INSECTS OF THE GIANT SENSITIVE PLANT (*MIMOSA INVISA*) AT RAMU, PAPUA NEW GUINEA

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ABSTRACT

Fourteen species of insects in 3 orders and 9 families mainly lepidopterans were collected on Mimosa invisa *at Ramu. The pierid,* Eurema hecabe *L. was the most abundant followed by the lymantriid,* Euproctis *sp. nr.* trispila *Turner. However, damage to* M. invisa *was minor, and there appeared to be no competitor with the introduced biological control agent,* Heteropsylla spinulosa *Muddiman, Hodkinson & Hollis (Psyllidae), for feeding sites.*

Key words: Mimosa invisa, Eurema hecabe, Heteropsylla spinulosa, *Papua New Guinea.*

INTRODUCTION

Mimosa invisa Martins ex Colla (Mimosoidea) commonly known as giant sensitive plant (GSP) is a native of central America. GSP can be biennial or perennial (depending on duration of growing season) and is distributed widely in the tropics. Norris (1987) pointed out that the weed is well established in most Pacific countries including Australia. In Papua New Guinea (PNG) GSP is well established and is creating serious problems in pastures, plantations, subsistence cropping situations, and non-productive areas. It is found up to 2000 m.a.s.l and on most off-shore islands. Heavy infestations of GSP can seriously change the ecology.

Control of such a prolific weed with chemical herbicides has usually proved too expensive, and there was a high risk of contaminating the environment and people handling the chemicals. Ramu Sugar Ltd (RSL) already spends up to K200,000 annually on costs of herbicides and regular slashing of GSP on its sugarcane estate and ranches in the Markham Valley (Ramu Sugar Ltd, unpublished reports).

A biological control programme for GSP was initiated by RSL in December, 1992. The psyllid, *Heteropsylla spinulosa* Muddiman, Hodkinson & Hollis has proved to be successful in controlling *M. invisa* in Queensland (M. Vitelli, pers. comm.), and therefore this bug was introduced into PNG in an attempt to control GSP. The psyllid is highly specific to GSP (Muddiman *et al.* 1992) and early indications were that the bug has established in the Markham-Ramu valleys (Kuniata and Dori 1993).

The present survey attempts to document important phytophagous insects on the foliage of GSP at RSL and possibly identify those which might compete with *H. spinulosa* for feeding sites on the plant.

MATERIALS AND METHODS

Insect collections were made during the growing stage of the plant from December to May on fortnightly intervals. This period coincided with the wet season at RSL. Immature and adult stages of insects found on GSP at RSL were collected using standard techniques, and the immature stages were reared to adults before these were sent to various specialists at International Institute of Entomology, London (UK) for identification. Most specimens are held in the collection at RSL.

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RESULTS

Fourteen species of phytophagous insects were recorded on GSP at Ramu (Table 1). Most of these are polyphagous lepidopterans.

Eurema hecabe L.

This is a common yellow butterfly widely distributed in PNG and Asia. Adults are often seen congregating in marshy areas to drink. The green larva feeds voraciously on foliage and tender shoots of *M. invisa*.

Females oviposit single elliptical eggs in an upright position on leaves. The larva (green) first feeds on foliage and then on tender portions of shoots and pupates inside fine silken strands on the leaves or stems. Larval stage is 14-15 days while the pupal stage is 5-6 days.

Some eggs were parasitized by *Trichogramma chilonis* Ishii (Hym. Trichogrammatidae).

Euproctis sp. nr. *trispila* Turner

Adult is cream to light orange. Females lay round, glossy eggs in masses on leaves and cover these with brown scales. Caterpillars are brown and hairy. On hatching larvae disperse and feed on leaves and tender shoots. Before pupation the larva spins a loose brown cocoon and pupates on the leaves or axils. Duration of larval and pupal stages were 20-23 and 9-10 days, respectively.

Euproctis sp. are commonly known as tussock moths and are general defoliators of forest trees. However, in PNG *Euproctis* sp. nr. *varians* (Walker) was reported feeding on cocoa foliage (Bourke *et al.* 1973).

Adoxophyes sp. nr. *trirhabda* Diakonoff

The larva is active and feeds inside a loose case made up of leaves. Pupation also takes place inside this case. The pupal stage is about 4-6 days.

