, most of the saline areas stay fallow. Due to the continuous development of infrastructure, the amount of arable land is decreasing. With this, the population is constantly increasing. To meet the food needs of this population, there is shift from mono crop to two- and three crop farming. Brinjal (*Solanum melongena*) is widely cultivated in Bangladesh and is considered as the second most important vegetable crop after potato in relation to its total production. A part of food shortage can be mitigated by expanding Bt-brinjal production in these regions. However, in recent years Bt-brinjal cultivation is expanding in some pocket areas where irrigation facilities are available. Moisture conservation is a primary concern for crop production in coastal area. Rice straw mulch is readily available mulch in coastal area for conserving moisture and reducing soil salinity. Once rice straw used to remain fallow in the field but in recent years it has been using for fodder purpose, which becomes costly. To overcome the situation we hypothesized that short duration green leafy vegetables could be used as cover crops in between bt brinjal rows, which could conserve soil moisture as well as reduce soil salinity. Moreover, farmers could get extra income from cover crops, thereby system productivity would be increased.
Materials and methods	:	
Crop/variety	:	Brinjal, Red amaranth, Cauliflower and Knolkhol
Design	:	RCB

Treatment	:	BARI Bt Begun-4 + BARI Lalshak-1, BARI Fulcopy-1 and Challenger
Replications	:	
Plot size	:	5 m X 10 m
Spacing	:	Bt Begun; 1m x 60 cm and cauliflower at 6o cm x 60 cm
Fertilizer dose and Methods	:	As per recommended dose from Fertilizer Recommendation Guide (BARC, 2024).
Irrigation/ rainfed	:	-
Data to be recorded	:	Dates of all operation, yield and yield attributes, major disease and insect incidence, cost and return analysis and farmers' opinion
Investigator(s)	:	M.K.Islam, T.Z. Munmun and, M.K. Shahadat and M.Rahman OFRD, BARI, Khulna
Season	:	2025-2026
Date of initiation	:	October, 2025
Date of completion	:	May, 2026
Expected output/ Benefit	:	System productivity and farmers income will be increased.
Locations	:	Koyra, Khulna.
Status	:	New
Estimated cost	:	Tk. 50,000/-
Source of fund	:	BARI
Program Proposed from	:	OFRD, BARI, Khulna
Priority	:	First

Expt. 213. Piloting of Coconut Rugose Spiralling whitefly management in Southern region of Bangladesh

Activity	:	Production Program
Objective (s)	:	The technology would contribute substantially in reducing rugose spiralling whitefly infestation.
Rationale	:	Rugoe spiralling whitefly (Aleurodicus rugioperculatus) is a serious pest in coconut. The pest was first identified in Bangladesh at Regional Agricultural Research Station (RARS), BARI, Jashore in May 2019. The pest is highly polyphagous with more than 118 hosts belonging to 43 plant families, including several economically important crops. This pest damages the plants by sucking sap from leaves and thus causes stress to the plant and by promoting the growth of black sooty molds. They excrete honeydew, which provides an excellent substrate for growth of sooty molds. Once it dries, the sooty mold forms thick layers on the host leaves and other non-plant surfaces. The layers of sooty mold on leaves may disrupt the photosynthetic process in the host leading to physiological disorders.
Materials and Methods	:	
Crop	:	Coconut
Design	:	-
Treatment	:	Rotation spraying of chemical insecticide Acetamiprid (e.g. Tundra 20SP, Platinum 20SP) @ 1g/l of water and biopesticide Fizimite or Bioclean @ of 1ml/l of water at 15-day intervals needs to be done. Usually, 2-3 sprays are required to obtain satisfactory results. First spray April/May and second spray September/October.

Replication	:	-
Plot size	:	100 Coconut Tree in each location
Planting system/ spacing	:	-
Fertilizer dose and methods of application	:	-
Irrigation	:	-
Data to be recorded	:	Dates of all operation, yield, cost and return and farmers' opinion.
Investigator (s)	:	Concern Scientist of OFRD
Season	:	2025-26
Date of Initiation	:	October 2025
Date of completion	:	May 2026
Expected output / benefit	:	It would help increase the productivity of coconut crop.
Location (s)	:	OFRD, BARI, Khulna, Barisal and Patuakhali
Status	:	New
Estimated cost	:	Tk. 1,00,000 Tk in each location
Source of fund	:	BARI
Priority	:	1st

Expt. 214. Validation on controlling of major betel vine diseases in Khulna and Barisal region

Activity	:	Disease pest Management
Objective (s)	:	The technology would contribute substantially in reducing leaf spots, lesions and stem lesions infestation.
Rationale	:	The betel vine is highly susceptible to diseases, pests and natural calamities (Sayeduzzaman 1988). Humid and moist shaded conditions are favorable for betel vine growth, which also favor a variety of root and foliage disease development (Goswami et al. 2002). Thus the betel vine growers incurred huge loss due to different diseases of betel vine. The most important diseases of betel vine plants are foot and root rot disease, leaf spot disease, powdery mildew disease and leaf rot disease. Biological control of soil borne pathogens offers environmentally safe, durable and cost effective alternative to chemicals. Many species of fungi and bacteria are reported to be effective bio-control agents against soil borne plant pathogens. Trichoderma spp. are known antagonists of plant pathogenic fungi and have been shown to be very potential bio-control agents of several soil borne plant pathogenic fungi under both greenhouse and field conditions. Especially, Trichoderma spp. was found to be effective against different sclerotia forming fungi including Rhizoctonia solani and Sclerotium rolfsii (Hadar et al. 1979).
Materials and Methods	:	-
Crop	:	Betel vine
Design	:	-
Treatment	:	Tricoderma should be applied 8 to 10 kg/Bigha of land during land preparation and Tricoderma powder (0.02%) should be applied by spray 3 times at 12 days intervals.

