

**Behavioural Studies of Cowpea Seed Bruchid,  
*Callosobruchus maculatus* (F.) Against Volatile Leaf Extracts of  
Lemongrass, Neem and Curry Leaf**

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**ABSTRACT.** The leaf volatiles of lemongrass (*Cymbopogon citratus*), neem (*Azadirachta indica*) and curry leaf (*Murraya koenigii*) were investigated for their Electroantennogram (EAG) responses against cowpea seed bruchid; *Callosobruchus maculatus*. Dichloromethane extract of cowpea seed was used as the standard stimulant. During the EAG assay of cowpea seed extract the highest responses of  $0.992 \pm 0.124$  mV and  $0.595 \pm 0.045$  mV were observed at the dose of 3.0 mg for female and male insects, respectively. All responses of male bruchids were significantly higher than the responses of the female ( $p < 0.05$ ). In the olfactometer assay for seed extract, the minimum dose of 5 mg showed a response of 65.5% whereas the higher dose of 25.0 mg resulted in 89.6%. At the dose of 0.20 mg of lemongrass volatiles, the highest EAG response of  $1.186 \pm 0.074$  mV and  $0.631 \pm 0.071$  mV were observed for both male and female bruchid, respectively. For the leaf volatile of lemongrass, male bruchid always displayed significantly higher response than the female ( $p < 0.05$ ). Neem and curry leaf volatiles showed comparatively low responses of  $0.41 \pm 0.048$  mV and  $0.36 \pm 0.031$  mV at the dose of 0.25 mg, respectively. However, there was no significant difference between male and female responses against both neem and curry leaf volatiles. Behavioural bioassay with Olfactometer and choice chamber clearly indicated that the increase in the dosage of volatile oils decreased the bruchid responses. At the highest dosage of 160 mg, minimum responses were observed in olfactometer and choice chamber, respectively.

## INTRODUCTION

Cowpea (*Vigna unguiculata* Valp.) is one of the main sources of protein for people in developing countries. However, the inhabitation or infestation of *Callosobruchus* species results in heavy qualitative and quantitative post harvest losses of the crop. A loss of up to 50% of cowpea substrate could result during 3-4 months storage due to infestation by *C. maculatus* (Caswell, 1981).

Phosphene, methyl bromide and pirimiphos methyl are the most popular synthetic pesticides currently used in controlling stored grain insects (Pesticide Manual, 1991; Hill, 1992; Waterford *et al.*, 1994). As methyl bromide has been recognized as a potent ozone

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