STUDIES ON THE EFFICACY OF SOME PLANT PRODUCTS AS PROTECTANTS AGAINST PESTS OF CABBAGE CROP

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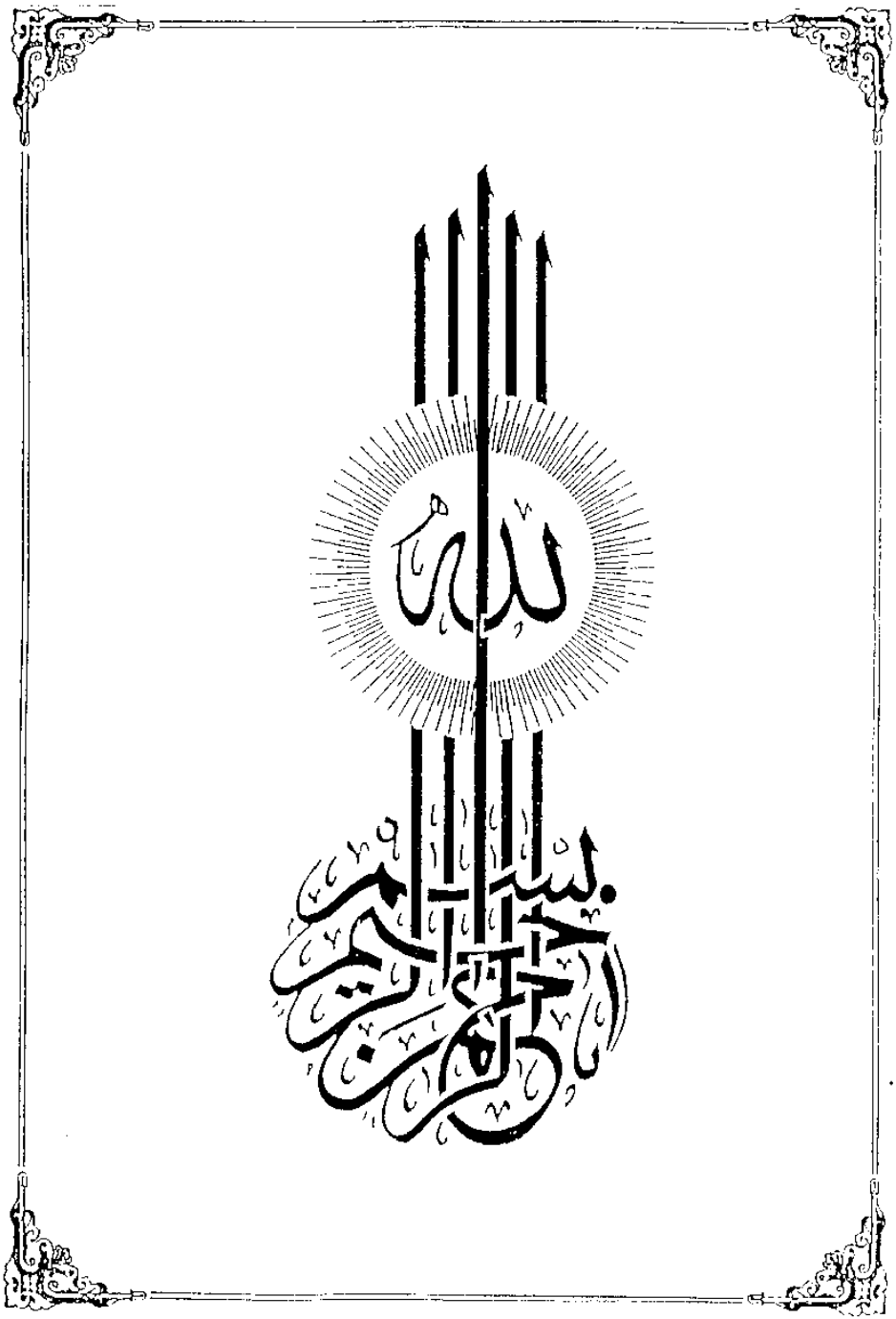

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Introduction

plants, namely cabbage aphid (***Brevicoryne brassicae***L.), cabbage butterfly (***Pieris brassicae***L.) and diamondback moth (***Plutella maculipennis*** Curtis), besides the susceptibility of ***Spodoptera littoralis*** (Boisd.) larvae to neemazal-T and other some insecticides was studied in the laboratory, furthermore the effect of the LC_{50} of neemazal-T on some biological aspects of ***S. littoralis*** was investigated.

