

Irrigation and Water Management Division

RESEARCH PROGRAMME 2021-2022

Program area/Project with duration	Major Objectives	Annual budget (Thousand Tk)
Sub-Sub Program I: Improvement of Water Use Efficiency in Irrigated Agriculture		
1.1: Determination of physical and hydraulic properties in different soil types 2015- To be continued	<ul style="list-style-type: none"> • To document the important soil physical properties in different soil profiles • To develop a soil moisture characteristics curve 	100
1.2: Automated Alternate Wetting and Drying Irrigation System for Rice production 2018-22	<ul style="list-style-type: none"> • To automate conventional implementation of AWD technology • To make the AWD method easy and user-friendly • To save irrigation water by precise water level monitoring 	200
1.3: Technique for Using Basin Water for Elevated Land Rice Cultivation in Haor Area during Dry Season 2019-22	<ul style="list-style-type: none"> • To develop a technique for using basin water of haor during dry season • To bring elevated land under boro cultivation • To improve land productivity 	100
1.4: Problems and potentials for crop productivity improvement through water management in the Hilly areas 2015-22	<ul style="list-style-type: none"> • To identify problems & potentials of water resources development for agriculture and livelihood improvement in the Hilly area • To recommend suitable water management options 	100
1.5: Study on water stress tolerance capacity for different advanced rice genotype of BRRI 2015- To be continued	<ul style="list-style-type: none"> • To quantify water-stress tolerance capacity for different varieties • To determine yield of varieties under different water stress condition 	100
1.6: Performance evaluation of the proposed rice varieties under different water regimes 2019-23	<ul style="list-style-type: none"> • To study performance of the proposed rice varieties under different water regimes • To evaluate suitable water regimes for proposed lines/varieties of rice 	200
1.7: Improving soil-water availability for crop production in char land by amendment practices 2019-22	<ul style="list-style-type: none"> • To determine soil physical properties of root zone soil layers • To determine water holding capacity of root zone soil layers • To determine infiltration rate and saturated hydraulic conductivity of the soil layers before and after soil amendment • To measure soil-water retention curves of the soil layers and determine their parameters 	100
1.8: Determining minimum irrigation water requirement of rice at different regions of Bangladesh through water balance from on-farm demand and model simulation 2019-23	<ul style="list-style-type: none"> • To measure minimum water requirement for rice irrigation at different regions • To measure yield response of rice to irrigation application based on on-farm demand and simulated irrigation requirement • To recommend the suitable water requirement package 	200

1.9: Optimization of water use efficiency through subirrigation and mini-sprinkler 2021-2024	<ul style="list-style-type: none"> To increase water use efficiency in crop cultivation To evaluate the performance of sub-irrigation and sprinkler irrigation system in transplanted rice field 	300
1.10: Irrigation water requirement and rainfall utilization for delayed transplanting of Boro rice in different locations of Bangladesh 2021-2024	<ul style="list-style-type: none"> To find out the variation of irrigation water requirement in relation to the delayed transplanting To maximize the rainfall utilization and to reduce the groundwater withdrawal. 	300
1.11: Farm level irrigation efficiency determination by ODK software 2021-2024	<ul style="list-style-type: none"> To assess the present level of irrigation efficiency (IE) and water productivity (WP) of minor irrigation system To assess the techno-socio-economic opportunity for improving irrigation efficiency. 	100
Sub-Sub Program III: Land Productivity Improvement in the Coastal Environment		
2.1: Agricultural drought forecasting for mitigation of drought in T. Aman rice 2017- 22	<ul style="list-style-type: none"> To determine drought using forecasted rainfall and evapotranspiration To mitigate effect of drought by applying supplemental irrigation To determine suitability of existing model for drought forecasting, and To determine yield performance of T. Aman rice after mitigating drought 	200
2.2: Irrigation scheduling of Boro rice (<i>Oryza sativa</i> L.) based on weather forecasting in Gazipur 2019- 22	<ul style="list-style-type: none"> To predict water demand through WBSM (Towfiq, 2007) To compare performance of WBSM with AWD and CSW methods To validate WBSM with CROPWAT 8.0 model To recommend the better method for irrigation scheduling of Boro rice 	100
2.3: Feasibility evaluation of the use of sub-surface drainage system for rice-based cropping pattern in Bangladesh 2020-25	<ul style="list-style-type: none"> To identify post-monsoon waterlogged crop field under rice-based cropping pattern To collect detail information about land use, elevation and gradient, soil physical and hydraulic properties To evaluate potential benefit due to installation of sub-surface drainage system To recommend suitable area for sub-surface drainage for increasing productivity 	100
Sub-Sub Program IV: Sustainable Management of Water Resources		
3.1: Assessment of suitable water resources availability for irrigation to increase crop production in tidal areas of Barisal region 2015- To be continued	<ul style="list-style-type: none"> To monitor the dynamics of surface water salinity in the dry season at different locations of Barisal region To assess the suitability of water for irrigated crop cultivation. To assess the availability of water and potentials for irrigated crop cultivation To assess the constraints and prospects of tidal water utilization for crop production. 	100