Replication	:	-
Plot size	:	-
Planting system/spacing	:	-
Fertilizer dose and methods of application	:	-
Irrigation	:	-
Data to be recorded	:	Dates of all operation, yield, cost and return and farmers' opinion.
Investigator (s)	:	M K Islam SSO, TZ Munmun SSO and M Rahman SO OFRD, Khulna, R Uddin, SO, Barisal
Season	:	2025-26
Date of Initiation	:	November 2024 October (1st week harvest to July)
Date of completion	:	May 2025
Expected output / benefit	:	It would help increase the productivity of betel vine crop.
Location (s)	:	OFRD, BARI, Khulna and Barisal.
Status	:	1st year
Estimated cost	:	Tk. 50,000 in each location
Source of fund	:	BARI
Priority	:	1st

Expt. 215. Up-scaling of IPM based mungbean production in southern Bangladesh

Activity	:	Crop management
Objective(s)	:	To uplift IPM based mungbean production in southern region
Rationale	:	Mungbean is a major pulse crop in southern region of Bangladesh. Pest management is a critical factor for mungbean yield and productivity. Thrips (Megalurothrips usitatus) is a major pest that can cause hundred percent yield loss of mungbean. On the other hand, pod borer of mungbean is causing certain level of damage in southern region. With a view to overcoming these pest infestations, IPM technologies have been developed. The technology includes non-chemical, biological and chemical treatments. For effective adoption of the technologies, upscalling program should be taken in farmer's field. Therefore, the program will be taken to increase mungbean yield and productivity through IPM package.
Materials and methods	:	
Crop/variety	:	BARI Mung-6, BARI Mung-8
Design	:	RCBD
i) Treatment	:	T1: IPM Package: Blue Sticky Trap (3nos./decimal) + Chlorfenapyr (Benapore) @ 1 ml/L at 35-40 DAS + two time spray of Spinosad (Success 2.5 EC)/ Chlorantraniprol (Coragen 20 SC) T2: Farmers practice
ii) Replication	:	6 (Dispersed)
Plot size	:	100 decimal
Spacing		Broadcasting
Fertilizer dose and methods of application	:	FRG-2018 and recommended methods

Irrigation/rainfed	:	Rainfed
Data to be recorded	:	Dates of all operation, Yield and yield attributes, Major disease and insect incidence, Cost and return analysis, and Farmers opinion
Investigator(s)	:	K N Islam, SO (Patuakhali), R. Uddin, SO, and M. S. I. Khan
Season		Rabi 2025-26
Date of initiation	:	November, 2025
Date of completion	:	May, 2026
Expected output/benefit	:	Fallow land will be utilized Cropping intensity will increase
Location	:	Bakerganj, Barishal, Rajapur and Kathalia, Jalokathi and Patuakhali
Status	:	New
Estimated cost	:	Tk. 50000/-
Source of fund	:	BARI
Priority	:	1st

Expt. 216. Pilot production of selected varieties under BARI technology village

Activity	: Technology Transfer
Objective(s)	: Yield performance and popularize BARI crop variety among the farmers in different locations
Rationale	: The government of Bangladesh is entrusted with huge food and feed production for sustaining development along with maintenance of nutrition security. As a component of such activities Bangladesh Agricultural Research Institute (BARI) has developed both commodity (varieties) and non-commodity (production/adaptation) technologies that need to be transferred in the farmers' fields for up-scaling production system through system-based approaches. Up-scaling of cereals, pulses, tubers, roots, fruits, vegetables, flowers, condiments, species, oilseed crops through integrated participation of farmers and scientists in different parts of the country would be one of the easiest ways of achieving the target. Additionally, transforming traditional agriculture to commercial agriculture is highly demanding to enhance national GDP. So, need-based dissemination of technologies is the prime requirement of OFRD for fulfilling sustainable development goals of 2030.
Materials and Methods	:
Crop/variety	: Different crop varieties
Treatments	: As per availability of land for each variety at farmers field
Plot Size	: As per availability
Planting system/spacing	: Recommended spacing for respective crop
Fertilizer dose and methods of application	: Recommended fertilizer dose and method of application for each crop (FRG 2024)
Irrigated/rainfed	: Irrigated/rainfed based on crop
Data to be recorded	: Dates of all operations, crop duration, yield and yield attributes, major disease and insect incidence, soil salinity data (in saline area), cost and return, farmer's opinion
Investigator(s)	: Concerned scientist of respective site
Season	: *Rabi* 2025
Date of initiation	: November 2025
Date of completion	: June 2026

Expected output/benefit	:	BARI developed latest varieties will be popularized in different locations.
Location	:	Faridpur, Tangail, Pabna, Rangpur, Barind, Bogura, Sylhet, Bandarban, Patuakhali and Khulna
Status	:	New
Estimated cost	:	Tk. 1,00,000/- per location
Source of fund	:	BARI
Priority	:	1st

Expt. 217. Pilot production program of BARI Grasspea variety in the Charlands of Manikganj

Objectives	:	1. To disseminate BARI grass pea variety among the farmers. 2. To increase production and farmers income.
Rationale	:	Grasspea (*Lathyrus sativus*) is the most important pulses crop crop in our country cultivated mostly during Rabi season. The area of grasspea at Manikganj district is low and total production is also low. The acreage of grasspea in Manikganj district was 560 acres and production 229 metric tons during 2021-22 (BBS, 2022). Farmers generally use traditional variety of tomato which is low yielder and susceptible to disease. Pulses Research Centre of BARI has developed some geasspea varieties those are supposed to be higher yielder and less susceptible to pest and diseases. The present study was undertaken to evaluate the performance of BARI Kheshari-3 in the charlands of Manikganj and to popularize the variety among the farmers to promote their adoption.
Materials and methods	:	
Design	:	RCB
Crop	:	Grasspea
Variety	:	BARI Kheshari-3
Treatments	:	
Replications	:	6 (dispersed)
Plot dimension	:	1 bigha per farmer
Plant spacing	:	Broadcast
Fertilizer dose and application methods	:	The experimental plots were fertilized with 16-12-22-7.2-1.36 kg ha^{-1} N-P-K-S-B along with 5.0 t ha^{-1} of cowdung. The whole amounr of all fertilizers to be applied as as urea, TSP, MOP, Gypsum, Zinc sulphate, Boric acid during final land preparation.
Irrigation/rainfed	:	Irrigated
Date of sowing/planting	:	2nd week of October, 2024
Plant protection measures		As and when necessary
Data to be recorded	:	Dates of all operation, Yield and yield contributing characters Major disease and insect incidence Cost and returns analysis Farmer's opinion.
Output	:	BARI Kheshari-3 will be popularized among the farmers and production will be increased.
Season	:	Rabi

