



PREDATORS SCREENING ON INSECT-PESTS OF CAULIFLOWER IN EASTERN (U.P.), INDIA

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Abstract

To determine the importance of predators on the natural control of cauliflower insect-pests, experiments were carried out in 2009-10 and 2010-11. *Mantis religiosa* have maximum population 0.66 adult/10 plants was recorded in 50th at temperature range of 11.0 - 25.9°C and RH 64.4% during 2009-10. The population of *Coccinella septempunctata* during maximum in 3rd standard week, 2.08/10 plants in 2009-10 and 2.75/10 plants in 2010-11. *Oxyops* sp. and *Clubonina* sp. were found associated with insect- pests of mid early season cauliflower crop and one arthropod of symbiotic group, *Camponotus* sp. was active in 50th SW during both the years.

Key words : Insect pests, cauliflower, *Mantis religiosa*, *Coccinella septempunctata*.

Introduction

The various damaging insect pests are worms, aphids and whiteflies, depending on the ecosystem. The cabbage aphid (*Brevicoryne brassicae*) is the most important pest, though larvae of the cabbage maggot (*Delia radicum*) can chew and damage the hypocotyls of young transplants. Green peach aphid (*Myzus persicae*) are more common pests. Several predators and parasites attack aphids, especially in fields that are not sprayed or sprayed with less-toxic insecticides. These natural enemies, including general aphid predators such as the mantis, seven-spotted lady beetle (*Coccinella septempunctata*), spiders and ants may provide adequate control under certain circumstances. In most production areas, several worm pests such as loopers (*Trichoplusia ni*), imported cabbage worm (*Pieris brassicae*), tobacco caterpillar (*Spodoptera litura*), diamondback moth (*Plutella xylostella*) and others are potential problems, depending on the time of year and weather conditions Atwal and Dhaliwal (2009). Rotation of insecticide classes is essential for insecticide resistance management. Concerns of resistance to new generation pesticides are present whenever one chemical is heavily relied upon as a control measure.

Materials and Methods

The observation was laid under the several villages of Faizabad district during 2009-10 and 2010-11. Some of natural enemies viz., mantis, *Coccinella*, spiders and symbiotic group of *Camponotus* sp. were found on cauliflower crop and feeding their host. The plot size was mainly dependent upon farmer's field area and plant spacing of 60 × 60cm. Recommended fertilizers dose and others agronomical practices were adopted.

Results and Discussion

In present study (table 2) of Mantis, *M. religiosa* was found associated with insects of cauliflower in two phases, first from 46th - 47th SW and second from 50th - 51st SW during first year and from 47th - 48th SW and in 50th SW during second year. The maximum population of 0.66 adult/10 plants was recorded in 50th SW at temperature range of 11.0 - 25.9°C and RH 64.4% during 2009-10 while during equal population of 0.33/10 plants was recorded in all three weeks.

Grubs and adults of Lady bird beetle, *C. septempunctata* appeared on the crop for the first time in 51st SW during both the years of study. The populations during this week in respective years were 0.50 and 0.41/

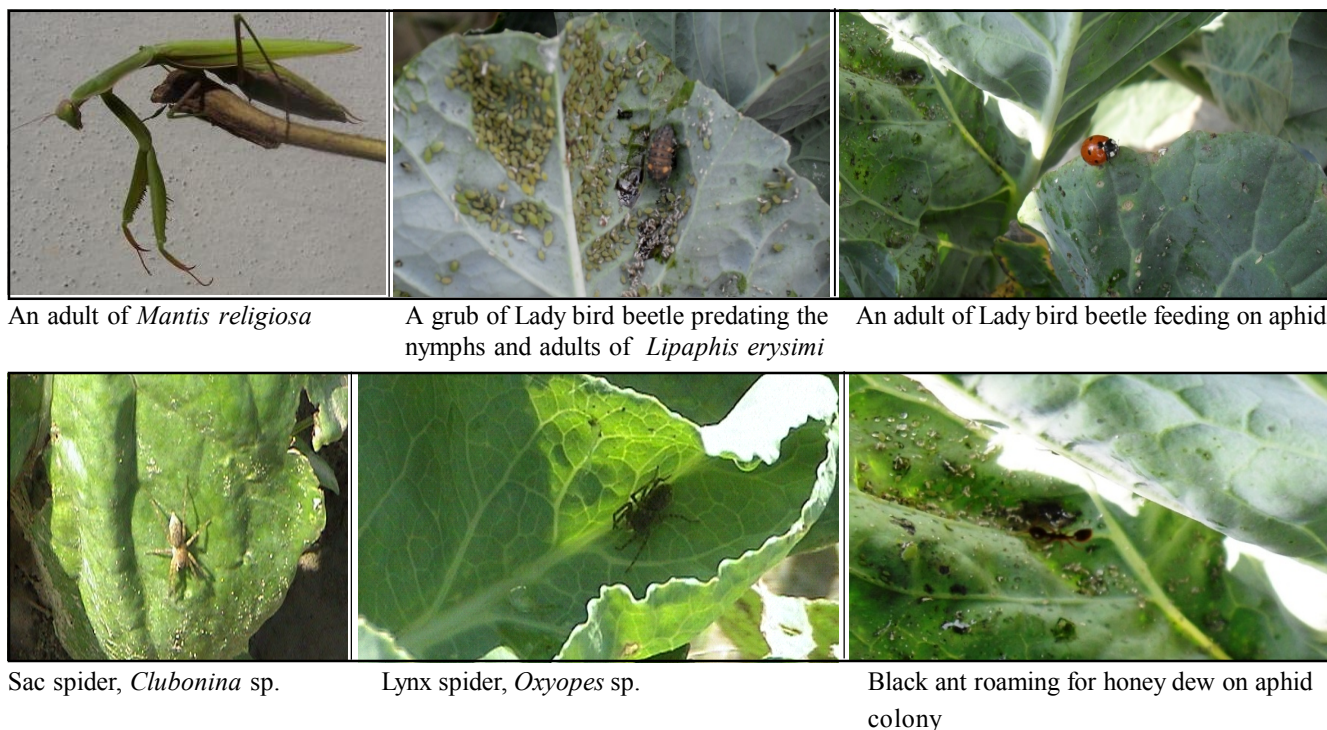


Fig. 1 : Predators of cauliflower.

