Training Program
On
Mass Production of Biological Control Agents
15.12.2025 to 30-12-2025 (15 days)



Sponsored By:
HADP Project No. 18 “Minimization of Pesticide Use in Agriculture”

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Organized By:
Division Of Entomology,
Faculty of Horticulture, SKUAST-K, Shalimar

Background:
The increasing global emphasis on sustainable agriculture has brought biological control to the forefront of Insect-pest management strategies. In Jammu & Kashmir, where horticulture forms the backbone of the farming community, indiscriminate and repeated use of chemical pesticides has resulted in several challenges, including pest resistance, resurgence, destruction of beneficial fauna, and concerns over pesticide residues in fruit crops. To address these issues, the Holistic Agriculture Development Programme (HADP) of the UT of J&K has identified biological control as a priority area under Project No. 18, “Minimization of Pesticide Use in Agriculture.” Strengthening the capacity of field personnel, students and young professionals in the scientific production and use of biological control agents is central to achieving pesticide reduction goals.
The Division of Entomology and the Division of Plant Pathology, SKUAST-Kashmir, jointly contribute to the advancement of sustainable pest and disease management by developing and standardizing mass production technologies for a wide range of biological control agents. While the Division of Entomology specializes in the rearing of key natural enemies such as *Trichogramma* spp., predatory beetles like *Chilocorus infernalis*, anthocorid bugs, entomopathogenic fungi, bacteria, nematodes and viruses, the Division of Plant Pathology complements this effort through large-scale production of microbial antagonists including *Trichoderma spp.*
Together, the two divisions provide a strong foundation for biointensive pest and disease management in the region by offering farmer-ready biocontrol solutions, quality-controlled mass production protocols and capacity-building programs. Their integrated efforts support the HADP goal of reducing pesticide dependency while promoting environmentally safe, effective and sustainable crop protection strategies.
By creating trained human resources capable of producing and promoting biocontrol agents at local and regional levels, this programme directly contributes to the state’s vision of reducing pesticide dependence, enhancing ecological resilience and encouraging adoption of eco-friendly Integrated Pest Management (IPM) practices. Ultimately, the initiative will support the production of residue-free horticultural produce and safeguard the long-term sustainability of Kashmir’s unique agro-ecosystems.

Objectives:
1. To train participants in standardized mass production techniques for key biological control agents, including parasitoids, predators and microbial antagonists
2. To enhance technical skills for quality assurance, handling, formulation and field application of biocontrol agents for effective integration into IPM programmes.
3. To promote sustainable agriculture by reducing pesticide reliance through capacity building, awareness creation and adoption of eco-friendly biological pest and disease management strategies

Number of Participants: 50

Course Outline:

- ❖ Overview of Biological Control: Introduction to concepts, types of natural enemies and their role in minimizing pesticide use.
- ❖ Mass Production of Parasitoids: Techniques for rearing *Trichogramma* spp., *Encarsia perniciosi* and other important parasitoids.
- ❖ Mass Production of Predators: Rearing methods for *Chilocorus infernalis*, *Blaptostethus pallescens*, and other beneficial predators.
- ❖ Mass Multiplication of Entomopathogenic Fungi: Production of *Beauveria bassiana*, *Metarhizium anisopliae*, *Lecanicillium lecanii* under laboratory and semi-commercial setups.
- ❖ Production of Entomopathogenic Bacteria and Viruses: Techniques for culturing *Bacillus thuringiensis* (Bt), NPVs/GVs, and preparation of field-ready formulations.
- ❖ Mass Production and Formulation of Entomopathogenic nematodes
- ❖ Mass Production of Microbial Antagonists: Standardized production protocols for *Trichoderma harzianum*, *T. viride*, *T. asperellum* and *Pseudomonas fluorescens*.
- ❖ Quality Control and Standardization: Viability assessment, spore load estimation, purity testing, and adherence to CIBRC/ICAR guidelines.
- ❖ Formulation and Shelf-life Enhancement: Development of talc-based, liquid, and oil formulations; packaging, storage and transport.
- ❖ Field Application Techniques: Release strategies for parasitoids and predators; application methods for microbial biopesticides; integration into IPM modules.
- ❖ Compatibility and Safety Aspects: Compatibility with pesticides, environmental considerations, biosafety and handling procedures.
- ❖ Commercialization and Entrepreneurship: Small-scale production units, cost estimation, marketing prospects, and opportunities under HADP.
- ❖ Exposure Visits/Practicals: Demonstration of mass rearing units, hands-on practicals and field visits to orchards/biocontrol facilities.

Faculty/Resource Persons

Division of Entomology & Division of Plant Pathology, SKUASST-K, has great strength of renowned Scientists working on biological control insect pest and plant diseases. In addition, resource persons/experts from other SAUs, ICAR and other Institutions will be invited for delivering specific lectures and practicals.

Target Group

Participation in the programme is open to farmers from various districts of the Kashmir Valley, preferably those actively engaged in horticultural and agricultural activities. Priority will be given to farmers who have demonstrated interest in adopting improved and sustainable plant protection practices.

Boarding & Lodging

Free boarding and lodging will be arranged by the organizers for all outstation farmers for the duration of the programme. Local participants residing within the vicinity of the venue will not be eligible for lodging facilities; however, they will be provided working lunch and refreshments during the programme.

All Correspondence to be addressed to:
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