Annual Research Programme

(2015-16)

Entomology Division

PROGRAMME AREA: PEST MANAGEMENT (INSECT)

Project 1	**:**	**Screening of rice and wheat mutants for tolerance to major insect pests**
Objectives:	:	i) To identify the sources of tolerance in rice and wheat plants against the major pests such as brown plant hopper, green leaf hopper, rice hispa, stem borer, gall midge, leaf roller, thrips, aphid and termite. ii) To find out the causes of tolerance/resistance.
Personnel assigned	:	Dr. Md. Jahangir Alam, C.S.O (P.I.) Dr. Md. Tazmul Haque, S.S.O Muhammad Maruf Husain, S.O Mr. Golam Rasul, A.S.O Mrs. Habiba Khatun, S.A-I Md. Alal Uddin, S.A-II
Status	:	On going
Source of fund	:	GOB
Experiment 1	**:**	**Evaluation of rice varieties/mutants against stem borer, gall midge and brown plant hopper under saline area**
Objective(s)	:	To indentify the stem borer, gall midge and brown plant hopper tolerant line(s)
Growing season	:	T aman and Boro, 2015-2016
Treatments	:	3 (2 varieties + 1 checks), 2 varieties: Binadhan -10, Binadhan -11.
Design & Repln.	:	RCBD & 4
Location	:	BINA Sub-station Farm, Shatkhira.
Unit plot & total area	:	5 m x 4 m; 700 sq. m
Data to be recorded	:	i) Percentage of dead heart (45 DAT) and white head (10 days before harvest). ii) Percentage of onion shoot iii) No. of gravid female BPH/hill
Experiment 2	**:**	**Evaluation of advanced mutants of rice for tolerance to rice hispa under artificial infested condition**
Objective(s)	:	To identify the drought tolerant mutants of rice for tolerance to rice hispa under artificial infested condition
Growing season	:	Boro, 2015-2016
Treatments	:	6 (4 mutants +2 checks) 4 mutants : N4/350/P-4(5), N10/350/P-5-4, N4/250/P-1(2), N4/250/P- (6)-26
Design & Repln.	:	CRD & 4
Location(s)	:	BINA, Mymensingh

Data to be recorded	:	Percentage of leaf infestation at tillering stage.

Experiment 3	**:**	**Evaluation of advanced mutants of rice for tolerance to brown plant hopper under artificial infested condition**
Objective(s)	:	To identify the advanced mutants of rice for tolerance to brown plant hopper under artificial infested condition.
Growing season	:	Boro, 2015-2016
Treatments	:	7 (5mutants +2 checks) 5 mutants: RM(2)-40-(C)-1-1-10, RM-40 (C)-1-7, RC-2-4-1-2, RM-40 (C)-1-1 and RM-40 (C)-1-5
Design & Repli.	:	CRD & 4
Location(s)	:	BINA, Mymensingh.
Data to be recorded	:	Percentage of infested seedling(s).

Experiment 4	**:**	**Evaluation of two promising mutants of rice B-10 and B-11 for tolerance to rice hispa under artificial infested condition**
Objective(s)	:	To identify the two promising mutants of rice B-10 and B-11 for tolerance to rice hispa under artificial infested condition
Growing season	:	Boro, 2015-2016
Treatments	:	4 (2 mutants + 2 checks) 2 mutants: B-10 and B-11
Design & Repln.	:	CRD & 4
Location(s)	:	BINA, Mymensingh
Data to be recorded	:	Percentage of infested seedling(s).

Experiment: 5	:	**Evaluation of salt tolerant mutants of wheat for tolerance to major insect pests under field condition**
Objectives	**:**	To identify the salt tolerant mutants of wheat for tolerance to major insect pests under field condition
Locations	**:**	BINA farm, Mymensingh and the experiment(s) set by Plant Breeding division at different location(s).
Status	:	New
Growing season	:	Rabi season, 2015-2016
Treatments	:	Three advanced mutants (L-880-43, L-880-5 and L-880/1)
Data to be recorded	:	Percentage of aphids and termite (after 45 days)

Project 2	**:**	**Screening of radiation induced spices and vegetables for tolerance to their major insect pests**
Objectives	:	To find out spices and vegetables for tolerance to their major insect pests.
Personnel assigned	:	Dr. Md. Jahangir Alam, C.S.O (P.I) Muhammad Maruf Husain, S.O Mr. Abdul Baki, A.S.O Mr. Ramandra Chandra Nayak, S.A-I Md. Aminul Islam, S.A.-I

Md. Alal Uddin, S.A.-II

Status : New

Source of fund : GOB

Experiment 6 : **Evaluation of summer onion mutants for tolerance to thrips and aphid under field condition**

Objectives : To identify the sources of tolerance in onion against their major insect pests.