3.2: Water resources assessment during dry season crop cultivation in selected polders of coastal region 2017-2022	<ul style="list-style-type: none"> • To delineate suitable water resources during dry season • To determine the amount of fresh water available for crop production during the period and • To assess the cultivated area by different cropping pattern based on water resources 	100
3.3: Use of less saline water resources for increasing cropping intensity in Barisal region 2017-2023	<ul style="list-style-type: none"> • To bring fallow land under Boro cultivation • To improve crop and land productivity in the region 	200
3.4: Saline water irrigation strategies for Boro rice cultivation in the coastal saline area 2021-2024	<ul style="list-style-type: none"> • To find out the saline water irrigation management options for Boro rice cultivation • To quantify the ionic stress on plant shoot and root under saline water treatments 	400
Sub-Sub Program IV: Sustainable Management of Water Resources		
4.1. Monitoring of groundwater fluctuation and safe utilization in different geo-hydrological regions 1979-To be continued.	<ul style="list-style-type: none"> • To determine the fluctuation of groundwater level over time and its relationships with rainfall, and • To determine water quality for assessing suitability for irrigation. 	100
4.2: Conjunctive use of wastewater and fresh water for irrigation in Boro rice cultivation 2020-22	<ul style="list-style-type: none"> • To determine suitability of wastewaters for boro rice cultivation. • To analyze rice grain sample for heavy metal uptake. 	100
4.3: Effect on percolation losses and groundwater recharge due to weak plough-pan formed under long term conservation agriculture 2019-21	<ul style="list-style-type: none"> • To determine amount of irrigation water contributed through deep percolation to ground water recharge under SP and CT • To determine depth of vertical movement of irrigation water towards ground water level • To determine the depth and vicinity of the nearest aquifer 	200
4.4: Assessment of groundwater level depletion dynamics in selected locations of Bangladesh 2019-23	<ul style="list-style-type: none"> • To evaluate fluctuation pattern of GWL • To determine the GWL depletion trend • To assess the GW recharge pattern through model study • To recommend location specific safe GW use 	200
4.5: Assessment of surface and groundwater quality for irrigation in selected locations of Bangladesh 2019-22	<ul style="list-style-type: none"> • To determine the surface and groundwater quality parameters • To determine the suitability of groundwater for irrigation 	200
4.6: Change in surface water bodies and its impact on groundwater recharge in Barind region of Bangladesh 2021-2025	<ul style="list-style-type: none"> • To find out the relationship between surface water storage and groundwater recharge • To figure out the options increasing surface water storage for enhancing GW recharge and sustainable crop production 	200
4.7: Surface water receding pattern in relation to Boro rice establishment in Haor region of Bangladesh 2021-2025	<ul style="list-style-type: none"> • To determine weekly/fortnight water receding pattern and a contour map showing the water receding area • To determine suitable establishment period for escaping flash flood damage of Boro rice 	100

4.8: Reuse of domestic household water for crop production at BRRRI farm, Gazipur 2021-2025	<ul style="list-style-type: none"> To find out the quality of domestic wastewater for irrigation To assess the opportunities of domestic wastewater for irrigation 	300
4.9: Assessing on-farm water-use efficiency of BRRRI research farm, Gazipur 2021-2025	<ul style="list-style-type: none"> To find out present irrigation management status of BRRRI farm To suggest plan for efficient irrigation management plan for BRRRI farm 	100
4.10: Present status and potentiality for increasing rice cultivation in surface water irrigation projects of Bangladesh 2021-2024	<ul style="list-style-type: none"> To determine the present efficiency of major irrigation projects To figure out the improvement options for surface water utilization 	100
Sub-Sub Program V: Utilization of Renewable Energy		
5.1: Development of a low-cost DC solar water pump for irrigation in Bangladesh 2019-22	<ul style="list-style-type: none"> To use brushless DC motor for operating solar water pump To find out optimum panel size To test efficacy of the pump for surface water irrigation To determine economic feasibility of the pump for rice cultivation 	150
5.2: Evaluation of smallholder surface water solar irrigation system for crop production 2017-20	<ul style="list-style-type: none"> To evaluate the technical and economic performance of a small capacity solar powered low lift centrifugal and submersible pumps To develop a portable type PV panel structure To determine the maximum command area covered by the solar pumps for rice irrigation To analyze the feasibility of the pumps for rice cultivation To assess the value addition for versatile use of solar panels (Solar home system/Paddy thresher) 	350
5.3: Feasibility assessment of solar pump utilization for irrigation purpose in Chattogram region 2021-2022	<ul style="list-style-type: none"> To increase water use efficiency in crop cultivation To evaluate the performance of sub-irrigation and sprinkler irrigation system in transplanted rice field 	100
Sub-Sub Program VI: Climate Change Impact Assessment and Adaptation Techniques Development		
6.1: Effect of irrigation suspension on mitigating greenhouse gas emission in irrigated rice cultivation 2021-2024	<ul style="list-style-type: none"> To determine irrigation requirement and yield of Boro rice under varying practices To assess irrigation suspension practices on reducing global warming potential 	0.50
Sub-Sub Program VII: Technology Validation in the Farmers' Field		
7.1: Modeling climate change impact on agriculture and developing mitigation and adaptation strategies for sustaining agricultural production in Bangladesh (KGF funded) 2020-23	<ul style="list-style-type: none"> Assessment and characterization of climatic variability, vulnerability, and extreme events for agri-production under climate change 	10619
7.2: Intervention in surface water utilization through integrated minor irrigation schemes for escalating water and land	<ul style="list-style-type: none"> Expansion of Boro rice cultivation in selected area utilizing less saline surface water. 	12000

<p>productivity in coastal region (KGF funded) 2021-24</p>	<ul style="list-style-type: none"> • Assessment of suitable water resources for crop planning in selected polders. • Increasing water use efficiency by adopting on-farm water saving technologies. 	
<p>7.3: Increasing Cropping Intensity in the Coastal Barishal and Khulna Region Through Water Resources and Soil Salinity Management (GoB funded) 2020-23</p>	<ul style="list-style-type: none"> • The main objective of this project (Karmasuchi in Bangla) is increasing cropping intensity and improving farmers livelihood by integrated management of less surface water and soil salinity in the coastal Barishal and Khulna region. 	<p style="text-align: center;">42200</p>