

Host range and predatory fauna of *Aphis craccivora* Koch (Homoptera: Aphididae) in Bangalore, Karnataka

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ABSTRACT: The aphid, *Aphis craccivora* Koch is a common pest of cowpea and lablab around Bangalore. Survey for its predatory fauna resulted in recording eleven coccinellids, six syrphids, a chamaemyiid and a hemerobiid species. Syrphid species viz., *Betasyrphus fletcheri* Ghorpade and *B. linga* Ghorpade are new records on *A. craccivora* in India and elsewhere. Among predators recorded, *Cheilomenes sexmaculata* (Fabricius), *Paragus serratus* (Fabricius) and *Ischiodon scutellaris* (Fabricius) were found predominant on *A. craccivora*.

KEY WORDS : *Aphis craccivora*, *Cheilomenes sexmaculata*, predators, syrphids

The aphid, *Aphis craccivora* Koch (Homoptera: Aphididae) is a serious pest of several crops like cowpea, groundnut, pigeonpea, greengram, blackgram, soybean, broad bean and pea affecting their growth and market value by sucking sap from tender shoots, leaves, inflorescence and pods (Saxena, 1978). Dhingra (1994) reported development of resistance in *A. craccivora* to various pesticides. Therefore, it was felt necessary to explore the possibility of the use of biocontrol agents (particularly predators) in

management of *A. craccivora* in these crops.

With this in view, surveys were undertaken at fortnightly interval during 1994-96 in Bangalore district of Karnataka. Plants infested with *A. craccivora* were collected along with immature stages of predators if any, and reared in cloth walled aluminium cages (30 x 30 x 30 cm) in the laboratory until the emergence of adults. The predators thus obtained were preserved and identified. Aphids and their predators

were sampled and counted using a method devised by Srikanth and Lakundi (1988).

Survey conducted during summer (March-May) and kharif (August - October) seasons revealed that the population of *A. craccivora* reached the

peak during March last week to May first week (252.20 to 449.70 aphids per cowpea plant) and from second week of September to first week of October (160.20 to 289.30 aphids per cowpea plant), respectively (Fig. 1 & 2). During January- March, *A. craccivora* was recorded on the

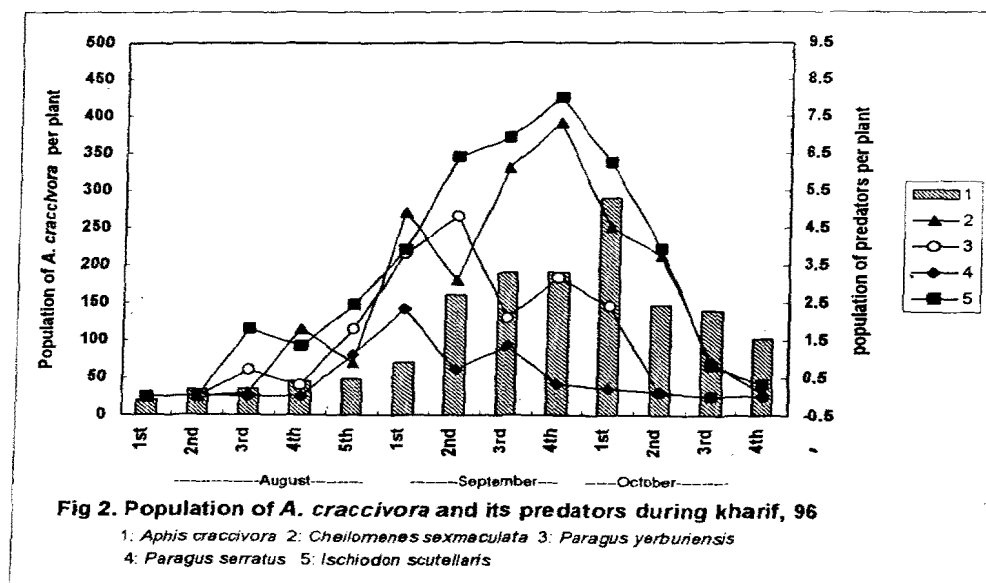
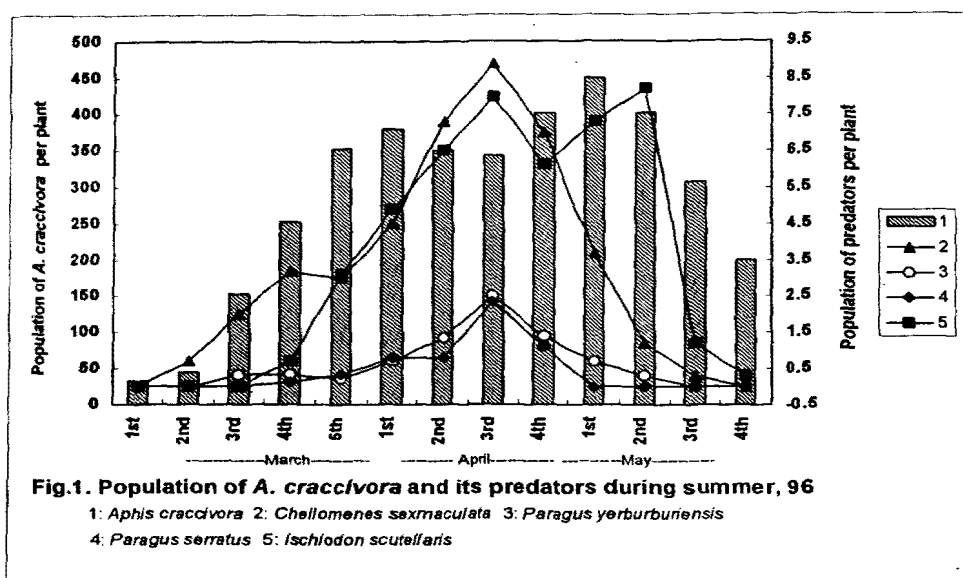


