

A clear reduction in the exposure of bee colonies to the tested plant protection products by the Dropleg^{UL} method compared to conventional application could be shown by means residue analyzes of pollen and nectar.

Very low to non-measurable (<LOQ) residue level of the test substances were measured in nectar samples from plots treated with the Dropleg^{UL} application method.

In pollen samples a clear reduction of the residues of the test substances could likewise be achieved by using the Dropleg^{UL} application method.

Therewith, it could be clearly shown that the Dropleg^{UL} technology has the potential to substantially reduce the exposure of foraging honeybee colonies to foliar pesticide treatments.

5.7 Neonicotinoids & Pollinators: Indian Perspective

Raj Thakur, K. Kumaranag, Uzma Manzoor, P. Chakrabarthy

AICRP (HB&P), Division of Entomology, IARI, New Delhi-110012

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Abstract

Pollinators provide essential services in agriculture and ecosystem as a whole. The reproduction of nearly 85 % of the world's flowering plants and production of 35 % of the world's food crop depends on pollinators. In the recent years, the concern over the decline in pollinator population has gained impetus due to the decrease of plant species and vice versa. Although, the abundance of pollinators in the environment is influenced by a number of biotic and abiotic factors, the injudicious use of chemical pesticides is maximizing the damage.

Neonicotinoid insecticides have successfully controlled pests in various crops. They have zero phytotoxicity and are compatible with all relevant crops. However, they may not only affect pest insect but also non-target organisms such as pollinators. In India, neonicotinoid pesticides were first registered for use in mid 1990s. With the overall decline in pollinators and worldwide neonicotinoid use, their impact on pollinators has become a cause of concern and more accurate risk assessments are needed critically.

Neonicotinoids are currently the most widely used group of insecticides in the world comprising 25 % of the agrochemical market. They have been subjected to public debate considering their potential role in pollinator decline. A lot has been published and many opinions have been voiced but the science and facts underlying the issue have not been clearly laid out. Till date the research on the hazardous effect of neonicotinoids has been confined to the environmental neonicotinoid residue levels in crops and pollinators and sub-lethal effects to pollinator populations. Besides, research investigating the effects of neonicotinoids on pollinators is primarily restricted to honey bees but other pollinators should also be taken into account.

However, it is important to mention here that neonicotinoids are safer to animals, mammals and environment. All chemical insecticides are harmful for bees. Use of insecticides is not the only cause for decline in natural pollinator's population. Decline is due to several factors and thus effort should be laid on conservation of pollinators.

In view of the concern over the risk of neonicotinoids on pollinators, on the recommendations of the Department of Agriculture and Cooperation, Ministry of Agriculture, Cooperation and Farmer Welfare, Government of India and Indian Council of Agricultural Research agreed to conduct the two years multi-location and multi-centric study on the effect of neonicotinoids on honey bees and other pollinators under the supervision of All Indian Coordinated Research Project on Honey bees and Pollinators. The anticipated outcomes of the study will be to evaluate the impact of various neonicotinoids on different crops, growth and development of bee brood with the exposure of contaminated pollen, impact on foraging behavior and residual effects in bees and bee products. On the basis of the data generated through the various scientific trials, legitimate action for the sake of sustainable agriculture can be taken.