

Transformation of Entomology Division, 1970 to 2021



Entomology Division
Bangladesh Rice Research Institute
Gazipur-1701



VISION

Development of eco-friendly insect pests management technologies.



MISSION

To attain sustainable food security by developing insect pests management technologies in rice production

Mandate

- The mandate of the division is to develop a sustainable integrated pest management system taking into consideration the ecological and sociological aspects of agro-system and the long term conservation of the environment.

Brief History of Entomological Research

- ❑ Entomological researches for agriculture started in Bangladesh (major part of the undivided Bengal) in 1910 with the establishment of Agricultural Research Laboratory (ARL) in 1909.
- ❑ Since then, the research divisions of ARL developed gradually.
- ❑ The history of entomological researches of rice pests in Bangladesh may be divided into three major phases.



- ❑ The first phase comprised of the period from 1910 to 1947 (i.e. the period from the beginning of entomological research to the time of partition of India in 1947).
- ❑ The second phase from 1947 to 1970 (i.e. the period from partition of India to the establishment of Bangladesh Rice Research Institute).
- ❑ The third phase from 1970 onwards (i.e. the period after the establishment of BRRI almost contemporary to the emergence of our independent country – Bangladesh).

- ❑ Much of our present day knowledge about rice entomology resulted from the researches conducted during the second phase.
- ❑ Information regarding rice insect pests of Bangladesh became known to world entomologists during this period through a symposium held in 1964 at the International Rice Research Institute, Philippines.

- ❑ As many as 84 articles and reports on rice insect pests of Bangladesh were written or published during this period.

- ❑ Most of these publications were done by the entomologists of Agricultural Research Institute.

- ❑ Entomological researches specifically for rice insects started during the third phase with the establishment of Bangladesh Rice Research Institute (BIRRI) in October 1970.

- ❑ The Division of Entomology in BRRI started with one Senior Scientific Officer and one Scientific Officer.
- ❑ There was no field staff (Field man) up to 1973. Higher studies and training of the scientists started from 1973.
- ❑ The number of scientists and field staff started to increase from 1975.
- ❑ In 1975, the total number of scientists and staff was 8 with one Principal Scientific Officer (PSO) 4 Scientific Officers (SO), and 3 Field

- ❑ This number reached at 17 in 1979 with one Head of Division, 2 PSO, 1 SSO, 5 SO, 6 FMs and 2 Laboratory Attendants (LA).
- ❑ Now, the Entomology division is one of the 19 research division of Bangladesh Rice Research Institute (BIRRI).
- ❑ The main activities of the division is to conduct research on insect pest management.
- ❑ However, it has a small component which deals with rodent pests also.
- ❑ The division has also strong collaboration with the Varietal Development Programme Area Committee.



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- The main activities of the division is to conduct research on insect pest management.
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Present Manpower Scenario of Entomology Division:

SI no.	Name and designation	Joining date
01	Dr. Sheikh Shamiul Haque, CSO & Head	29 Sept. 1993
02	Dr. Md. Mofazzel Hossain, CSO	20 Aug. 1998
03	Mr. Md. Mosaddeque Hossain, PSO	20 Aug. 1998
04	Dr. Md. Nazmul Bari, PSO	28 Feb. 1999
05	Dr. ABM Anwar Uddin SSO BIRRI RS Rajshahi	12 Nov. 2007
06	Dr. Md. Panna Ali, SSO	12 Nov. 2007

SI no.	Name and designation	Joining date
07	Mr. MM Moniruzzaman Kabir SSO BIRRI RS Barishal	06 Jan. 2013
08	Ms. Farzana Nowrin, SSO	25 July 2013
09	Ms Sadia Afrin, SO	26 July 2015
10	Tapan Kumar Roy, SO, BIRRI RS Rangpur	27 Oct. 2019
11	Ms. Sanjida Akter, SO	27 Oct. 2019
12	Mr. Abu Nayem, SO BIRRI RS Habiganj	05 Dec. 2021
13	Sania Tamanna, SO BIRRI RS Sonagazi	05 Dec. 2021



SI no.	Name and designation	Joining date
12	Mousumi Akter, SA	10 May 2001
13	Debrongon Chandro, SA	01 Aug. 2017
14	Ms Razia Sultana, LA	01 Aug. 2017

List of Heads of Entomology Division from 1970 to till date

Sl. no.	Name	Duration	
		From	To
01	Dr. Shamsul Alam	01-08-1971	20-06-1982
02	Dr. A N M Rezaul Karim (Incharge)	21-06-1982	30-06-1982
03	Dr. Shamsul Alam	01-07-1983	01-02-1984
04	Dr. A N M Rezaul Karim	02-02-1984	07-04-1988
05	Dr. Nazira Quraishi Kamal (Incharge)	08-04-1988	07-04-1990
06	Dr. A N M Rezaul Karim	08-04-1990	25-02-1998
07	Dr. Zahirul Islam (incharge)	26-02-1998	31-05-1999
08	Dr. Nazira Quraishi Kamal (Incharge)	01-06-1999	20-10-1999

Sl. no.	Name	Duration	
		From	To
09	Dr. Nazira Quraishi Kamal	21-10-1999	10-07-2005
10	Dr. Mainul Haq	10-07-2005	30-12-2010
11	Dr. Mohibul Hasan	30-12-2010	14-12-2011
12	Dr. Mohammad Fazle Rabbi	14-12-2011	27-01-2014
13	Dr. Sheikh Shamiul Haque	27-01-2014	14-10-2014
14	Dr. Nur Ahmed	14-10-2014	10-01-2016
15	Dr. Md. Ansar Ali	10-01-2016	27-04-2016
16	Dr. Sheikh Shamiul Haque	27-04-2016	Till date

The chronology of insect pests and their damages

- ❑ Agro-ecosystem of Bangladesh is very congenial for insect pest incidence.
- ❑ The climate and some cultural practices like cultivation in contiguous lands and staggered planting has made the situation more favorable for the pests to multiply quickly.
- ❑ The infestation and damage of these pests vary with crop seasons, years, crop growth stages, variety, management practices and the overall agro-ecological conditions.
- ❑ Results of several crop loss assessment trials showed that an average of 18% yield loss due to the infestations of major insect pests (13% in Boro, 24% in Aus and 18% in Transplanted Aman seasons).

Research projects in different decades

1970	1990	2021
1. Survey, identification and monitoring of rice insects	1. Survey and monitoring of rice insect	1. Survey and monitoring of rice arthropods
2. Bio-ecological studies of rice insects	2. Bio-ecological studies	2. Bio-ecology of rice insect pest and natural enemy
3. Insecticide evaluation	3. Crop losses and threshold levels	3. Biological control of rice insect pests
4. Crop loss assessment	4. Host plant resistance	4. Crop loss assessment
5. Integrated pest management	5. Insecticide evaluation	5. Evaluation of chemicals and botanicals
6. Varietal resistance of rice to insect pests	6. Botanical pest control	6. Insecticide toxicology
-	7. Vertebrate pest management	7. Host plant resistance
-	-	8. Insect molecular biology
-	-	9. Integrated pest management
-	-	10. Vertebrate pest management

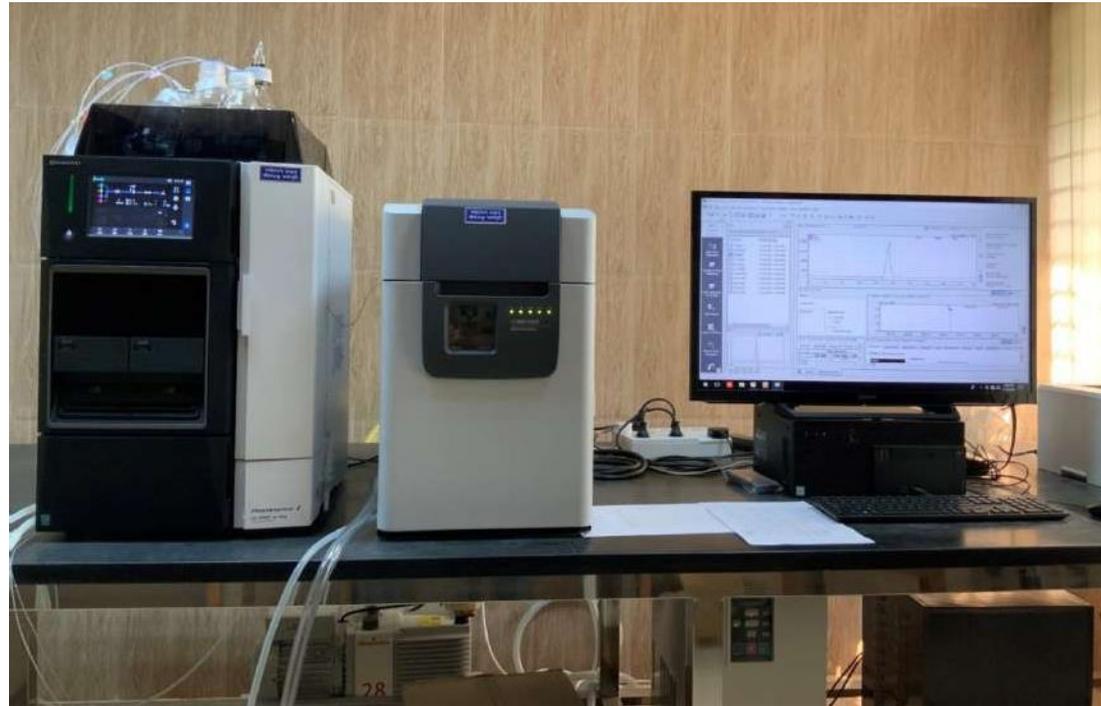
Changes in status of rice insect pests in Bangladesh

