

### Indigenous insect pests - *Batocera* and *Apriona* beetle attack on eucalyptus

Though fungal diseases were reported as a major threat to eucalyptus cultivation in India (Tiwari, 1992), as many as 60 insect species (Sen-Sarma and Thakur, 1983) have also been recorded as pests. Out of these, 6 species were termites causing serious damage; two species causing moderate damage while, rest of 52 species causing less damage and considered as negligible in terms of economic value. An indigenous pest, *Celosterna scabrator* Fabr. (Cerambycidae) of *Acacia nilotica* and a new pest *Psiloptera fastuosa* (Buprestidae) were reported gaining importance in eucalyptus plantations, the latter being a twig and branch girdler gnawing the twigs, lateral branches and leaders in irregular patches similar to *Celosterna* resulting in drying off of the affected parts (Chatterjee, and Singh, 1968; Basu, *et al.*, 1986). In this paper the pest status of two indigenous beetles viz., *Batocera* and *Apriona* on eucalyptus is presented.

The Clones of *Eucalyptus tereticornis* were tested in multilocal field trials consisting of 48 trees in three replications. Girth and height measurements were recorded annually for estimation of wood yield per ha apart from the occurrence of diseases and pests. The promising clones were shortlisted based on higher wood yield and resistance to diseases and pests. The shortlisted clones were multiplied for

raising large scale plantations under farm forestry. Studies were also conducted in the farmer's plantations for occurrence of diseases and pests. Observations were recorded on 50 trees per clone to assess the occurrence and damage caused by the pest and the data were graded into: 1) Not Affected (0% damage), 2) Less Affected (1-20% damage), 3) Moderately Affected (21-50% damage), 4) Severely Affected (51-70% damage) and 5) Fully Affected (100% damage).

*Batocera* and *Apriona* borer attack on *E. tereticornis* clones showed varying degree of resistance (Table 1). Out of 135 clones, 61 were not affected, 53 less affected, 20 moderately affected and one was fully affected. Clone 71 was severely damaged resulting in retarded growth in plantations and remained stunted with bushy appearance. However, *E. citriodora*, *E. torelliana*, *E. alba*, *E. urophylla* and *E. pellita* were free from the attack. *Batocera rufomaculata* (Fig.1) is widely known as Mango stem borer all over the country predominating in old neglected Mango orchards and also reported on Fig and Apple trees in north India (Singh, 1978). Comparison was attempted to know whether the pest attack is correlate with the productivity. The data (Table 2) indicated that irrespective of low or high productivity the infestation was found with varying intensities.

Table 1. Screening of Eucalyptus species and clones against *Batocera*

Sl. No.	Eucalyptus Clone No.	Wood yield per ha at 4 yr felling cycle (t)	Grading **
1	ITC BCM 1	88	LA
2	ITC BCM 3	132	MA
3	ITC BCM 4	100	LA
4	ITC BCM 5	112	MA
5	ITC BCM 6	208	NA
6	ITC BCM 7	108	MA
7	ITC BCM 8	76	MA
8	ITC BCM 10	148	MA
9	ITC BCM 27	132	LA
10	ITC BCM 52	120	LA
11	ITC BCM 71	88	FA
12	ITC BCM 72	156	MA
13	ITC BCM 83	104	MA
14	ITC BCM 84	68	LA
15	ITC BCM 99	108	MA
16	ITC BCM 105	112	LA
17	ITC BCM 113	52	MA
18	ITC BCM 115	136	MA
19	ITC BCM 116	72	MA
20	ITC BCM 119	52	MA
21	ITC BCM 122	108	LA
22	ITC BCM 124	80	MA
23	ITC BCM 128	88	MA

