

Field observations on Hyperparasites of Aphid Pests infesting *Rosa* spp. in Kashmir Valley, India

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ABSTRACT

Of the primary aphidiid parasites of aphids of *Rosa* spp. encountered in Kashmir Valley, *Praon volucre* (Haliday) was dominating with wide occurrence and *Aphidius avenae* Haliday was relatively scarce. Host range, seasonal occurrence and population density of the hyperparasites: *Alloxysta* sp., *Asaphes suspensus* (Nees), *Coruna* spp. and *Prionomitus* sp. have been studied. The population of *A. suspensus* was high and of *Prionomitus* sp. low in various habitats surveyed.

Key words : *Rosa* spp., Aphids, hyperparasites

A detailed survey for aphidiid parasites of rose aphids revealed a large number of hymenopteran hyperparasites attacking different species of aphids and primary parasites in different localities, areas and habitats of Kashmir Valley. During the course of the present investigation, the host range, seasonal occurrence and population densities of hyperparasites have been assessed. It was observed that these hyperparasites played a negative role in biological control of aphids damaging various species of wild and cultivated rose in the valley.

The previous reports of hyperparasites of aphids affecting *Rosa* spp. in India were made by Bhagat (1982, 1983). The record of the hyperparasite, *Alloxysta pleuralis* Cameron for the first time from India was provided by Sinha (1979). Earlier, Subba Rao and Sharma (1962) and Singh *et al.* (1962) reported for the first time other species of hyperparasites of aphids from India.

MATERIALS AND METHODS

Large number of hyperparasites were collected by rearing parasitized or mummified aphids in the laboratory. The samples were collected from different regions and localities at different altitudes of Kashmir Valley. The host aphid species were preserved in 70%

alcohol, later mounted and identified. For rearing of large samples, spacious jars / bottles along with infested part of the plant, covered with dense textured muslin cloth were utilized. Small samples especially mummified aphids (parasite cocoons) were reared in small vials and glass tubes covered with cotton plugs. The adult hyperparasites were later separated out on a white sheet of paper and parasites preserved as dry-mounts or slides. This survey was based on random sampling method and data cover several years field observation.

RESULTS AND DISCUSSION

The investigations revealed the occurrence of four species of hyperparasites (Table 1).

Alloxysta spp. have been found in various localities from ca 1500 m to ca 2,500 m. The hyperparasites parasitized primary parasites *viz.*, *Praon volucre* (Haliday) and *Aphidius* nr. *eglanteriae* Haliday and aphid, *Myzaphis rosarum* (Kaltenbach) attacking mainly *Rosa webbiana*, occurring as forest undergrowth. The hyperparasite was in abundance from late March to early June in low land areas and at high altitudes from late May to July. The field observation revealed the existence of high percentage of *Alloxysta* spp., suppressing the aphid

Table 1. Occurrence of hyperparasites of primary parasites of aphids of *Rosa* spp.

Hyperparasite Primary parasite	Aphid species	Host plant
<i>Alloxysta</i> spp.		
<i>Aphidius</i> nr. <i>eglanterae</i> Haliday	<i>Myzus rosarum</i> (Kaltenbach)	<i>Rosa webbiana</i>
<i>Proan valucra</i> (Haliday)	<i>M. rosarum</i> (Kaltenbach)	<i>Rosa webbiana</i>
<i>Asaphes suspensus</i> (Nees)		
<i>Aphidius avenae</i> Haliday	<i>Chaetosiphon chaetosiphon</i> (Nevsky)	<i>Rosa macrophylla</i>
<i>A. rosae</i> (Haliday)	<i>Macrosiphum</i> sp.	<i>Rosa macrophylla</i>
<i>Coruna</i> spp.		
<i>Aphidius</i> sp.	<i>Chaetosiphon</i> sp.	<i>Rosa</i> sp.
<i>Aphidius</i> sp.	<i>Macrosiphum</i> sp.	<i>R. indica</i>
<i>Prionomitus</i> sp.		
<i>Aphidius</i> sp.	<i>Chaetosiphon tetra rhodus</i> (Walker)	<i>R. canina</i>

parasite population to a great extent in various areas and localities surveyed. Mummified aphids were found singly on the underside of the leaves of the host plant, and in very few cases, more than one mummified aphid was encountered.

2. *Asaphes suspensus* (Nees) (Pteromalidae)

This hyperparasite was common in various areas of the Valley, attacking the primary aphidiid parasite, *Aphidius avenae* and *Aphidius rosae* Haliday, parasitizing the aphid species, *C. chaetosiphon* (Nevsky) and *Macrosiphum* sp. respectively. These aphid pests greatly affect *Rosa macrophylla*, existing as forest undergrowth in low as well as high altitude forest zones of the valley. Population of *A. suspensus* (Nees) was high from early to late May. The mummified aphids were also found in large numbers, occurring singly on the underside of small leaves of the host plant.

3. *Coruna* spp. (Pteromalidae)

Coruna spp. were observed as hyperparasites of *Macrosiphum rosae* (Linnaeus) and *Chaetosiphon* sp. attacked by primary aphidiid parasite *Aphidius* spp. *M. rosae* was noticed as a serious pest of *Rosa indica* mostly occurring in cultivated habitats. Also, *Chaetosiphon* sp. damaged *Rosa* sp. occurring in parks and garden avenues in various localities and areas of Kashmir valley. The mummified aphids were seen in abundance from early May to

early June, attached singly on the underside of the leaves of host plant.

4. *Prionomitus* sp. (Encyrtidae)

Rosa canina existing as a forest undergrowth in low land as well as high-altitude forest zones of Kashmir valley, has been found to be severely damaged by the aphid, *Chaetosiphon tetra rhodus* (Walker). This aphid pest was found to be attacked by *Aphidius* sp. The rearing of a few samples of live parasitized aphids revealed the occurrence of its hyperparasite, *Prionomitus* sp. Mummified aphids were found on the underside of the small leaves of the host plant during early summer in the parks, gardens and other cultivated avenues.

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