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A brief note on the aphidiphagous *Endaphis aphidimyza* Shivpuje et Raodeo, 1985 (Diptera Cecidomyiidae) in Chitrakoot Dham region and Parbhani district (India)

Manoj Kumar* & Ramesh Chandra

Department of Biological Sciences Mahatma Gandhi Chitrakoot Gramodaya University, Chitrakoot, Satna (MP); e-mail: manoj.150378@gmail.com, rctchitrakoot@gmail.com
*Corresponding author

ABSTRACT *Endaphis aphidimyza* Shivpuje et Raodeo, 1985 (Diptera Cecidomyiidae) is an endoparasitoid gall midge, feeding within the body of the aphids *Uroleucon* (*Uroleucon*) *sonchi* (Linnaeus, 1767) (Hemiptera Aphididae); *U.* (*Uromelan*) *compositae compositae* (Theobald, 1915) and *U.* (*Uromelan*) *gobonis* (Matsumura, 1917). Aphids are one of the major insect pests of many crops including mustard, safflower, ground nut, cabbage, cauliflower, knol-khol, radish, bean, soybean, wheat, sorghum, peas, potato, cotton and maize. In the present work four districts of Chitrakoot Dham region, as well as nearby villages of Parbhani district (Maharashtra), were surveyed for the above endoparasitoid gall midge. None *E. aphidimyza*, at any stage, was found in Chitrakoot Dham, while other natural enemies of aphids such as syrphids, coccinellids and lacewings were recorded.

KEY WORDS Cecidomyiid; Safflower; Gall midge; Endoparasitoids; Biological control.

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INTRODUCTION

The Coccinellids, syrphids, lacewings and cecidomyiids are the natural enemies of aphids. In cecidomyiids (Diptera Cecidomyiidae), *Aphidoletes aphidimyza* (Rondani, 1847) and *Monobremia rishikeshensis* Grover, 1979 are predators, while *Endaphis* Kieffer, 1896 and *Pseudendaphis* Barnes, 1954 are parasitoids of aphids (Grover & Chandra, 1988; Chandra & Kumar, 2010).

The genus *Endaphis* was erected by Kieffer (1896) and one of its species, *E. perfidus* (Kieffer, 1896), was reported as parasitoid of *Drepanosiphum platanoides* (Schrank, 1801) (Hemiptera Callaphididae). In India, Shivpuje & Raodeo (1985) described a new species of this genus, i.e. *Endaphis aphidimyza* (Shivpuje et Raodeo, 1985).

Present study was planned to explore the presence/absence of the aphidophagous *E. aphidimyza* and its distribution pattern in four districts of Chitrakoot Dham region as no such information exist in literature.

MATERIAL AND METHOD

Aphids and their natural enemies were surveyed in mustard, radish, cauliflower, cabbage, wheat, brinjal, cucurbit and bean plants in all blocks of Hamirpur, Mahoba, Banda and Chitrakoot districts

Name of District	Name of Crop							
	Mustard & Radish		Cauliflower/ Cabbage		Brinjal and Cucerbit Plants		Bean	
	Aphids	Natural enemies	Aphids	Natural enemies	Aphids	Natural enemies	Aphids	Natural enemies
HAMIRPUR	*L. erysimi* *B. brassica* *M. persicae*	Coccinellids (E - L - A) Syrphids (E - L) *Chrysoperla* sp. (L)	*M. persicae* *L. erysimi* *M. persicae*	Coccinellids (E - L - A) Syrphids (E - L)	*A. gossypii* *A. craccivora*	Coccinellids (A) Syrphids (L - A)	*A. craccivora*	Coccinellids (E - L) Syrphids (E - L) *Chrysoperla* sp. (A - E)
MAHOBA	*L. erysimi* *B. brassica*	Coccinellids (L - A) Syrphids (L)	*L. erysimi* *M. persicae*	Syrphids (E - L) Coccinellids (L - A)	*A. gossypii* *A. craccivora*	Syrphids (E - L) Coccinellids (L)	*A. craccivora*	Coccinellids (L - A) Syrphids (E - L)
BANDA	*L. erysimi* *M. persicae*	Coccinellids (E - L - A) Syrphids (L)	*M. persicae* *L. erysimi* *B. brassica*	Coccinellids (L - A) Syrphids (L)	*A. gossypii*	Syrphids (L) Coccinellids (L - A) *Chrysoperla carnea* (A)	*A. craccivora*	Coccinellids (L - A) Syrphids (E - L)
CHITRAKOOT	*L. erysimi* *M. persicae* *B. brassica*	Syrphids (E - L) Coccinellids (L - A)	*M. persicae* *L. erysimi*	Syrphids (L) Coccinellids (L - A) Syrphids (L)	*A. craccivora* *A. gossypii*	Syrphids (E - L) Coccinellids (L - A)	*A. craccivora*	Coccinellids (L - A) Syrphids (E - L)
UNIVERSITY AGRICULTURAL FARM, RAJAULA (M.P.)	*L. erysimi* *M. persicae*	Coccinellids (E - L - A) Syrphids (L)	*L. erysimi* *M. persicae*	Syrphids (L) Coccinellids (L - A) *Chrysoperla carnea* (A)	*A. gossypii*	Syrphids (L) Coccinellids (A)	*A. craccivora*	Coccinellids (L - A) Syrphids (L)