M Z Alam, 1965		BRRI Literature Review, 1977		Islam et al., 2009	
Major pests		Major pests		Major pests	
1	Rice ear-cutting Caterpillar	1	Stem borers (YSB, DHB,	1	Stem borers
2	Rice swarming caterpillar	2	Green leafhoppers	2	Brown planthopper Whitebacked planthopper
3	Rice stem borers (DHB, YSB, PB)	3	Ear-cutting caterpillar	3	Rice hispa
4	Rice hispa	4	Rice gall midge	4	Gall midge
5	Rice bug	5	Rice hispa	5	Rice bug
6	Rice leafhoppers (Green)	6	Rice bug	6	Rice leaffolders
7	Rice cascworm	7	Rice leaffolder	7	Green leafhoppers
8	Rice mealy bug	8	Rice swarming caterpillar		
9	Rice grasshopper ¹	9	Rice caseworm		
		10	Rice mealy bug		
		11	whorl maggot		

Changes in status of rice insect pests in Bangladesh

M Z Alam, 1965		BRRI Literature Review, 1977		Islam et al., 2009	
Minor pests		Minor pests		Minor pests	
1	Whitebacked planthopper	1	Rice grasshoppers ^{1,2}	1	Ear-cutting caterpillar
2	Rice grasshopper ²	2	Rice thrips	2	Swarming caterpillar
3	Rice leaf gall-fly (Gall midge)	3	Orange-headed leafhopper	3	Mealy bug
4	Rice leaf roller (Leaffolder)	4	Field cricket	4	Whorl maggot
5	Rice hairy caterpillar	5	Rice leaf beetle ³	5	Caseworm
6	Rice leaf beetle ³	6	Brown planthopper	6	Field cricket
7	Rice thrips	7	Rice hairy caterpillar	7	Rice thrips
		8	Rice leaf butterfly		
		9	Rice skipper		

Capacity Development and Modern Equipment Collection for Insecticide Residue Analysis



**Liquid Chromatography and Mass Spectrometry (LC-MS)
Collection: 2019**



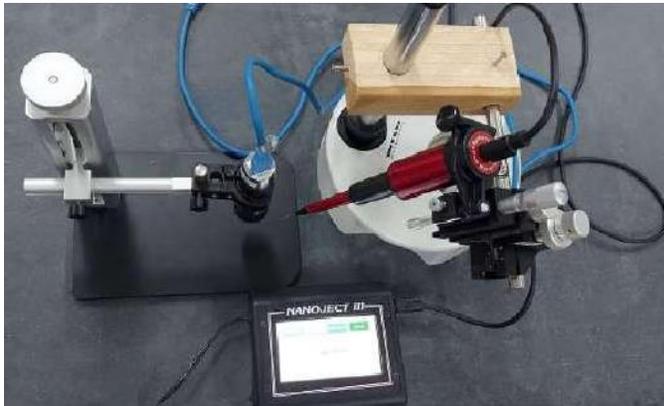
Training on insecticide residue analysis



Training on insecticide residue analysis



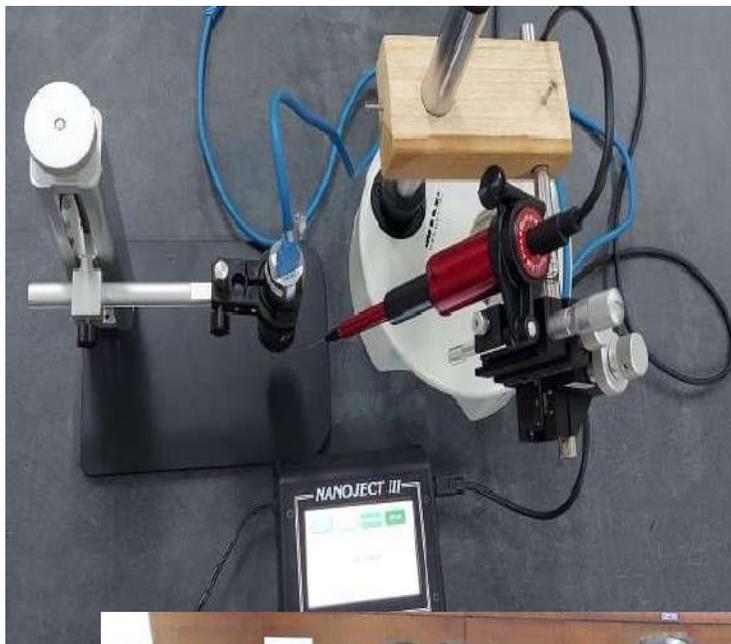
Laboratory Development With Molecular and Genome Editing Facilities



Laboratory Development



Laboratory activities visit by Director General, BRRRI



Renovation of Green House



Before Renovation



After Renovation

Good Agricultural Practice of Entomology Division





Insect pest management by perching

- Birds are very useful to control insects in the rice field.
- By placing dead branches of trees, we can arrange sitting place of different birds.
- Branches must be suitable for bird sitting and should be higher in height from the plant.
- Recommended number of perching are given below:

Land size	Number of perching
100 m ²	01
1 bigha	14
1 acre	40
	100





Different types of perching

Sweeping and light trapping



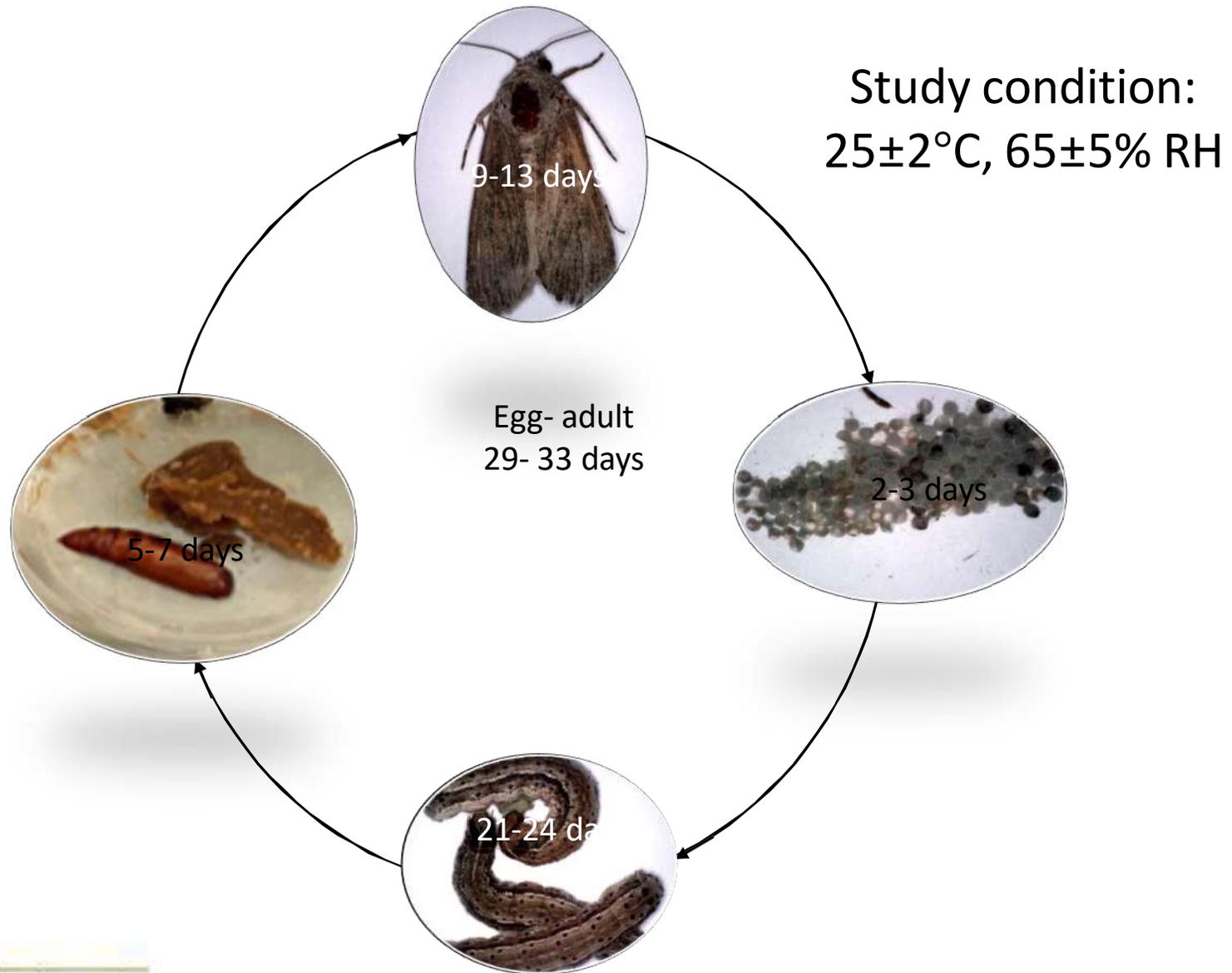


Pheromone trap of Rice Leafhopper(RLF)