Locations : BINA farm, Mymensingh

Status : New

Growing season : Kharif-season, 2015-16

Treatments : Three mutants
BP2/75/2, BP2/100/2 and BP2/75/5

Data to be recorded : Percent onion leaf infested by thrips and aphid

Experiment: 7 : **Evaluation of chilli mutants/lines for tolerance to thrips and aphid under field condition**

Objective(s) : To identify the chilli lines for tolerance to thrips and aphid under field condition

Locations : BINA farm, Mymensingh

Status : New

Growing season : Winter, 2015-16

Treatments : 6 lines: C_{75} HM_4, C_{75} MM_4, C_{150} MM_4, C_{150} MM_4, C_{300} MM_4 and C_{300} MM_4.

Data to be recorded : Percent chilli leaf infested by thrips and aphid

Experiment 8 : **Evaluation of tomato mutants for tolerance to tomato fruit borer under field condition**

Objectives : To identify the tomato mutants/lines tolerance to tomato fruit borer under filed condition

Locations : BINA farm, Mymensingh, Ishurdi and Magura

Status : New

Growing season : Winter/summer-season, 2015-16

Treatments : 5 mutants, Philli-I, Philli-II, HM-2853, HM-2722, HM-2671,

Data to be recorded : i) Percent fruits infested by fruit borer
ii) Population of fruit borer

Experiment 9 : **Evaluation of brinjal mutants for tolerance to brinjal shoot and fruit borer (BSFB) under field condition**

Objectives : To identify the brinjal lines for tolerance to brinjal shoot and fruit borer (BSFB) under field condition

Locations : BINA farm, Mymensingh, and Farmer's field, Jamalpur

Status : New

Growing season : Winter/summer-season, 2015-16

Treatments : 5 lines
Ind M_2 D_{75} P_{71} (1), Ind M_2 D_{75} P_{80} (8), Ind M_2 D_{75} P_{90} (14), Ind M_2 D_{75} D_{150} P_{120} (1) and Ind M_2 D_{75} P_{62} (1)

Data to be recorded	:	i) Percent plant infested by BSFB ii) Percent fruits infested by BSFB iii) Population of BSFB
Project 3	:	**Screening of pulse crops for tolerance to major insect pests**
Objectives	:	To identify the chickpea mutants/lines for tolerance to major insect pests, such as cut worm and pod borer To identify the mungbean mutants tolerance to white fly, jassids, leaf hopper and pod borer
Personnel assigned	:	Dr. Md. Jahangir Alam, C.S.O (P.I.) Dr. Md. Tazmul Haque, S.S.O. Muhammad Maruf Husain, S.O Mr. Golam Rasul, A.S.O Mr. Ramandra Chandra Nayak, S.A-I Md. Alal Uddin, S.A-II
Status	:	On going
Source of fund	:	GOB
Experiment:10	:	**Evaluation of chickpea mutants for tolerance to cutworm and pod borer under drought area**
Objectives	:	To identify the chickpea mutants for tolerance to cutworm and pod borer under field condition
Locations	:	Chapainababgong and Godagari, Rajshahi
Status	:	On going
Growing season	:	Rabi season, 2015-2016
Treatments	:	Four mutants: CPM (kab), CPM-8-300, CPM-BR-7-400 and CPM-8-400
Data to be recorded		(i)% Infestation of cutworm (ii) Number of infested pods will be counted from 10 randomly selected plants (iii) Seed yield will be recorded at each harvest
Experiment 11	:	**Evaluation of mungbean mutants/varieties against pod borer, hairy caterpillar, leaf roller, jassid and whitefly under hilly area and other mung growing areas**
Objectives	:	To identify tolerance lines against pod borer, hairy caterpillar, jassid, whitefly.
Locations	:	BINA Substation farms, Khagrachori, Ishurdi and Magura.
Status	:	On going
Growing season	:	Karif season, 2015-2016
Treatments	:	Five mutants MBM-07-Y-2, MBM-07-Y-1, MBM-07(S)-2, MBM-656-51-2 and MBM-427-87-3
Data to be recorded		(i) Leaf area consumed by hairy caterpillar will be measured (ii) % plant infested by leaf roller will be recorded (iii) Number of infested pods by pod borer will be counted from 10 randomly selected plants