24	ITC BCM 130	104	LA
25	ITC BCM 142	52	MA
26	ITC BCM 147	48	MA
27	ITC BCM 158	84	MA
28	ITC BCM 159	80	LA
29	ITC BCM 165	56	MA
30	ITC BCM 222	100	LA
31	ITC BCM 223	100	LA
32	ITC BCM 226	104	NA
33	ITC BCM 236	96	LA
34	ITC BCM 241	52	NA
35	ITC BCM 265	108	NA
36	ITC BCM 266	140	LA
37	ITC BCM 269	104	LA
38	ITC BCM 271	120	LA
39	ITC BCM 272	168	LA
40	ITC BCM 273	148	LA
41	ITC BCM 274	116	NA
42	ITC BCM 275	124	LA
43	ITC BCM 276	100	LA
44	ITC BCM 277	124	LA
45	ITC BCM 284	144	LA
46	ITC BCM 285	136	LA
47	ITC BCM 286	164	NA
48	ITC BCM 288	188	LA
49	ITC BCM 290	180	LA

50	ITC BCM 291	156	LA	96	ITC BCM 529	52	NA
51	ITC BCM 292	172	LA	97	ITC BCM 532	60	NA
52	ITC BCM 314	100	NA	98	ITC BCM 533	64	LA
53	ITC BCM 315	120	LA	99	ITC BCM 534	60	NA
54	ITC BCM 316	144	LA	100	ITC BCM 535	72	LA
55	ITC BCM 317	84	NA	101	ITC BCM 540	44	NA
56	ITC BCM 318	104	NA	102	ITC BCM 541	52	LA
57	ITC BCM 319	92	LA	103	ITC BCM 545	64	NA
58	ITC BCM 320	100	NA	104	ITC BCM 547	90	NA
59	ITC BCM 323	56	NA	105	ITC BCM 548	64	NA
60	ITC BCM 326	48	LA	106	ITC BCM 566	52	LA
61	ITC BCM 328	100	NA	107	ITC BCM 570	90	NA
62	ITC BCM 330	40	LA	108	ITC BCM 585	64	LA
63	ITC BCM 351	84	LA	109	ITC BCM 587	52	NA
64	ITC BCM 355	80	NA	110	ITC BCM 588	64	NA
65	ITC BCM 356	96	NA	111	ITC BCM 598	52	LA
66	ITC BCM 359	80	NA	112	ITC BCM 607	68	NA
67	ITC BCM 405	132	LA	113	ITC BCM 609	52	NA
68	ITC BCM 407	84	NA	114	ITC BCM 611	48	MA
69	ITC BCM 409	76	NA	115	ITC BCM 612	56	NA
70	ITC BCM 411	100	NA	116	ITC BCM 654	90	NA
71	ITC BCM 412	64	NA	117	ITC BCM 670	80	NA
72	ITC BCM 413	92	NA	118	ITC BCM 671	80	NA
73	ITC BCM 415	76	NA	119	ITC BCM 2016	80	LA
74	ITC BCM 417	104	LA	120	ITC BCM 2045	92	NA
75	ITC BCM 433	80	NA	121	ITC BCM 2070	100	SA
76	ITC BCM 436	92	NA	122	ITC BCM 2120	64	NA
77	ITC BCM 437	80	NA	123	ITC BCM 2135	60	LA
78	ITC BCM 438	100	LA	124	ITC BCM 2145	120	NA
79	ITC BCM 439	100	NA	125	ITC BCM 2149	92	NA
80	ITC BCM 458	56	NA	126	ITC BCM 2151	92	NA
81	ITC BCM 469	52	NA	127	ITC BCM 2153	80	LA
82	ITC BCM 470	76	LA	128	ITC BCM 2154	76	NA
83	ITC BCM 471	88	LA	129	ITC BCM 2169	92	NA
84	ITC BCM 492	40	LA	130	ITC BCM 2170	72	NA
85	ITC BCM 498	68	LA	131	ITC BCM 2171	72	NA
86	ITC BCM 499	76	NA	132	ITC BCM 2202	76	LA
87	ITC BCM 501	40	LA	133	ITC BCM 2253	120	NA
88	ITC BCM 503	108	LA	134	ITC BCM 2254	120	NA
89	ITC BCM 513	120	NA	135	ITC BCM 2306	120	NA
90	ITC BCM 514	52	NA	136	E grandis	100	LA
91	ITC BCM 515	56	MA	137	E pellita	100	NA
92	ITC BCM 516	40	NA	138	E alba	80	NA
93	ITC BCM 522	56	LA	139	E citriodara	70	NA
94	ITC BCM 525	60	NA	140	E torelliana ITC BCM 1	80	NA
95	ITC BCM 526	68	NA	141	E torelliana ITC BCM 2	80	NA
				142	E urophylla	100	NA