**Solar light trap for insect pests
Monitoring and Management**

Life cycle study of invasive insect Fall Armyworm (FAW) in rice



Management of BPH through bio-pesticide

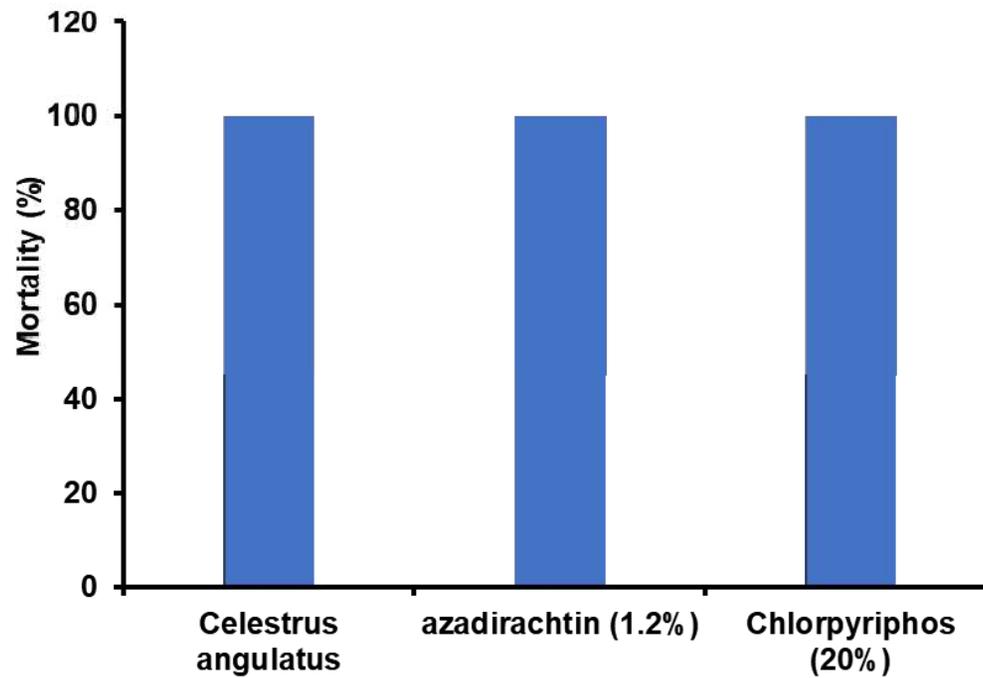


Fig: Effect of biopesticide on BPH mortality

Research with nano particle, entomopathogenic fungus for insect pest management



Fungus infected BPH

Entomopathogenic fungus

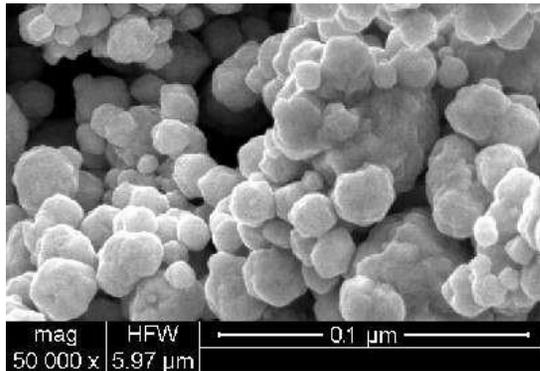


silver (Ag), Copper (Cu), gold (Au), silica (Si) and zinc (Zn), Japan

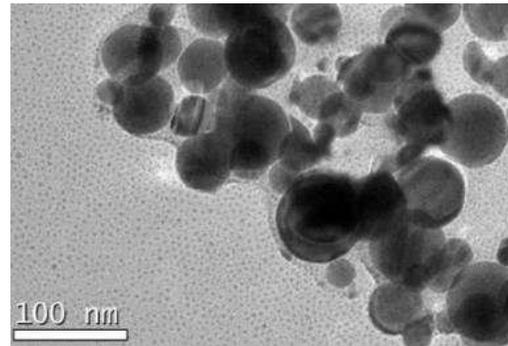


Progress/achievement of nano particles

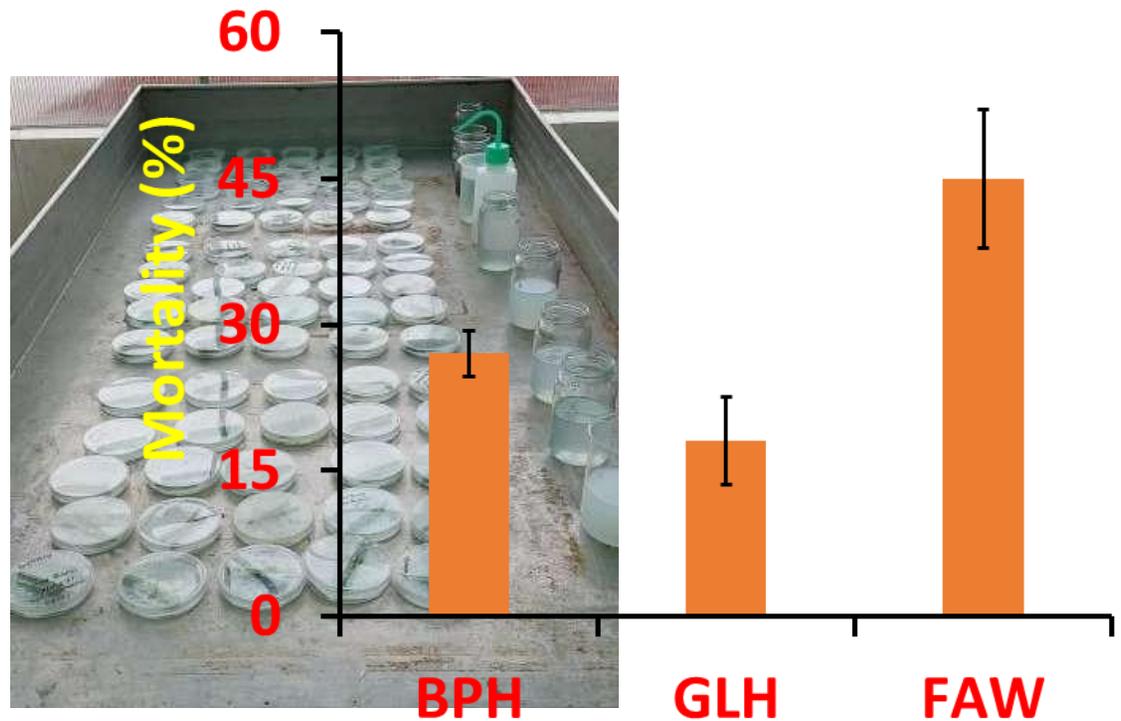
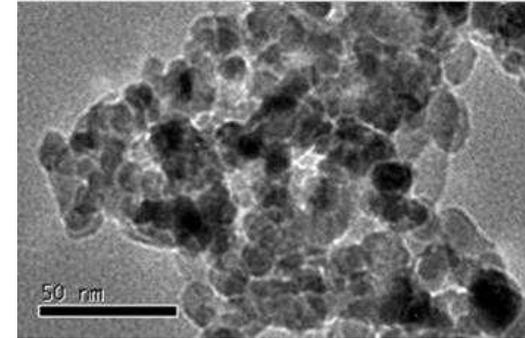
Ag, size: 20 nm



