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RELATIVE TOXICITY OF SOME OF THE NEWER INSECTICIDES TO ADULTS OF *EUSCYRTUS CONCINNUS* HAAN

(*Eneopteridae: Orthoptera*)

Euscyrtus concinnus is a severe pest of guinea grass defoliating the crop extensively during October–November to March–April in Kerala. It was also reported to feed on the leaves of paddy to a limited extent (Pillai and Saradamma, 1979). No information is available on the relative toxicity of insecticides to the pest and hence contact insecticides were evaluated in the laboratory with a view to find out the more effective ones for controlling the pest. The insecticides used were carbaryl, dichlorvous, fenitrothion, phendal (supplied by M/s. Bharat Pulverising Mills Ltd, Bombay) fenitrothion, methyl parathion, trichlorphon (supplied by M/s. Bayer (India) Ltd., Madras), monocrotophos (supp)ied by M/s CIBA–Geigy of India Ltd, Bombay), phosalone (supplied by M/s. Voltas Ltd. Bombay), quinalphos (supplied by M/s. Sandoz (India) Ltd. Bombay) and endosulfan (supplied by M/s. E. I. D. Parry Ltd. Ranipet).

Benzene was used as solvent for preparing emulsions and Triton X-100 (supplied by M/s. Indofil Chemicals Ltd. Bombay) as emulsifier. Stock solutions of 1–20% concentration were prepared by dissolving required quantities of the chemical in benzene and these were then diluted with water containing *0.625%* of Triton X-100. Solvent and emulsifier in the final spray fluid was maintained at 5.0% and 0.625% respectively. Water containing benzene and Triton X-100 in the above proportions was sprayed on insects taken as control.

E. concinnus collected from the guinea grass grown in field, were kept in the laboratory in large circular troughs provided with fresh food materials and covered with muslin cloth at about 27 + 1°C for 12 hours. From the bulk population, adult female insects of uniform size were collected and used for the experiments. Fifteen insects each were collected in specimen tubes and were inactivated with a minimum dose of solvent ether and were then transferred to petridishes (9cm diameter). Each dish was sprayed under potter's spraying tower with 1 ml of the insecticide at a pressure of 2.5 kg/sq. cm. Each treatment was replicated thrice. The sprayed dishes were dried under an electric fan and then the insects in each dish were transferred to clean dry chimneys provided with fresh food material. The chimneys were closed at both ends with pieces of muslin cloth which were held in position with rubber bands and these were then kept at 27 + 1°C. The mortality was observed 24 hours after treatment. The moribund insects were also counted as dead. The data were subjected to probit analysts (Finney, 1 952} and the results are presented in Table 1. The relative toxicity was estimated taking the LC_{50} value of carbaryi as standard. The cost of insecticides required for preparing 500 L of

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Table. 1

Relative toxicity and preference of different insecticides to the adults of *Euscyrtus concinnus.* Han.

Insecticides	Heterogeneity	Regression equation*	LC_{50}	Fiducial limits	Relative toxicity.	Relative cost
Fenitrothion	X^2 (5) = 0.61	Y = 1.11 x + 3.96	0.008732	0.005606 (0.013600	1.326	2.522
Carbaryl	X^2 (6) = 2.77	Y = 1.63 x + 3.26	0.011540	0.008262 (0.016130	1.000	1.000
Quinalphos	X^2 (3) = 1.63	Y = 2.04 x + 2.46	0.017620	0.013110 (0.023670	0.655	10.203
Phosalone	X^2 (3) = 2.81	Y = 1.91 x + 2.52	0.019730	(0.014060 0.027710	0.585	5.377
Monocrotophos	X^2 (3) = 0.94	Y = 1.80 x + 2.59	0.021810	0.015880 (0.029960	0.529	4.423
Methyl parathion	X^2 (3) = 0.29	Y = 1.01 x + 3.53	0.027960	0.014090 (0,057810	0.413	8.116
Endosulfan	X^2 (4; = 2.11	Y = 2.03 x + 1.81	0.037640	0.028130 (0.050400	0.307	6.226
Fenthion	X^2 (3) = 0.10	Y = 1.60 x + 2.31	0.047790	0.032110 (0.071140	0.242	20,783
Trichlorphon	X^2 (4) = 0.87	Y = 1.24 x + 2.50	0.105900	0.069280 (0.162100	0.109	16.884
Dichlorvos	X^2 (6) = 4.42	Y = 1.48 x + 1.93	0.117100	0.084310 (0.162900	0.099	22.081
Phendal	X* (6) = 3.84	Y = 1.81 x + 1.24	0.119200	0.088820 (0.160000	0097	27.641

* Regression equation of probit mortality (Y) on log-concentration (X)

LC_{50} - concentration calculated to give 50% mortality.

emulsion at LC_{50} level was worked out at the current market rates and the relative cost was also calculated taking the cost of required quantity of carbaryl as standard. The results are also shown in Table. 1 .

Fenitrothion was found to be the most toxic insecticide to *E. concinnus* and it was followed by carbaryl, quinalphos, phosalone, monocrotophos, methyl parathion, endosulfan, fenthion, trichlorphon, dichlorvos and phendal in the descending order of toxicity. But based on cost factor also the insecticides can be ranked in the ollowing descending order of preference; carbaryl, fenitrothion, monocrotophos, phosalone, methyl parathion, quinalphos, trichlorphon, fenthion, dichlorvos, and phendal.

സംഗ്രഹം

നെല്ല്, ഗിനിപ്പുല്ല് എന്നീ വിളകളുടെ ഇലതിന്നു നശിപ്പിയ്ക്കുന്ന യൂസിർറസ് കോൺസിന്നസ് എന്ന കീടത്തെ നിയന്ത്രിക്കുന്നതിന്നുവേണ്ടി ഫലപ്രദമായ കീടനാശിനി തിരഞ്ഞെടുക്കുന്നതിനുവേണ്ടി വെള്ളായണി കാർഷിക കോളേജിൽ ഒരു പഠനം നടത്തുകയുണ്ടായി. ഫെനിട്രോത്തയോൺ, കാർബറിൽ എന്നീ കീടനാശിനികളാണ് ഏറ്റവും ഫലപ്രദമായി കണ്ടത്. ഇവയിൽ കാർബറിൽ എന്ന കീടനാശിനിയാണ് ഏറ്റവും ലാഭകരമായി കണ്ടത്.

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