(iv) Number of jassid /cage will be recorded
(v) Number of white fly/cage will be recorded

Project 4	**:**	**Screening of oil seed crops for tolerance to major insect pests**
Objectives		- To identify mustard mutants resistant to major insect pests such as cut worm, aphid, hairy cater pillar saw fly and diamond back moth - To identify groundnut mutants resistant to thrips, jassids and leaf roller - To identify soybean mutants resistant to cabbage looper hairy caterpillar and pod borer. - To identify sesame mutants resistant to leaf roller, til hawk moth and pod borer, hairy cater pillar. - To find out the causes of resistance (morphological and biochemical)
Personnel assigned	:	Dr. Morzia Begum, P.S.O (P.I.) Dr. Md. Tazmul Haque, S.S.O. Muhammad Maruf Husain, S.O Mr. Abdul Baki, A.S.O Mr. Golam Rasul, A.S.O Mr. Ramendra Chandra Nayak, S.A-I Md. Alal Uddin, S.A-II
Status	:	On going
Source of fund	:	GOB
Experiment: 12	:	**Evaluation of mustard/rapeseed mutants/strains for tolerance to aphid, common cutworm and sawfly under field and artificial condition**
Objectives	**:**	To identify mustard mutants for tolerance to common cutworm, aphids and sawfly
Locations	**:**	BINA farm, Mymensingh; BINA sub-stations, Comilla, Jamalpur and Rangpur
Status	:	On going
Growing season	:	Rabi Season 2015-2016
Treatments	:	Five mutants : MM-35, MM-36, MM-37, MM-210, MM-211 and two check
Data to be recorded	**:**	(i)Number of aphid per plant will be recorded (ii)Incidence of aphid will be recorded (iii)Percent infestation by common cutworm and sawfly will be calculated
Experiment: 13	:	**Evaluation of salt and drought tolerant mutants of groundnut for tolerance to hairy caterpillar, leaf roller, jassid and aphid under field condition**
Objectives	**:**	To identify salt and drought tolerant mutants of groundnut against, jassid, leaf roller, hairy caterpillar and aphid
Locations	**:**	BINA sub-station farms Subarnachar, Noakhali and Ishurdi and Farmer's field, Kishoregong.
Status	:	On going

Growing season : Kharif Season-2015-2016

Data to be recorded : (i)Leaf area consumed by hairy caterpillar will be measured
(ii)% plant infested by leaf roller will be recorded
(iii) Number of jassid /cage will be recorded

Experiment 14 : **Evaluation of different soybean mutants for tolerance to common cut worm, hairy caterpillar and leaf roller under field condition**

Objectives : To identify soybean mutants tolerance to major insect pests such as common cut worm, hairy caterpillar and pod borer

Locations : Mymensingh, Magura and Noakhali

Status : On going

Growing season : Kharif Season 2015-2016

Treatments : 3 Mutants(SBM-15, SBM-18 & SBM-22) and 2 check varieties

Data to be recorded : (i) Leaf area consumed by hairy caterpillar will be measured
(ii) % plant infested by leaf roller will be recorded
(iii) Number of infested pods will be counted from 10 randomly selected plants

Experiment 15 : **Evaluation of mutant/varieties of sesame for tolerance to leaf roller, hawk moth, pod borer and hairy caterpillar under field condition**

Objectives : To identify sesame mutants tolerance to leaf roller, til hawk moth, pod borer and hairy cater pillar.

Locations : BINA farm, Mymensingh and BINA Substation farms Rangpur and Ishurdi

Status : On going

Growing season : Kharif-season, 2015-16

Treatments : Four mutants (SM-8, SM-9,SM-white & SM-black) with one check

Data to be recorded : (i) Leaf area consumed by hairy caterpillar will be measured
(ii) % plant infested by leaf roller will be recorded
(iii) Number of infested pods will be counted from 10 randomly selected plants
(iv) Hawk mooth infestation will be recorded

Project 5 : **Genetic control of insect pests with special reference to Sterile Insect Technique (SIT) and Radiation-induced F_1-sterility**

Objectives : - To develop the method of radiation induced F_1 sterility for area-wide control of some Lepidopteran pests.
- Control of cucurbit fruit fly and some other pests by applying Sterile Insect Technique (SIT) in Bangladesh.

