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Research Note

Spodoptera litura (Fabricius) feeds on aphids and eggs of coccinellids, *Cheilomenes sexmaculata* (Fabricius) and *Coccinella transversalis* Fabricius - a new observation

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ABSTRACT : Early and late instar caterpillars of *Spodoptera litura* (Fabricius), a known pest of many vegetable crops and other economically important plants, readily ate live *Aphis craccivora* Koch and eggs of coccinellids, *Cheilomenes sexmaculata* (Fabricius) and *Coccinella transversalis* Fabricius in the laboratory. These caterpillars developed normally, similar to those caterpillars which were exclusively fed on foliage of mustard or bean plants. Such a feeding habit of *S. litura* reported here for the first time, could have important bearing in relation to prey-predator interaction in a seasonal habitat.

KEY WORDS : Aphids, carnivory, *Cheilomenes sexmaculata*, *Coccinella transversalis*, *Spodoptera litura*

Spodoptera litura (Fabricius) is a major pest of tobacco, rice, tomato, cauliflower and lucerne. The species has also been reported as a minor pest of potato, pepper, onion, egg-plant, water-melon, banana, pigeonpea, beans and many other vegetable crops in India and elsewhere in Asia (Patel *et al.*, 1973; Patel, 1977; Roy and Banerjee, 1993). During study of pest complex of bean [*Vigna catjang* (Brum. f.) Walp] and mustard [*Brassica juncea* (L.) Cosson] crops in Agartala, early and late instar caterpillars of *S. litura* were noticed feeding on the bean aphid, *Aphis craccivora* Koch and the mustard aphid, *Lipaphis erysimi* (Kaltenbach) in the field. Even if it is an instance of occasional carnivory, this observation appeared interesting from the view-point of prey-predator interaction. A preliminary study was conducted to substantiate this observation.

Culture of *S. litura* was raised in glass jars (10 x 8 cm) using gravid females obtained from a light trap. Caterpillars which hatched from their eggs were provided with fresh bean leaves as food and water through moistened swab of cotton and reared to second and fifth instar stages. For carnivory study, ten caterpillars, each of second instar (3-4 days old) and fifth instar (15-16 days old), were kept separately in petri dishes (9 cm dia.). Each of these caterpillars was offered 125 live adults of *A. craccivora* for three consecutive days. In another similar set-up, each of the ten caterpillars of second and fifth instar was offered 45 eggs of *Cheilomenes sexmaculata* (Fabricius) or *Coccinella transversalis* Fabricius for three consecutive days. Live adults of *A. craccivora* and eggs of *C. sexmaculata* and *C. transversalis* were obtained from the stock cultures being maintained in the green house. Individual caterpillars, under observation, were then transferred to fresh, dry and clean petri dishes and fed on foliage of bean and/or mustard till pupation.

In order to confirm the carnivory, in the laboratory a free-choice experiment was done. Each of the laboratory reared caterpillars of second and fifth instars offered 100 frozen adult of *A. craccivora* and 100 pieces of fresh incised leaves of bean plant (0.5 x 0.5 cm in case of second instar and 1.0 x 1.0 cm in case of fifth instar) in a common area of 9 cm diam. petri dishes. Number of frozen aphids and incised leaves eaten by a caterpillar after 24 h was recorded. This was repeated for three consecutive days and at each observation fresh supply of aphids and leaves was restored.

It was observed that each of the second and fifth instar caterpillars ate aphids and eggs of coccinellids that were offered (Table 1). Under choice condition of frozen aphids or incised leaves, a caterpillar ate the two foods without any preference (Table 2). These caterpillars developed normally, similar to those caterpillars which were exclusively fed on foliage of bean and/or mustard plants. The results suggest that this primarily phytophagous insect does not show reluctance in eating animal foods of insect origin.

Table 1. Mean number of aphids or eggs of *C. sexmaculata* eaten/day by caterpillars of *S. litura*

Caterpillar	No.	Mean number eaten/day ± SD	
		Aphids	Coccinellid eggs
Second instar	10	125.00 ± 0.0	45.00 ± 0.0
Fifth instar	10	125.00 ± 0.0	45.00 ± 0.0

Facultative carnivory of insects like aphids and coccids by phytophagous

Table 2. Frozen aphids and incised leaves eaten by caterpillars of *S. litura*

Caterpillar instar	No.	Mean number eaten/day ± SD				
		frozen aphids	incised leaves	t-value*	df	p
Second	10	83.13 ± 5.09	86.13 ± 4.32	0.44	18	NS
Fifth	10	94.70 ± 2.34	95.53 ± 2.45	0.24	18	NS

*t-test, unpaired samples

coccinellids have been reported earlier (Mills, 1981; Agarwala and Ghosh, 1988). Importance of such a feeding behaviour of noctuid caterpillars in the aphid prey-predator interaction is required to be determined in a future study.

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