Table 1. Survey report of aphids and their natural enemies in Chitrakoot Dham Region (L = Larva, A = Adult, E = Egg). *Lipaphis erysimi* Kaltenbach, 1843; *Brevicoryne brassicae* (Linnaeus, 1758); *Myzus persicae* (Sulzer, 1776); *Aphis gossypii* Glover, 1877; *Aphis craccivora* C.L.Koch, 1854.

of Chitrakoot Dham region as well as in campus and research farms of the Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya rural areas (Chitrakoot, Satna, MP) during the Rabi season (starting with the onset of the north-east monsoon in October). Fifteen samples of highly aphids infested parts of the plants were collected in polythene bags. Each sample was observed with help of a stereoscopic trinocular research microscope in the laboratory.

As per survey report by Grover et al. (1991), safflower crops were surveyed in the research farm of Marathwada Agricultural University, Parbhani (Maharashtra) and in the nearest villages i.e. Taroda, Pokharni, Brahman Goan and Umripata. Highly aphids infested safflower leaves and terminal twigs were collected in plastic containers, the mouth of which was covered by muslin cloth. Meteorological data of the surveyed areas were also recorded.

RESULTS AND DISCUSSION

As shown in Table 1, eggs, larvae and adults of natural enemies of aphids like syrphids, coccinellids and lacewings (species of genus *Chrysoperla* Steinmann, 1964, Neuroptera Chrysopidae) were recorded during the observation of collected samples; on the contrary, different stages (eggs, larvae and

Name of Place	Name of Crop					
	Mustard		Safflower		Niger	
	Name of aphids	Name of natural enemies	Name of aphids	Name of natural enemies	Name of aphids	Name of natural enemies
MARATHWADA AGRICULTURAL UNIVERSITY, PARBHANI	*L. erysimi* *U. sonchi*	Coccinellids (L - A) Syrphids (E - L)	*U. gobonis* *U. sonchi*	Coccinellids (E - L - A) *E. aphidimyza* (E - L)	*U. compositae*	Coccinellids (L)
TARODA	*L. erysimi* *U. gobonis*	Coccinellids (E - L - A) *E. aphidimyza* (E - L)	*U. sonchi*	Coccinellids (L - A) *E. aphidimyza* (E - L)	*U. compositae*	Coccinellids (L - A) *E. aphidimyza* (L)
POKHARNI	*L. erysimi*	Coccinellids (A) Syrphids (L)	*U. gobonis*	*Coccinellids* (L - A) Syrphids (L) *E. aphidimyza* (L)	*U. sonchi* *U. compositae*	Coccinellids (L - A) Syrphids (E - L) *E. aphidimyza* (A - L)
BRAHMAN GAWN UMRIPATA	*L. erysimi*	Coccinellids (L - A)	*U. sonchi*	Coccinellids (A) *E. aphidimyza* (E - L - A) Syrphids (L)	*U. compositae*	Coccinellids (L - A) Syrphids (E - L)
UMRIPATA	*L. erysimi*	Coccinellids (E - L - A)	*U. sonchi*	Coccinellids (A) *E. aphidimyza* (E - L - A)	Crop not Availab	Crop not Available

Table 2. Survey report of aphids and their natural enemies in Parbhani District, Mahashtra (L = Larva, A = Adult, E = Egg). *Uroleucon* (*Uroleucon*) *sonchi* (Linnaeus, 1767); *U.* (*Uromelan*) *compositae compositae* (Theobald, 1915)*U.* (*Uromelan*) *gobonis* (Matsumura, 1917).

adults) of the endoparasitoid gall midge *E. aphidimyza* were not seen in any collected samples from Chitrakoot Dham region.

On the other hand, in nearby villages of Parbhani district (Maharashtra) all stages of natural enemies of aphid like Coccinellids, syrphids and, in line with Grover et al. (1991), even *E. aphidimyza*, were recorded during observations on Mustared, Safflower and Niger crops (Table 2). Probably, maximum and minimum temperature, humidity and rainfall play an important role in the distribution of *E. aphidimyza* in the above working stations, but, at the moment this item remains to be further investigated.

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