Personnel assigned	:	Dr. Md. Tazmul Haque, S.S.O. (P.I.) Dr. Md. Jahangir Alam, C.S.O Dr. Md. Lutfar. Rahman Mollah, S.S.O Muhammad Maruf Husain, S.O Mr. Md. Golam Rasul A.S.O Mrs. Habiba Khatun, S.A-I Mr. Ramandra Chandra Nayak, S.A-I
Status	:	On going
Source of fund	:	GOB

Experiment: 16	:	**Effect of gamma radiation for controlling fruit fly (*Bactrocera cucurbitae*)**
Objectives	**:**	(i) To control the insect pests without using pesticides (ii) To protect the environment from the pollution of pesticides
Locations	**:**	BINA, Mymensingh
Status	:	On going
Growing season	:	Throughout the year, 2015-16
Treatments	:	2(Sterile insect + control)
Data to be recorded	**:**	Percentage of fruit infested by fruit fly

Experiment 17	:	**Determination of effective radiation dose (s) for controlling pulse beetle (*Callosobruchus chinensis*)**
Objectives	**:**	(i) To control the insect pests without using pesticides (ii) To protect the environment from the pollution of pesticides
Locations	**:**	BINA, Mymensingh
Status	:	On going
Growing season	:	Throughout the year, 2015-16
Treatments	:	2(Sterile insect + control)
Data to be recorded	**:**	Percent sterility of pulse beetle

Project 6	**:**	**Development of botanical pesticides**
Objective(s)	:	To develop insecticides from indigenous plants and use them to control the insect pests in storage as well as in the field so that the environmental pollution can be minimized.
Personnel assigned	:	Dr. Morzia Begum, P.S.O (P.I.) Dr. Md. Jahangir Alam, C.S.O Dr. Md. Tazmul Haque, S.S.O. Dr. Md. Lutfar. Rahman Mollah, S.S.O Muhammad Maruf Husain, S.O Mr. Md. Golam Rasul, A.S.O Mrs. Habiba Khatun, S.A-I Mr. Ramandra Chandra Nayak, S.A-I Md. Alal Uddin, S.A-II
Status	:	On going
Source of fund	:	GOB

Experiment 18	**:**	**Effect of some plant extracts to control stored and field pests.**

Objective	:	To find out the effectiveness of plant extracts for the control of stored and field pests
Growing season	:	Throughout the year, 2015-16
Treatments	:	1) Mehogini 5) Pitraj 2) Biskatali 6) Neem 3) Turmeric 7) Rain tree 4) Urmoi
Concentration of plant	:	1%, 2% , 3% , 4% , 5% 7.5% and 10% of extract
Insects to be treated	:	1) Pulse beetle 2) Red flour beetle 3) Rice weevil. 4) Brown plant hopper. 5) Aphid.
Design	:	CRD & 5
Location(s)	:	Entomology Laboratory, BINA, Mymensingh
Data to be recorded	:	Percent mortality of insects (1 DT, 2 DT, 3 DT), Percent repellency rate at 1 hr, 2 hr, 3 hr, 4 hr, 5 hr and 6 hr after treatment, Percent grain damage after 3 months, 6 months and 1 year after treatment

Project 7	**:**	**Development of a suitable control methods of rice, pulses, oilseeds, spices and vegetables crops against their major insect pests**
Objectives	:	-To study, compare and develop specific insect control methods including chemical control (insecticides), biological control and cultural control. -To study the compatibility of the various insect control methods with the aim of selecting the combination(s) which will provide effective and economical insect control or management without producing any serious environmental contamination
Personnel assigned	:	Dr. Md. Jahangir Alam, C.S.O (P.I) Dr. Morzia Begum, P.S.O Dr. Md. Tazmul Haque, S.S.O. Dr. Md. Lutfar Rahman Mollah, S.S.O Muhammad Maruf Husain, S.O Mr. Md. Abdul Baki A.S.O Mr. Md. Golam Rasul A.S.O Mrs. Habiba Khatun, S.A-I Mr. Ramandra Chandra Nayak, S.A-I Md. Alal Uddin, S.A-II
Status		On going
Source of fund	:	GOB

