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**ON THE PERSISTENT TOXICITY OF VARIOUS INSECTICIDES
SPRAYS TO FIRST INSTAR CATERPILLARS OF *CNAPHALOCROCIS
MEDINALIS* GUENEE, THE RICE LEAF-ROLLER**

The relative toxicity of 24 insecticides to the 4th instar caterpillars and moths of *C. medinalis* was studied by Das and Nair (1974 a&b.) Results of studies made on the effect of the different insecticides applied for the control of the larvae on the hatching larvae originating from the residual egg/adult populations are presented in this note.

The insecticides used in these experiments and the doses are presented in Table 1. Commercial formulations obtained from firms as reported earlier (Das and Nair, 1974 a) were used. The insecticides prepared at their respective doses were sprayed on plants in 2x2 m plots, 5 weeks after transplantation of the crop. Contamination due to drift was prevented by providing 1 m border around each plot and by using screens around the plots while spraying. Each insecticide was applied in three plots and three plots similarly sprayed with water alone served as control. Four tillers were uprooted from each plot at random, at different intervals after spraying and immediately transferred to 9 x 3 cm specimen tubes along with some mud and water and were then brought to the laboratory. Each tube was Passed through a bag made up of perforated polythene sheet (40 x 3.5 cm open at both ends) in such a way that the leaf portion of the tillers got enclosed in the cage. The lower end of the cage was tied round the tillers with some cotton wool in between. The tube was then removed and the tillers were planted in mud taken in a flower pot. This method minimised the loss of insecticide residue while caging. Then first instar caterpillars of *C. medinalis* obtained from laboratory rearings (Das and Nair 1974) were exposed to the tillers in each cage. The upper end of the cage was then sealed with a flame. At the end of 48 hours the tillers were cut out and placed on a white paper. The tillers were then drawn out of the cage and the dead and living caterpillars on the plant and in the cage were counted and recorded. Per cent mortality calculated from the above data were corrected with Abbott's formula and the persistent toxicity was calculated in terms of PT index following the method of Pradhan (1967).

The persistent toxicity of different insecticides to the 1st instar larvae is presented in Table 1. It may be observed that BHC, *endrin* and endosulfan had very low persistent toxicity to *C. medinalis* larvae. A rapid deterioration of organochlorine insecticides under field conditions in Kerala has

Table 1

Periods upto which residues of different insecticides applied on rice plants cause mortalities in first instar larvae of *C. medinalis* when confined on the plants for 48 hours

Insecticide and concentration % ai	Periods in days during which different descending ranges of per cent mortalities are caused in the larvae			
	100 to 70%	69 to 50%	49 to 0%	P. T. index
B. H. C. 0.2	2	3	4	345.05
Endrin 0.04	3	4	8	458.78
Endosulfan 0.04	0.5	1	6	341.22
E. Parathion 0.04	7	11	13	993.33
M Parathion 0.04	5	5	7	588.08
Dichlorvos 0.08	0.25	0	8	146.00
Carbophenothion 0.04	5	0	11	777.92
Diazinon 0.04	2	3	6	426.00
Phenthoate 0.04	5	6	10	665.10
Fenthion 0.075	3	4	5	385.00
Malathion 0.06	0.5	0.5	5	665.79
Phosvel 0.075	6	7	14	940.52
Orthene 0.075	3	5	10	633.80
Quinalphos 0.06	5	6	14	940.52
Carbaryl 0.2	9	14	18	1477.44
Fenitrothion 0.04	3	5	10	628.50
Triclorfon 0.04	0.5	4	6	420.00
Phosphamidon 0.04	3	5	10	287.75
Dimethoate 0.05	2	4	5	618.20
Monocrotophos 0.04	11	14	16	408.96
Formothion 0.06	8	7	11	830.17
Phorate 0.04	2	5	5	425.20
Methyl demeton 0.05	2	7	11	754.05

Average temperature during the period 23.8 to 30.4°C

Average relative humidity during the period 69 to 88 per cent.

been reported earlier also (AH *et al.*, 1967; Koshi *et al.*, 1972) Among organo-phosphates dichlorvos was the least persistent, its toxicity being lowered significantly within 48 hours after spraying. Thiometon, diazinon, trichlorfon, dimethoate, fenthion and phorate also had low persistence. Monocrotophos was the most persistent organophosphate. It was closely followed by quinalphos, leptophos and ethyl parathion. The remaining insecticides showed intermediate degree of persistence and they came in the following descending order: formothion, methyl - demeton, carbophenothion, phosphamidon, acephate phenthoate fenitrothion, methyl parathion and malathion. Carbaryl also had a very high persistent toxicity, even higher than that of monocrotophos.

സംഗ്രഹം

നെല്പിൻ്റെ ഓലച്ചുരുട്ടിപ്പുഴുക്കൾക്കു് നെൽപാടത്തു് പ്രയോഗിച്ച വിവിധയിനം കീടനാശിനികളുടെ വിഷാദത എത്രത്തോളം നീണ്ടുനില്ക്കുന്നുവെന്നു് പരീക്ഷിച്ചുനോക്കി. ബി. എച്ച്. സി. എൻഡ്രിൻ, എൻഡോസൾഫാൻ എന്നീ ക്ലോറിനടങ്ങിയ കീടനാശിനികളുടെ വിഷാദത വളരെവേഗം നഷ്ടപ്പെടുന്നതായി കണ്ടു. ആർഗനോഫോസ്ഫാറു് കീടനാശിനികളിൽ മോണോക്രോട്ടോ ഫോസിൻ്റെ വിഷാദതയാണ് ഏറ്റവും നീണ്ടുനിന്നതു്. കപിനാൽ ഫോസു്, ലെപ്റ്റോഫോസു്, ഈതയിൽ പാരത്തയോൺ എന്നിവയ്ക്കും ദീർഘകാലവിഷാദതയുള്ളതായി കണ്ടു. ഫോർമോത്തയോൺ, മീതയിൽ ഡെമിറ്റോൺ, കാർബോഫിനോതയോൺ, ഫോസഫമിഡാൺ, അസിഫോറു്, ഫെൻതോയോറു്, ഫെനിടോത്തയോൺ, മീതയിൽ പാരത്തയോൺ, മാലത്തയോൺ എന്നീ കീടനാശിനികളും സാമാന്യം നീണ്ടുനില്ക്കുന്ന വിഷാദതയുള്ളവയായി തെളിഞ്ഞു. കാർബറിൽ എന്ന കീടനാശിനിക്കാണ് പരീക്ഷിക്കപ്പെട്ടവയിൽ ഏറ്റവും നീണ്ടുനില്ക്കുന്ന വിഷാദത കണ്ടതു്.

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