

Natural Enemy Complex of the Cabbage Aphid *Brevicoryne brassicae* L. (Homoptera : Aphididae) in Kullu Valley, Himachal Pradesh

J.N. THAKUR, U.S. RAWAT, A.D. PAWAR AND S.S. SIDHU

Central Biological Control Field Laboratory, Lugaribhuthi Seobag, Kullu 175 101 (H.P.)

The cabbage aphid, *Brevicoryne brassicae* L. is a serious pest of cabbage, but also attacks cauliflower, turnip, radish, mustard etc. affecting their growth and reducing their market value considerably. The role of natural enemies in containing the aphid population is of considerable importance. Recently, Verma and Makhmoo (1987) have reported various species of syrphid preying upon *B. brassicae* in mid-hill region of Himachal Pradesh. In the present study, efforts were made to determine the natural enemy complex of *B. brassicae* other than syrphids in and around the Kullu valley (H.P.) during the years 1987-88 from April to June by conducting regular field surveys. Parasitoids and predators so obtained were identified through CIE, London.

Surveys were conducted in Bajaura, Bhuntar, Katrain and Seobag. The natural enemy complex of *B. brassicae* collected from these areas were, three coccinellid predatory beetles viz., *Coccinella septempunctata* L., *Hippodamia variegata* Goeze and *Harmonia dimidiata* F. and one braconid endo-parasitoid *Diaeretiella rapae* McIntosh. *H. variegata* was previously recorded from the plum aphid *Hyalopterus arundinis* F. in Kashmir Valley (Bhagat and Masoodi, 1988). *Aphidius* sp. parasitizing 2.9-38% of *B. brassicae* in mid-hill region of H.P. (Kotwal *et al.*, 1984) was not found during the present investigation. *D. rapae* was hyperparasitized by a pteromalid *Pachyneuron aphidis* Bouche to the extent of 33.12 - 45.92%. Of the four natural enemies, *D. rapae* and *H. dimidiata* have been reported for the first time from Himachal Pradesh, although *D. rapae* on *B. brassicae* has been reported earlier in West Bengal (Ghosh, 1975). The status of *P. aphidis* as a hyperparasite in the present study is substantiated by the works of Kiliucer (1982) and Kotwal *et al.* (1984). Predators have been found to be the key mortality factors but not parasitoids in the present study. Among the predators, syrphids were more abundant followed by coccinellids. Only a few mummies of hymenopterous parasitoids were observed in dense aphid colonies. Parasitism of *B. brassicae* by *D. rapae* varied between 9.34-20.13% at different places which is quite less

as compared to 27.1-76.0% reported in Kenya by Bahana and Karuhize (1986). Among the coccinellid beetles, *C. septempunctata* consumed 10.4-12.5 aphids per beetle per day followed by *H. dimidiata* (9.7-11.92) and *H. variegata* (4.75-7.7).

The appearance of these natural enemies synchronised with the occurrence of aphid population in April-May, but maximum activity was observed in the last week of May or first week of June in this area. Still our knowledge regarding the natural enemy complex of *B. brassicae* in this area may be incomplete and needs more investigations in the years to come.

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KEY WORDS : *Brevicoryne brassicae*, natural enemy complex, Kullu valley

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