

Webinar on Biocontrol of Soil Arthropod Pests

2nd January 2021



Executive Summary

The soil arthropod pests (SAP) of national agriculture importance are posing a serious problem of pest infestation on major commercial crops like sugarcane, groundnut, soybean, potato, sorghum, corn, pearl millet, turmeric, ginger, arecanut, coconut etc. in the states of Uttar Pradesh, Haryana, Punjab, Rajasthan, Madhya Pradesh, Gujarat, Maharashtra, Karnataka, Assam and West Bengal. The major soil arthropods pests are white grub, termite, root borer and cutworm. The management of soil arthropod pests is mainly being done by application of chemical pesticides. However, due to various reasons, the chemical pesticides are becoming ineffective for the management of soil arthropod pests. Therefore, adoption of the bio-control measures for the long-term management strategy for SAP is one of the best options in current agroecological scenario.

In view of the above a webinar “Bio-control of Soil Arthropod Pests” was organized by Foundation for Agricultural Resources Management and Environmental Remediation (FARMER) on 02.01.2021. The webinar was attended by 83 participants representing scientists from ICAR Research Institutions, All India Network Project on Soil Arthropods Pests, Sugar Industry and Bio-fertilizers / Bio-pesticides Formulation Industry, Scholars and Farmers from the states of Uttar Pradesh, Uttarakhand, Maharashtra etc. The main themes for interaction of webinar were: current status of soil arthropod pest infestation, existing recommended package of practices being followed, chemical pesticides, IPM using biological control agents such *Metarhizium anisopliae*, *Beauveria bassiana*, Entomopathogenic Nematodes and other available edaphic natural enemies on immature stages of these pests and on natural predators on adult beetles that emerge and feed on various host plant foliage. Efforts to chalk out future strategy for making available the successful and effective bio-agents at farm level will be made through rural entrepreneurship under rural self-help groups and farmer producer groups.

The Webinar was launched by Dr. T.R. Sharma, Deputy Director General (Crop Science). He discussed the need for sharper IPM tools using biological control tactics to contain the overwhelming soil arthropod pests and save crops from severe damage and loss to farmers. In the Welcoming remarks Sh. Jagpal Singh Secretary, FARMER explained the purpose of the Webinar and expected outcome. In his Opening Remark by Dr. T.P. Rajendran, Former Asst/ DG (Plant Protection), ICAR explained the need for sustainable solutions to suppress soil arthropod pests and the significant role of ICAR-All India Network Research project in developing regional and national recommendations that can be incorporated by the packages of practices of all State Agriculture Universities as well as the agriculture / horticulture departments of all states and Union Territories. Dr. Y.P. Singh, Assistant Director General (Plant Protection), ICAR in his felicitation address provided the ICAR perspective on the research for managing soil arthropods through ICAR-AINP on Soil arthropods.

In her Felicitation Addresses by Dr. (Ms). Chandish Ballal, Former Director, NBAIR provided the overview of successful biological control programmes to target soil arthropod pests developed by National ICAR-Bureau of Agriculturally Important Insects and ICAR-All India Coordinated Research Project on Biological Control. Dr. Subhash Chander, Director, ICAR- National Research Centre for Integrated Pest Management, New Delhi proposed for the long-term IPM strategies in all cropping systems for the management of Soil Arthropods pests. The thoughts on the current status and management strategy of soil arthropod pests by Prof. A. S. Baloda, Director, RARI, SKNAU & Coordinator, ICAR – AINP on Soil Arthropod Pests provided an overview of the research progress and recommendations for preventing crop loss due to soil arthropod pests over the last decade and encouraged the research group to look for innovative research plans to manage them with cost-effectiveness. Two Sugar mills, viz., Dr Rajesh Shukla, General Manager, Triveni Sugar Mills and Dr Abhishek Srivastava, General Manager, Mawana Sugar mills. Farmers from Uttar Pradesh, Maharashtra, Madhya Pradesh participated expressed their increasing confidence in Entomopathogenic nematode (EPN) for white grub suppression in sugarcane and other crops in western Uttar Pradesh.

The technical session that followed covered the detailed lectures by eight professors / scientists who consolidated recommendations for effective soil pest management that enable farmers to save their crops from suffering crop and financial loss.

Conclusions and Recommendations of the Webinar

1. While increasing the knowledge level of the participants and farmers in managing soil Arthropod pests (SAP) in various national cropping systems the Webinar brought out the significance of the scope and pragmatic deployment of microbial biological control of these cryptic pests. Soil Arthropod pests have been tormenting farmers' crops in all agroclimatic conditions. The national agriculture research system (NARS) has from time to time researched to find out the solutions to suppress the crop damage in most of the cropping systems.
2. Biological control of SAP species has been devised since the unsustainability of chemical pesticides to contain these pests without polluting impact on soil and aquatic natural resources. Natural enemies of SAPs are well-characterised over the last four decades in the country. The NARS has developed their cost-effective large-scale production to make them available in our farms. The last few decades have emphasised on the rural entrepreneurship development in this business of making available to farms high quality microbial pesticides (MP).
3. The regulatory management of MP in the recent years has been quite liberal so as to encourage multitude of micro, small and medium entrepreneurs (MSMEs) to register their biological control agents that are developed and collaborated with by NARS and other scientific research institutions. The desirable enhanced utilisation of MP products has been limited due to the challenges in the large availability of quality MP products. Further call to reduce the stringency in data on biosafety, toxicology and chemistry of these products has been repeatedly impressed by the academia so as to make their regulations more pragmatic and overwhelmingly useful to manage crop pests.
4. The MP formulations can be mass-produced by self-help groups (SHG), farmers producer groups (FPG), rural farm families on a non-profit basis for supplying to the farmers of the region. Voluntary and non-government agencies can steer such efforts by meeting the actual cost of production of the candidate MP formulations to supply farms for their inundative release.
5. The non-regulated biocontrol agents such as Entomopathogenic nematodes are ideal to effectively manage SAPs in the country. Devising systems to permit enhanced rural entrepreneurship for EPN business would make this biocontrol tool very impactful for suppressing SAPs. In association with entomopathogenic fungi (EPF), as an impacting new weapon system, their success rate has been inspiring to bring down the soil pest load dramatically.
6. ICAR may take up discussion with government regulatory agencies in respect of devising modalities in preventing over-regulating MP products. One Standing Expert Committee (SEC) on biopesticides with revolving membership can advise the central and state governments in the matters related to the regulation of MPs.
7. The Webinar successfully brought in these useful outputs after the day-long deliberation.

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