Cu, size: 40 nm

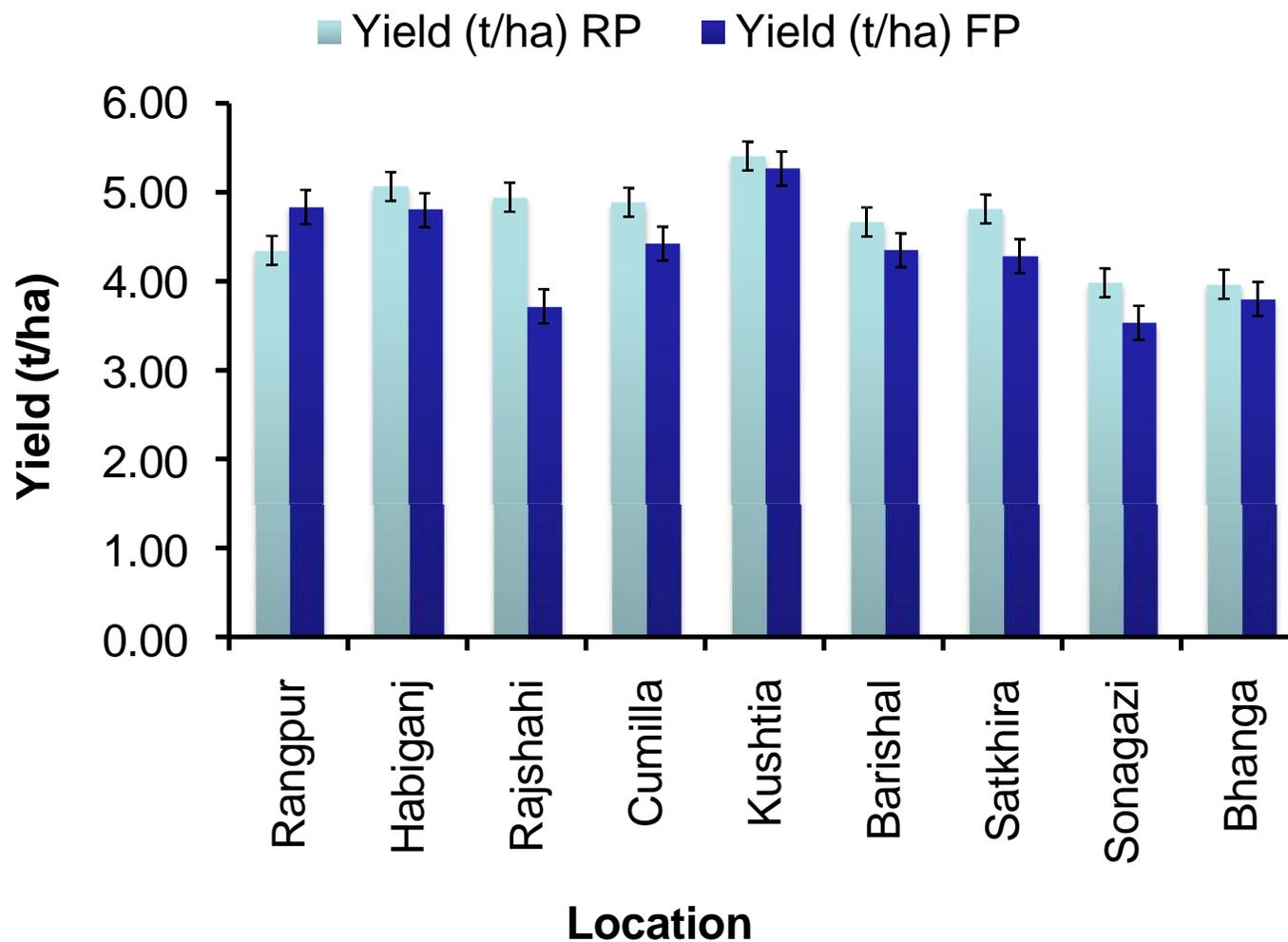


ZnO, size: 20-30 nm



Field demonstration for reduction of insecticide



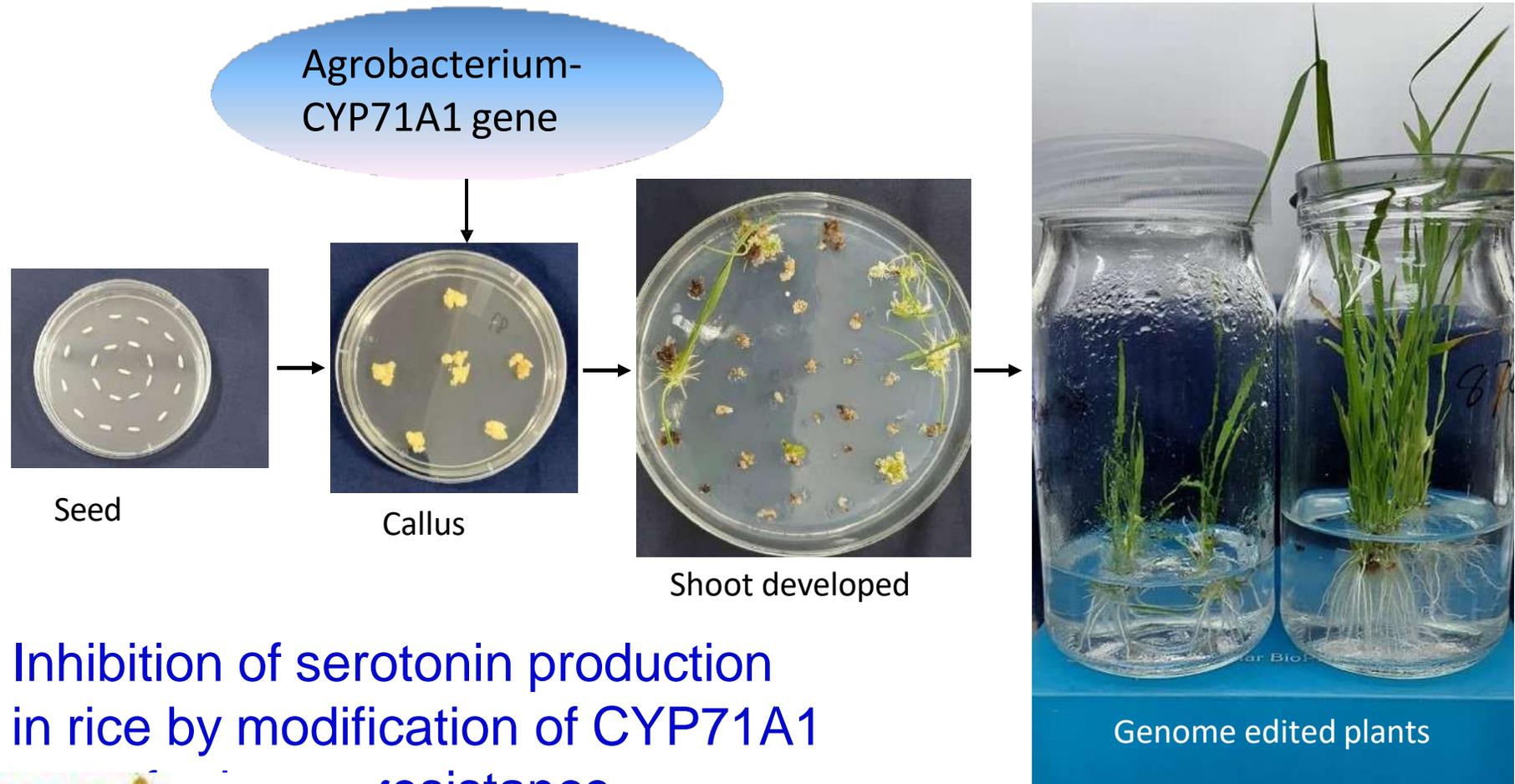


**T₁ = গবেষকের ব্যবস্থাপনায়
পোকামাকড় দমন**

**T₂ = কৃষকের ব্যবস্থাপনায়
পোকামাকড় দমন**

ation of insect management practice

Use of CRISPR Cas9 genome editing tool in rice



Inhibition of serotonin production
in rice by modification of CYP71A1
resistance



Rice pest calendar of BIRRI HQ and different regional stations

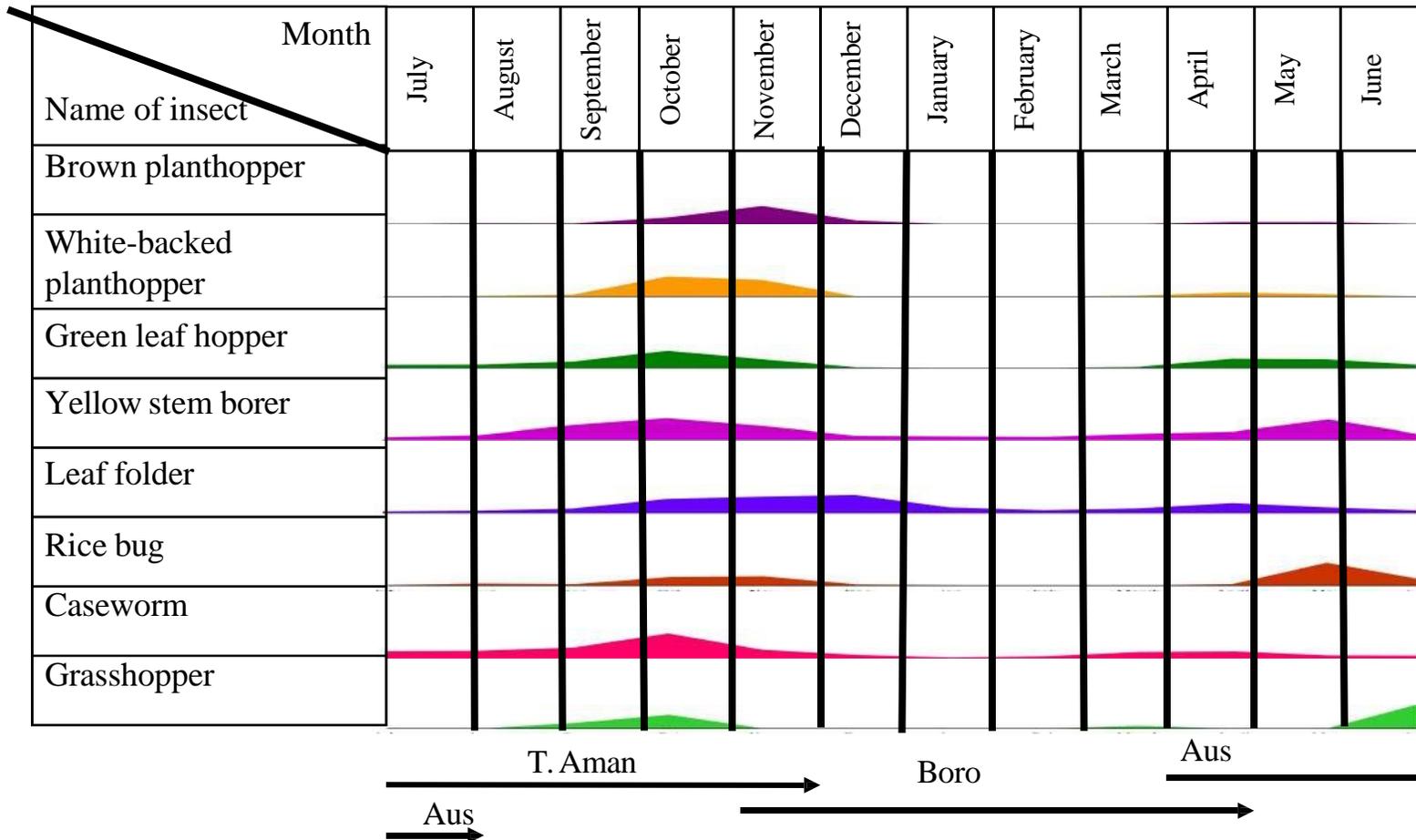


Fig.: Incidence pattern of major insect in Gazipur based on historical data from 2012-2021

