# Proposed Research Program 2024-2025

| | **Program Area: Pest Management** | | | |
|---|---|---|---|---|
| **Sl. No.** | **Program Area/Project/ Experiment Title & Duration** | **Major Objective** | **Expected output** | |
| | **Entomology Division** | | | |
| 1 | Pest monitoring in BRRI farm.<br>Duration: Long term, continued since 1972. | To study the insect pests and their natural enemy incidence at BRRI farm and to create a database to develop a forecasting system. | Insect pests and their natural enemy incidence will be identified and a database for insect forecasting will be developed. | 150000/- |
| 2 | Insect pests and natural enemy in light trap.<br>Duration: Long term, continued since 1972. | To study the pest and their natural enemy incidence patterns in rice fields and to create a database to develop a forecasting system. | Insect pests and their natural enemy incidence will be identified and a database for insect forecasting will be developed. | 150000/- |
| 3 | Survey and monitoring of rice arthropods in different AEZ.<br>Duration: Long term, continued since 2020. | To identify the peak abundance of insect pests in different AEZ of Bangladesh. | The highest levels of insect pest abundance in various Agro-Ecological Zones (AEZ) of Bangladesh will be determined. | 200000/- |
| 4 | Behavioral adaptation of RLR in different weather condition.<br>Duration: Mid term, continued since 2019. | To identify the effects of temperature on life cycle of rice leafroller. | The impact of temperature due to climate change on the life cycle of the rice leafroller will identify. | 200000/- |
| 5 | Species composition of stem borer in rice.<br>Duration: Mid term, continued since 2022. | To study the relative abundance of different species of rice stem borers and to determine the yield loss due to their damage. | Will assess the relative prevalence of various species of rice stem borers and quantify the resulting yield loss from their damage. | 150000/- |
| 6 | Conservation of natural enemies through eco-engineering.<br>Duration: Mid term, continued since 2019. | To conserve natural enemies through ecological engineering approaches.<br>To reduce insecticide application in rice production.<br>To identify the parasitoids for specific | Ecological engineering methods for preserving natural enemies will minimize insecticide usage in rice field. | 200000/- |

| | | | | |
|---|---|---|---|---|
| | | flowers. | | |
| 7 | Study on entomogenous fungi to control BPH.<br>Duration: Mid term, continued since 2019. | To identify the entomopathogenic fungi isolates that naturally infected brown planthoppers. | Naturally occurring entomopathogenic fungi isolates that have infected brown planthoppers will discover. | 200000/- |
| 8 | Study on the biology of green mirid bug an egg predator BPH.<br>Duration: Mid term, continued since 2022. | To know the biology and life cycle of green mirid bug. | An efficient natural predator will be utilized for managing Brown Planthopper (BPH). | 100000/- |
| 9 | Estimation of yield loss due to insect pests of rice.<br>Duration: Long term, will be continued from 2024. | To determine the yield loss of rice due to insect.<br>To predict losses for formulating action thresholds. | The whole scenario of rice yield loss due to insect will determine. | New |
| 10 | Test of different insecticides against major insect pests.<br>Duration: Long term, continued since 1972. | To evaluate the effectiveness of commercial formulations of different insecticides against major insect pests of rice. | Effective insecticide formulation and dose against specific insect will evaluate. | 300000/- |
| 11 | Use of nanoparticle to control rice insect pests.<br>Duration: Mid term, continued since 2019. | To develop nano-particle based pest management in rice<br>To reduce chemical pesticide load in environment. | Nano particle based pest management will reduce the use of chemical insecticides. | 300000/- |
| 12 | Insecticidal effects of different botanicals for the management of rice leaffolder.<br>Duration: Short term, will be continued from 2024. | To know the efficacy of different botanicals for management of rice leaffolder. | Various botanicals will be employed for controlling rice leaffolder infestation. | 100000/- |
| 13 | Effect of different insecticides on resistance GLH population.<br>Duration: Mid term, will be continued from 2024. | To find out the location specific GLH resistance level against different insecticides. | We will identify various insecticides that are effective against GLH populations that have developed resistance. | 200000/- |
| 14 | Effect of insecticide on | To know the role of natural enemy for | The impact of insecticides on the | 100000/- |

| | | | | |
|---|---|---|---|---|
| | resurgence development in absence or presence of natural enemy.<br>Duration: Short term, will be continued from 2024. | the control of resurgence development. | resurgence of pest populations, both in the presence and absence of natural enemies, will be identified. | |
| 15 | Residue analysis of different insecticide in rice by using LCMS.<br>Duration: Mid term, continued since 2020. | To detect insecticide residues in rice hull, bran and polished rice.<br>To establish monitoring and guidance on safe use of insecticide in rice field. | The presence of insecticide residues in rice hulls, bran, and polished rice, will assess and will develop monitoring protocols and guidelines for the safe application of insecticides in rice fields. | 500000/- |
| 16 | Development and validation of analytical methods for multiple pesticide residue determination in rice grain using Liquid Chromatography with Tandem Mass Spectrometry (LCMS/MS).<br>Duration: Mid term, continued since 2023. | To develop and validate a multi-residue analytical method for the analysis of different pesticide in rice grain using QuEChERS (Quick, Easy, Cheap, Effective, Rugged and Safe) extraction coupled to LC-MS/MS. | A validated analytical method for multiple pesticide residue determination in rice grain using LCMS will develop. | 500000/- |
| 17 | Screening of rice germplasm, advance line against BPH, WBPH, GLH, GM.<br>Duration: Long term, continued since 1972. | To identify resistant rice germplasm against major insect pests. | Insect resistant rice germplasm will be idenfied. | 400000/- |
| 18 | Identify of biotype on brown planthopper in Bangladesh.<br>Duration: Long term, will be continued from 2024. | To find out the biotype scenario in rice ecosystem.<br>To identify the resistance genetic sources. | Updated information of BPH biotype and their incidence pattern will find out. | New |
| 19 | Suppression of serotonin synthesis in rice using CRISPR Cas9 for insect control.<br>Duration: Mid term, continued | To develop insect resistant rice variety.<br>To reduce insecticide dependency. | Insect resistant rice line will be developed. | 500000/- |

| | | | | |
|---|---|---|---|---|
| | since 2019. | | | |
| 20 | Controlling rat in rice field through integrated management approach.<br>Duration: Long term, will be continued from 2024. | To manage rats in rice field through different options in a sustainable way. | A sustainable way to control rat will be identified. | New |