Persistance of Different Neem Based Pesticides Against Diamond Back Moth, *Plutella xylostella* Linn

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SUMMARY

A field - cum laboratory study was carried out on residual toxicity of field weathered deposits of five neem based pesticides. *viz.*, Neemazal, Bioneem, Neemgold, Nimbicidine and Achook at 1 and 2 per cent concentrations against third instar larvae of Diamond back moth, *Plutella xylostella* Linn. Results showed that Neemazal was most toxic and persistent pesticide as initially it offered maximum kill of larvae and continued to give mortality even after 10th day of spraying, where as Achook proved to be least effective and persistent. However, Bioneem, Neemgold and Nimbicidine behaved intermediary.

The present day need is to produce uncontaminated food including vegetables, fruits, pulses, cereals etc. for growing population at the global level. The increasing use of synthetic insecticide, have posed the problems of their residual hazards, resistance in pest species against them and pest resurgence after their use, which has diverted the attention of the scientists to shift from the common philosophy of pest control with the application of insecticides, on the ecofriendly approaches for suppressing the pest problems. Neem (*Azadirachta indica* A. Juss), a well known Indian tropical plant, is found to have more than hundred terpenoids from different parts of its biological constituent, the most active and well studied compound is azadirachtin, highly oxidized triterpenoid. Neem has easy available and fast degradating and persistency impact on pest multiplication. These qualities of neem make it more suitable for managing the pests on vegetables where its less persistence becomes more appropriate to grow uncontaminated healthy vegetable for human consumption. Diamond back moth, *Plutell xylostella* Linn. is a serious pest of cruciferous crops. The larval stage of the pest is phytophagous in nature feeding on cruciferous (Brassicaceous) plants like cauliflower, cabbage, radish, mustard, turnip etc.

MATERIALS AND METHODS

The residual toxicity of various neem based pesticides, *viz.*, Neemazal, Bioneem, Neemgold, Nimbicidine and Achook were studied in the field. For this purpose, the cabbage plants were selected and different neem formulations were sprayed at two concentrations *viz.*, 1.00 and 2.00 per cent. In order to study the residual toxicity of the formulations, the sprayed leaves of cabbage were plucked and brought to the laboratory just after zero hour of spray. After 1, 2, 3, 5, 7 and 10 days of spraying, the leaves were kept in Petridishes after plucking from the fields. Ten, third instar larvae of *P. xylostella,* starved for seven hours, were released in each Petridish. The feeding larvae were recorded for observing the persistence or residual life of these formulations in field conditions. The moribund larvae were taken as dead for calculating the percentage mortality.

RESULTS AND DISCUSSION

The results of the tests on the persistence of the spray deposits against *P. xylostella* larvae are given in Table 1. The Neem mortality of the larvae of the test insect has been expressed as the time in days after spraying. The age of the deposits was considered as the best criterion to assess the combined effects of weathering, dilution due to the growth of the leaves, penetration into the cuticle and chemical change of the deposits.

It is amply documented from Table 1 that after one hour of spray, highest concentration (2.00%) of Neemazal proved to be significantly superior over all the treatments. It registered maximum (93.33%) larval morality. It was followed by 2% each of Bioneem, Neemgold,