BRRRI RS Rangpur

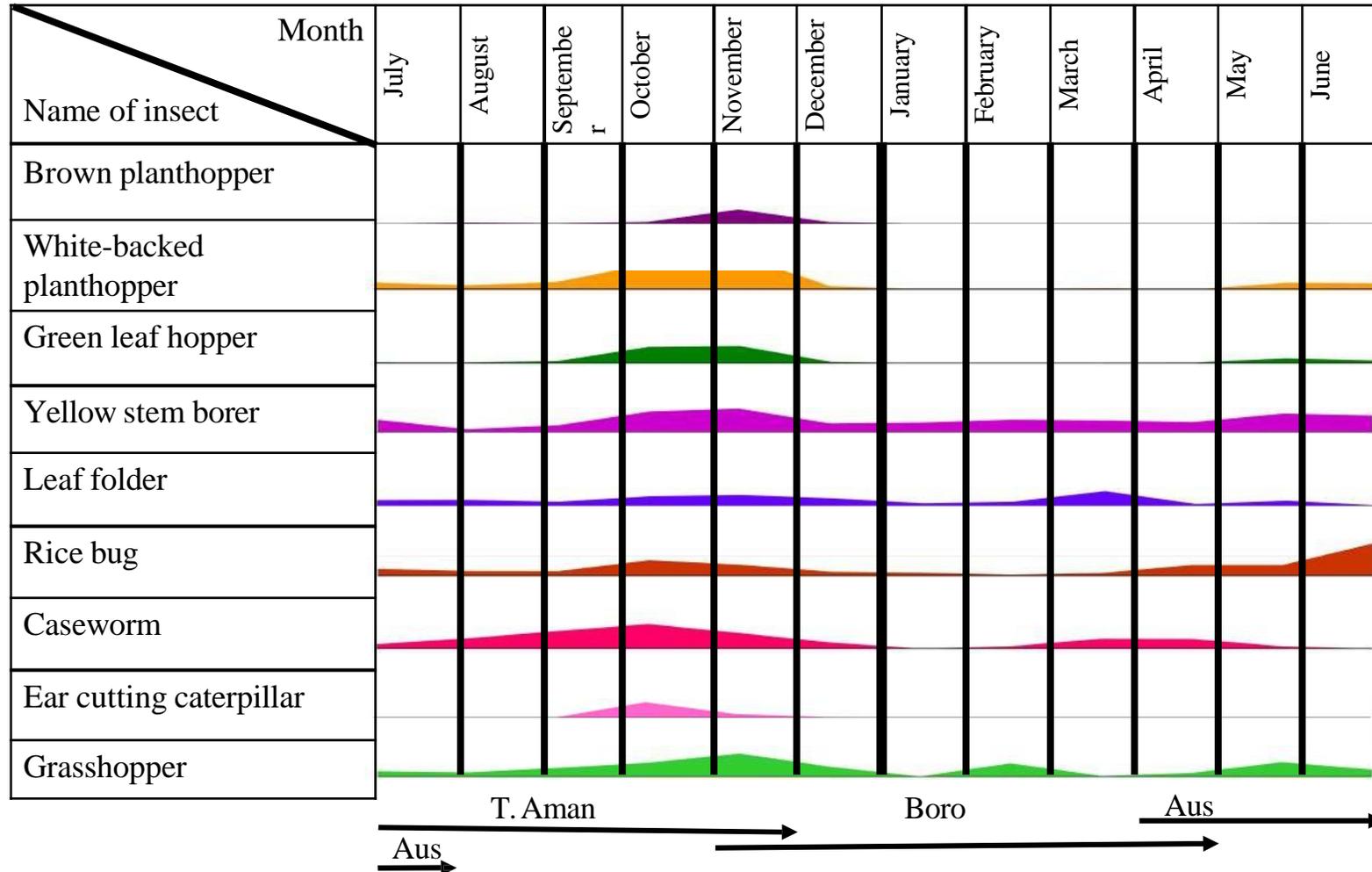


Figure: Incidence pattern of major insect in Rangpur based on historical data from 2012-2021

BRRRI RS Rajshahi

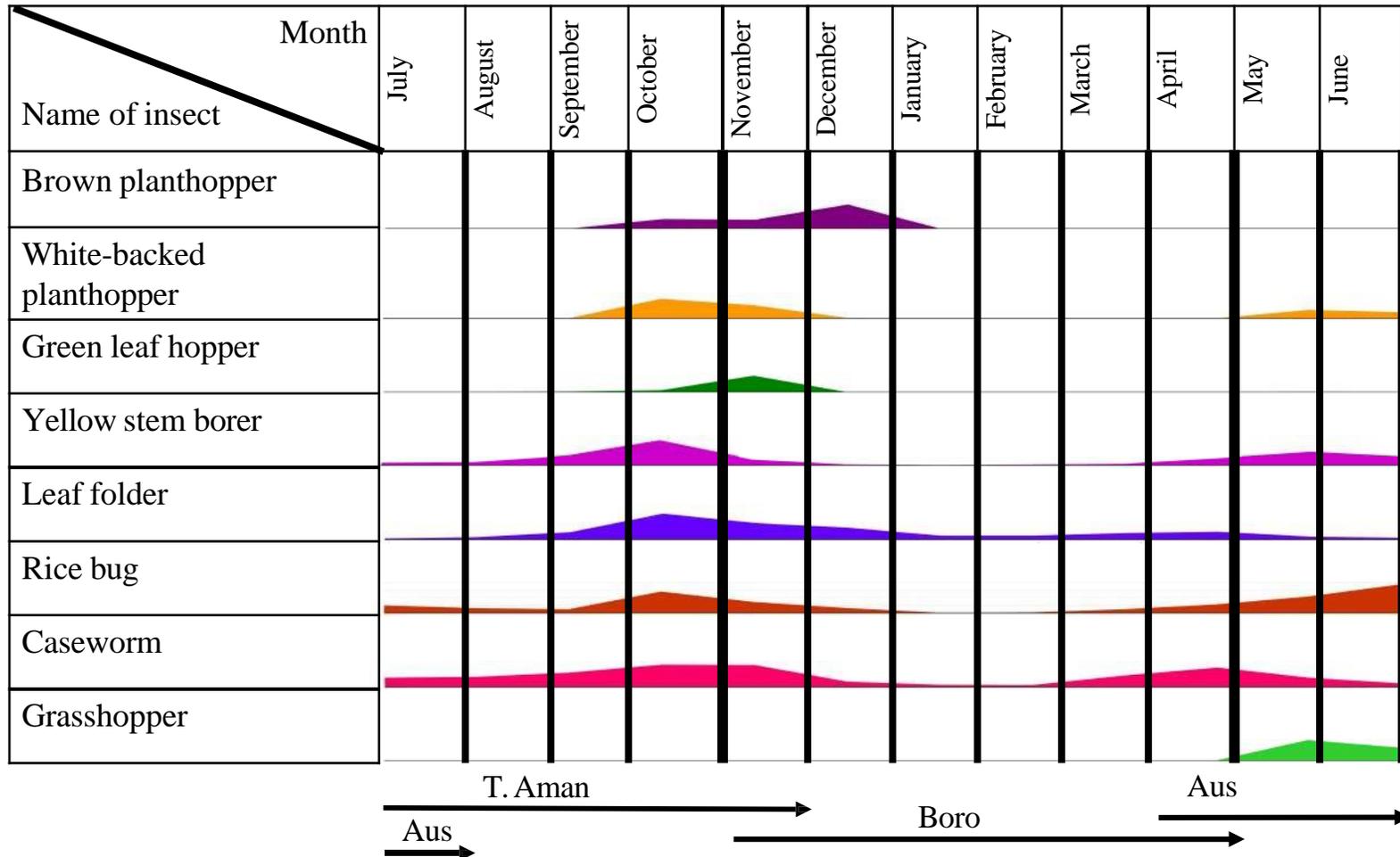


Figure: Incidence pattern of major insect in Rajshahi based on historical data from 2012-2021

BIRRI RS Habiganj

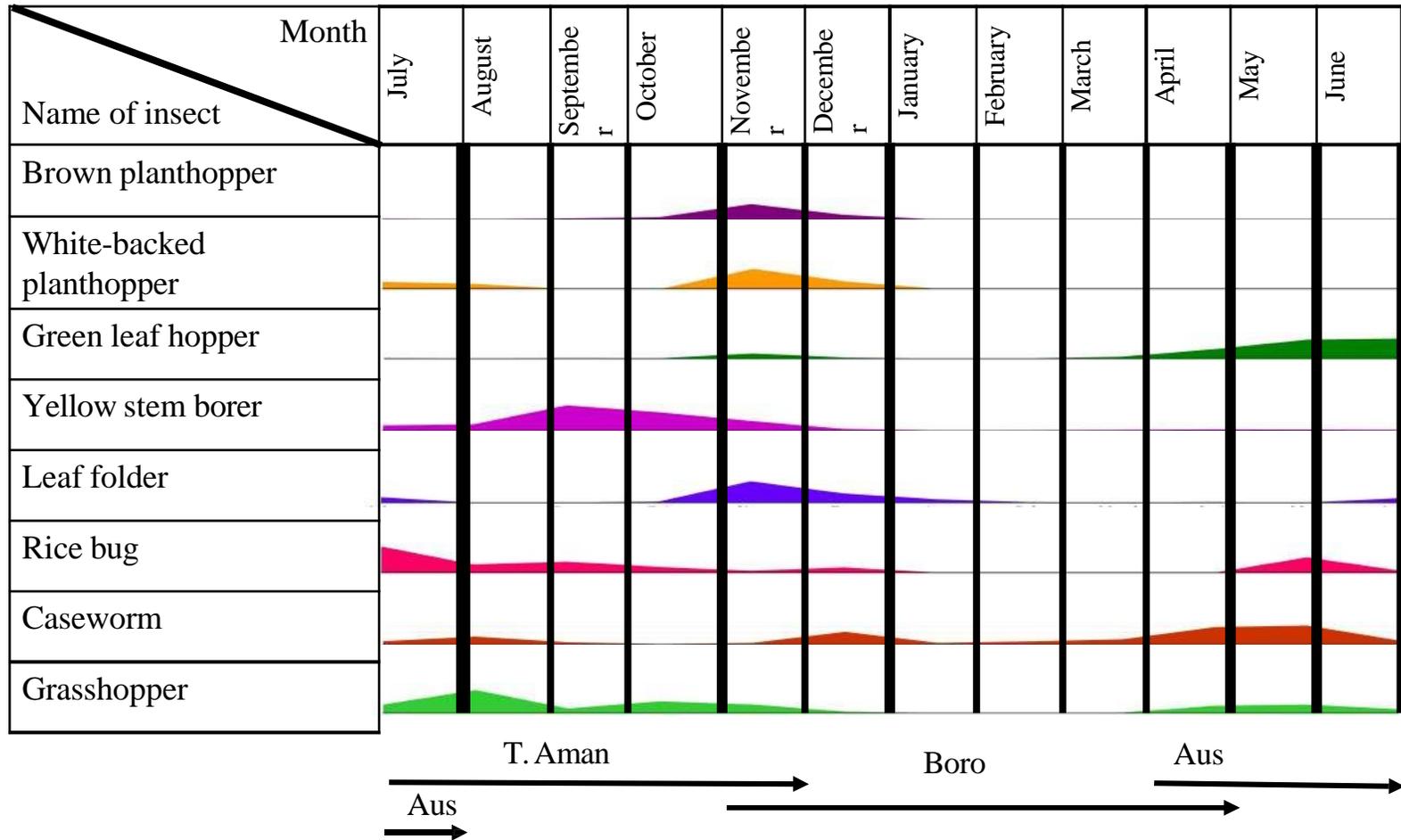


Figure: Incidence pattern of major insect in Habiganj based on historical data from 2012-2021