An unidentified species of *Adoxophyes* was reported damaging tea leaves in a glass house at Konedobu (Anon. 1971).

Metallochlora neomela Meyrick

The moth is green. Larva is light green and feeds on foliage. Pupation takes place in a loose leaf case. Duration of the larval and pupal stage were 7-9 days and 5-6 days, respectively. This moth is quite rare on GSP at Ramu.

Homona sp. prob. *trachyptera* Diakonoff

The habits were similar to *Adoxophyes* sp. nr. *trirhabda*. The larva feeds on foliage from inside a loose leaf case and also pupates in the same. Pupal stage takes about 6 days.

An unidentified species of *Homona* was reported as a pest of tea in PNG (Bourke *et al.* 1973).

Gymnoscelis ? imparatalis Walker

The moth is green, larva light brown and feeds on leaves of GSP. Pupation lasts for about 13 days and takes place in a loose leaf case. Larvae are often parasitised by a solitary *Apanteles* sp. (Hym. Braconidae).

Disease

A disease probably viral was observed on several clumps of *M. invisa*. The symptoms were little leaf and stunted growth, yellowish appearance and infected stems become brittle and break-off easily. Seed production is also reduced.

DISCUSSION

The present survey indicated the insect fauna encountered on GSP at Ramu were general feeders and do not appear to pose any competitive threats to the establishment of *H. spinulosa*. Most insects encountered were also collected on certain cultivated crops, for example, *Euproctis* sp. nr. *varians* on cocoa (Bourke *et al.* 1973); *Homona* sp. nr. *trachyptera* on tea (Bourke *et al.* 1973); *Helicoverpa armigera* on a wide range of crops, *Nodaria cornicalis* on soya bean (Brier & Rogers 1991) and *Balclutha* sp. on a number of graminaceous crops (Hill 1987). It is possible that GSP might be an alternate host

Table 1. **Phytophagous insects collected from *Mimosa invisa* at Ramu Sugar estate.**

SPECIES	ORGAN OF PLANT ATTACKED	RELATIVE ABUNDANCE
LEPIDOPTERA		
Geometridae		
Gymnoscelis ? *imperatalis* Walker	leaves	+
Metallochlora neomela Meyrick	leaves	+
Unidentifed species	leaves	-
Lymantriidae		
Euproctis sp. nr. *trispila* Turner	tender shoots	++
Noctuidae		
Helicoverpa armigera (Hubner)	tender shoots	-
Mythimna sp.	tender shoots	-
Nodaria cornicalis Fabricius	tender shoots	-
Pieridae		
Eurema hecabe Linnaeus	tender shoots	+++
Tortricidae		
Adoxophyes sp. nr. *trirhabda* Diakonoff	leaves	+
Homona sp. nr. *trachyptera* Diakonoff	leaves	+
COLEOPTERA		
Coccinellidae		
Epilachna signatipennis (Boisduval)	leaves	-
HOMOPTERA		
Cicadellidae		
Balclutha sp.	tender shoots	+
Pseudococcidae		
Unidentified mealybug	stalk, axils	-
Psyllidae		
Heteropsylla cubana Crawford	leaves	-

- rare, + few, ++ abundant, +++ very abundant

for over-wintering stages of these insects and it may be necessary to control GSP in near proximity to cropping situations.

The feeding behaviour of *H. spinulosa* could assist in the transmission of the viral disease encountered in GSP. Nymphs and adults of this psyllid suck sap from the plants and therefore might be able to transmit this virus. However, no detailed work has been done in this area.

Four species of spiders belonging to Araneidae and Oxyopidae were encountered in large numbers and could be important predators of phytophagous insects on GSP. Populations of *H. spinulosa* were usually high and mostly adults get caught in the spider webbings. Therefore, it is unlikely that predation from these spiders will have any significant effect on the introduced biological control agent of *M. invisa* (M. Vitelli, pers. comm.).

ACKNOWLEDGEMENTS

The following specialists, Drs R.G. Booth, M.R. Wilson and J.D. Holloway of International Institute of Entomology (London, U.K.) identified most of the insects while the tortricids were identified by Dr K.R. Tuck of Natural History Museum (London). Mrs B. Taramaku typed the manuscript.

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