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BIOLOGY OF *TOYA* SP. ON WATERGRASS *BRACHIARIA MUTICA* STAFF.*

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Delphacids as a group are important as they include planthoppers feeding on graminaceous plants whose faunistic distribution in this part of country known for intensive rice growing areas have not been studied so far. In this context the outbreak of the new grass feeding delphacid, *Toya* sp. assumes greater proportion of the possible host shift from grass to rice.

MATERIALS AND METHODS

Natural growth and development of the species was studied in terms of survival rate, nymphal period. Sex ratio, and morph ratio, adult longevity and fecundity on 15-20 days old plants of watergrass. The grass setts with identical number of foliage and stem length were kept in test tubes with culture solution and were used as food plants for the insect.

Survival percentage(Nymphal survival and development) The newly emerged ten first instar nymphs per replication were released on 15-20 days old plants of watergrass. The percentage survival was observed and recorded, seven days after infestation. Finally the number of adults that successfully emerged from the surviving nymphs were counted and the percentage adult development was worked out.

Nymphal period The newly emerged ten first instar nymphs per replication were released on 15-20 days old plants of watergrass in test tubes with culture solution. The developmental period in days from first instar to adult was observed and each nymph and the average number of days required for completing the nymphal period was worked out and given.

Sex ratio and morph ratio The newly emerged ten first instar were released on 15-20 days old plants of watergrass kept in test tubes with culture solution. The whole experiment had been continued until all the insects became adults. The sex ratio and morph ratio were recorded as female to male and as macropterous to brachypterous from the emerged adults.

Adult longevity and fecundity The newly emerged male and female adults were released in pairs on 15-20 days old plants of watergrass. The insect mortality was

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Table 1. Growth and development of the Delphacid on its natural host *Brachiaria mutica Stapf.*

	%Nymphal survival	% adult emergence	Instar in days					Total period	Sex female; male	Morph ratio nymphal pterrous to Brachypterou	Adult longevity ratio Male	Macro-Female (in days)	
			I	II	III	IV	V						
Moan	82.5	62.5	1.75	2.375	2.875	3.0	4.25	14.25	1.79:1	1:0	8.75[b]	12.25[a]	91.75
S.E. +	0.78	2.03	0.27	0.43	0.86	0.95	2.19	0.23	0.452	0	0.108	0.114	10.36
											2.403		

(Means with same alphabets do not vary significantly)

recorded daily and continued till all the insects became dead.

Single pairs of newly emerged adults were placed in test tubes with test plants in culture solution. The plants were changed daily for the next 7 days and the eggs laid in each were counted by examining the dissected leafsheath tissue, stem tissue under a binocular microscope. Fecundity was determined by counting number of eggs laid by each female per day.

Results and Discussion

The biology of the delphacid was studied on its natural host which were potted and grown well for the purpose. The results obtained on the various aspects of its biology are given in Table-1. Results showed that the survival rate of *Toya* sp. on watergrass, its natural host plant was 82.5 per cent. The average percentage of adults that successfully emerged from the surviving nymphs was 62.5 per cent. The nymphal life lasted for 14.25 days on an average on its natural host plant and the mean nymphal period lasted for five nymphal instars, 1.75, 2.375, 2.875, 3.0, 4.25 days for each instar respectively. Results showed that the average sex ratio (female to male) record was 1.79:1 and the average morph ratio (macropterous to brachypterous) was 1:0. Results showed significant variation in mean longevity between females and males of *Toya* sp. The female adults were found to have an extended longevity over that of males (Manjunath, 1978; Khaire and Dumbre, 1982; Kramer and Martorell, 1982). The natural host plant, watergrass, was preferred more for oviposition by the *Toya* sp. , resulting the total number of eggs laid per female was 91.75 ad the total oviposition period lasted for five days.

Summary

Biology of a new delphacid, *Toya* sp. on watergrass was studied during 1986-87 at Annamalainagar. The survival rate of *Toya* sp. was maximum and the percentage of adults that emerged from the surviving nymphs was more than fifty per cent on its natural host plant. The nymphal duration lasted for 14.25 days to become adults. The females were more in number and the only macropterous adults were observed among the successfully emerged adults. The mean adult longevity for female insect was higher (12.25) when compared to that of male insect (8.75 days). The number of eggs laid per female was more on watergrass, and the total oviposition period lasted for five days.

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