

## NEH Programs organized by ICAR-NBAIR, Bengaluru 2019-20

ICAR-NBAIR, Bengaluru utilized the NEH funds appropriately to disseminate the expertise, knowledge and skills related to biological control of crop pests, diseases and nematodes; awareness and identification of invasive and important crop pests of national importance and pest monitoring through pheromone traps and pest control using mass trapping techniques, for the benefit of farmers, trainers, KVK personnel and entrepreneurs of the NEH region during 2019-2020. Dr. Chandish Ballal, Director ICAR-NBAIR coordinated and monitored the activities under NEH funds granted to ICAR-NBAIR appropriately in tune with the mandate of the Bureau and the Council. The activities are summarized and presented in the following report.

### I. Trainers training: Biocontrol training programme for officers of the NEH region

NBAIR organised a training programme on “Biological Control and Compatible Pest Management Modules for Management of Major Pests in NEH Region with Emphasis on Fall Armyworm” in three batches, viz. 19–23 August, 16–20 September 2019 and 14-18 October 2019. Twenty-nine participants employed as Subject Matter Specialists (Plant Protection), Assistant Professors, Block and Assistant Technology Managers, Entomologists, Pathologists and Nematologists from Assam, Manipur, Arunachal Pradesh, Meghalaya, Sikkim and Tripura participated in the training. The participants were trained on mass production of various biocontrol agents that have relevance to their region. Special attention was given to expose them to strategies for management of the invasive fall armyworm (FAW), *Spodoptera frugiperda*. The trainees were also taken to FAW-infested fields in Chikkaballapura to see the nature of damage by this pest. Drs M. Sampath Kumar, K. Selvaraj, Richa Varshney, Veeresh Kumar, G. Mahendiran, S. Salini, U. Amala, J. Patil, K.J. David, Om Prakash Navik and B. Ramanujam coordinated the training programme.



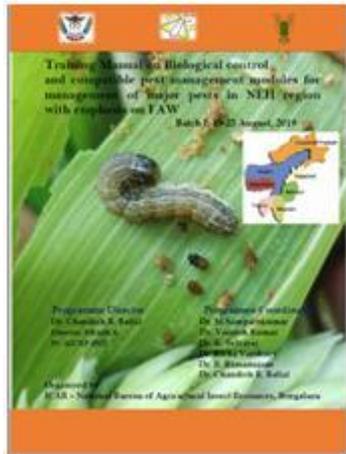
Batch I



Batch II



Batch III



Publications and training manuals

## II. Hands-on Training Workshop cum input distribution for empowerment of NEH farmers and KVK personnel

### A. Collaborative NEH program Workshop on Bio-control and Utilization of Insects for North-East India

Directorate of Extension Education, Central Agricultural University, Imphal and ICAR-National Bureau of Agricultural Insect Resources, Bengaluru jointly organized a two day workshop on “Biological Control of Crop Pests & Invasives and Utilization of Insects as Food in North East Region of India” during February 25-26, 2020 at College of Agriculture, CAU, Iroisemba, Imphal. The workshop was conceived and organized under Govt. of India, ICAR-NEH Fund to provide and promote use of biological control of crop pests with special reference to invasive crop pests in order to minimize the use of synthetic pesticides, promote natural fauna of the region for biological control and provide awareness of entrepreneurship among farming community of NEH. The workshop further aimed to address the promotion of insect resources as food and feed for domestic livestock (fish and poultry) besides use of insects in safer disposal of farm and kitchen organic waste in the region. Keeping in view the geo-graphical importance of NEH region, the workshop specially addressed the awareness and sensitization of farming community, KVK, State and ACRIP personals for the importance of invasive pests that have entered in to India (Fall army worm, *Tuta absoluta*, rugose white fly, papaya mealy etc.). Dr. Shravan M Haldhar, Associate Professor (Entomology), COA, CAU, Imphal and Dr. M. Nagesh, Principal Scientist and HOD, ICAR-NBAIR, Bengaluru were Course Directors, while Dr. Dipak Nath, Dy Director (EE) and Dr. Bireshwar Sinha, Asst. Professor (Pathology), CAU, Imphal were course coordinator of this programme.