Experiment 19	:	**Management of major insect pests of brinjal, tomato and different cucurbit vegetables by using IPM packages**
Objective	:	To manage the insect pests economically and environment friendly
Growing season	:	Throughout the year, 2015-16
Treatments	:	(Bracon inhibitor and Tricogama + Tricoderma + Biopesticide + Clean culture + control)
Design & Repln.	:	RCBD & 4
Location (s)	:	Farmers field, Mymensingh, Jamalpur and Sherpur

Data to be recorded	:	Percent infested fruits, Percentage of BSFB trapped and Yield (infested & fresh)

Experiment 20	:	**Efficacy of different insecticides and other management practices against brown plant hopper (BPH) of rice.**
Objective	:	To find out a suitable insecticide and effective doses for the control of BPH.
Growing season	:	Aman and Boro 2015-16
Treatments	:	i)Carbofuran, Diazinon, Quinalphos and Chloropyriphos with one check ii)Cultural and biological approach.
Design & Repln.	:	CRD & 4
Location (s)	:	BINA farm, Mymensingh
Data to be recorded	:	Percent infestation, Mortality percentage of BPH and yield.

Experiment 21	:	**Management of pod borer of chickpea through chemicals, plant extracts and other alternative practices**
Objective	:	To find out a suitable insecticide and effective dose(s) for the control of pod borer in chickpea mutant/varieties
Growing season	:	Rabi season, 2015-16
Treatments	:	i) Three insecticides with doses, ii) Three plant extracts iii) Cultural and biological approach.
Design & Repln.	:	RCBD, 3
Location(s)	:	Farmer's field, Godagari, Rajshahi and BINA sub-station farm, Jamalpur.
Data to be recorded	:	No. of larvae/m^2 , Percentage of infested pod /plot, Yield/plot

Project 8	:	**Investigation on the fate and persistence of pesticide residues in agro-ecosystem**
Objective (s)	:	To identify the residue level of different persistent and non-persistent pesticides in some major crops To identify the non-effective, less effective and hazardous pesticides commonly used for major crops in Bangladesh
Personnel assigned	:	Dr. Md. Jahangir Alam, P.S.O (P.I.) Dr. Md. Tazmul Haque, S.S.O. Dr. Md. Lutfar Rahman Mollah, S.S.O Mr. Abdul Baki, A.S.O Ramandra Chandra Nayak S.A-I Md. Alal Uddin, S.A-II
Status	:	On going
Source of fund	:	GOB

Experiment 22	:	**Residue analysis of some common pesticides used for the production of brinjal, tomato and cucumber in Bangladesh**
Objective(s)	:	To identify the persistent and nonpersistent pesticides commonly used for

		major crops under laboratory and field conditions
Growing season	:	2015-16
Treatments	:	4 (3 insecticides + control)
Design & Repln.	:	RCBD, 3
Location(s)	:	BINA, Mymensingh
Data to be recorded	:	% efficacy data of the pesticides, % residue of the insecticides present in the crops, % residue of the insecticides present in the other components of the environment will be taken by using GC/HPLC.

Head of Entomology Division **CSO (RC)** **Director (Research)**

ANNUAL RESEARCH BUDGET FOR ENTOMOLOGY DIVISION 2015-1016

Items Programmme /Project	No. of experiment	Source of fund	Labour	Chemicals/ Glasswares/ Equipments	Travel	Inputs	Project wise Sub-Total (Lakh taka)
Project – 1	5	GOB	Central	0.70	0.90	0.90	2.50
Project – 2	3	GOB	Central	0.50	0.90	0.50	1.90
Project – 3	2	GOB	Central	0.50	1.30	0.50	2.30
Project – 4	5	GOB	Central	0.50	1.50	0.50	2.50
Project – 5	2	GOB	Central	0.50	0.60	0.40	1.50
Project – 6	1	GOB	Central	1.50	0.90	0.80	3.20
Project – 7	4	GOB	Central	0.90	2.20	0.70	3.80
Project – 8	1	GOB	Central	2.50	0.60	0.90	4.00
GRAND TOTAL	**23**	**-**	**-**	**7.60**	**8.90**	**5.20**	**21.70**

Head of Entomology Division **CSO (RC)** **Director (Research)**