Investigator(s)	:	Concern scientists Dr. Md. Ruhul Amin and Md. Emdadul Haque of OFRD, Manikganj
Date of initiation	:	2nd week of October, 2024
Date of completion	:	March, 2025
Location	:	Char Katari, Daulatour upazila of Manikganj
Status	:	2nd year
Estimated cost	:	Tk. 50000/- per location
Source of fund	:	BARI
Priority	:	1st

Expt. 218. Pilot production program of BARI Black Cumin variety in the Charlands of Manikganj

Objectives	:	1. To disseminate BARI Kalozira-1 among the farmers. 2. To increase production and farmers income.
Rationale	:	Black Cumin (*Nigella sativa*) is the most important spices crop in our country cultivated mostly during Rabi season. The area of black cumin at Manikganj district is low and total production is also low. The acreage of black cumin in Manikganj district was 30.58 acres and production 7.96 metric tons during 2021-22 (BBS, 2022). Spices Research Centre of BARI has developed some black cumin varieties those are supposed to be higher yielder and less susceptible to pest and diseases. The present study was undertaken to evaluate the performance of BARI Kalozira-2 in the farmers' charlands of Manikganj and to popularize the variety among the farmers to promote their adoption.
Materials and methods	:	
Crop	:	Black Cumin
Variety	:	BARI Kalozira-1
Design	:	RCB
Treatments	:	
Replications	:	6 (dispersed)
Plot dimension	:	10 decimal per farmer
Plant spacing	:	Broadcast
Fertilizer dose and application methods	:	The experimental plots were fertilized with 57-19-37.5-5 kg ha^{-1} N-P-K with 5.0 t ha^{-1} of cowdung. The whole amount of cowdung, TSP, MOP, Gypsum, Zinc sulphate, Boric acid and half of urea were applied during final land preparation. The remaining urea to be applied in two equal splits at 30 and 45 DAS.
Irrigation/rainfed	:	Irrigated
Date of sowing/planting	:	2nd week of October, 2024
Plant protection measures		As and when necessary
Data to be recorded	:	Dates of all operation, Yield and yield contributing characters Major disease and insect incidence Cost and returns analysis Farmer's opinion.
Output	:	BARI Kalozira-1 will be popularized among the farmers and production will be increased.
Season	:	Rabi

Investigator(s)	:	Concern scientists Dr. Md. Ruhul Amin and Md. Emdadul Haque of OFRD, Manikganj
Date of initiation	:	2nd week of October, 2024
Date of completion	:	March, 2025
Location	:	Char Katari, Daulatour upazila of Manikganj
Status	:	2nd year
Estimated cost	:	Tk. 50000/- per location
Source of fund	:	BARI
Priority	:	1st

Expt. 219. Pilot production program of BARI Blackgram variety

Objectives	:	1. To disseminate BARI Mash-3 among the farmers. 2. To increase production and farmers income.
Rationale	:	Blackgram (*Vigna mungo*) is one of the important pulse crops in Bangladesh. It belongs to the family leguminosae and is used in various forms such as grain for human consumption and fodder for cattle, green manure, cover crop and short-lived forage. Blackgram is a fast growing, short duration, drought tolerant and low input crop (Gowda and Kaul, 1982). It is a promising crop for south East Asia and its ecological suitability is wide. The national average yield of black gram in Bangladesh is low. This low yield may be due to the cultivation of the low yielding local varieties, incidence of diseases and insects, lack of technical know–how etc. BARI has developed some promising lines of blackgram varieties. The present study was undertaken to evaluate the performance of BARI Mash-3 in the farmers' charlands of Manikganj and to popularize the variety among the farmers to promote their adoption.
Materials and methods	:	
Crop	:	Blackgram
Variety	:	BARI Mash-3
Design	:	RCB
Treatments	:	
Replications	:	6 (dispersed)
Plot dimension	:	1bigha per farmer
Plant spacing	:	Broadcast
Seed rate		35 kg ha^{-1}
Fertilizer dose and application methods	:	Soil was fertilized with NPK at the rate of 20.74-20-20-8.8-5-1.7 N-P-K-S-Zn-B, The experimental plots were fertilized with 20.74-20-20-8.8-5-1.7 N-P-K-S-Zn-B, respectively with 5.0 t ha^{-1} of cowdung. The whole amount of fertilizers to be applied during final land preparation.
Irrigation/rainfed	:	Irrigated
Date of sowing/planting	:	Last week of October, 2024
Plant protection measures		As and when necessary
Data to be recorded	:	Dates of all operation, Yield and yield contributing characters Major disease and insect incidence Cost and returns analysis Farmer's opinion.

Output	:	BARI Mash-3 will be popularized among the farmers and production will be increased.
Season	:	Kharif-II
Investigator(s)	:	Concern scientists of OFRD, Manikganj and Kushtia
Date of initiation	:	Last week of August, 2024
Date of completion	:	First week of November, 2024
Location	:	Manikganj and Kushtia
Status	:	2nd year
Estimated cost	:	Tk. 50000/- per location
Source of fund	:	BARI
Priority	:	1st

Expt. 220. Pilot production program of BARI Begun-12 at Manikganj

Objectives	:	1. To disseminate BARI Begun-12 among the farmers 2. To increase production and farmers income.
Rationale	:	Brinjal (*Solanum melongena*) is the most important vegetables crop in Bangladesh cultivated during the Rabi season. This crop can be grown whole the year round. It is a good source of vitamins and minerals. This average yield of brinjal is very low compared to other tomato growing countries of the world. Farmers use the traditional varieties those are low yielding and susceptible to diseases and pests. As a result, yield is decreasing day by day. BARI has recently developed a new brinjal variety namely BARI Begun-12 which are supposed to be high yielding and less susceptible to pest and diseases. The present study will be undertaken to evaluate the performance of BARI Begun-12 in the farmers' field to increase production and economic return of farmers.
Materials and methods	:	
Design	:	RCB
Treatments	:	
Replications	:	6 (dispersed)
Plot dimension	:	400 m^2 per farmer
Plant spacing	:	Line sowing (100 cm x 80cm)
Fertilizer dose and application methods	:	Recommended fertilizer as per FRG, 2018 i.e. 140-50-40-16-1-1.7 kg, N-P-K-S-Zn-B ha^{-1} plus 5 tha^{-1} Cowdung. Half of the quantity of cow dung, half amount of P and entire amount of S and B will be applied during final land preparation. The remaining half of cow dung and P are to be applied during pit preparation before a week of planting. The entire N and K are to be applied in 3 equal installments of 21, 35 and 50 days after seedling transplanting.
Irrigation/rainfed	:	Irrigated
Date of planting	:	Seed sowing- 1st week of September, 2024 Planting- 2nd week of October, 2024
Plant protection measures		As and when necessary
Data to be recorded	:	Dates of all operation, Yield and yield contributing characters, Major disease and insect incidence, Cost and returns analysis and farmers opinion.
Output	:	BARI Begun-12 will be popularized among the farmers and production will be increased.
Season	:	Kharif-II