BIRRI RS Sonagazi

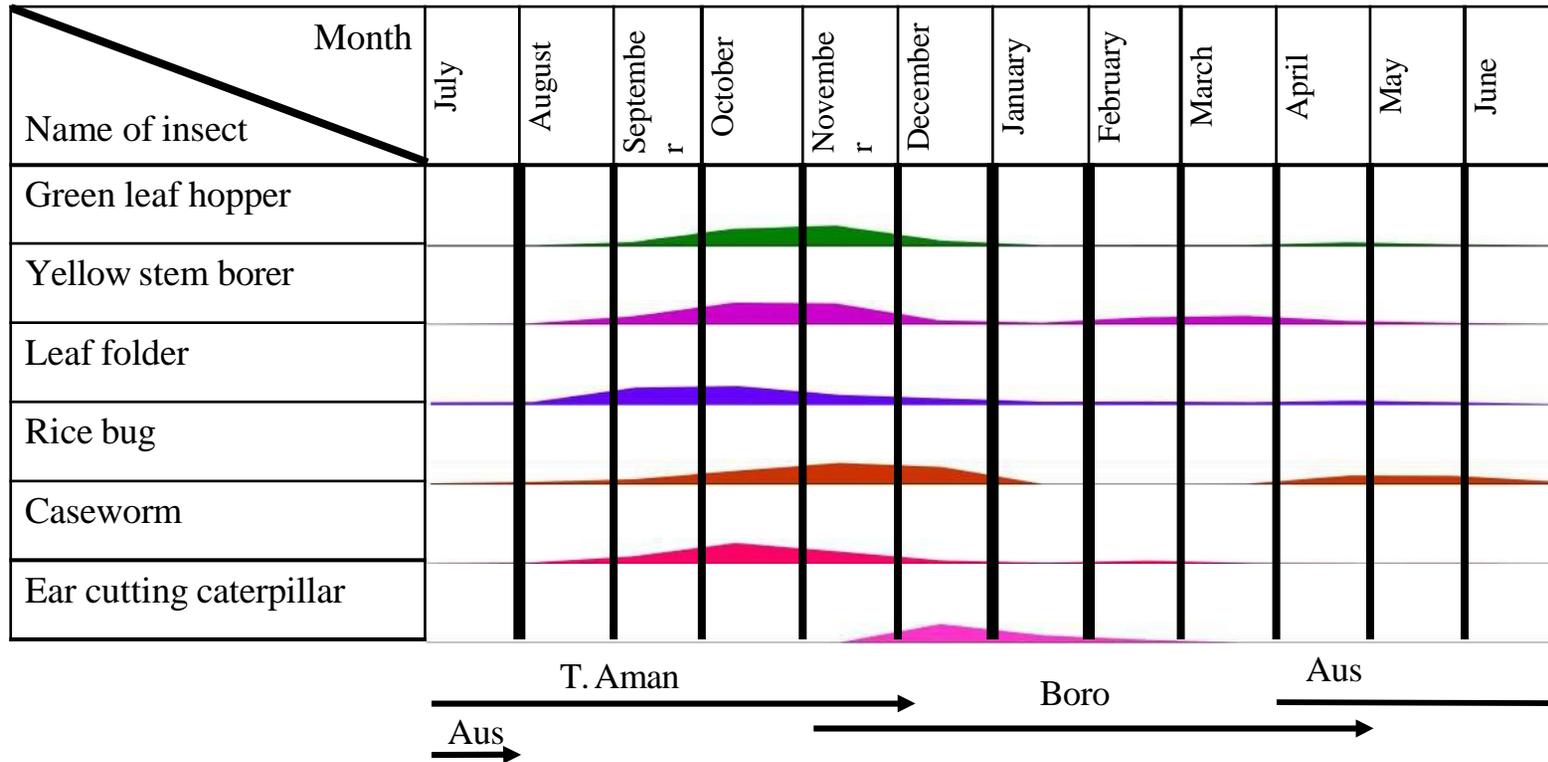


Figure: Incidence pattern of major insect in Sonagazi based on historical data from 2012-2021

BRRRI RS Cumilla

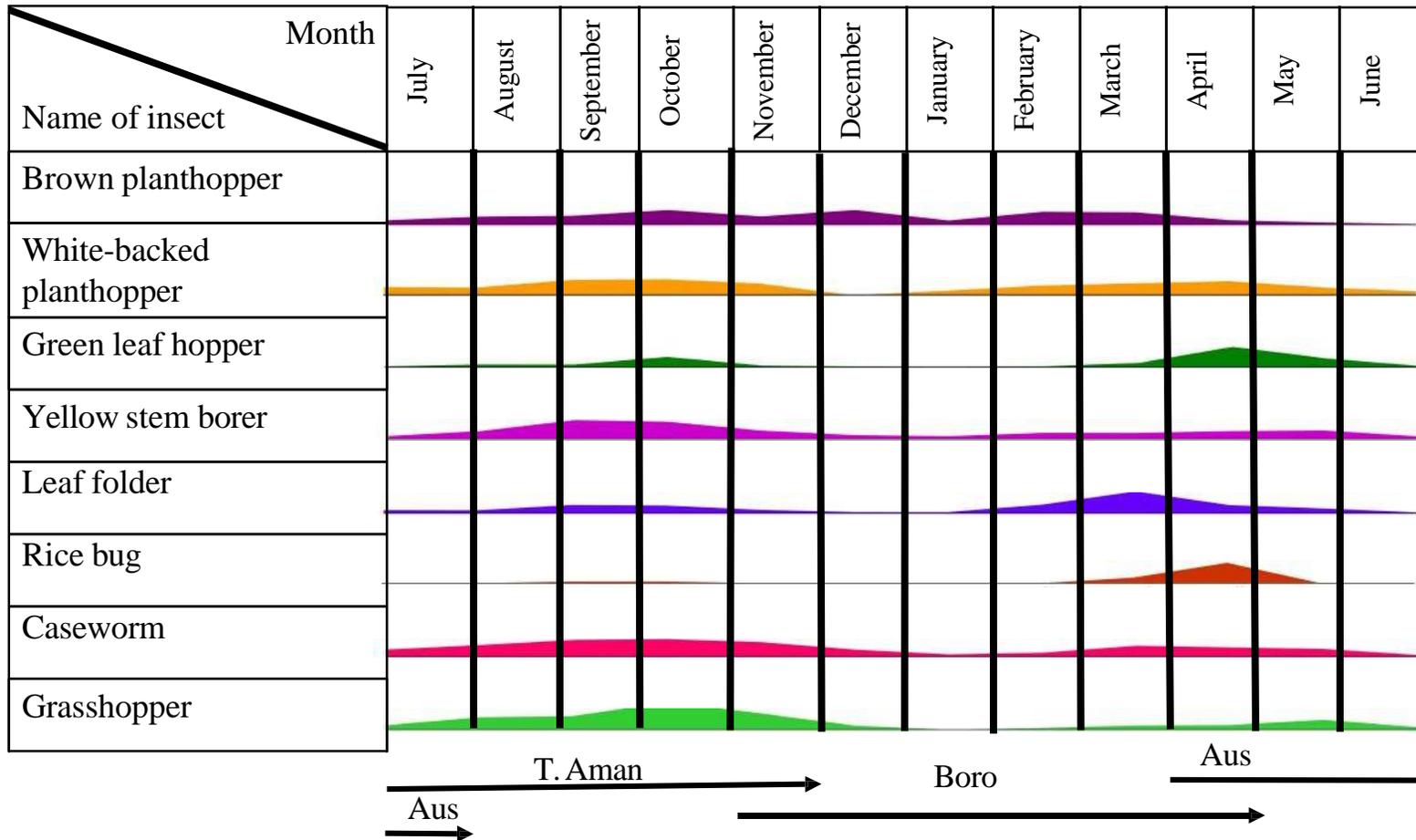


Figure: Incidence pattern of major insect in Cumilla based on historical data from 2012-2021

