

**Interaction between *Aphis craccivora* Koch and its predators, *Coccinella transversalis* Fabricius (Coleoptera : Coccinellidae) and *Ischiodon scutellaris* (Fabricius) (Diptera : Syrphidae)**

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**ABSTRACT** : The interaction of *Coccinella transversalis* Fabricius and *Ischiodon scutellaris* (Fabricius) with the aphid, *Aphis craccivora* Koch was studied on green gram by estimating the prey and predator populations at weekly interval. Populations of both the predators had positive correlation with the aphid, attaining population peak simultaneously with their prey. The population decline of the prey was followed by their predators.

**KEY WORDS** : *Aphis craccivora*, *Coccinella transversalis*, *Ischiodon scutellaris*, interaction

Coccinellids and syrphids are two important groups of aphidophagous predators that control aphids naturally in Assam (Saharia, 1980; Barman and Dutta, 1995). The present study aims at understanding the relationship between *Aphis craccivora* Koch and two of its predators, *Coccinella transversalis* Fabricius and *Ischiodon scutellaris* (Fabricius) in green gram (*Vigna radiata* (L. Wilezek.) fields.

Green gram variety AAU-34 was sown following recommended package of

practices (Anon., 1994) during Kharif 1994 (sown on 18th August) and kharif 1995 (sown on 20th August) in two plots measuring 10 x 10 m each. No insecticidal treatment was, however, given to the plots to ensure natural build-up of populations of *A. craccivora* and its predators and parasitoids. In the initial stage, when the aphid infestation was low, their number per plant was counted *in situ* from 25 randomly selected plants in each plot. The coccinellid and syrphid predators were also counted *in situ* on these selected plants prior to aphid count. Later in the season, when

aphid population began increasing, they were dislodged from the plants into polythene bags by washing them with detergent water (Irwin, 1980) and also by brushing them with a camel hair brush and then counted.

Four coccinellids *viz.*, *Lemnia biplagiata* (Mulsant), *Coccinella transversalis* Fabricius, *Micraspis discolor*

(Fabricius) and *Cheilomenes sexmaculata* (Fabricius) were found predated upon *A. craccivora*. The maggots of a syrphid, *Ischiodon scutellaris* (Fabricius) were also found preying on *A. craccivora*. Populations of *L. biplagiata*, *M. discolor* and *C. sexmaculata* were, however, low and sporadic (0.50 to 2.63 / 25 plants) during the two years. *Lemnia biplagiata* was not recorded in Kharif 1995. Saharia

Table 1. Populations of *A. craccivora*, *C. transversalis* and *I. scutellaris* on green gram

Sampling date	Aphid (no./plant)	<i>C. transversalis</i> population (no./25 plants)			<i>I. scutellaris</i> larval population (no./25 plants)	
		Grub	Adult	Total		
<b>Kharif 1994</b>						
September	17	6.96	-	3.50	3.50	-
	24	34.48	-	4.50	4.50	-
October	18	72.68	3.00	5.00	8.00	4.50
	15	48.84	6.50	4.00	10.50	6.00
	22	80.64	7.00	6.50	13.50	3.50
	29	10.12	4.00	2.00	6.00	3.00
		229.32	9.50	6.00	15.50	14.50
November	5	286.48	19.00	7.50	26.50	17.50
	12	134.84	12.50	4.00	16.50	13.50
	19	15.12	3.50	2.00	5.50	4.50
	Mean	91.95	6.50	4.50	11.00	6.70
Correlation Coefficient	-	0.881**	0.787**	0.926**		0.925**
<b>Kharif 1995</b>						
September	20	5.20	0.00	3.00	3.00	0.0
	27	22.52	6.00	3.00	9.00	3.50
October	4	83.80	4.00	4.50	8.50	5.50
	11	92.56	4.50	3.00	7.50	3.00
	18	267.40	16.00	5.50	21.50	16.50
	25	130.40	13.50	5.00	18.50	12.00
November	1	14.96	2.00	3.50	5.50	8.00
	Mean	88.12	6.57	3.93	10.50	6.93
Correlation Coefficient	-	0.886*	0.840*	0.899**		0.840***

Significant at P = 0.05; \*\* Significant at P = 0.01

(1978) found *C. transversalis*, *C. septempunctata* and *C. sexmaculata* preying on *A. craccivora* on cowpea in Assam and of them *C. transversalis* was the most regular predator on *A. craccivora*. Barman and Dutta (1995) reported *C. transversalis* and *M. discolor* to be the most common predators of *A. craccivora* on green gram.

*Coccinella transversalis* adults were recorded on the first day of sampling along with *A. craccivora* during the third week of September itself (Table 1). However, grubs were recorded one to two weeks after the appearance of adult beetles. Peak *C. transversalis* population (26.50/25 plants in 1994 and 21.50/25 plants in 1995) coincided with the peak *A. craccivora* population (286.48 / plant and 267.40 / plant in 1994 and 1995, respectively). Similar population peak of *A. craccivora* and its predator were reported by Srikanth and Lakkundi (1990). The aphid population declined after attaining the peak and the population of *C. transversalis* also followed the trend. Grub, adult and total *C. transversalis* populations exhibited significant positive association with aphid population. Synchronization of the population cycle of coccinellid predators and *A. craccivora* population was reported by Saharia (1980), and Butani and Bharodia (1984).

Maggots of *I. scutellaris* were recorded in green gram fields one to two weeks after the appearance of *A. craccivora*. Similar trend (as in case of *C. transversalis*) was observed in the

population of maggots of *I. scutellaris* in relation to the aphid population and the association was positive. Saxena *et al.* (1970) have also reported feeding of *I. scutellaris* on *A. craccivora* in green gram fields.

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