

A novel method of field release of *Goniozus nephantidis* (Muesebeck), an important primary parasitoid of *Opisina arenosella* Walker on coconut

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ABSTRACT: *Goniozus nephantidis* (Muesebeck) is an important primary parasitoid of *Opisina arenosella* Walker in coconut eco-system. The method of release of *G. nephantidis* was standardized for the first time. It was found that 90-100 per cent of the parasitoids released at the trunk (1.2 m from the ground level) reached the crown of the palm irrespective of the height of the tree. The mean time taken by each batch of the parasitoids to reach the crown varied from 13 to 22 minutes. It was also found that the parasitoids preferred to crawl on the tree rather than flying. Hence it is suggested that *G. nephantidis* adults may be released at the trunk (1.2 m height from the ground level) of the coconut palm for the management of *O. arenosella* instead of releasing at the crown region of the palm or arbitrarily on unit area basis.

KEY WORDS: *Goniozus nephantidis*, method of release, *Opisina arenosella*

Goniozus nephantidis (Muesebeck), a larval gregarious ecto-parasitoid plays a key role in the biological suppression of the black-headed caterpillar, *Opisina arenosella* Walker infesting coconut plantations in nature. In India, the parasitoid affected different levels of parasitism in various states, viz., 3.7 to 47.6 per cent in Kollam district of Kerala (Sathiamma *et al.*, 1996); 31.0 per cent in Mahuva district of Gujarat (Kapadia and Mittal, 1986); 28.0 per cent in Guntur district of Andhra Pradesh (Manjunath, 1985) and 48.0 per cent in Bangalore (Nadarajan and Channabasavanna, 1980). There are reports available on dosage for field release of *G. nephantidis* (Sathiamma *et al.*, 1987). However, there is no published information available on the method of release of this parasitoid. Hence, an

attempt has been made to standardize the method of release of *G. nephantidis*.

Coconut palms of different heights (Table 1) were selected for the study at Allalasanra located 14 km (Northwards) from Bangalore City during 2002-2003. Height from the ground level to the base of the crown was taken as the height of the tree. *G. nephantidis* was reared on late instars of *Corcyra cephalonica* (Stainton) and the same were used for the study. Ten female parasitoids of *G. nephantidis* were released on the trunk (i.e., 1.2 m height from the ground level) of the each tree by using a piece of cotton during morning hours (8 AM) and the parasitoids were observed till they reached the crown of the palm. Adequate care was taken to release the parasitoids at the shaded portion of the tree as the parasitoids were found to

fly when they were exposed to sunlight during our preliminary investigations. The time was recorded when the parasitoids were released at 1.2 metre height and also when they reached the base of the crown. The total time required for the release of the parasitoids at the trunk and at the crown region of the palm was recorded and converted for 100 trees. The entire study was repeated five times.

The parasitoids were not observed to fly towards the crown region, instead they were found to crawl upward along the trunk as soon as they were released and some of them were found to rest in the cracks present on the trunk before moving upward. Irrespective of the height of the tree, almost 90-100 per cent of the parasitoids reached the crown (Table 1). Mean time taken by each batch (10 nos.) of the parasitoids to move from the point of release to the base of the crown of the coconut palm ranged from 13 to 22 minutes. In the new method of release, the time taken to release *G. nephantidis* was approximately two minutes and the time taken to cover 100 trees was 3½ hours. In the old method of

release, the time taken to release the parasitoids at the crown region was 4 minutes for 2.1 metres; 5 minutes for 3.15 metres; 6 minutes for 4.35 metres; 7 minutes for 5.7 metres; 8 minutes for 6.75 metres and 9 minutes for 7.5 metres and time taken to release the parasitoids for 100 palms was 7, 8½, 10, 12, 13½ and 15 hours, respectively. The above study proved that *G. nephantidis* could be effectively released at the trunk of the tree at chest height (1.2 m height approximately from the ground level) by this new method against *O. arenosella* rather than releasing at crown which will save time and labour.

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Table 1. Details of the movement of *G. nephantidis* adults released at the trunk of coconut palm

Height of the palm (metre)	Distance traveled by the parasitoid (metre)	Percent parasitoids reaching the crown *
2.10	0.90	90.0(71.6)
3.15	1.95	90.0(71.6)
4.35	3.15	100.0(90.0)
5.70	4.50	90.0(71.6)
6.75	5.55	90.0(71.6)
7.50	6.30	90.0(71.6)
SEM±	—	5.60
CD (P=0.05)	—	NS

*Mean of five replications

NS= Non-Significant

Figures in parentheses are arcsine values.