Investigator(s)	:	Concern scientists Dr. Md. Ruhul Amin and Md. Emdadul Haque of OFRD, Manikganj
Date of initiation	:	September, 2024
Date of completion	:	April, 2025
Location	:	Saturia and Singair of Manikganj
Status	:	2nd year
Estimated cost	:	Tk. 50000/- per location
Source of fund	:	BARI
Priority	:	1st

Expt. 221. Pilot Production Program of Mustard Varieties in Sylhet region

Objective(s)	:	To popularize and disseminate the BARI developed mustard varieties in Sylhet region To increase oilseed production and farmer's income
Rationale	:	In Bangladesh, rapeseed and mustard are the most important among all oilseed crops. Total cultivated area under rapeseed and mustard cultivation is 0.234 million hectares which produces 0.203 million tonnes of oil per year (BARI, 2011). It is a good source of oil. The oil content in rapeseed and mustard is 40-44%. Due to acute shortage of edible oil, country importing it by exchanging huge amount of foreign currency. A prolonged winter prevails in Sylhet, helped a lot for late planting opportunity of mustard (Annual report 2022-23) varieties viz. BARI Sarisha-14, BARI Sarisha-17, BARI Sarisha-18 and BARI Sarisha-20. Another scope to increase mustard production through utilization of fallow land in this area. With this point of view, a pilot production program has been taken.
Materials and methods	:	
Crop/ Variety	:	Mustard/BARI Sarisha-14, BARI Sarisha-17, BARI Sarisha-18 and BARI Sarisha-20
Design		RCB
i) Treatments	:	Above mentioned mustard varieties
ii) Replications	:	Not applicable
Plot size	:	2 ha each variety
Planting system/spacing	:	Broadcast
Fertilizer dose and methods of application	:	90-18-40-10-1 N-P-K-S-Zn kg ha^{-1}. Application method as per *Krishi Projukti Hatboi* (2020)
Irrigated/rainfed	:	Rainfed
Data to be recorded	:	Dates of all operation, yield and yield contributing characters, major disease and insect incidence, applied input and output price, farmers' opinion
Investigator(s)	:	M I Nazrul and M Zulfiqar, M Asaduzzaman
Season	:	Rabi 2024-25
Date of initiation	:	November 2024
Date of Completion		March 2025
Expected output	:	Increased oil seed production and farmers' income
Location	:	FSRD and all MLT sites under OFRD Sylhet
Status	:	On-going
Proposed from	:	OFRD, BARI Sylhet
Priority	:	1st
Estimated cost	:	Tk. 80,000/-
Source of fund	:	BARI

Expt. 222. Pilot Production of cereals, pulses, oilseeds and spices crop in char areas of Faridpur

Objective	:	To boost farmer productivity and economic return by popularizing BARI released crop types at farm level
Rationale	:	BARI developed different crop varieties and management approaches were evaluated in the farmers field in the previous years and compare their performances with farmers cultivated varieties as well as production practices. If there is any improvement regarding recent technology (both varietal and management approaches) for at least two successive years, then it is considered to be a new technology for large scale production. Last few years different improved variety of cereals, pulses, oilseeds, vegetables, and spices crops performed well in the farmer's field. Hence the production programs of different crops/varieties were undertaken.
Materials and methods:		
Crop/variety	:	Foxtail millet (var. BARI Kaon-2), Proso-millet (var. BARI Cheena-1), Barley (var. BARI Barley-7), Mustard (var. BARI Sarisha-14,18), Sunflower (var. BARI Surjamukhi-3), Sesame (var. BARI Til-4), Groundnut (BARI Chinabadam-8/9), Lentil (var. BARI Mashur-8), Grass pea (var. BARI Khesari-3), Blackgram (var. BARI Mash-3), Sweet potato (BARI Mistialu-16/17)
Plot size	:	Foxtail millet: 10 ha, Proso millet: 5 ha, Barley: 2 ha, Mustard: 10 ha, Sunflower: 2 ha, Sesame: 2 ha; Groundnut: 10 ha, Lentil: 5 ha, Grass pea: 3 ha, Black gram: 2 ha, Sweet potato: 2 ha
Planting system	:	Line sowing/Broadcasting
Fertilizer dose application	:	As per FRG, 2018
Irrigated/rainfed	:	Irrigated
Data to be recorded	:	Date of all operations, yield, Farmer's opinion, pest incidence
Investigator(s)	:	M M Rahman
Season	:	Rabi 2023-24 and kharif I 2024
Date of initiation	:	October 2023
Date of compilation	:	September 2024
Expected output	:	Seed/grain yield of said crop and farmer's income will be increased
Location	:	Faridpur
Status	:	New
Estimated cost	:	Tk. 300000/-
Source of fund	:	PARTNER Project
Priority	:	1st

Expt. 223. Pilot production program of Onion at Pabna region

Objective	:	To increase the production of spice crops.
Rationale	:	Onion is one ofthe majorspices in Bangladesh. BARI has developedsix onion varieties having high yield potential. Among the varieties BARI Piaj-4 is a high yielding promising variety.There is a huge area coverage of onion in Pabna. The farmers cultivate local and commercial varieties in these areas.Therefore, a production program of BARI Piaj-4will be undertaken to increase the production of onion and to popularize the variety in onion growing areas of Pabna.
Materials & methods	:	
Crop/Variety	:	Onion (BARI Piaj-4)

