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BIOLOGICAL STUDIES OF *OXYRHACHIS LEFROYI* DISTANT (HOMOPTERA : MEMBRACIDAE) ON TWO DIFFERENT HOSTS *DALBERGIA SISSOO* AND *CASSIA FISTULA* WHEN ATTENDED BY AN ANT SPECIES *PHEIDOLE INDICA* MAYR.

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Biological observations revealed variations in longevity of nymphal instars of membracid *Oxyrhachis lefroyi* on two different hosts when attended by ant species *Pheidole indica* Mayr. On *Dalbergia sissoo* total nymphal duration recorded an average of 35.83±0.30 days/ cycle with an average of 34-39 days and on *Cassia fistula* an average of 37.33±0.42 days/ cycle ranging from 34-41 days was recorded, thereby depicting the host preference by the membracid.

Key words : *Oxyrhachis lefroyi* (Membracidae); ant *Pheidole indica* Mayr (Myrmicinae); host plants *Dalbergia sissoo* (Paplionaceae) and *Cassia fistula* (Caesalpiniaceae).

INTRODUCTION

Membracids commonly called as "treehoppers" show highly developed parental care as also reported by Wood (1974) and Wood & Olmstead (1984) which may range from solitary to gregarious forms. Gregarious species show mutualistic association mostly with hymenopteran and most probably with ants. Ant mutualism is commonly noticed in tropical species which may have evolved in response to the threat of predation as reported by Holldobler & Wilson (1990) and Wood (1993). Solitary species rarely show ant mutualism and ants are noticed attending only gregarious forms as also observed by Wood (1983 & 1984). Attending ants provide protection from predators and parasitoids as also reported by Bradley (1973) and Mc Lain (1980) where ants defend aphids and coccids from predation. Ants get honeydew from membracids which is an abundant food source as also observed by Carroll & Jansen (1973) and Skinner (1980).

Belt (1874) first of all reported mutualistic association between ants and membracids. Other workers like Buckton (1903), Poulton (1903), Branch (1913), Funkhouser (1917 & 1951), Behura (1951), Way (1963), Ekkens (1972), Ananthasubramanian & Ananthakrishnan (1975), Fritz (1983) and Morales (2000a,b) studied association between ants and homopterans. Several ant species have been found in the field attending various treehopper species as *Camponotus compressus* Fabricius (major and minor workers), *Pheidole indica* Mayr, *Crematogaster rogenhoferi* Mayr, *C. rothneyi* Mayr and *Tapinoma melanocephalum* Fabricius. Detailed life-cycle of membracid *Oxyrhachis lefroyi* has been studied on two different host plants *Dalbergia sissoo* and *Cassia fistula* when attended by ant *Pheidole indica.*

MATERIALS AND METHODS

Life-cycle studies were carried on selected host plants, grown in pots (26x20 cm). Experiments were carried in Botanical Garden, University of Jammu. Egg laying female was introduced on potted plant and record of egg laying, day of hatching, various nymphal moults and emergence of adults was maintained. Freshly emerged nymphs were

also reared on twig of host plant dipped in water covered with glass chimneys or meshed cages. Data as recorded was statically analyzed (SPSS software).

OBSERVATIONS AND DISSCUSSION

Biological studies reveal that membracid *Oxyrhachis lefroyi* when attended by *Pheidole indica* on two different hosts *Dalbergia sissoo* and *Cassia fistula* recorded an average of 35.83±0.30 days/ cycle ranging between 34-39 days and an average of 37.33±0.42 days/ cycle was recorded ranging from 34-41 days. Variations in the longevity of nymphal instars have been recorded in Table I.

Table I : Longevity of nymphal instars of *Oxyrhachis lefroyi* on host plant *Dalbergia sissoo* and *Cassia fistula* when attended by ant species *Pheidole indica.*

Nymphal instars	Mean ± S.E. (in days)	
	Dalbergia sissoo	***Cassia fistula***
1st	4.66±0.33 (4-5)*	5.33±0.21 (5-6)
2nd	4.50±0.22 (4-5)	4.83±0.30 (4-5)
3rd	6.33±0.21 (6-7)	6.50±0.34 (6-7)
4th	8.66±0.21 (8-9)	9.16±0.30 (8-10)
5th	12.16±0.33 (12-13)	11.50±0.22 (11-12)

± S.E. : Standard error; * : Range in parentheses.

Variations recorded in nymphal duration of life cycles of *Oxyrhachis lefroyi* on different hosts when attended by an ant species *Pheidole indica* indicate the preference of insect over the host. Thus, variations in life cycle of these treehoppers could be attributed to varied host plant phenology. Varied nutrient levels may also affect the life cycles of membracids, as also revealed by Wood & Dowell (1984) while observing *Umbonia crassicornis.*

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