

OBSERVATIONS ON INSECTS ASSOCIATED WITH *ACACIA MANGIUM* IN PENINSULAR MALAYSIA

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Acacia mangium Willd. is presently the most widely planted fast-growing exotic tree species for forest plantations in Peninsular Malaysia. This legume is native to the Molucca Islands of eastern Indonesia, southwestern New Guinea and a small area of northwestern Queensland in Australia. It was first planted in Sabah and then in the peninsula in the late 1970s.

Plantations of *A. mangium*, like other monocultures, are exposed to risks of introduced and indigenous insect pests. A general overview of *A. mangium* pests is given by Hutacharern (1993). However, some of the pests mentioned in the review were not encountered in the present study, and vice versa. This paper lists indigenous insect species that have been recorded on this tree, and highlights those species which have proven, thus far, to be potentially important pests in Peninsular Malaysia.

Surveys in various plantation nurseries were carried out from 1989 to 1995. A total of 14 forest plantation nurseries were visited at least once in the states of Perlis, Kedah, Kelantan, Terengganu, Perak, Selangor, Negeri Sembilan and Johor. Immature insects were collected and reared to adult stage in the laboratory. Pest outbreaks in actual plantations were monitored through requests for advisory services by the State Forest Departments since the establishment of *A. mangium* as a plantation species.

A total of 38 insect species were recorded on *A. mangium* (Table 1). The composition of insect species found on *A. mangium* in the peninsula bears some affinities to and differences from those listed by Chey (1987) in Sabah and Sarkawi (1986) in Sarawak. About half the insect species recorded from Sabah and Sarawak affect *A. mangium* in the peninsula. Although most of the insects recorded in this study on *A. mangium* are leaf feeders, these may be disproportionately represented because, as Tho (1986) pointed out, leaf consumption by insects is readily detectable in comparison to some other forms of damage, such as consumption of sap. About 84% of the leaf feeding insects that were recorded on *A. mangium* were lepidopteran caterpillars. Those which were abundant were *Dasychira inclusa*, *Orgyia postica*, *Euproctis bicolor*, *Hyposidra talaca*, *Adoxophyes privatana*, *Pempelia* sp., *Pteroma pendula*, *Eurema hecabe contubernalis* and *E. blanda snelleni*.

Outbreaks of two lepidopteran pests, *Spodoptera litura* and *Speiredonia retorta*, were observed in plantations. In total, seven species, all of which were Lepidoptera, were recorded from plantations. In addition to the two outbreak species, they were *Pempelia* sp., *Pteroma pendula*, *Hypolycaena erylus teatus*, *Prosotas dubiosa lumpura* and *Stathmopoda* sp. The last four species were not found in nurseries. The few which were found to feed on the young flower buds or the seeds of *A. mangium* (Table 1) probably do not have a significant effect on the growth of the trees. As Tho (1986) pointed out, these insects are of little economic importance unless they affect individual trees that have been selected as seed bearers. The number of pest species occurring in plantations is, however, expected to be higher than we recorded, since an intensive survey of plantations was not conducted.

Eurema hecabe contubernalis was sometimes observed to cause considerable damage and the death of young seedlings in nurseries. The species was considered by Yoshii (1982) to be, like other defoliators, a pest which did not cause the mortality of *A. mangium* trees.

However, in relation to nurseries its pest status can be considered more severe since it has often been observed to cause complete defoliation of the seedlings, sometimes resulting in mortality. Under nursery conditions, seedlings are often grown very close together, allowing defoliators to spread rapidly.

