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OBSERVATIONS ON SPIDERS (ORDER : ARANEAE) PREDACIOUS ON THE COCONUT LEAF EATING CATERPILLAR *OPISINA ARENOSELLA* WLK. (*NEPHANTIS SERINOPA* MEYRICK) IN KERALA : FEEDING POTENTIAL*

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Twenty-six species of spiders belonging to twelve genera and six families were observed in association with the larval galleries of *Opisina arenosella* on coconut palms. Eighteen species were studied for their feeding potential under laboratory conditions. *Sparassus* sp., *Cheiracanthium* sp., *Rhene khandalensis* and *R. indicus* topped the list and *Neoscona elliptica* the last.

(Key words: Opisina arenosella, spider, coconut)

INTRODUCTION

A survey of the *Opisina arenosella* infested coconut gardens in Alleppey and Quilon Districts of Kerala revealed that twenty-six species of spiders belonging to twelve genera and six familes are frequently associated with the larval galleries of the pest (SATHIAMMA *et al.*, unpublished). Some of them were observed to be highly predacious and they consume a huge population of the pest in the field. The objective of the present study was to evaluate the feeding potental of the spider predators associated with caterpillars of *O. arenosella* in the laboratory.

MATERIALS AND METHODS

Test spiders were collected individually from *Opisina* infested coconut plantations. They were reared separately in glass jar cages (size 17 × 6.5 cm) in the laboratory. Coconut leaflet bits infested with known number of *Opisina* caterpillars were provided in each of the cages containing the spiders. The spiders were starved for a day prior to offering *Opisina* caterpillars to them. The number of caterpillars preyed upon and their feeding habits were recorded every day.

RESULTS AND DISCUSSION

All the eighteen spider species preyed on *O. arenosella* caterpillars (Table 1). The rate of predation varied from 0.05 to 1.54 caterpillars per day. *Sparassus* sp., *Cheiracanthium* sp., *Rhene khandalensis* and *Rhene indicus* recorded a high rate of predation, the rate being 1.54, 1.19, 0.71 and 0.70 caterpillars, respectiveiy, per day. *Neoscona elliptica* consumed only 0.05 caterpillars per day and occupied the last rank in the rate of predation. It was interesting to observe that the ratio of predation varied considerably between sexes of the same species. Females of *Sparassus* sp,, *Cheiracanthium* sp., *Rhene indicus* and *Marpissa dhakuriensis* consumed 1.54, 1.19, 0.70 and 0.62 caterpillars,

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TABLE 1. Feeding potential of spiders predacious on *Opisina arenosella* capterpillars in the laboratory (Mean of 10 replications).

Sl. No.	Name of spider	Sex	Average no. of days observed	Average no. of prey consumed	No. of prey consumed per day
1	*Sparassus* sp.	F	70	108	1.54
		M	63	72	1.14
2	*Cheiracanthium* sp.	F	57	68	1.19
		M	66	46	0.70
3	*Rhene khandalensis* Tikader	F	38	27	0.71
4	*R. indicus* Tikader	F	46	32	0.70
		M	50	15	0.30
5	*Plexippus paykulli* (Aud.)	F	49	32	0.65
6	*Marpissa dhakuriensis* Tikader	F	89	55	0.6
		M	32	5	0.16
7	*Tetragnatha andamanensis* Tikader	F	65	38.5	0.59
8	*Cheiracanthium melanostom* Thorell	I	67	36	0.54
9	*Clubiona drassodes* Cambridge	F	28	12	0.43
10	*Larinia jayasankari* Biswas	F	78	31	0.40
11	*Marpissa* sp.	F	10	4	0.40
12	*Phidippus bengalensis* Tikader	F	48	18	0.36
13	*Phidippus* sp.	F	14	5	0.36
14	*Phidippus* sp.	F	9	3	0.33
15	*Marpissa tigrina* Tikdar	F	30	9	0.30
16	*Marpissa* sp.	F	10	3	0.30
17	*Rhene danieli* Tikadar	F	13	3	0.23
18	*Neoscona elliptica* Tikader Bal	F	20	1	0.05

F- female M- male I- immature stage

respectively, per day, whereas their male counterparts cosumed much less with 1.4, 0.7, 0.3 and 0.16 caterpillars per day. Rate of predation was observed to be very high when the prey caterpillar removed from the larval galleries were offered.

Spiders have been implicated as efficient biological control agents of pests of many agricultural crops. HOWELL & PIENKOWSKI (1971) listed spider fauna of Virginia alfalfa field and BAILEY & CADA (1968) on grain sorghum. Species of *Cheiracanthium*, *Clubiona*, *Marpissa* and *Phidippus* preyed on the maize borer larvae *Chilo partellus* and the consumption per predator varied from 2 to 18 borer larvae. *Clubiona* sp. and *Marpissa* spp. have been observed preying on the nymphs of *Pyrilla perpusilla* on sugarcane in Punjab (SINGH, 1967). JANDU (1972) observed *Marpissa* sp. and *Phidippus* sp. feeding on the

nymphs of *Diaphorina citri* on citrus. *Phidippus audax* (Hentz) consumed larvae of the boll weevil and salticid spiders on *Heliothis* spp. on cotton (WHITCOMB *et al.*, 1963). *Neoscona* sp. preyed on aphids *Myzus dycei*, *Chaitophorus kapuri*, *Liosomaphis himalayensis*, and *Metopolophium phaseoli* on leguminous host plants including *Urtica parviflora*, *Populus* sp., *Berberis* sp. and Indet respectively, and *Clubiona* sp. on *Aphis gossypii* on Indet plant (DAS & CHAUDHURI, 1983). *Neoscona nautica* Koch, *R. Khandalensis* Tikader and *Thomisus* sp. feed on aphids *Macrosiphum rose* and *M. rosaeiformis* on *Rosa* sp. (AGARWALA, 1983). A recent study MOHAMED *et al.*, 1982) of the natural enemies of the coconut caterpillar did not record any predatory spiders. The present report is the first record of the predacious spiders comprising major species such as *Cheirncanthium*, *Rhene*, *Marpissa*, *Neoscona* and *Clubiona* on the coconut leaf eating caterpillar *Opisina arenosella*.

The observations clearly revealed that the spiders constitute an important group of biocontrol agents exerting natural suppression on the field population of the coconut leaf eating caterpillar. *Cheiracanthium*, *Sparassus* and *Rhene* are the important predators consuming @ 0.7—1.5 *Opisina* caierpillars per day. The magnitude of pest suppression these species can exert can further be seen from their long life span and their presence in the field almost throughout the year (SATHIAMMA *et al.*, unpublished). During the period when *Opisina* population is very low, the spiders thrive on other species as well. Hence, conservation of these predators in the field is of great relevance. For the management of *O. arensella*, when chemical treatments are to be done care should be taken to use only those chemicals which are less toxic to the spiders. The major handicap with the spider fauna is that they are not specific predators of the pest, but are polyphagous ones and a such they would feed on many species of other insects as well available in the field.

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