Planting system	:	Transplanting
Fertilizer dose	:	As per FRG 2018
Methods of application	:	As per BARI *Krishi Projukti Hatboi*, 2021
Irrigation/rainfed	:	Irrigated
Area	:	1 ha
Data to be recorded	:	Dates of all operations Yield and yield contributing characters Disease and insect incidence Cost and return analysis Farmer's opinion
Investigator	:	Concern scientist of OFRD, Pabna and Kushtia
Season	:	Rabi
Date of initiation	:	1st week of November, 2023
Expected output	:	Onion production will be increased, and farmers will be benefited.
Location	:	MLT site Sujanagar, Pabna and Kushtia
Status	:	3rd year/New
Estimated cost	:	Tk. 1,00,000/-
Source of fund	:	PARTNER Project
Priority	:	1st

Expt. 224. Pilot production program of Mustard varieties

Objectives	**:**	To popularize the BARI developed mustard variety in Sylhet region To increase oilseed production and farmer's income
Rationale	**:**	Bangladesh has an acute shortage of oil seeds in respect of its demand. Lack of suitable high yielding mustard varieties are major reasons of this deficit. The farmers of Syhet area generally grow local mustard variety after harvest of T. Aman rice. The yield potentiality of this local variety is very low. Furthermore, farmers sow mustard after harvest of long duration local T. Aman rice and hence, get a very low yield due to late planting and increase in soil salinity. Oil Seed Research Centre of BARI has developed some high yielding mustard varieties. Therefore, this program is undertaken.
Materials and Methods	**:**	
Crop /Variety	**:**	BARI Sarisha-14, BARI Sarisha-17, BARI Sarisha-18 and BARI Sarisha-20
Replication	**:**	
Land area	:	4 ha
Sowing time	**:**	November, 2023
Fertilizer dose	**:**	As per recommendation based on FRG/2018
Data to be collected	**;**	Dates of all operations, Yield and yield attributes, Major disease and pest incidence, Economic analysis, Farmers' opinion & Soil salinity
Expected output	**:**	Increased oil seed production and cropping intensity in the Sylhet area
Status	**:**	New
Date of initiation	**:**	November, 2023
Estimated cost	**:**	Tk. 60000/-
Source of fund	**:**	BARI
Location	**:**	Kushtia and Narsingdi
Investigator (s)	**:**	Concerned scientist of Kushtia and Narsingdi

Expt. 225. Pilot production program of BARI Panikachu-1

Objectives	:	To introduce BARI Panikachu-1 in farmers' field
Rationale	:	Taro (*Colocasia esculenta* L.), also called Panikachu in Bangladesh, is an aqua edible aroid belonging to the family Araceae that contains 106 genera and more than 1500 species (Wilson and Siemonsma, 1996; Paul et. al., 2011). It is one of the most important tuber crops in Bangladesh commercially grown in all parts of the country during the summer season (Mondal *et al.,* 2011). The crop has good potential for production in the wet season and can survive a certain period in floodwater. They are rich in calcium, phosphorus, iron, vitamin C, thiamine riboflavin and niacin which are important constituents of human diet (Holland et al., 1991). Most of the araceae plants or plant parts (leaf, petiole, rhizome, corms, stolon, flowers, etc.) are used directly or indirectly in Bangladesh for animal and human beings in different ways (Saha and Hussain, 1983). Demand of aroids in Bangladesh is increasing year after year, but its yield per unit area is very low. It is a popular crop in Sylhet area but many farmers grow local varieties. Yield potentiality of the local verity is low and susceptible to different pest and diseases. BARI has developed three panikachu varieties, of them BARI Panikachu-1 (Latiraj) is released as high yielding variety in 1998. The present study was therefore undertaken to study adaptability and to introduce BARI Panikachu-1 to increase yield as well as income of farmers.
Procedure/Methods		
Crop/Variety	:	Aroid: BARI Panikachu-1
Planting system	:	Line
Area	:	1 ha
Fertilizer dose	:	As per recommendation based on FRG/2018
Data to be recorded	:	Yield and yield attributes
Season	:	Kharif
Date of initiation	:	February, 2024
Expected output	:	Medium low fallow land will be utilized and variety will be disseminated.
Status	:	2nd year
Estimated cost	:	Tk. 40,000/-
Source of Fund	:	BARI
Location	:	Narsingdi
Investigators	:	Concerned scientist of OFRD, Narsingdi
Priority	:	First

Expt. 226. Production program of Sesame variety

Objectives	:	To introduce BARI Til-6 in farmers' field
Rationale	:	Til (*Sesamum indicum*) is an important oil crop in Bangladesh. In terms of acreage, it is next to mustard. In Bangladesh, 38,866 hectares of land (2003-04) are cultivated under sesame with a production of 25,000 metric tons of seed showing a yield of 640 kg/ha (BBS, 2004). It can be cultivated both in kharif and rabi seasons. The main regions are greater Faridpur, Barishal, Rangamati, Dinajpur, Pabna, Khulna, Dhaka, Mymensingh, and Comilla. The seed on an average consists of 47% oil and 20% protein (Rahman, 1976). BARI has developed some sesame varieties and their performances at farmer's field are satisfactory. However, these varieties were not tested in Sylhet condition. But before suggesting the suitable varieties for Sylhet, their agro-economic performances need to be tested in the farmer's field. So, this trial was under taken to evaluate the performance of BARI developed sesame varieties in the farmer's field of Sylhet region.
Procedure/Methods		
Crop/Variety	:	Sesame: BARI Til-6
Planting system	:	Broadcast
Area	:	100 dec
Fertilizer dose	:	As per recommendation based on FRG/2018
Data to be recorded	:	Yield and yield attributes
Season	:	Kharif-1
Date of initiation	:	February 2024
Expected output	:	Increase production and income of farmer.
Status	:	1st year
Estimated cost	:	Tk. 60,000/-
Source of Fund	:	BARI
Location	:	Kushtia
Investigators	:	Concerned scientist of OFRD, Cumilla
Priority	:	First