BRRRI RS Barishal

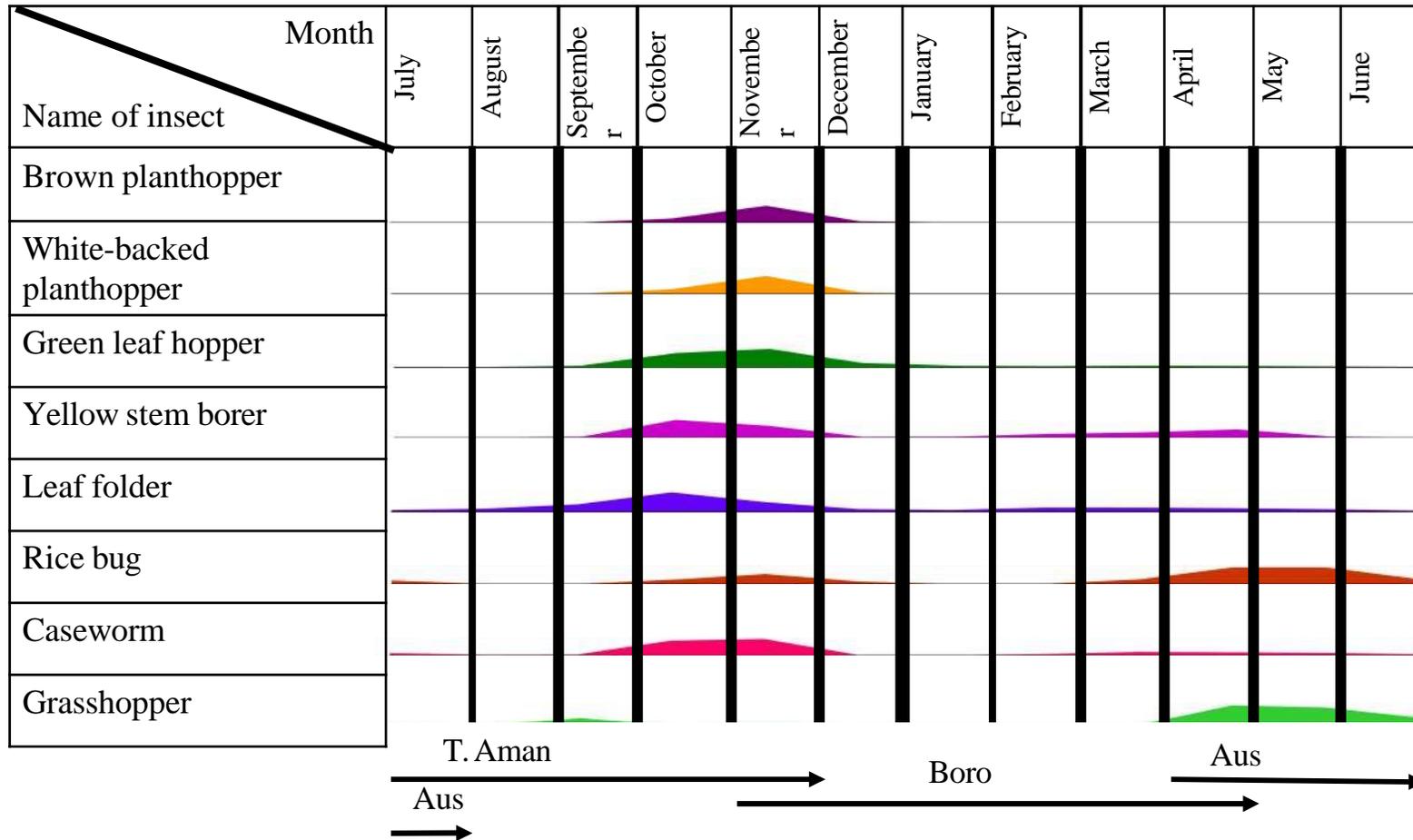


Figure: Incidence pattern of major insect in Barishal based on historical data from 2012-2021

Published Leaflets

ধানের
বাদামি
গাছফড়িং



বাংলাদেশ ধান গবেষণা ইনস্টিটিউট
গাজীপুর ১৭০১

ধানের
পাতামোড়ানো
পোকা



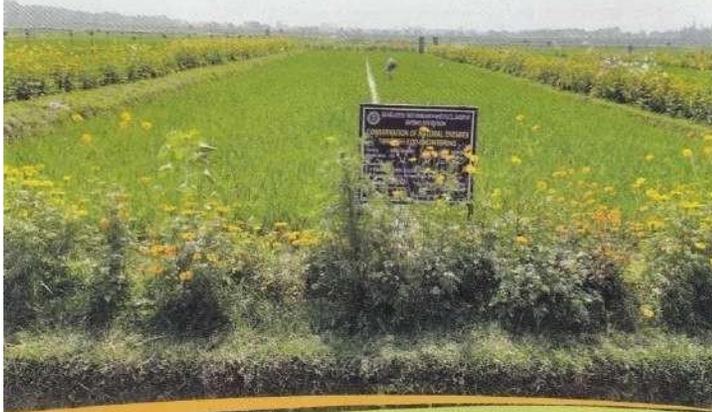
বাংলাদেশ ধান গবেষণা ইনস্টিটিউট
গাজীপুর ১৭০১

ধান ক্ষেতে
পার্চিং



বাংলাদেশ ধান গবেষণা ইনস্টিটিউট
গাজীপুর ১৭০১

ধানের পোকামাকড় ব্যবস্থাপনায় ইকো-ইঞ্জিনিয়ারিং



কীটতত্ত্ব বিভাগ
বাংলাদেশ ধান গবেষণা ইনস্টিটিউট (ব্রি)
গাজীপুর ১৭০১

উপসংহার: কীটনাশক প্রয়োগকৃত ধান ক্ষেতের তুলনায় ধান ক্ষেতের চারিপার্শ্বের আইলে ফুলগাছ লাগানো জমিতে উপকারী পোকামাকড় ও পরজীবিতার পরিমাণ বেশী দেখা যায়। চার বার কীটনাশক ব্যবহার করে ধানের যে ফলন পাওয়া যায় ধানক্ষেতের চারিপার্শ্বের আইলে ফুল গাছ লাগিয়ে একই রকম ফলন পাওয়া যায়। এছাড়াও ধানক্ষেতের চারিপার্শ্বের আইলে তিলের চাষ করে বাড়তি আয় করা যায়। সুতরাং ধান চাষীরা পোকা দমনে কীটনাশক ব্যবহার না করে ধান ক্ষেতের চারিপার্শ্বের আইলে পুষ্পমধুযুক্ত ফুলগাছ (গাঁদা, কসমস) এবং বানিজ্যিক ফুল সূর্যমুখীও ব্যবহার করতে পারেন। এছাড়া তেল জাতীয় ফসল (তিল, ভিষি) লাগিয়ে ধান চাষ করতে পারেন। ফলে কৃষকের ধান উৎপাদন খরচও কমবে এবং কীটনাশকের ক্ষতিকর প্রভাব থেকে পরিবেশও রক্ষা পাবে। এছাড়া ধান ক্ষেতের চারিদিকের আইলে তিল, লতানো শিম ও মুগ ডাল এর মত শস্য চাষ করে একদিকে যেমন শস্যের বৈচিত্র্যতা বাড়িয়ে উপকারী পোকামাকড় সংরক্ষণ করা যায় তেমনি কিছু বাড়তি আয় করাও সম্ভব।

প্রকাশনায় : কীটতত্ত্ব বিভাগ
বাংলাদেশ ধান গবেষণা ইনস্টিটিউট
গাজীপুর ১৭০১

অর্থায়নে: **IRRI** Leveraging Diversity for Ecologically
Based Pest Management Project, IRRI

প্রকাশকাল : মার্চ ২০২১
প্রকাশনা নম্বর : ৩১৭
কপির সংখ্যা : ৮,০০০

রচনা ও সম্পাদনা

❖ মো: নজমুল বারী ❖ শেখ শামিউল হক ❖ মো: পান্না আলী
❖ ফারজানা নওরীন ❖ মো: মোসাদ্দেক হোসেন ❖ সাদিয়া আফরিন

বিস্তারিত তথ্যের জন্য যোগাযোগ করুন

বিভাগীয় প্রধান, কীটতত্ত্ব বিভাগ
বাংলাদেশ ধান গবেষণা ইনস্টিটিউট, গাজীপুর ১৭০১
ফোন: ০২-৪৯২৭২০৭০, ফ্যাক্স: ৮৮-০২-৪৯২৭২০০০
E-mail: shamiulent@gmail.com
head.entom@brrri.gov.bd
Website: www.brrri.gov.bd

কীটনাশকের ব্যবহার ছাড়াই ধান উৎপাদন

রচনা ও সম্পাদনায়

- ড. মো: নজমুল বারী
উপস্থাপন বৈজ্ঞানিক কর্মকর্তা, কীটতত্ত্ব বিভাগ
- ড. নূর আহাম্মদ
মুখ্য বৈজ্ঞানিক কর্মকর্তা, কীটতত্ত্ব বিভাগ
- ড. শেখ শামিউল হক
প্রধান বৈজ্ঞানিক কর্মকর্তা, কীটতত্ত্ব বিভাগ
- ড. খোন্দকার মো: ইফতেখারুন্নেসা
প্রধান বৈজ্ঞানিক কর্মকর্তা, উদ্ভিদ প্রজনন বিভাগ ও
প্রকল্প ব্যবস্থাপক, আইএপিপি, ব্রি
- ড. মাকিয়াহ রহমান মনি
উপস্থাপন বৈজ্ঞানিক কর্মকর্তা, আইএপিপি, ব্রি

প্রকাশনায়

কীটতত্ত্ব বিভাগ
ব্রি, গাজীপুর-১৭০১

উদ্ভিদ প্রজনন বিভাগ
ব্রি, গাজীপুর-১৭০১

ডিসেম্বর ২০১৫
১০০০ কপি

অর্থায়নে

ইন্টিগ্রেটেড এগ্রিকালচারাল প্রোডাক্টিভিটি প্রজেক্ট-ব্রি কম্পোনেন্ট





১৫ দিন পর পর হাত জালের সাহায্যে (চিত্র ৪) পোকা ধরে ক্ষতিকর ও উপকারী পোকার উপস্থিতি পর্যবেক্ষণ করতে হবে।



