

# Parasitization by *Cotesia plutellae* on major insect pests of crops under laboratory conditions

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

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## SUMMARY

The extent of parasitization of *Cotesia plutellae*, a solitary endo-parasitoid of lepidopterous pests was studied under the laboratory conditions on crop was pests. Ten pairs of adult male and female parasitoid, *Cotesia plutellae* were released on hundred second instar larvae of gram pod borer (*Helicoverpa armigera* Hubn.), tobacco caterpillar (*Spodoptera litura* Fabr.), Bihar hairy caterpillar (*Spilarctia obliqua* Walker) and rice moth, (*Corcyra cephalonica*). Next day the parasitized larvae were separated and reared on synthetic diet for a week. Fully fed parasitoid larvae left their host and spun creamy white cocoon near the host. Total number of parasitized and healthy larvae were counted and parasitization percentage of each species was observed separately. *C. cephalonica* larvae were severely parasitized (30%) followed by 20% in *H. armigera* and *S. litura* larvae. Least parasitization (10%) was observed in the larvae of *S. obliqua*. The findings of this experiment may safely be utilized in the management of gram pod borer and tobacco caterpillar.

See end of the article for authors' affiliations

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

## Key words :

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Biological control is the method of destroying pests by making use of their natural enemies *i.e.* parasites which are totally beneficial to us. The method is self-perpetuating, ecologically sound, economical and also free from environmental pollution, toxic hazards and other undesirable side effects. With availability of synthetic pesticides, biological control was relegated to rear position and almost forgotten and well established biological control systems were disrupted. However, the drawbacks of indiscriminate use of synthetic pesticides and awareness regarding the quality of environment have again brought the biological control in the forefront as an ecologically sound method of pest suppression. The management of natural enemies like parasitoids of pests and the use of selected beneficial organisms like antagonists, competitors etc. and of their products to reduce pest populations has emerged as the most eco-friendly management for harmful pest populations.

The Valuable informations on these aspects has been provided by Melo, 1990; Singh, 1993a; Singh, 1993b and Singh, 2000.

## MATERIALS AND METHODS

An experiment was carried out in

Department of Entomology at C.S.A. University of Agriculture and Technology, Kanpur to study the parasitization by *Cotesia plutellae* on crop pests. For this purpose, the larvae of major insect pests and *Cotesia plutellae* were collected from agricultural crops and reared in the laboratory. Mass rearing of parasitoid *Cotesia plutellae* was made in cages of 40 x 40 x 45cm size in which two hundred cocoons of *C. plutellae* were placed in a Petridis. 10% honey solution was also provided in side of the cage for feeding of adults. Mustard seedlings containing 2nd instar larvae of the host insects were exposed to the adults parasitoids for parasitization for 24 hours. The parasitized larvae were removed from the cage and kept for further development of the adult parasitoid. The fully fed larvae of parasitoid left their host and spun a creamy white cocoon near the host. The cocoons were collected from the seedlings and placed inside the rearing cage. The adults emerged in 3 to 5 days. Each female parasitoid parasitizes 100 to 150 larvae of the host in its life time.

## RESULTS AND DISCUSSION

In the present investigations (Table 1), results have shown that Braconid parasitoid, *Cotesia plutellae* on gram pod borer

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**Table 1 : Propensity of braconid parasitoids on major insect pests of field crops in laboratory condition**

Sr. No.	Common name of the pest	Scientific name	Crop	No. of host larvae	Adult parasitoid released	No. of larvae parasitized	Percentage of parasitization
1.	Rice moth	<i>Corcyra cephalonica</i> (Staint.) (Lepidoptera :Galleridae)	Jowar	100	10 Pairs	30	30%
2.	Gram pod borer	<i>Helicoverpa armigera</i> (Hubn.) (Lepidoptera : Noctuidae)	Gram, sweet pea	100	10 Pairs	20	20%
3.	Tobacco caterpillar	<i>Spodoptera litura</i> (Fabr.) (Lepidoptera : Noctuidae)	Castor and cauliflower	100	10 Pairs	20	20%
4.	Bihar hairy caterpillar	<i>Spilarctia obliqua</i> (Walk.) (Lepidoptera : Arctiidae)	Castor	100	10 Pairs	10	10%

(*Helicoverpa armigera* Hubn.), tobacco caterpillar (*Spodoptera litura* Fabr.), Bihar hairy caterpillar (*Spilarctia obliqua* Walk.) and rice moth (*Corcyra cephalonica* staint.) which were maintained on the synthetic diet as well as on the crushed grain of jowar. The higher (30%) parasitization in rice moth larvae (*Corcyra cephalonica* Staint.) and least 10% parasitization were recorded in Bihar hairy caterpillar (*Spilarctia obliqua* Walk.) in the laboratory condition. Chauhan *et al.* (1997) found *Cotesia* spp. as dominant having 70% parasitism and Devi and Raj, 1995 also support the present results.

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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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