Release of manuals by dignitaries for NEH farmers and trainers

The two days workshop was inaugurated at College of Agriculture, CAU, Imphal on 25<sup>th</sup> February 2020 with Dr. Satyasai Kovvali, GM, NABARD (R.O.), Imphal as Chief Guest; Dr. Chandish R. Ballal, Director, ICAR-NBAIR, Prof. Indira Saranthen, Dean, College of Agriculture, Iroisemba; Dr. N. Prakash, Jt. Director, ICAR-NEH Centre, Imphal and Prof. K. Mamocha Singh, Registrar, CAU as Guest of Honour and Prof. R. K. Saha, Director, DEE, CAU as President of this event. About 35 farmers and 25 KVK, State and ACRIP personals from two states Manipur and Nagaland were the beneficiaries of the workshop. The expert resource persons from ICAR-NBAIR, Bengaluru and College of Agriculture, CAU, Imphal have provided the necessary knowledge, technical inputs and hands on training. A field visit to FLD areas along with a visit to a lady-

entrepreneurial enterprise on biological, M/s Green Biotech, Imphal were part of the workshop for the benefit of trainees/ participants.

Prof. M. Premjit Singh, Honorable Vice Chancellor, CAU, Imphal during the valedictory function honored/ awarded the progressive farmers who have presented the novel ITKs and innovation on biological means of pests management. Prof. M Premjit Singh also distributed the awards to



trainees of KVK, State and ACRIP for best FLDs and KVKs for dissemination of technologies and bicontrol inputs to farmers locally from the two states of Manipur and Nagaland.

In continuation, another workshop is scheduled to be organized by Prof. RK Saha, Prof. KM Singh, Dr. NB Singh, Dr. RK Tombisana Devi, Dr. M Pathak, Dr. P Dutta, Dr. SM Haldhar, Dr. N Kennedy, CAU and Dr. M Nagesh, Dr. K Selvaraj, ICAR-NBAIR at College of PG Studies in Agricultural Sciences, CAU, Umiam, Meghalaya in collaboration with ICAR-NBAIR, Bengaluru during March 6-7, 2020 for the benefit of the farmers and KVK, State and ACRIP personals of Assam, AP, Meghalaya, Tripura and Mizoram.



## **B. Workshop on “Biocontrol of Crop Pests & Invasives and Utilization of Insects as Food in North East Region of India” at CAU, Umiam, Meghalaya**

Directorate of Extension Education, Central Agricultural University (CAU), Imphal, Manipur & ICAR-National Bureau of Agricultural Insect Resources (NBAIR), Bengaluru jointly organized a two days’ workshop on “Biocontrol of Crop Pests & Invasives and Utilization of Insects as Food in North East Region of India” on 6-7<sup>th</sup> March, 2020 at College of Post Graduate Studies in Agricultural Sciences (CPGS-AS), School of Crop Protection (SCP), Umiam, Meghalaya. Welcoming the event, Dr. N.B. Singh, Dean, CPGS-AS, Umiam, expressed that Meghalaya is fortunate to be blessed with a vast diversity of flora and fauna. He emphasized management of insect and diseases of rice, citrus, ginger through of biocontrol approaches and the farmers can increase their income without the use of synthetic pesticides. Dr. R.K. Tombisana Devi In-charge, SCP highlighted the importance of workshop. Guest of Honor Dr. B. Ramanujam, Principal Scientist, ICAR-NBAIR, Bengaluru, in his inaugural address, enlightened the importance and scope of biocontrol agents for pest and diseases management and insect as a food in India and he stressed on setting up biocontrol units in the North East Hill Region of India.

Dr. B. C. Deka, Director ICAR-Agricultural Technology Application Research Institute, Umiam was the Chief Guest of the inaugural session. In his address he stated that the state Meghalaya has a vast potential biodiversity and he articulated that management of pests and diseases through biocontrol agents are very much important as the most of the states in North East India produced the crops organically. He also urged the farmers to adapt the insects as a food. Prof. N.S. Azad Thakur, Professor, Entomology offered the vote of thanks.

