

NATURAL ENEMIES ON *MIKANIAMICRANTHA* H.B.K. IN KERALA

Mini Abraham, C. T. Abraham and P. J. Joy

College of Horticulture, Thrissur 680 656, India

Abstract: Laboratory and field investigations were conducted to identify the natural enemies of *Mikania micrantha* H.B.K. and to evaluate their efficacy as biocontrol agents. During a survey on the distribution of *Mikania* in Kerala, pests seen on this weed were collected. Nineteen species of insect pests and a species of mite belonging to 15 families and eight orders were identified. Nature and extent of damage caused by these different pests on *Mikania* were studied. Among them tea mosquito bug (*Helopeltis theivora*) caused serious damage on *Mikania*. All these pests are polyphagous in nature. So further scope for utilizing them as biocontrol agent is limited.

Key words: Biocontrol agents, *Mikania micrantha*, natural enemies

INTRODUCTION

Mile-a-minute weed, *Mikania micrantha* H.B.K., an introduced climbing weed, native to tropical south and central America, belongs to the family Asteraceae. It is widely distributed in the central region of Kerala. It is a menace to agricultural

and non-agricultural areas of Kerala. Being an introduced weed spreading fast, biological method of weed control may be the most ecologically sound method of control. A study was conducted during 1996-1999 to identify the natural enemies of *Mikania* and to evaluate their efficacy as biocontrol agents.

Table 1. Natural enemies of *Mikania*

Insect pests	Family	Order
(a) Mite		
<i>Tetranychus neocaledonicus</i> (Andre)	Tetranychidae	Acarina
(b) Insects		
<i>Eurommaticera vittata</i> Wlitr.	Cerambycidae	Coleoptera
<i>Apophyllia viridis</i> (Jac.)	Chrysomelidae	Coleoptera
<i>Derectina collina</i> (Weise)	Chrysomelidae	Coleoptera
<i>Diapromorpha tunica</i> (E)	Chrysomelidae	Coleoptera
<i>Hipsa armigera</i> (Oliv)	Chrysomelidae	Coleoptera
<i>Lacoptera quadrimaculata</i>	Chrysomelidae	Coleoptera
<i>Luperomorpha bombayensis</i> (Jac.)	Chrysomelidae	Coleoptera
<i>Myllocerus blandus</i> Fst	Curculionidae	Coleoptera
<i>Platybolium alvearium</i> Blair.	Tenebrionidae	Coleoptera
<i>Aphis citricola</i> Vander Goot	Aphididae	Hemiptera
<i>Krishna strigicollis</i> Spinola	Cercopidae	Hemiptera
<i>Cofanaunimaculata</i> (Sign.)	Cicadellidae	Hemiptera
<i>Kolla</i> sp.	Cicadellidae	Hemiptera
<i>Centropyphus</i> sp.	Membracidae	Hemiptera
<i>Helopeltis theivora</i> (Waterch)	Miridae	Hemiptera
<i>Pericallia ricini</i> F.	Arctiidae	Lepidoptera
<i>Spodoptera litura</i> F.	Noctuidae	Lepidoptera
<i>Catantop</i> sp. (Annexus) Bol.	Acrididae	Orthoptera
<i>Microcephalothrips abdominalis</i> (Crawford)	Phloeothripidae	Thysanoptera

