

Natural parasitization by certain parasitoids on the pests of field crops

RENU YADAV, NEELAM YADAV, RANJANA YADAV AND R.R. KATIYAR

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See end of the article for authors' affiliations

Correspondence to :
NEELAMYADAV
Department of
Zoology, D.A.V. (P.G.)
College, KANPUR
(U.P.) INDIA

SUMMARY

The extensive and intensive survey of various insect pests attacking different *Kharif* and *Rabi* crops recorded certain parasitoids on different stages of crop pests. The promising parasitoids were *Apanteles flavipes*, *Apanteles plutellae* and *Apanteles angaleti* and their respective parasitization was noticed to the range of 7.5 to 20 per cent. These parasitoids may prove very useful in controlling the population of several noxious insect pests infesting field crops.

Key words :

Parasitoids,
Apanteles sp.,
Crop pests,
Braconidae

The Braconidae constitute the most important and largest group of parasitic insects (Piper, 2007) which comprise a large array of wasps which are primarily parasites on lepidopterous larvae. A large number of Braconid parasites have been utilized in biological control programmes against insect pests of crops (Oatman and Platner, 1971 and Rawat and Panwar 1993). The study was conducted to search most virulent species as a biocontrol agent, which is altogether economically viable, socially acceptable and environmentally safer, for man and biosphere.

An experiment was carried out in Department of Entomology at C.S.A. University of Agriculture and Technology, Kanpur to study the natural parasitization by different parasitoids on the pests of field crops. The Braconid parasites were collected for natural parasitization.

The different species of Braconid parasites were collected on major crops and sent for identification to the Division of Entomology, IARI, New Delhi. Hand net sweeping was found to be the most effective ways of collecting Braconid parasites. A relatively good diversity of species were collected in the earmarked sites where wide varieties of flowering plants surrounded by several different kinds of bushes were occurring.

In an extensive survey of various insect pests attacking on different *Kharif* and *Rabi* crops (Table 1), *Spodoptera litura*, *Spilosoma*

obliqua, *Plutella xylostella*, *Helicoverpa armigera*, *Chilo partellus*, *Sylepta derogata* and *Eucosma critica* were observed, feeding on different crops.

The certain parasitoids have been recorded parasitizing naturally on various stages of crop pests viz., *Apanteles* species (*Spodoptera litura*, *Spilosoma obliqua*, *Pieris brassicae*, *Plutella xylostella*, *Helicoverpa armigera*, *Cnephalocrosis medinalis*, *Chilo partellus*, *Earias vitella*, *Sylepta derogata*, *Eucosma critica*) and *Bracon* sp. (*Helicoverpa armigera*, *Spodoptera litura*). Braconid parasitoids have been observed parasitizing on different species of insect pests in which *Apanteles* spp. were dominant predominating (Table 1) a minimum of 7.5 and maximum 20.0 per cent parasitization on different species of crop pests. The higher (20%) parasitization was recorded in *Eucosma critica*, occurring naturally. Mitchell, 2000; Kunnalaca and Mueller, 1979; Boling and Pitre, 1970 and Chandra Mohan, 1994 reported for parasitoids.

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Table 1 : Natural parasitisation of pest insect species infesting various field crops

Sr. No.	Common name of the pest	Scientific name	Crop	Parasitisation	
				Parasitoid	Extent of parasitisation (%)
1.	Tobacco caterpillar	<i>Spodoptera litura</i> (Fabr.) (Lepidoptera : Noctuidae)	Cauliflower and cabbage	<i>Apanteles flavipes</i> (Hymenoptera : Braconidae)	7.5
2.	Bihar hairy caterpillar	<i>Spilarctia (Spilosoma) obliqua</i> (Walk.) (Lepidoptera : Arctiidae)	Castor, arhar and pea	<i>Apanteles flavipes</i> (Hymenoptera : Braconidae)	9.5
3.	Diamond back moth	<i>Plutella xylostella</i> (Linn.) (Lepidoptera : Plutellidae)	Cabbage and cauliflower	<i>Apanteles plutellae</i> (Hymenoptera : Braconidae)	10.9
4.	Gram pod borer	<i>Helicoverpa armigera</i> (Hubn.) (Lepidoptera : Noctuidae)	Gram and chickpea	<i>Apanteles flavipes</i> (Hymenoptera : Braconidae)	12.5
5.	Jowar stem borer	<i>Chilo partellus</i> (Swinh.) (Lepidoptera: Pyralididae)	Jowar and maize	<i>Apanteles flavipes</i> (Hymenoptera : Braconidae)	8.0
6.	Cotton leaf roller	<i>Sylepta derogata</i> (Fabr.) (Lepidoptera: Pyralididae)	Cotton	<i>Apanteles flavipes</i> (Hymenoptera : Braconidae)	9.5
7.	Arhar leaf folder	<i>Eucosma critica</i> (Hycy.) (Lepidoptera : Eucosmidae)	Arhar	<i>Apanteles angaleti</i> (Hymenoptera : Braconidae)	20.0

Authors' affiliations:

RENU YADAV, Department of Zoology, C.C.S. (P.G.) College, Heorna, ETAWAH (U.P.) INDIA

RANJANA YADAV, Department of Zoology, N.D. College, Chhibramau, KANPUR (U.P.) INDIA

R.R. KATIYAR, Department of Entomology, C.S.A. University of Agriculture and Technology, KANPUR (U.P.) INDIA

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