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A STUDY ON TOXIC EFFECTS OF SOME LOCAL
PLANT OILS ON *Sitotroga Cerealella* (Olivier)

(LEPIDOPTERA : GELECHIIDAE)

I wish to state that this work is the result
of my own investigation and that it has not been
currently submitted in candidature for any Degree.

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B.Sc. (Ceylon)

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Thesis

submitted in fulfilment of the requirements

We certify that the above statement is correct.

for the Degree of

MASTER OF PHILOSOPHY

in

Science

of

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THE UNIVERSITY OF COLOMBO

SRI LANKA



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oxygenated terpenes showed maximum repellency in
ABSTRACT
 the case of camphor : p-cymene (1 : 4).

Investigations on the effects of various plant
 Citronella oil was found to be the most effective
 oils and their components on repellency, toxicity and
 plant oil causing knock down, inactivation and mortality.
 the mating of Sitotroga cerealella (Olivier) were
 Of the components of terpene hydrocarbon p-cymene is
 carried out in this study.

the most effective compound. While among the oxygenated
 Citronella oil, lemongrass oil, lime leaf oil
 and Vitex negundo oil were isolated by steam distillation.
 The components of the different oils were separated and
 identified by chromatographic techniques.

The two major fractions of the plant oils namely
 terpene hydrocarbons and oxygenated terpenes and their
 respective components were also tested in this study.

Of the oils used, Vitex negundo oil was found
 to be the most effective repellent. Among the terpene
 hydrocarbons the most effective repellent was β -pinene.
 Among the oxygenated terpenes, citronellal and α -terpineol
 were most effective. As far as the synergistic effect
 of the constituents of terpene hydrocarbons is concerned
 the combination of p-cymene : β -pinene (2 : 1) proved
 to be the most effective. Among the oxygenated terpenes
 α -terpineol : camphor (3 : 1) and citronellal : citral
 (3 : 1) were effective. Similar studies with mixtures
 of components from the terpene hydrocarbons and

oxygenated terpenes showed maximum repellency in the case of camphor : p-cymene (1 : 4).

Citronella oil was found to be the most effective plant oil causing knock down, inactivation and mortality. Of the components of terpene hydrocarbon p-cymene is the most effective compound. While among the oxygenated terpenes, citronellal is the most effective compound in this respect. p-cymene : β -pinene (2 : 1) and citronellal : citral (3 : 1) proved to be the most effective synergistic combinations in the toxicity studies.

The vapours of all the oils studied and their individual components inhibited the mating behaviour of this moth. The susceptibility of the mated moths was found to be greater than in the case of the unmated ones.

These studies point to the possibility of using some of these plant derivatives such as camphor : p-cymene (1 : 4) or α -terpineol : camphor (3 : 1) in the control of this important paddy pest in the storage.

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