Table 2. Nature and extent of damage by insect pests

Insect sp.	Nature of damage	Severity of attack
Acarina		
<i>Tetranychus neocaledonicus</i> (Andre)	Nymphs and adults feed by remaining inside the web on the undersurface of leaf resulting in the yellowing of leaves. The leaves later appear crinkled and curled downwards	Mild
Hemipterans		
<i>Aphis citricola</i> Vander Goot	Nymphs and adults suck sap from leaves and petiole and cause crinkling	Moderate
<i>Centropyphus</i> sp.	"	Mild
<i>Cofanaunimaculata</i> (Sign.)	"	Mild
<i>Kolla</i> sp.	"	Mild
<i>Krishna strigicollis</i> (Spinola)	"	Mild
<i>Helopeltis theivora</i> (Waterh)	Nymphs and adults suck sap from the leaves and petioles, due to which brown spots develop which later turn necrotic	Severe
Thysanopteran		
<i>Microcephalothrips abdominalis</i> (Crawford)	Suck sap from the flowers and cause drying of the flowers	Mild
Coleopterans		
<i>Apophyllia viridis</i> (Jac.)	Cause defoliation by making small holes on leaf lamina	Mild
<i>Derectina collina</i> (Weise)	"	Mild
<i>Diapromorpha turcica</i> (F.)	"	Mild
<i>Eurommaticera vittata</i> Wlitr.	"	Mild
<i>Hispa armigera</i> (Oliv)	"	Mild
<i>Lacoptera quadrimaculata</i>	"	Mild
<i>Mylocerus blandus</i> Fst	"	Mild
<i>Platybolium alvearium</i> Blair.	"	Mild
<i>Luperomorpha bombayensis</i> (Jac.)	"	Mild
Orthopteran		
<i>Catantops</i> sp. (Annexus) Bol.	"	Mild
Lepidopterons		
<i>Pericallia ricini</i> F.	Caterpillar feeds on the leaves voraciously causing defoliation reducing the leaves to mere veins	Moderate
<i>Spilosoma obliqua</i> Walk.		Moderate
<i>Spodopteralitura</i> F.		Moderate

Table 3. Intensity of attack of tea mosquito bug on *Mikania*

Sample no.	Total no. of leaves in 1.m ² (b)	No. of leaves damaged (a)	Intensity of attack (I = a/b x 100)
1	530	118	22.3
2	680	164	24.0
3	746	104	13.9
4	620	74	11.9
Mean	644	115	18.02

MATERIALS AND METHODS

During a survey on the distribution of *Mikania* in Kerala, insect pests seen on this weed were collected, preserved and identified with the help of insect taxonomists. The nature of damage caused by these pests was studied. Nature of damage of insect pests such as aphids, thrips, tea mosquito bugs, jassids, mites and beetles were studied by inserting the tender shoots containing the test insects into specimen tubes of size 10 x 2.5 cm and observing the damage of leaf. For lepidopteran pests, the caterpillars were reared on *Mikania* grown in cages. The extent of damage caused by tea mosquito bug (*Helopeltis theivora*) was studied under natural field situation (rubber plantation heavily infested with *Mikania*). Observation on total number of leaves and number of damaged leaves in one square metre area was noted. The intensity of attack (I) was calculated by using the expression, $I = a/b \times 100$ where 'a' is the number of damaged leaves and 'b' the total number of leaves present in one square metre area.

RESULTS AND DISCUSSION

Nineteen species of insect pests and a species of mite belonging to 15 families and eight orders were identified. Among them, nine species belonged to the order Coleoptera (Table 1). The nature and severity of attack caused by the different pests on *Mikania* are given in Table 2. Based on the observation on nature and intensity

of attack of different pests studied, tea mosquito bug (*Helopeltis theivora*) caused serious damages on *Mikania*. It caused an average intensity of attack (percentage of damaged leaves) of 18.02 per cent (Table 3). Widespread occurrence of aphid (*Aphis citroicola*), lepidopterans (*Spilosoma obliqua*, *Spodoptera litura* and *Pericallia ricini*) was observed. Other insect pests caused only mild attack on *Mikania*. Among them, thrips (*Microcephalothrips abdominalis*) attacked on the flowers causing drying of the flowers.

All these pests are polyphagous in nature. So further scope for utilizing them as biocontrol agent is limited. However, serious damage to *Mikania* was found in the field by these insect pests, especially tea mosquito bug, caterpillars and aphid. According to Cock (1982), the reason for the mild occurrence of *Mikania* in the new world was the presence of wide range of phytophagous insects. This indicates that the chance of *Mikania* becoming a serious menace is limited, as the uncontrolled growth of *Mikania* will be checked by the indigenous enemies present here, which will utilize *Mikania* as their alternate host.

ACKNOWLEDGEMENT

This paper forms a part of the Ph.D. thesis of the senior author submitted to the Kerala Agricultural University, Thrissur, Kerala.

REFERENCE

- Cock, M. J. W. 1982. Potential biological control agents for *Mikania micrantha* H.B.K from the neotropical region. *Trop. Pest Mgmt* 28: 242-254