Table 1. Insect species associated with *Acacia mangium* in Peninsular Malaysia

Damage	Order	Family	Species	
Phyllodes & young leaves	Lepidoptera	Lymantidae	<i>Dasychira araea</i> Collenette	
			<i>Dasychira inclusa</i> Walker	
			<i>Dasychira osseata</i> Walker	
			<i>Orygia postica</i> Walker	
			<i>Euproctis ? bicolor</i> Heylaerts	
			<i>Euproctis</i> sp.	
			<i>Calliterra horsfieldii</i> Saunders	
			Noctuidae	<i>Speirelomia retorta</i> Linnaeus
				<i>Spodoptera litura</i> Fabricius
			Geometridae	<i>Biston prustulata</i> Warren
		<i>Hyposidra taluca</i> Walker		
		<i>Cleora repetita</i> Butler		
		Tortricidae	<i>Atloxophyes privatana</i> Walker	
			<i>Homona tabescens</i> Meyrick	
		Pyrilidae	<i>Pempelia</i> sp.	
			<i>Sacada</i> sp. nr. <i>flexuosa</i> Snellen	
		Notodontidae	<i>Stauropus</i> sp.	
		Psychidae	<i>Eumeta variegata</i> Snellen	
			<i>Pteroma pendula</i> Joannis	
			<i>Mahasena corbelli</i> Tams	
<i>Heylaertsia griseata</i> Hampson				
<i>Chaliooides sumatrensis</i> Heylaerts				
Limacodidae	<i>Chalocelis albivittatus</i> Snellen			
	<i>Thosoa trifurca</i> Holloway			
	<i>Darna diducta</i> Snellen			
Arctiidae	<i>Hemonia</i> sp.			
Carposinidae	<i>Merularchis</i> sp.			
Pieridae	<i>Euxema hecabe contubernalis</i> Moore			
	<i>Euxema blanda snelleni</i> Moore			
Coleoptera	Curculionidae	<i>Hypomeces squamosus</i> Fabricius		
		Scarabaeidae	<i>Adoretus compressus</i> Weber	
<i>Apogonia</i> sp.				
Orthoptera	Acrididae	<i>Valanga nigricornis</i> Burmeister		
		Lepidoptera	<i>Hypolycaena erylus leatus</i> Fruhstorfer	
<i>Prasolas dubiosa lumpura</i> Corbet				
Seeds	Lepidoptera	Oecophoridae	<i>Stathmopoda</i> sp.	
Stems	Coleoptera	Scolytidae	<i>Xylsandrus compactus</i> Eichhoff	
		Isoptera	Rhinotermitidae	<i>Coptotermes curvignathus</i> Holmgren

A scolytid beetle, *Xylosandrus compactus*, was observed to attack the stem of *A. mangium* seedlings, eventually killing the plants. The beetle is, thus far, the only borer that has been found to affect *A. mangium* in the peninsula, although a number of others have been reported in Sabah (Khamis 1982, Mori 1986). The species has been reported attacking healthy twigs (Beaver 1977) and causing the death of trees (Nelson & Davis 1972) but, in relation to *A. mangium* in the peninsula, Ahmad and Lee (1990) noted that it only affected over-aged seedlings which had been grown under conditions of stress, that is, seedlings that were too big for their polythene potting bags or kept too closely together. Damage by this species can be prevented if delay in the transplanting of seedlings is avoided. We have also observed the beetle affect mature *A. mangium* trees in plantations under very dense growing conditions where the trees had not been thinned at the recommended intervals.

The termite, *Coptotermes curvignathus*, attacked and killed living trees in some plantations. In Sabah, *Microcerotermes sabahensis* has been reported damaging *A. mangium* (Mori 1986). Hamid (1987) has reported *M. distans* injuring *A. mangium* trees in Sarawak, although *Coptotermes curvignathus* was the most common termite pest and *C. sepangensis* was found in association with the tree species in one site. *Coptotermes curvignathus* would, however, appear to be the only termite species that damages and kills *A. mangium* in the peninsula. Although not widespread, it can cause significant losses in the localised areas in which it occurs.

In conclusion, the lepidopteran defoliator, *Eurema hecabe contubernalis*, and the stem boring beetle, *Xylosandrus compactus*, are recognised as important pests of *A. mangium* at the nursery stage. The termite, *Coptotermes curvignathus*, on the other hand, is important in actual plantations. Damage by *X. compactus* can be prevented by prompt transplanting of seedlings. *Spodoptera litura* and *Speiredonia retorta* are two defoliators which have been known to reach outbreak proportions in plantations.

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