Rapporteurs Reports

Internal Research Review and Program Planning Workshop, 2025

Technical Session I & II: Improvement of Cropping Systems

- System background/justification should be mentioned in CP based experiment.
- In CP experiment, if one crop is damaged, the experiment should be stopped and repeated in the next year.
- AEZ name should be mentioned clearly in the report/program.
- In pattern-based experiment MBCR should be calculated properly.
- In sowing time experiment, data on soil moisture, crop growth duration, temperature etc. should be correlated with crop yield.
- Scientists should have enough knowledge regarding their experiments.
- Crop duration should be mentioned.
- Farmers can't take a good technology due to lack of seed – should be mentioned in the report.
- BARI/BRRI developed crop varieties should be included in the CP based experiment.
- Validation/upscaling of developed 4-crop based CP should be undertaken.
- Farmers' opinion should be mentioned in proper way.
- If 2 years completed experiment showed consistent results, presentation should be done in a package form.
- In system approach BARI developed crop varieties should be used to improve the system. In this case adaptive trial should be done at first.
- Three CP based experiment from Bhola should be considered as technology.
- T. Aman rice variety should be changed when time needs to be extended time for rabi crops.
- Same CP experiment over location should be presented combinedly.
- Sole lentil performed better than intercrop or mixed crop.
- MBCR for CP and BCR for other experiments should be done.
- BCR calculation should be done using total cost instead of TVC.
- Pocket area should be explored to increase oilseed crops production.
- For clear understanding of data, it should be presented in table form instead of seminar style.
- In bar graph standard error and DMRT marking should be placed for more understanding.
- In case of T.Aus rice, whether it is rainfed/irrigated should be mentioned.
- Maturity index of offseason watermelon should be identified for easy understanding of farmers.
- In case of LSD level of significance should be mentioned.
- Date should be mentioned in time series graph.
- LSD value should be included with graph.
- Conclusion should be drawn in a clear form mentioning the key findings.
- First crop name and then variety name should be mentioned in the Expt. Title.
- Pooled analysis should be done in multiple years/locations data.
- For program planning consultation should be done with respective division/center.
- Spacing and plant density for sunflower should be checked for yield.
- Production cost should be done in proper way.

- Output/product price should be calculated considering time series harvesting.
- The term financial analysis/ profitability analysis should be used instead of economic analysis.
- The reason for fallow land and how it could be overcome should be mentioned. Field pea performed better in relay method. Seed rate should be increased to 70 kg/ha.
- In combined presentation location specific farmers' reaction should be mentioned.
- BARI Sarisha-14 should be replaced by BARI Sarisha-20.
- Similar format should be followed for CP experiments.
- Opening of a new MLT site in Chalan bill area was proposed by expert panel.
- Why farmers accept new technology should be explained.

Technical Session III: Integrated Farming

- In the case of Integrated farm management systems, the issue of energy security should be taken into consideration. Biogas can be produced from cow dung.
- Instead of using traditional stoves, improved stoves can be used for cooking.
- Care should be taken in determining the pH of the soil where the soil is sloping and high and low.
- Farm system research is an excellent approach! Its obstacles need to be overcome.
- It would be very good if farming system research was carried out in other districts besides Pabna. Such work would provide a lot of encouragement to the villagers.
- Instead of plain land eco-system, it should be called flood-plain ecosystem.
- Emphasis should be placed on working with vegetables and fruits. Efforts should be made to make people of Sylhet eat more vegetables.
- The program is good, but it needs to be widely publicized.
- Funding is needed to conduct integrated farming system research. Therefore, an attempt can be made through the KGF project.
- It would be better to show the application of bio-pesticide use for disease and pest control in integrated farm management such as sex pheromones, yellow traps, bagging etc
- A preface should be given at the beginning of the report.
- Negative MBCR cannot be given in Mustard-Boro-T. Aman cropping pattern.
- Farming system sites should be strengthened. All components should be coordinated in such a way that it is sustainable.
- Emphasis should be placed on hill farming systems. Mr. Moniruzzaman's farm design model can be followed.
- Technology of high value crops should be taken for improving livelihood.
- BARI Sarisha-20 should be expanded instead of BARI Sarisha-14.
- BARI Tomato-23 is an OP variety. It can be expanded. BARI Danta-4 may be suitable for Comilla.
- Quality seeds and quality inputs should be provided to the farmers.
- Relay cropping and mixed cropping should be brought under the section of technology transfer.
- Seeds should be produced at the farmer level and the seeds should be purchased again and given to the farmers.
- Policies/appropriate measures should be formulated for purchasing large quantities of seeds from farmers.

As there were no further comments, the Chairman of the Technical Session thanked everyone and declared the session closed.

Technical Session-IV: On-Farm Trials with Advanced Lines and Technologies

- OFRD scientists suggested to work over there in Char and draught prone area like Chilmari upzila of Kurigram district
- Suggested to cultivate BARI Piaz-5 in summer season instead of winter
- In case of same adaptive trial, sowing time should be similar over different locations and soil condition should mentioned properly
- Imitaf, imidachloroprid and confidor was applied about 4 times higher than actual application dose suggested to apply judicious dose after discussing with respective divisions
- In case of vegetables, OFRD and vegetable section of HRC should work combinedly and selection must be done properly
- In case of hybrid, it had better to write locally available commercial hybrid instead of local hybrid
- In case of presentation, it is better to present site wise or at least the scientists expertise with the relevant subject can present those type of reports. The presenter should get enough information so that they can explain properly
- As there are two different coffee varieties, it is not wise to present mean data in report
- Who is the pioneer of Soybean BARI or BAU? It should be solved. Dr. Jamal Uddin, PSO, OFRD, Cumilla can write an article on 'Soybean chacher itibritto'
- Screening of Mustard varieties in costal areas should be executed properly in next year. Oilseed Research Center should also works on it
- Salinity measurement should be done properly. The result will be invalid, if salinity is not measured over the growing period
- Initiatives must be taken to identify anonymous BARI varieties of different crops for branding and popularization all over the country
- This is high time to make Public Relation Officer of BARI more active
- It is better to produce seeds of BARI developed varieties at RARS and discriminate those through OFRD and contract MoU with seed companies for seed production
- Varietal trial of potato must be based on objective wise such as table purpose, export quality, short duration, salinity tolerant, drought tolerant, heat tolerant, late blight resistant etc.
- Potato varieties providing yield lower than 40 t/ha should exclude from trial
- In Khulna region BARI Alu-72 should include in varietal trial experiment
- Suggested to disseminate BARI Misti Alu-18 instead of BARI Misti Alu-16
- In case of varietal trial of panikachu, stolon producing and rhizome producing should be done separately
- Disease and insect infestation data should provide properly and scientist from respective division must present in presentation sessions
- Fertilizer dose should be written in unified either as elemental or compound form
- The short duration varieties must compare with short duration, long duration with long duration, summer with summer etc. For that it is better to make group cluster considering duration, season, resistant to diseases, insect or specific ecosystem
- The results of turmeric is misleading in Sherpur, which can be cheeked
- Ecosystem is a broader term, suggested to use another term
- The field trial must be executed more scientifically and properly considering socio-economic conditions and challenges

