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Biography – Dr. Opendar Koul

Opendar Koul, Fellow of the National Academy of Agricultural Sciences and the Indian Academy of Entomology, is an insect toxicologist/physiologist/chemical ecologist and currently the Director of the Insect Biopesticide Research Centre, Jalandhar, India, and Adjunct Professor, Faculty of Science, Kasetsart University, Bangkok. After obtaining his PhD in 1975, he joined the Regional Research Laboratory (CSIR), Jammu, and then became Senior Group Leader of Entomology at Malti-Chem Research Centre, Vadodara, India (1980–1988). He has been a visiting scientist at the University of Kanazawa, Japan (1985–1986), University of British Columbia, Canada (1988–1992), Institute of Plant Protection, Poznan, Poland (2001), and Kasetsart University, Bangkok (2009). His extensive research experience concerns insect–plant interactions, spanning toxicological, physiological, and agricultural aspects. Dr Koul has been honoured with an Indian National Science Academy medal (INSA), the Kothari Scientific Research Institute award, KEC Science Society award, Recognition Award of the National Academy of Agricultural Sciences of India for outstanding contribution in the field of insect toxicology/ physiology and plant protection, Dr. R.C. Saxena Memorial Medal of Entomological Research Association, and the late P.P. Singhal Memorial Award in Entomology. Dr Koul is on panels of experts in many committees and leading international and national journals. He is the Editor-in-Chief of the journal *Biopesticides International* and *Industrial Crops and Products*. He has also been an informal consultant to the Board on Science and Technology in International Development (BOSTID),

and to the National Research Council (NRC) of the United States at the International Centre for Insect Physiology and Ecology (ICIPE), Nairobi; UNIDO consultant for biopesticides in China; and ICS-UNIDO consultant in Nigeria. He has authored over 240 research papers and articles, and is the author/editor of 20 books on various aspects of biopesticides.

Presentation title: Advances in the development and use of biopesticides for insect pest management

Abstract

Chemical pesticides do take care of insect pests to a larger extent, but at the same time, they are hazardous to the environment and human health. Accordingly, the best approach during last few decades has been to develop eco-friendly products generally termed as biopesticides, which are environment-friendly and also help in reducing the chemical pesticide load. Various biopesticides used belong to various naturally occurring organisms and are accordingly named as microbial biopesticides, botanical biopesticides and semiochemicals. While microbial biopesticides include bacteria, viruses, fungi, nematodes and protozoans; botanicals include the products obtained from various plant sources, generally called as phytochemicals and semiochemicals that include kairomones and insect pheromones. The recommended steps to obtain a good pest control product would be collection of isolates and identification of a perfect isolate, laboratory screening for efficacy, assessment of production efficiency, mode-of-action and toxicological properties, glasshouse trials and evaluation of efficacy under commercial conditions. If all these factors are considered, success is inevitable. Commercialization of the products is an important component of any strategy developed; therefore, the global biopesticides market has been segmented on the basis of type, crop type, origin, formulation, and mode of application. Recently use of nanotechnology for plant protection by biopesticides, though under exploration, has also been the subject of extensive study that would expand the frontiers of nano-particle based biopesticide technologies for pest management. There are certain barriers too, i.e. all products come under global regulatory regimes in order to protect the life and environment. Thus only authorized biopesticide products can be used legally for crop protection.