Table 1. Record of coccinellid predators of *A. craccivora* in Bangalore district, Karnataka

Predator	Activity period	Crop	Occurrence
<i>Cheilomenes sexmaculata</i> (Fabricius)	Throughout the year	Cowpea and lablab	Common
<i>Coccinella septempunctata</i> Linnaeus	January- March October- December	Pigeonpea and lablab	Common
<i>Coccinella transversalis</i> Fabricius	January - March June - July	Pigeonpea and <i>Portulaca oleracea</i>	Common
<i>Scymnus</i> sp. nr. <i>latemaculatus</i> (Motschulsky)	July- October	Cowpea and pigeonpea	Occasional
<i>Scymnus</i> sp. nr. <i>castaneus</i> Sicard	July- September	Cowpea and lablab	Occasional
<i>Scymnus coccivora</i> Ayyar	January - March	Cowpea and lablab	Occasional
<i>Scymnus</i> spp.	March-May	Cowpea and lablab	Occasional
<i>Pseudaspidimerus trinotatus</i> (Thunberg)	March-May	Cowpea	Occasional
<i>Propylea</i> sp. nr. <i>japonica</i> Thunberg	January	Cowpea and <i>Vicia faba</i>	Sporadic
<i>Harmonia octomaculata</i> (Fabricius)	June-July	<i>Cassia auriculata</i> and <i>Crotolaria mucronata</i>	Sporadic

inflorescence of *Gliricidia maculata* and during June - August, it appeared on the new flush of *G. maculata*, *Mimosa pudica*, *Cassia auriculata*, *Cassia tora*, *Portulaca oleracea*, *Crotolaria mucronata* and *Crotolaria juncea* and during November - March it was found to survive on *Vicia faba*. Predatory coccinellids started appearing two weeks after the appearance of aphid and peak syrphid population coincided with peak aphid population. Similar observations on coccinellids were made by Srikanth and Lakundi (1990). Among predators, eleven coccinellids, six

syrphids, a chamaemyiid and a hemerobiid were recorded (Table 1 & Table 2) on *A. craccivora* infesting pulses. Whereas only *Cheilomenes sexmaculata* (Fabricius), *Scymnus* sp., *Paragus serratus* (Fabricius) and *P. yerburiensis* Stuckenberg were recorded on *A. craccivora* infesting weeds. *Leucopis* sp. *formosana* Hennig was recorded only on *V. faba* and cowpea during winter. *Cheilomenes sexmaculata*, *P. serratus* and *Ischiodon scutellaris* (Fabricius) were the predominant predators in both the seasons and were available throughout the year feeding on different

Table 2. Record of *A. craccivora* predators (other than coccinellids) in Bangalore district , Karnataka

Predator	Activity period	Crop	Occurrence
Diptera : Syrphidae	September - October	Lablab and cowpea	Occasional
<i>Betasyrphus fletcheri</i> Ghorpade			
<i>Betasyrphus linga</i> Ghorpade	January- March	Pigeonpea	Occasional
<i>Dideopsis aegrota</i> (Fabricius)	September- October	Lablab	Occasional
<i>Ischiodon scutellaris</i> (Fabricius)	Throughout the year	Cowpea, lablab and pigeonpea	Common
<i>Paragus serratus</i> (Fabricius)	Throughout the year	Cowpea, lablab and pigeonpea	Common
<i>Paragus yerburiensis</i> Stuckenberg	Throughout the year	Cowpea, lablab and pigeonpea	Common
Diptera : Chamaemyiidae	February - March	Cowpea and <i>Vicia faba</i>	Common on <i>Vicia faba</i>
<i>Leucopis</i> sp. ?			
<i>formosana</i> Hennig			
Neuroptera : Hemerobiidae	January - March	Lablab and cowpea	Occasional
<i>Hemerobius</i> sp.			

species of aphids. *Paragus yerburiensis* was the first syrphid species to appear (third week of March), immediately followed by *P. serratus* and *I. scutellaris*. The incidence of other syrphid species and hemerobiid was negligible. Earlier reports suggest that *Betasyrphus fletcheri* Ghorpade and *B. linga* Ghorpade were not recorded on *A. craccivora*, but the other four species of syrphids have already been recorded by Ghorpade (1981). *Betasyrphus linga* was found during January - March only on pigeonpea and *G. maculata*, whereas *Harmonia octomaculata* (Fabricius) was found to feed on *A. craccivora* infesting *Cassia auriculata* and *Crotolaria mucronata*. All the other coccinellids, however, are known general predators on many other aphid species. One species of

Scymnus was abundant and helped in bringing down the population of aphid on *G. maculata* during January - March and June - August, and the aphids almost disappeared by the end of March and August due to the activity of this predator.

The predatory coccinellid and syrphid populations declined by the second week of May and first week of October in summer and kharif seasons, respectively. During February, about 8 -10 per cent of *C. sexmaculata* and *C. septempunctata* were parasitised in prepupal stage by *Homalotylus flaminus* Dalman (Hymenoptera: Encyrtidae). Around 16 - 19 per cent of *I. scutellaris* pupae were also parasitised by an unknown pteromalid during the same period. Similarly, *P.*

serratus was found to be parasitised to an extent of 16 - 59 per cent during December by an unidentified ichneumonid. In addition to these, unidentified braconid and eulophid parasitoids were found to parasitise syrphids and coccinellids during December to January. Survey revealed *C. sexmaculata* and *I. scutellaris* as promising biocontrol agents of *A. craccivora* and effective suppression can be achieved if these are reared and released in sufficient numbers.

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