\*\* 00 - 00 %

NA - Not Affected

01 - 20 %

LA - Less Affected

21 - 50 %

MA - Moderately Affected

51 - 70 %

SA - Severely Affected

70 - 100 %

FA - Fully Affected

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Table 2. Comparison of Eucalyptus Productivity vs. Batocera Infestation

Productivity (t/ha)	Grading				
	NA	LA	MA	SA	FA
40 - 70	22	13	7	0	0
71 - 100	34	17	5	1	1
101 - 130	9	11	4	0	0
131 - 170	1	9	4	0	0
171 - 200	0	3	0	0	0
> 201	1	0	0	0	0



Fig.1. *Batocera rufomaculata*

However, in eucalyptus, only the adult beetle damage was recorded and no egg, larvae or pupal stages were observed. The adult beetle in the absence of alternate host (such as Mango) may start damaging well grown 1 to 3 year old clonal Eucalyptus plantations. This beetle fed on the bark and girdled the top shoot portion of crown having 2 to 3 cm diameter stem. Eventually, the shoot dried up and fell due to wind leading to development of multiple shoots at the injured portion and one or two shoots developed in to leader shoots and formed a stag headed or 'Y' type crown (Kulkarni and Lal, 1995). The injured part of the tree appeared brown due to oozing of kino (red watery and sticky substance). Repeated infestation of insect drastically reduced the growth of the tree without killing outright. Beetle infestation was not seen on trees crossing more than 8 meters height. The adult insect was quite active during October to

January (winter months) and disappeared during rainy days. The tree withstood the damage and revived during monsoon season by putting up new shoots.

*Batocera* previously considered to be a minor pest assumed the pest status by increased population which might be due to change in climate (hot weather). Clone 71 suffered severe infestation in Krishna District of Andhra Pradesh where mango is cultivated on large scale while in other places the infestation was not so serious.

One year old eucalyptus plantation at Nandigama village, Khammam District, Andhra Pradesh having 100 plants of each clone 1, 3, 4, 6, 7, 8 and 10 attaining a height of 6 m were found girdled uniformly above 4 m from ground resulting in hanging of the dried crowns posing a condition as if cut by human being in precise manner.

*Apriona germari* is an occasional pests in 6 month to one year old eucalyptus plantations with 3-7 m height appearing in July-August and feeding on the bark of the top stem portion of 2-3 cm diameter of the crown Eventually the girdled shoot was killed. Pruning of affected stem / branches and fumigation was recommended for controlling the pest (Chatterjee, *et al.*, 1969; Singh and Prasad, 1985; Singh and Singh, 1987). *Apriona* is also a destructive pest in Apple, Peach, Fig and Poplars (Gupta and Sharma, 1988).

Both *Batocera* and *Apriona* being polyphagous pests removal of mango orchards and other host plants would have forced the insects to move towards eucalyptus, due ecological disturbance. Control measures therefore are required to keep the activities of these borers under check so that the productivity of eucalyptus can be maintained as it has become an economically important tree crop in India.

Acknowledgements: The author wish to thank Entomology Departments of IARI, New Delhi; TNAU and IFGTB, Coimbatore for identification of the insects. Thanks are due to the scientists of Plantation R&D Division of PSPD, Unit: Bhadrachalam for assistance in the study. Special thanks are due to Mr. A. Madhuraa for helping in compilation of data and analysis.

IITC Limited  
Paperboards and Specialty Papers Division,  
Unit: Bhadrachalam, Sarapaka – 507 128, Andhra Pradesh, India.  
E-Mail: hd.kulkarni@itc.in

H. D. KULKARNI

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