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EFFECT OF SUBLETHAL LEVEL OF A SELECTED SYSTEMIC  
INSECTICIDE (MONOCROTOPHOS) ON RED WEEVIL  
(Rhynchophorus ferrugineus) LARVAE REARED  
ON A SEMI-ARTIFICIAL DIET

By

MARKANDU THAMARAICHELVE

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APPROVED BY

*D. Perera*

*S. Raveendranath*

.....  
Dr P A C R Perera

.....  
Dr S RAVEEENDRANATH

Supervisor

Head

Head

Department of Agronomy

Crop Protection Division

Faculty of Agriculture

Coconut Research Institute

Eastern University

Lunuwila

SRI LANKA

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## ABSTRACT

The effect of three concentrations of the systemic insecticide Monocrotophos 60% on the different larval instars of Rhynchophorus ferrugineus were studied under laboratory conditions. The larvae were reared on an artificial diet and the experiments were carried out using 425 ml transparent plastic containers with 100 g of the diet and a single larva per container. The insecticide concentrations studied were 0.5  $\mu\text{l}$ , 1.0  $\mu\text{l}$  and 1.5  $\mu\text{l}$  per 100 g of diet corresponding to 3, 6 and 9 parts per million respectively. The aim was to determine the effect of sublethal concentrations of Monocrotophos 60% on R. ferrugineus larvae. Monocrotophos incorporated at the levels of 0.5  $\mu\text{l}$ , 1.0  $\mu\text{l}$  and 1.5  $\mu\text{l}$  per 100 g of media suppressed the growth and development of R. ferrugineus larvae.

A uniform increase in larval weight was recorded for all larval instars in the untreated control whereas weight losses were recorded for the larvae in all treatments.

All first instar larvae died on the 3<sup>rd</sup> day after introduction to diet treated with 0.5  $\mu\text{l}$ . With 1.0  $\mu\text{l}$  and 1.5  $\mu\text{l}$  treatments all the first instar larvae were dead within one day. 2<sup>nd</sup> instar larvae when introduced to diet treated with 0.5  $\mu\text{l}$ , 1.0  $\mu\text{l}$  and 1.5  $\mu\text{l}$  of Monocrotophos recorded 100% mortality on 3, 2 and one days after introduction respectively.

The mean duration for 100% mortality of 3<sup>rd</sup> instar larvae was recorded as 4, 2 and 1 days for 0.5  $\mu$ l, 1.0  $\mu$ l and 1.5  $\mu$ l of Monocrotophos per 100 g of diet respectively. Fourth instar larvae with 0.5  $\mu$ l, 1.0  $\mu$ l and 1.5  $\mu$ l treatments recorded 100% mortality in 4, 3 and 2 days respectively.

Larvae in the 5<sup>th</sup> and 6<sup>th</sup> instars when introduced to 0.5  $\mu$ l, 1.0  $\mu$ l and 1.5  $\mu$ l treatments recorded 100% mortality in 5, 3 and 2 days respectively.

Finally the mean duration for 100% mortality of 7<sup>th</sup> instar larvae with 0.5  $\mu$ l, 1.0  $\mu$ l and 1.5  $\mu$ l treatments was 6, 4 and 3 days respectively.

In Sri Lanka the application of 10 ml of monocrotophos 60% per palm as a trunk injection is recommended for the control of R. ferrugineus on coconut palms. In the trunk injection technique a very low dose of Monocrotophos appears to be adequate for the control of red weevil larvae in the coconut palm.

The laboratory studies showed that the lowest level studied, 0.5  $\mu$ l of monocrotophos 60% (3 ppm a.i. of Monocrotophos 60%) completely killed all the larval instars within 6 days. Therefore the sublethal level of Monocrotophos 60% should be below 0.5  $\mu$ l (3 ppm) level.

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