চিত্র ৪: হাত জালের সাহায্যে পোকা ধরা

এভাবে কীটনাশক ব্যবহার ছাড়াই কিংবা একবার মাত্র কীটনাশক ব্যবহার করেই ধান উৎপাদন করা সম্ভব এবং এতে ফলনের কোন ঘাটতি হয় না (চিত্র ৫)। এর ফলে ধান উৎপাদন খরচ কমে এবং এই প্রক্রিয়ায় কীটনাশকের বিষাক্ততা থেকে পরিবেশকে রক্ষা করা যায়।



চিত্র ৫: কীটনাশক বিহীন বোরো ধান ক্ষেত

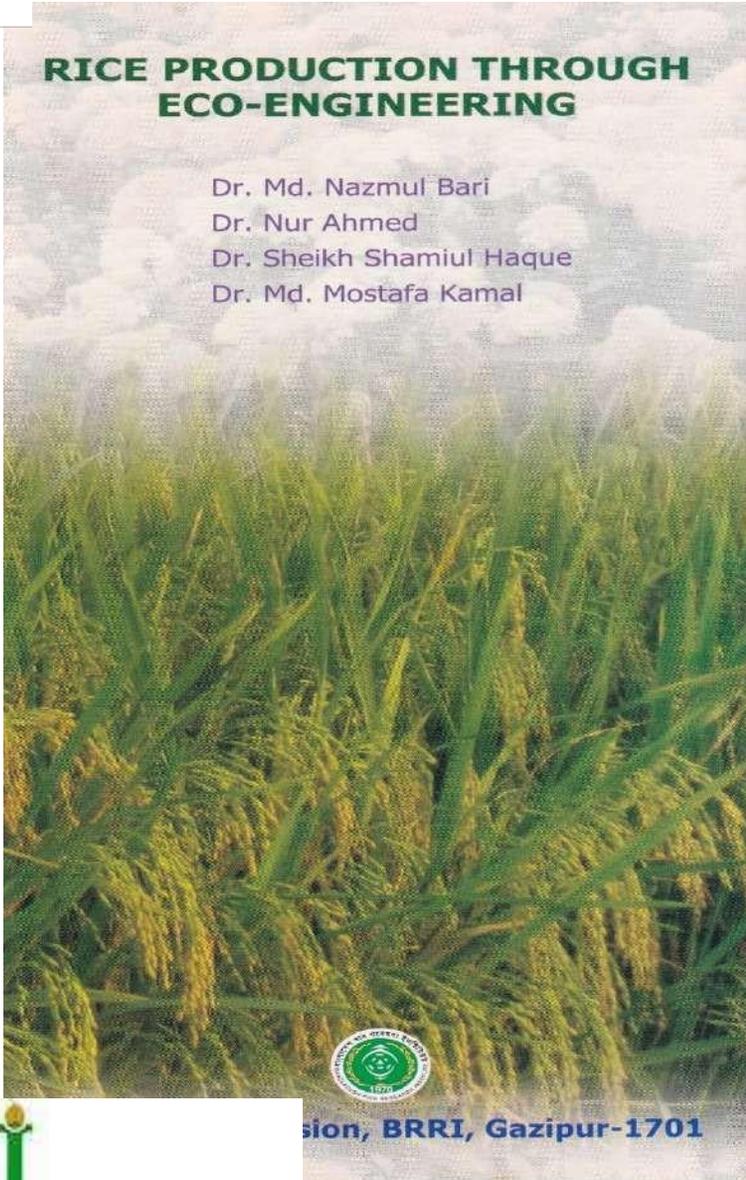
বিস্তারিত তথ্যের জন্য যোগাযোগ করুন

কীটতত্ত্ব বিভাগ

বাংলাদেশ ধান গবেষণা ইনস্টিটিউট, গাজীপুর-১৭০১
ফোন: ০২-৯২৬৩৬১০, ফ্যাক্স: ০২-৯২৬১৯১০
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RICE PRODUCTION THROUGH ECO-ENGINEERING

Dr. Md. Nazmul Bari
 Dr. Nur Ahmed
 Dr. Sheikh Shamiul Haque
 Dr. Md. Mostafa Kamal



Entomology Division, BIRRI, Gazipur-1701

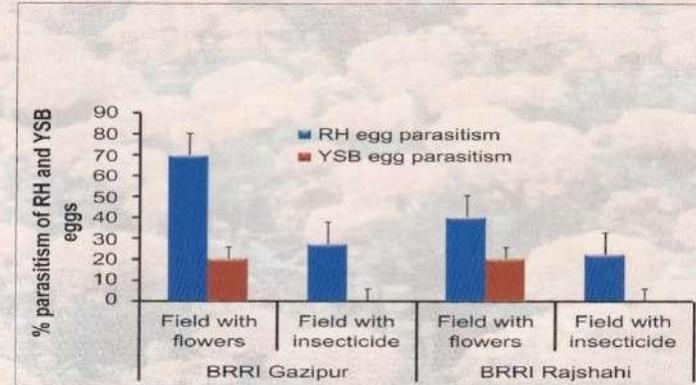


Fig. 1. Percent parasitism of RH and YSB eggs

Conclusion: The highest natural enemies and parasitism were observed in rice field nearby nectar-rich flowering plants. However, the least natural enemies and parasitism were found in rice field where continuous/ prophylactic insecticides were applied. Moreover, there was no yield reduction observed in rice field surrounding by flowering plants on rice bunds compared to insecticide treated field. So, farmers should avoid the toxic and hazardous insecticides to control the insect pests by growing nectar-rich flowering plants on the bunds of rice crops which attract bees and other beneficial arthropods or insects. These beneficial arthropods suppress insect pests of rice plants. These practices not only maintain the ecological diversity of the farms, but also results in significant reduction in insect control costs and save environment from insecticidal pollution.

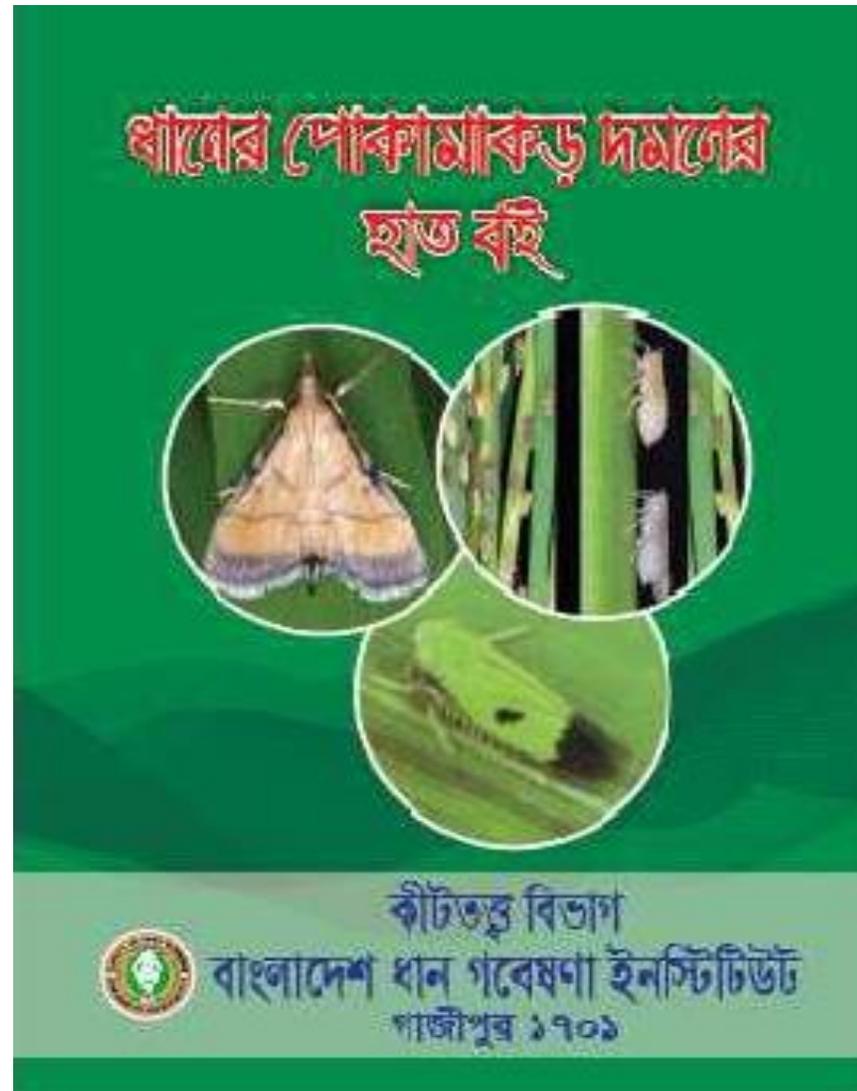
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Field activities of Entomology Division






BANGLADESH RICE RESEARCH INSTITUTE, GAZIPUR
ENTOMOLOGY DIVISION
 Website : www.birri.gov.bd

RESIDUE ANALYSIS OF THIAMETHOXAM + CHLORANTRANILIPROLE IN RICE

Variety : BIRRI dhan88	Season : Boro 2021-2022
Replication : 03	D/S : 21-11-2021
Treatments : 05	D/T : 29-12-2021

T₁ = Prophylactic insecticide application
 T₂ = Insecticide application at 5 DAF
 T₃ = Insecticide application at 10 DAF
 T₄ = Insecticide application at 15 DAF
 T₅ = Control (no insecticide)

PI: Farzana Nowrin, 01989-284528
 Ct: Md. Nazmul Bari, 01712-215439, Sadia Afrin, 01727-205036



ALART Field Visit

Field visit of different division



Problem identification at BIRRI Research field with Scientist and staff of BIRRI HQ



Problem Identification in farmers field



Problem Identification in farmers field with regional Scientist's

