

Research Note

Natural control of peach leaf curl aphid, *Brachycaudus helichrysi* (Kaltenbach) (Hemiptera: Aphididae) by *Oomyzus scaposus* (Thomson) (Hymenoptera: Eulophidae) on peach

SANDEEP SINGH* and GURLAZ KAUR

Department of Fruit Science, Punjab Agricultural University, Ludhiana 141 004, Punjab, India.

*Corresponding author E-mail: sandeep_pau.1974@pau.edu

ABSTRACT: Peach is an important fruit crop of Punjab. It is attacked heavily by peach leaf curl aphid, *Brachycaudus helichrysi* (Kaltenbach) causing maximum damage during March-May. Fixed plot surveys were conducted at Fruit Research Farm of Punjab Agricultural University, Ludhiana, Punjab. The samples of peach leaves infested with peach leaf curl aphid were collected and reared in the Entomology laboratory of the Department of Fruit Science. This study reports 40-50 Percent parasitization of peach leaf curl aphid by parasitic wasp, *Oomyzus scaposus* (Thomson) (Hymenoptera: Eulophidae).

KEY WORDS: Natural enemy, *Oomyzus scaposus*, peach leaf curl aphid, *Brachycaudus helichrysi*

(Article chronicle: Received: 10-09-2015; Revised: 26-09-2015; Accepted: 26-09-2015)

Peach is a mainly a temperate fruit crop but its low chilling varieties are also grown in sub-tropical regions as Punjab and Uttar Pradesh. In Punjab, peach is grown on an area of 1716 ha with a total production of 30340 MT (Anonymous, 2015). High palatability and processing value makes it an important commercial fruit. Production and productivity of peach is greatly hampered by many insect-pests as peach leaf curl aphid, *Brachycaudus helichrysi* (Kaltenbach), peach black aphid, *Pterochlorus persicae* (Cholodkovsky), chaffer and other defoliating beetles (*Adoretus* spp.), hairy caterpillars (*Euproctis* sp.), fruit flies [*Bactrocera dorsalis* (Hendel) and *Bactrocera zonata* (Saunders)] and flat headed borer, *Sphenoptera dadkhani* Obenberger under Punjab conditions. However, peach leaf curl aphid, *B. helichrysi* is one of the most important insect-pest of peach trees and is reported from all around the world (Singh and Sharma, 2012). Nymphs and adults are very destructive as they suck the cell sap from leaves, petioles, blossoms and fruits leading to curling and withering of leaves, reduced fruit set, slow development of fruit due to lack of nutrition and premature fall of the fruits. Secretion of honey dew by aphids leads to development of sooty mould on leaves and twigs and hence reducing the surface area for photosynthesis. Peak activity period of peach leaf curl aphid in Punjab is from March-May. Peach growers use plenty of insecticides to manage this pest each

year leading to depletion of resources and environment. Additionally, the residue problems related to insecticides is also harmful to human health by consumption of residue affected fruits. Using its natural enemies for managing the populations of peach leaf curl aphid below economic injury levels is the utmost need of time.



Fig. 1. Peach leaf curl aphid mummies along with green coloured nymphs on peach.

Regular fixed plot surveys were conducted in the peach orchards at the Fruit Research Farm of Punjab Agricultural University, Ludhiana, Punjab. Different life stages of *B. helichrysi* were collected and reared in Fruit Entomology Laboratory in the Department of Fruit Science. Percent infestation of peach leaves with leaf curl aphid was observed. Samples of curled leaves of peach infested with aphids were collected from orchards and kept in glass jars to rear and isolate the parasites of *B. helichrysi*. Along with it, percent parasitization of aphid individuals was also observed under laboratory conditions. Specimens of *B. helichrysi* and its parasitoid were sent to concerned taxonomists in different laboratories for identification.

The fixed plot surveys conducted on *B. helichrysi* demonstrated that there was almost 60-70 per cent infestation of the *B. helichrysi* on peach trees during March-May 2015 in peach orchards of Punjab Agricultural University, Ludhiana, Punjab. On an average, 400-500 aphids (nymphs and adults) were observed on the lower surface of each leaf. The samples of peach leaves infested by peach leaf curl aphids were observed regularly in the laboratory for the emergence of natural enemies. The adult wingless aphids were observed to be converting to golden coloured aphid mummies with time due to infestation of parasitoid. Adults of parasitoid, *O. scaposus* were observed to emerge from these aphid mummies (Figure 1). These specimens were collected and preserved. Approximately, 40-50 per cent aphids from each glass jar with samples were observed to be infested by this natural enemy.

This study reports *O. scaposus* for the first time as a parasitic natural enemy of the peach leaf curl aphid in Punjab. Earlier, its importance as a hymenopteran parasitoid has been highlighted by Kumar *et al.* (1987) from Patiala. Other than aphids, it is reported to be a hyperparasitoid of coccinellid predators in Himachal Pradesh (Sharma and Verma 1993), Karnataka (Balikai 2000) and Uttar Pradesh (Singh and Singh 2003). The potential of *O. scaposus* as a

biocontrol agent against the peach leaf curl aphid has to be tested further under field conditions. Also, the differentiation of specific strains of *O. scaposus* parasitizing on aphids and coccinellid predators need to be verified by morphological and molecular studies.

ACKNOWLEDGEMENT

Authors are thankful to Dr. S. Chakrabarti, Kalyani, West Bengal for identifying the specimens of peach leaf curl aphid and Dr. J. Poorani, National Research Center for Banana, Trichy for identifying the natural enemy *O. scaposus*.

REFERENCES

- Anonymous. 2015. *Package of practices for cultivation of fruit crops*. Punjab Agricultural University, Ludhiana. 150 pp.
- Balikai RA. 2000. Activity of coccinellid predator and its hyperparasitoid in rabi sorghum ecosystem of northern Karnataka. *Agric Sci Dig.*, **20**: 118–119.
- Kumar N, Singh D, Pal Kaur S. 1987. A report on hymenopteran parasite *Tetrastichus coccinellae* Kurdj. from Patiala. *Geobios New Reports* **6**: 72–73.
- Sharma PK, Verma AK. 1993. Studies on the coccinellid predators of the cabbage aphid *Brevicoryne brassicae* in Himachal Pradesh. *J Biol Control* **7**: 15–19.
- Singh HS, Singh R. 2003. Parasitization of *Tetrastichus coccinellae* Kurdj. on *Coccinella septempunctata* L. under field condition in eastern Uttar Pradesh. *Indian J Pl Prot.* **31**: 143.
- Singh S, Sharma DR. 2012. Abundance and management of fruit flies on peach through male annihilation technique (MAT) using methyl eugenol based mineral water bottle traps. *J Insect Sci.*, **25**: 135-43.