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**Neem: the bitter truth**

The insecticidal properties of plants have been known through the ages. In recent years botanical insecticides have played a critical role in the management of several insect pests. However, they have not been fully exploited on a commercial scale. Neem (*Azadirachta indica*) has been the focus of studies for over 20 years, and neem products are used as pesticides and allied chemicals against >250 insect species all over the world.

Results from several global pest management programs using neem have been spectacular. Neem products were believed to be harmless to natural enemies of the pests, pollinators and other non-target organisms, so Integrated Pest Management (IPM) programs adopted neem as one of the prime options for greater stability and sustainability in crop production. Yet, although there is much discussion about the advantages of neem, information about its toxic effects on beneficial organisms is not thoroughly understood.

ICRISAT studies on the efficacy of different IPM components (neem 1500 ppm, 1750 ml / ha, endosulfan 0.07% and NPV 250 LE / ha) on chickpea pod borer management revealed neem application ill effects on soil inhabiting and aerial natural enemies. Soil inhabiting natural enemies - ants, carabid beetles, spiders, crickets and earwigs -- was collected from the pitfall traps fixed in each treatment of the experiment. Aerial natural enemies such as braconids, ichneumonids, and ants of the order Hymenoptera, apart from these spiders and tachinids were also observed. Sampling was done with a De Vac (suction trap) to assess the effect of IPM components on aerial natural enemies.



Neem fruit, flowers and foliage.

The overall effect of neem was evident on soil dwelling natural enemies. Endosulfan was instrumental in reducing upto 63% natural enemy population compared to 38% in plots treated with neem and 31% in IPM plots which had received neem, HNPV and endosulfan at different stages of the crop.

The observations on aerial sampling of natural enemies with De Vac suggested a significant reduction of enemy populations in plots treated with endosulfan, neem and IPM with 56%, 28%, and 48% respectively at different stages of the crop.

Evidently, neem products are not as safe to the natural enemies as they were once believed. The results indicated that when neem was applied to control chickpea pests there was an overall 38% reduction in soil inhabiting and 28% reduction in aerial natural enemy populations. Therefore, considering the neem effects on natural enemies, we need to judiciously select management measures that help to maintain an ecological balance and healthy environment.

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