



## Field evaluation of anthocorid predator, *Cardiastethus exiguus* Poppius against *Opisina arenosella* Walker (Lepidoptera: Oecophoridae) in Kerala

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**ABSTRACT:** Blackheaded caterpillar, *Opisina arenosella* Walker is a major pest of coconut in India. *Cardiastethus exiguus* Poppius is a potential predator of eggs and newly hatched larvae of *O. arenosella*. Field release and evaluation of *C. exiguus* was carried out during summer months of 2003-04 and 2004-05 in two pest-infested areas of Kerala. The release rates were 50 and 100 nymphs/adults per tree in the crown region. Totally three releases were made. There was significant reduction in the population of *O. arenosella* after release of the predator. The two release rates (50 and 100 nos./ tree) were found equally effective in reducing the population of *O. arenosella*.

**KEY WORDS:** *Cardiastethus exiguus*, field evaluation, *Opisina arenosella*

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The blackheaded caterpillar, *Opisina arenosella* Walker is a major pest of coconut in India occurring more commonly along the west and east coast regions. On *O. arenosella*, 41 parasitoids and 40 predators have been recorded (Anon., 1999). *Cardiastethus* sp. is an efficient predator of eggs and early larval stage of *O. arenosella* (Mohamed *et al.*, 1982). The biological parameters of the predator were studied by rearing it on the target host *O. arenosella* (Abdurahiman *et al.*, 1982; Nasser and Abdurahiman, 1993). Ballal *et al.* (2002) reported the feasibility of mass multiplication of *C. exiguus* on *Coreyra cephalonica* (Stainton). Studies are available on releases of larval and larval

- pupal parasitoids of *O. arenosella* in coconut ecosystems, but information is not available of any agent for the egg and early larval stage of *O. arenosella*. The study was carried out to evaluate the predatory potential of *C. exiguus* on eggs and neonate larvae of *O. arenosella* in field.

The experiment was laid out during the summer months of 2003-04 and 2004-05 in Thrissur district. The release rates were 50 and 100 nymphs/adults per tree in the crown region and a parallel control was maintained. Ten infested trees were randomly selected as replications. Pre release sampling was done from each tree by collecting 15

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leaflets / tree. Counted different stages of the pest from the leaflets for representing a tree. Three releases of *C. exiguus* were made at five days interval. Leaflet samples were drawn at 15 days interval. Statistical analysis was carried out by following Snedecor and Cochran (1967).

The results of 2003-04 showed that there was significant reduction in the population of *O. arenosella* after the second and third releases of *C. exiguus* when compared to control. But there was no significant difference between treatments 1

(50 nos./ tree) and 2 (100 nos./ tree) in reducing the population of *O. arenosella* (Table 1).

The experiment conducted during 2004-05 showed that there was significant reduction in the post count of population of *O. arenosella* right after first release in both the treatments as compared to control. There was no significant difference between the two release rates in reducing the population of *O. arenosella* (Table 2). Pooled analysis carried out for the two seasons revealed the same result (Table 3).

**Table 1. Pre and post - counts of *O. arenosella* (2003-04)**

Treatment	Pre-count (mean no./ tree)	Post-counts (mean no./ tree)		
		After 1 <sup>st</sup> release	After 2 <sup>nd</sup> release	After 3 <sup>rd</sup> release
T <sub>1</sub> . 50 nymphs/ adults per tree	3.70 <sup>a</sup>	0.90 <sup>a</sup>	0.50 <sup>b</sup>	0.2 <sup>b</sup>
T <sub>2</sub> . 100 nymphs/ adults per tree	2.20 <sup>b</sup>	1.0 <sup>a</sup>	0.40 <sup>b</sup>	0.1 <sup>b</sup>
T <sub>3</sub> . Control	2.30 <sup>b</sup>	2.10 <sup>a</sup>	1.30 <sup>a</sup>	1.5 <sup>a</sup>

**Table 2. Pre and Post counts of *O. arenosella* (2004-05)**

Treatment	Pre-count (mean no./ tree)	Post-counts (mean no./ tree)		
		After 1 <sup>st</sup> release	After 2 <sup>nd</sup> release	After 3 <sup>rd</sup> release
T <sub>1</sub> . 50 nymphs/ adults per tree	5.60 <sup>a</sup>	2.40 <sup>b</sup>	1.40 <sup>b</sup>	0.50 <sup>b</sup>
T <sub>2</sub> . 100 nymphs/ adults per tree	7.60 <sup>a</sup>	1.80 <sup>b</sup>	1.20 <sup>b</sup>	0.40 <sup>b</sup>
T <sub>3</sub> . Control	7.00 <sup>a</sup>	5.40 <sup>a</sup>	5.90 <sup>a</sup>	4.40 <sup>a</sup>

**Table 3. Pre and Post counts of *O. arenosella* (pooled analysis for 2 seasons)**

Treatment	Pre-count (mean no./ tree)	Post-counts (mean no./ tree)		
		After 1 <sup>st</sup> release	After 2 <sup>nd</sup> release	After 3 <sup>rd</sup> release
T <sub>1</sub> . 50 nymphs/ adults per tree	4.65 <sup>a</sup>	1.65 <sup>b</sup>	0.95 <sup>b</sup>	0.35 <sup>b</sup>
T <sub>2</sub> . 100 nymphs/ adults per tree	4.90 <sup>a</sup>	1.45 <sup>b</sup>	0.80 <sup>b</sup>	0.25 <sup>b</sup>
T <sub>3</sub> . Control	4.60 <sup>a</sup>	3.75 <sup>a</sup>	3.60 <sup>a</sup>	2.95 <sup>a</sup>

From the above results, it can be concluded that *C. exiguus* is an efficient predator of *O. arenosella* and can suppress the pest population when released @ 50 nos./ tree at five days interval. At least three releases should be made coinciding with the egg laying stage of the pest. Since the mass culturing technology of this predator is available (Ballal *et al.*, 2002), it can be released in large areas for the management of early stages of *O. arenosella*. According to Mohamed *et al.* (1982) the polyphagous nature of this predator on immature stages of important larval ecto-parasitoids of the same pest often reduces the initial biocontrol of the pest. This has not happened during the experimental period and the aspect needs further investigations.

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