Technical Session-V: PARTNER Activities

- ORC, BARI should take initiative to develop short duration high yielding mustard variety as like as Tori-7.
- BARI Sarisha-14 can be replaced by BARI Sarisha-20.
- Challisha (Local potato) can be replaced by BARI Potato-62 in haor area but seed availability must be ensured in time.
- Under PARTNER program, 2000 MT TLS seed need to be produced. Special emphasis should be given by TCRC & OFRD.
- In case of potato, Ridomil Gold should not sprayed at early stage. At first spray with Mancozeb group then Mancozeb + Metaloxil (Ridomil Gold) should be applied.
- Location specific potato variety should be identified and disseminated by OFRD.
- In case of TLS seed purchasing from farmers, procedure of BRRI and BINA can be followed.
- Initiatives should be taken to produce TLS through contact growers under the supervision of OFRD and different centers of BARI.
- Initiative should be taken to make a data base on location specific crops and technologies.
- BARI released OP varieties which are at per with commercial hybrids should be identified and listed down.
- In Bandarban establishment of a research station similar to Khagrachari is demanded by DAE and other local communities.
- Adaptive trial should be taken on BARI Lau-4 and BARI Lau-6 all over the country.
- Study should be done on "Problems and Prospects of Soybean Cultivation in Southern Region of Bangladesh".
- Breeders should develop bold seeded high protein & oil content soybean varieties.
- Intensive research on coconut production should be taken to reduce coconut import.
- Ceiling of financial power needs to be increased for all DDO. In PPR 2008 any DDO irrespective of Grade can exercise 25,000/- per each voucher of direct purchase.

Technical Session VI: KGF, EPOC and PARTNER Activities

- Under the KGF program, the crop variety remained the same, but management practices differed:

  A. Farmers' practice – traditional methods.

  B. Improved management practice – involving timely application of fertilizers, pesticides, roguing, and other essential crop care measures.
- Onion seeds intended for char areas were produced in Rangpur.
- In the first year, three varieties of the same crop were tested. The highest-yielding variety was selected for the production program, with the aim of using it in the subsequent year.
- A dedicated production program is required to ensure the easy availability of vegetable crop seeds.
- Training should be provided to farmers in char areas to help them maintain seed quality and ensure seed availability
- Specialized training is also needed for the proper operation and maintenance of mustard seed mixers.
- Coordinated efforts under the EPOC program have significantly increased oilseed crop production.
- The report of the first phase of EPOC must be prepared carefully to secure approval for the second phase and to ensure continuity of activities.

- The first phase will conclude on June 26, while feasibility testing for the second phase is currently in progress.
- Effective pathways must be developed to ensure rapid dissemination of BARI-developed crop varieties, technologies, and production patterns to farmers.
- Oilseed crop production has increased under the EPOC project; however, discontinuation of the program would result in production decline.
- Activities are being coordinated with the Department of Agricultural Extension (DAE) to ensure smooth transition to the next phase.
- Mustard crops need to be systematically incorporated into different cropping patterns.
- Club root and Sclerotinia diseases are spreading beyond mustard and affecting other vegetable crops as well.
- BARI Sarisha-14 and BARI Sarisha-15 should not be cultivated together.
- Club root disease has already spread in northern Bangladesh.
- Information on emerging diseases and pests must be collected through field research and reported to the appropriate division.
- Pods of BARI Sarisha-14 are showing symptoms of Alternaria infestation.
- Groundnut: Dhaka-1 and Mustard:Tori-7 are not local varieties; they are BARI-developed, but in existing references, BARI's name has not been mentioned.
- Over time, systemic changes have resulted in modifications to the naming of BARI crop varieties.
- The program should be designed to ensure that activities continue irrespective of the presence or absence of external project funding.
- Continuous development of new crop varieties and technologies is essential, with simultaneous emphasis on rapid transfer to farmers.

Technical session-VII: Program Planning of OFRD

Region I:

Expt.3: Title of the experiment to be corrected as "Validation of intercropping garlic with sugarcane under different planting geometries in the Level Barind Tract area". In the treatment, Sugarcane + two rows of garlic to be included.

Expt.5: Title of the experiment to be corrected as "Improvement of onion storage system using BARI developed forced-ventilation mobile structure in Pabna". In this experiment, the effect of height to be studied whether any physical change in onion occur due to pressure.

Expt.6: Effect of planting system on sweet potato production in Rangpur region. In this experiment proper spacing to be maintained for spacing.

Expt.7: Evaluation of onion varieties during early winter in the char area of Rangpur. In this experiment on more treatment such as V_4 = BARI Piaz-1 (Taherpuri) to be included.

Expt.8: Title of the experiment to be corrected as "Effect of planting geometry and NPKS nutrient management on growth and yield of onion.'' Treatment in Factor B to be written as planting geometry not crop geometry. Experiment to be laid out with 3 replications.

Expt.9: Influence of tillage practices and nutrient sources on yield performance and quality traits of mustard. In this experiment treatment T_3 to be corrected as T_3 = Strip tillage (not zero tillage). The nutrient calculated from IPNS to be deducted from vermicompost carefully.

Expt.10: Performance of leafy vegetables intercropped with brinjal in Rangpur region. In this experiment, objectives to be corrected as "To evaluate the yield performance of different intercropping system". The word "growth" to be discarded.

Expt.12: Development of alternate cropping pattern instead of Maize – Fallow – T. Aman rice in Dinajpur region. In this experiment treatment CP_3 to be corrected as CP_3 = (Maize + Potato)- Mungbean- T. Aman rice.