Table 1 : List of predators for the natural control.

A. Natural enemies				
S. no.	Common Name	Scientific Name	Family	Order
1.	Mantid	<i>Mantis religiosa</i> (Linnaeus)	Mantidae	Mantodea
2.	Lady bird beetle	<i>Coccinella septempunctata</i> (Linnaeus)	Coccinellidae	Coleoptera
3.	Lynx spider	<i>Oxyopes</i> sp.	Oxyopidae	Araceae
	Sac spider	<i>Clubonina</i> sp.	Clubionidae	Araceae
B. Arthropod of symbiotic group				
1.	Black ant	<i>Camponotus</i> sp.	Formicidae	Hymenoptera

10 plants. Thereafter an increasing trend in population was observed and reached to its maximum in 3rd SW during both the years. The population during this standard week was 2.08/10 plants in 2009-10 and 2.75/10 plants in 2010-11. Lady bird beetle was active from 51st -5th SW during both the years and population ranged between 0.50-2.08±0.66/10 plants during 2009-10 and 0.41-2.75±0.85/10 plants during 2010-11. Singh *et al.* (2006) reported the occurrence of *C. septempunctata* in the 9th week after sowing of the crop. Bilashini and Singh (2010 and 2011) reported that with the increase in density of *L. erysimi* increase in density of *C. septempunctata* also occurred on *Brassica juncea* var. *rugosa*. They found significant positive correlation between predator and prey population. Temperature, relative humidity and rainfall correlated negatively with predator and prey population whereas sunshine and wind speed correlated

positively.

Predatory spiders, *Oxyops* sp. and *Clubonina* sp. were found associated with insect-pests of mid early season cauliflower crop twice, first from 45th SW (2009) and second from 2nd-3rd (2010) during 2009-10. The population was 0.33/10 plants during these weeks. During 2010-11, it occurred only from 45th-46th (2010) with a maximum population 0.50/10 plants in 46th SW (2010) at temperature range of 16.4-29.2°C and RH 78.3%. Hemchandra and Singh (2006) had reported 17 different predators including 3 species of spiders associated with cauliflower crop.

Arthropod of symbiotic group of *Camponotus* sp. was active in 50th SW during both the years and the level of population was 0.33/10 plants at temperature range 11.0 -25.9°C and RH 64.4% during the 2009-10 and 7.3

Table 2 : Population of natural enemies and other arthropod associated with the insect pests on cauliflower crop in eastern U.P. during 2009-10 and 2010-11.

SW	Population/10plants (Mean of 120 plants)							
	<i>Mantis religiosa</i>		<i>Coccinella septumpunctata</i>		<i>Oxyops spp.</i>		<i>Camponotus sp.</i>	
	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11
41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00	0.33	0.33	0.00	0.00
46	0.33	0.00	0.00	0.00	0.33	0.50	0.00	0.00
47	0.33	0.33	0.00	0.00	0.00	0.00	0.00	0.00
48	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00
49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	0.66	0.33	0.00	0.00	0.00	0.00	0.33	0.33
51	0.33	0.00	0.50	0.41	0.00	0.00	0.33	0.50
52	0.00	0.00	0.66	0.67	0.00	0.00	0.33	0.33
1	0.00	0.00	0.67	0.91	0.00	0.00	0.50	0.66
2	0.00	0.00	1.66	1.75	0.33	0.00	0.58	0.66
3	0.00	0.00	2.08	2.75	0.33	0.00	0.33	0.33
4	0.00	0.00	1.17	1.58	0.00	0.00	0.33	0.66
5	0.00	0.00	1.00	1.25	0.00	0.00	0.33	0.33
Range	0.33-0.66	0.33-0.33	0.50-2.08	0.41-2.75	0.33-0.33	0.33-0.5	0.33-0.58	0.33-0.66
Average	0.10±0.19	0.06±0.13	0.46±0.66	0.55±0.85	0.08±0.14	0.05±0.14	0.18±0.21	0.22±0.27

-24.0°C and RH 68.9% during 2010-11. Its activity continued till end of the crop during both the years. It is also evident from the data that population varied between 0.33-0.58/10 plants during first year and 0.33-0.66/10 plants during second year. Occurrence of *Camponotus* sp. was reported in this area earlier also by other workers but on different crops. Hemchandra and Singh (2006) had recorded 2 species of ants on cauliflower crop.

Conclusion

A total 4 natural enemies viz., Mantid, *Mantis religiosa* (Linnaeus), Coccinellid, *Coccinella septumpunctata* (Linnaeus) and two predatory spiders, *Oxyops* sp. and *Clubonina* sp. were found associated with insect-pests of cauliflower crop. *Camponotus* sp. was recorded roaming around aphid colony and feeding on honeydew during both the years.

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