During the two days’ workshop, a total of 62 participants (15 farmers, 10 faculties and 37 student) from the state of Assam, Tripura, Mizoram, Arunachal Pradesh and Meghalaya were attended satisfactorily. There were four technical sessions and 15 lectures were delivered by the highly experienced resource persons from NBAIR, Bengaluru and CPGSAS, Umiam. Competition on Poster Presentation was also arranged and 6 winners (3 farmers and 3 Scientists) were awarded with trophies and cash prizes. Besides, farm inputs like sprayer, neem based insecticides were distributed to the progressive farmers. This workshop was coordinated by Dr. K Selvaraj, Scientist and Dr. A. Kandan, Principal scientist, ICAR-NBAIR along with Dr. Pranab Dutta, Associate Professor, SCP, CAU, Meghalaya. This programme widely covered in press and media in local languages.



### **III. State level training programme on scientific management of FAW in maize organized by ICAR-NBAIR, Bengaluru**

On 15.5.2019, Department of Agriculture, Govt. of Mizoram organized a ‘State level training programme on scientific management of FAW in maize’ at SAMETI Hall, Aizawal in collaboration with ICAR-NBAIR Bengaluru, ICAR-IIMR Ludhiana, and ICAR RC on NEH Mizoram center. Total 120 personal from KVKs, Mizoram state department of agriculture, ATMA, YMA, CIPMC Mizoram participated in the training. The chief guest of the function was Mr. Pu Lalhmingthanga IAS, Commisioner and secretary Agriculture, Govt. Mizoram. Govt. of Mizoram Department of Agriculture officials, viz., Dr. H. Saithantlunga, Director Agriculture (Research and Extension) and Dr. Pu Rohmingthanga Colney, Director Agriculture (Crop Husbandry), Dr. Pu James Lalsiamliana, Joint Director (Planning & Monitoring) and team leader FAW Rapid Response Team and ICAR RC on NEH Mizoram center Director of Research Dr. I Shakuntala briefed the status and gaps in FAW management in Mizoram. Dr. J.C. Sekhar (PI AICRP Maize Entomology, IIMR) and Dr. Kesavan Subaharan (Principal Scientist Agriculture Entomology, NBAIR) shared their experience on FAW management in peninsular India. ICAR team gave lectures on ‘Integrated Pest Management’ (Dr. J.C. Sekhar, IIMR), ‘Eco-friendly measures on FAW management’ (Dr. Kesavan Subaharan, NBAIR), FAW identification & scouting (Dr. Suby SB, IIMR), ‘Geo-referenced recording and reporting of FAW incidence’ (Dr. SL Jat, IIMR) and ‘Monitoring and weather based pest forewarning’ (Dr. Saurav Saha, ICAR RC on NEH Mizoram).

Participants visited two maize fields under jhoom cultivation in Durtlang hills for practical demonstration on FAW monitoring using pheromone traps. It was observed that the farmers predominantly cultivate land races and composites, which are inherently heterogenous and less vigorous. The heterogenous population inherently having variation in terms of crop growth are probably more vulnerable to pest damage. Since the terrain is hilly the spread of insect is also patchy, in the sense at the same place one side of a hill may have infestation, while other is not having much infestation. The wind direction appeared to be playing an important role in this regard.

Under NEH scheme of ICAR-NBAIR organized training for the state officials. Main focus of these trainings was creation of awareness and capacity building. The State Department of Agriculture, Mizoram was provided with nucleus cultures of parasitoids, predators and microbial agents to be multiplied and supplied to meet the farmers’ demand for FAW management. The know-how on conservation of existing indigenous natural enemies, utilisation of pheromone traps for monitoring and mass trapping and mass multiplication and utilisation of biocontrol agents and biopesticides was provided by ICAR-NBAIR to the Department officials.



Training to officials in FAW management



State level training on FAW management at Mizoram



Demonstration on use of Pheromone for monitoring and mass trapping FAW