Expt. 20: Title of the experiment to be corrected as "On-farm trial of BARI released watermelon varieties at char area of Gaibandha. Date of initiation: February, 2026 (seed to be sown in the field).

Expt. 23: On-farm trial of stolon producing panikachu varieties. The name of the local stolon producing variety to be included in the treatment V_5.

Expt. 24: Title of the experiment to be corrected as "On-farm trial of BARI developed sesame varieties at Dinajpur area.

Expt. 26: On-farm trial of BARI summer tomato varieties in Thakurgaon region. Treatment of the experiment to be corrected as i). BARI hybrid Tomato-8 ii) BARI hybrid Tomato-11 iii). Bahuboli hybrid iv). Bipul plus hybrid.

Expt. 28: On-farm trial of BARI winter tomato varieties in Thakurgaon region. Treatment of the experiment to be corrected as i). BARI tomato-11 ii) BARI tomato-21 iii). BARI tomato-22 iv). BARI tomato-23 v). Local variety.

Expt. 30: Title of the experiment to be corrected as "On-farm trial of BARI chilli varieties in Thakurgaon region".

Region II:

AT: OFRD, Mymensingh

Expt. 4: Title of the experiment to be corrected as "On-farm trial of BARI Crysanthemum varieties in Mymensingh region.

Expt. No. 6: Title of the experiment to be corrected as "On-farm trial with BARI released potato varieties. Treatment of the experiment to be corrected as and local variety will be used as check.

Set I	Set II
Early variety	White colored variety
Late variety	Red colored variety

ICS: OFRD, Tangail

Expt. 3: Title of the experiment to be corrected as "Effect of seed rate on yield of mustard varieties under surface seeding conditions. BARI Sarisha-17 to be excluded from the variety treatment.

AT: OFRD, Tangail

Expt. 6: Title of the experiment to be corrected as "On-farm trial of BARI lilium (Lilium spp.) in Tangail." The objectives of the experiment to be corrected as "To evaluate the performance and adaptability of Lilium varieties in the farmers' fields in Tangail. Treatment T_4: Farmers or market preferred variety to be excluded.

AT: OFRD, Kishoreganj

Expt. 2: Development of Potato – Lau shak + Fallow cropping pattern against Potato-Kenaf-Fallow. In this experiment, Potato variety-BARI Alu-86 was suggested instead of BARI Alu-79.

Region III:

ICS: OFRD, Gopalganj

Expt. Title of the experiment to be corrected as "Validation of intercropping coriander with brinjal for controlling Brinjal Fruit and Shoot Borer insect infestation". It was suggested to discuss

with CSO, Agronomy about this experiment and to take validation trial. Coriander to be cultivated for seed not leaf purpose.

Expt. The effect of vine length on tuber yield of sweet potato (*Ipomoea batatus* L.). It was suggested to take validation trial and discuss with CSO, TCRC for further improvement of the experiment.

Expt. Intercropping of mustard with maize. This experiment to be taken as Pilot Production Program of mustard with maize.

Expt. On-farm trial of off-season watermelon varieties on Gher boundary in Gopalganj. In this experiment, treatment T_3 = local variety to be excluded.

ICS: OFRD, Patuakhali

Expt. Screening of different crops for land utilization after watermelon harvest in southern Bangladesh. In this experiment on more treatment such as T_6 = BARI Gimakolmi-1 to be included.

AT: OFRD, Kushtia

Expt. Adaptive trial of BARI released high yielding potato varieties in greater Kushtia region. In this experiment, TCRC short-listed potato varieties suitable for Kushtia region to be selected for experimentation.

AT: OFRD, Khulna

Expt. Title of the experiment to be corrected as "Evaluation of chilli lines in coastal areas. Treatment of the experiment to be corrected as i). Five lines from USA.

TT: OFRD, Patuakhali

Expt. Piloting of Coconut Rugose Spiralling whitefly management in Khulna region. In this experiment, treatment and rational to be corrected discussion with CSO, Entomology Division and it was suggested to develop a package.

Expt. Validation on controlling of major betel vine diseases in Khulna region. The objectives of the experiment to be corrected and relevant to the title. It was suggested to collect basic information discussion with CSO, Plant Pathology Division and to develop a package.

TT: OFRD, Gopalganj

Expt. Title of the experiment to be corrected as "IPM based mungbean production in southern Bangladesh. It was suggested to discuss with CSO, Entomolgy Division about the experiment.

Expt. Title of the experiment to be corrected as "Production program of relay lentil with T. Aman rice in Barisal.

Region IV:

AT: Bandarban

Expt. Adaptive trial of summer country bean in Bandarban district. In this experiment, treatment V_3 = SAU Sheem-1 to be excluded.

Expt. Adaptive trial of hybrid bitter gourd varieties in Bandarban Hill district. In this experiment, treatment V_3 = Commercial hybrid variety to be taken for experimentation.

ICS: Cumilla

Expt. Title of the experiment to be corrected as "Intervention of sesame in mustard-Falow- B. Aman rice cropping pattern in Brahmanbaria. It was suggested to select suitable T. Aman rice variety for the lowlands of that area.

AT: Cumilla

Expt. On-farm trial of newly released sweet potato varieties in Cumilla region. In this experiment, the name of the local variety of sweet potato to be mentioned.

AT: Hathazari

Expt. Validation trial of biolife BHAT-01 Wp for controlling bacterial wilt in BARI released eggplant variety. In this experiment treatment, BARI Begun-12 to be selected as variety not Bt brinjal.

General Comments, Observation and Suggestions on Program Development:

1. Pilot production program on the popular BARI varieties to be disseminated in BARI technology village.
2. All crops including fruits to be grown in BARI technology village.
3. Best technology of respective crops/varieties to be selected for BARI technology village.
4. New productive/creative/impressive technology to be demonstrated in BARI technology village.
5. It was suggested to emphasize farmers' variety under intercropping systems.
6. Minimum support/less subsidy to the farmers to be given so that technology could be sustainable in the tested locations. Experiments should be conducted in different farmers' field not emphasizing only the selected farmers every year.
7. All information in the signboard to be included so that it represents BARI.

Experimental crops should be treated as seed material not only for edible purpose.