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SUSCEPTIBILITY OF THE BLACK PORTUGESE MILLIPEDE,
OMMATOIULUS MORELETII LUCAS (DIPLOPODA:IULIDAE)
TO INSECTICIDES

A thesis presented in fulfilment of the requirements of
the Degree of Master of Agricultural Science,
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by

B.J. Kassebaum, B.App.Sc.

South Australian Department of Agriculture
Adelaide

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SUMMARY

The black Portugese millipede, *Ommatoiulus moreletii* Lucas appears in plague numbers in autumn and, to a lesser extent, spring in several areas of South Australia including the Mount Lofty Ranges near Adelaide.

The millipedes invade domestic dwellings, fouling food, water and bedding, an unpleasant nuisance by their presence alone.

The use of chemical insecticides forms an integral part of most millipede control strategies, but the range of insecticides recommended for such use is very limited.

Millipedes are most likely to encounter dried insecticide residues on surfaces such as the walls and paths around domestic dwellings and businesses, or on soil or leaf litter.

A biological assay technique was developed in which millipedes were exposed to non-porous and chemically inert Whatman GF/A glass filter papers treated with known amounts of insecticide, in closed disposable petri dishes.

Septene^R Liquid (500 g/L carbaryl) was chosen as the reference treatment as carbaryl is recommended as a barrier treatment at the rate of 1.2 grams/square metre (Birks 1979).

Statistically significant differences in response (between males and females) for both knockdown and moribundity were attributed to the difference in weights between the sexes, males weighing only about half that of females of similar stadial age.

The KT_{50} and MT_{50} for *O. moreletii* exposed to 1,375.4 mg carbaryl/m² (approximating the recommended rate of 1,200 mg carbaryl/m²) are:

$$KT_{50} = 1,126 \pm 29.35 \text{ minutes grams}^{-1};$$

$$MT_{50} = 1,127 \pm 73.27 \text{ minutes grams}^{-1}.$$

To compare the efficacy of Septene^R Liquid with that of other formulated insecticides against *O. moreletii* a biological assay experiment was conducted in which knockdown and moribundity of the millipedes exposed to a number of cost related concentrations of eleven insecticidal formulations were recorded.

The most effective knockdown and moribundity agents against *O. moreletii* compared on the basis of concentration of active constituent were the synthetic pyrethroid formulations, viz., Decis^R 25EC, Grenade^R 200EC, Ripcord^R 200EC and Baythroid^R H.

When the cost of treatment formed the basis of comparison of effectiveness against *O. moreletii* the cheaper carbamate insecticides X-18 Carbaryl, Baygon^R 80WP, Baygon^R 200 and Ficam^R W were the most effective formulations for knockdown and moribundity.

The organophosphate insecticides Lorsban^R 50EC and Lorsban^R 25WP were cost effective moribundity agents against *O. moreletii*, but performed poorly as knockdown agents.

STATEMENT

This thesis contains no material which has been accepted for the award of any other degree or diploma in any University and, to the best of my knowledge and belief, this thesis contains no material previously published or written by any other person, except when due reference is made in the text of the thesis.

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