Review of Literature

II- REVIEW OF LITERATURE

I- Effect of Plant Extract on the Pest Insects :

1.1- Neem extract against cabbage insects :

a) *Plutella xylostella* :

Dreyer (1987) mentioned that during laboratory and field tests carried out in Togo to demonstrate the efficacy of simple neem products (aqueous extracts of neem kernel powder, neem oil and ground neem kernels) for the control of arthropod pests on vegetables and field crops. Good control of the gelechiid ***Scrobipalpa ergasima*** on gboma (***Solanum aethiopicum***), the cicadellid ***Jacobiella facialis*** and several Lepidoptera on aubergines, and the yponomeutid ***Plutella xylostella*** and the pyralid ***Hellula undalis*** on cabbage was achieved with weekly applications of 25 or 50 g neem kernel powder/litre.

Fagoones (1987) stated that, in field trials in Mauritius on Chinese cabbages, cabbages and cauliflowers, neem seed kernel extract was found to be as effective as deltamethrin (Decis) against the yponomeutid ***Plutella xylostella*** and the pyralid ***Crocidolomia binotalis***. However, it was less effective than deltamethrin against the noctuid ***Heliothis armigera*** (***Helicoverpa armigera***) on tomatoes. The use of the neem extract alternately with the insecticide gave the best protection against the latter pest.

Kirsch (1987) evaluated neem kernel aqueous extract and the enriched formulation extract AZT-VR-K under field conditions for control of the noctuids ***Heliothis*** spp., on tobacco and the yponomeutid ***Plutella xylostella*** on cabbage. The extracts were compared with commercially available insecticides and the insect growth regulator BAY SIR 14591. Applications of both extracts (at 0.15 %) in tobacco, at spray intervals of 7 or 10 days, resulted in control of

Heliothis spp. which was comparable to that achieved by methamidophos (Tamaron 600 EC at 0.09 % a.i.). On cabbages, sufficient control of small larvae (1*st* to 2*nd* instar) of ***P. xylostella*** was achieved only by the growth regulator. Neem applications were considered to be more effective than the microbial pesticide Thuricide HP (***Bacillus thuringiensis*** subsp. ***kurstaki***).

Sombatsiri and Temboonkeat)1987) mentioneded that the toxicity of an aqueous neem extract and an improved extract were compared in bioassays using the yponomeutid ***Plutella xylostella*** and in field trials against these species on Kale in Thailand. The improved extract used alcohol and petroleum ether in the extraction process. The LC_{50} or 2*nd* and 4*th*-instar larvae of ***P. xylostella***, these values were 0.84 amd 8.6 %, respectively, for the aqueous extract and 0.46 and 4.6 % for the other extract. When 0.1 % piperonyl butoxide was added to the 0.67 % improved extract, the mortality of 2*nd* larvae and pupae of ***P. xylostella*** rose from 51.1 to 93.3 %. In field trials, the improved extract at a concentration of 33.3 % gave the best result in reducing populations of ***P. xylostella*** when compared with 1.67 % improved extract or a 33.3 % aqueous extract. There was no significant difference in the control achieved by the 33.3 % improved extract and 0.025 % cypermethrin.

Vollinger (1987) stated that lines from 2 genetically different strains of the yponomeutid ***P. xylostella*** were treated with a purified neem seed kernel extract and with deltamethrin for up to 42 generations. Response to the neem extracts and to deltamethrin was compared with that of untreated, susceptible lines. The larvae were treated during the 3*rd* and 4*th* instar with the respective LC_{50} dosage of the 4*th* instar. Neem extract treated lines showed no sign of resistance in feeding and fecundity tests, while deltamethrin-treated lines developed X20 and X35 resistance. There was no cross-resistance between