

AICRP ON BIOLOGICAL CONTROL OF CROP PESTS AND WEEDS

1. INTRODUCTION

During the era of green revolution, agrochemicals were used extensively to increase food production. By the sixties and seventies, the fall out of excessive use of chemical insecticides was evidently seen. Environmental pollution, contamination of food and water and development of resistance to chemical pesticides to several pest species became major concerns and the AICRP in Biological Control was initiated during the year 1977 to develop eco - friendly biological control methods for the sustainable management of pests.

With the help of AICRP programme on biological control, new approaches have been made during the XI plan period and the Bio Control technologies have been improved and field tested for wide acceptance by end users (farmers). Efficient methods of mass multiplication of parasitoids, predators and pathogens against insect pests and antagonists against plant pathogens and plant parasitic nematodes have been developed. Similarly, Bio Control technologies with pests and pathogens for Bio Control of weeds have been developed. The field demonstrations through AICRP centers have increased the awareness of farmers regarding the usefulness of biological control in IPM. Use of bioagents can reduce the pesticide use and enhance sustainability. Spectacular results have also been obtained in the management of plant diseases. Bio Control can result in several economic and ecological benefits.

Spectacular success achieved during the past three years in the management of the papaya mealybug using the predators and parasitoids is a landmark example of sustainable pest management. The pest that once ravaged the papaya crop in Maharashtra, Karnataka and Tamil Nadu has been contained successfully by the deployment of Bio Control agents leading to the savings of several crores of rupees for the farmers. Establishment of biotic balance through inoculative releases of natural enemies and the classical biological control of alien pests with introduced natural enemies have the potential to provide long term suppression of pest species so much so, there will be no need of recurring cost by the farmers season after season.

Through the AICRP on IPM & Bio Control, new Biocontrol agents and technologies have to be field-tested in different parts of the country to confirm their usefulness. The work under the XII plan would encompass i. Survey and collection of natural enemies *viz.*, insects, mites, spiders, EPN and pathogens, ii. Surveillance for possible entry of alien invasives like *Brontispa*, *Phenacoccus manihoti* the giant whitefly, *Frankliniella occidentalis* the western flower thrips etc. and classical biological control intervention, in case of entry. iii. Characterization / Identification of natural enemies. Promising natural enemies will be taken up for further studies on bionomics, behavior, seasonal cycles and assessment of potentials, iv. Utilization of natural enemies: Pilot studies to assess their potential interactions with inter-specific, intra-specific associations and relation to hosts / non hosts and also abiotic factors and evaluation studies of potential natural enemies against insect pests & diseases in crops and in storage. v. Validation of established and potential natural enemies and area-wide demonstration. vi. Technologies for mass multiplication / product development of microbes (Revolving fund). vii. Regulatory research for the development of commercial natural enemy/microbial products and viii. Policy perspective research for the impact assessment of natural enemies in various seasons / crops / cropping systems.

2. Mandate of AICRP on biological control of insect pests, diseases and weeds

- Promotion of biological control as a component of integrated pest and disease management in agricultural and horticultural crops for sustainable crop production
- Demonstration of usefulness of biocontrol in IPM in farmers' fields.

1. Objectives

- a. Development of effective biocontrol agents for use in biological suppression of crop pests and diseases
- b. Evaluation of various methods of biological control in multi-location field trials
- c. Development of biointensive integrated pest management strategies for cotton, rice, sugarcane, pulses, oilseeds, potato, coconut and a few selected fruits and vegetables
- d. Demonstration of usefulness of biocontrol in IPM in farmers' fields

2. Setup

With a view to fulfil the mandate effectively and efficiently, the Bureau is functioning with the following State Agricultural Universities, ICAR Institute – based centers and some voluntary centers

1. AICRP PC Cell, NBAII, Bangalore
2. Acharya N. G. Ranga Agricultural University, Hyderabad
3. Anand Agricultural University, Anand
4. Assam Agricultural University, Jorhat
5. Govind Ballabh Pant University of Agriculture and Technology, Pantnagar
6. Kerala Agricultural University, Thrissur
7. Mahatma Phule Krishi Vidyapeeth, College of Agriculture, Pune
8. Sher-e-Kashmir University of Agricultural Sciences and Technology, Srinagar
9. Punjab Agricultural University, Ludhiana
10. Tamil Nadu Agricultural University, Coimbatore
11. Yashwant Singh Parmar Univeristy of Horticulture and Forestry, Solan
12. Central Agricultural University, Pasighat
13. Maharana Pratap University of Agriculture and Technology, Udaipur
14. Orissa University of Agriculture and Technology, Bhubaneswar
15. University of Agricultural Sciences, Raichur*

* New centres proposed during XII plan

Apart from these 15 centers, this AICRP has 14 linkage centers based at ICAR institutes (CPCRI, CTRI, IIHR, IARI, IIVR, IISR, CISH, NCIPM, DRR, DSR (Soybean), DSR (Seed), DSR (Sorghum), DWSR and CARI) which also will be carrying out the research programmes on biological control with insect/ biocontrol agent culture support from NBAII