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Research Note

Field efficacy of Australian ladybird beetle *Cryptolaemus montrouzieri* Mulsant in the suppression of *Maconellicoccus hirsutus* (Green) on sapota

M. MANI *AND A. KRISHNAMOORTHY
Division of Entomology and Nematology,
Indian Institute of Horticultural Research,
Bangalore 560 089, Karnataka, India.
E-mail: mmani1949@yahoo.co.in

ABSTRACT: **The pink hibiscus mealybug *Maconellicoccus hirsutus* (Green) appeared on sapota (*Manilkara zapota* Forberg) in April 2003 at the Indian Institute of Horticultural Research Farm, Bangalore. The Australian ladybird beetle *Cryptolaemus montrouzieri* Mulsant was released @20/plant on sapota plants infested with mealybugs. The mealybug population declined from 54.20 /plant on April 23, 2003 to 1.50 /plant on June 15, 2003. No other natural enemy except *C. montrouzieri* was observed on *M. hirsutus* in the present study. There was no significant influence of weather factors, namely, maximum and temperature, morning and evening relative humidity and rainfall, on the mealybug population. The decline in the mealybug population on sapota was attributed to the predatory activity of *C. montrouzieri*.**

KEY WORDS: *Cryptolaemus montrouzieri Maconellicoccus hirsutus*, pink hibiscus mealybug, sapota

In recent years, mealybugs have become an increasing threat to the cultivation of sapota (*Manilkara zapota* Forberg) in peninsular India (Mani, 2001). During April 2003, the terminal shoots of sapota plants were found infested with the pink hibiscus mealybug, *Maconellicoccus hirsutus* (Green) at Indian Institute of Horticultural Research Farm (IIHR), Bangalore and mealybug infestation on the growing point had led to the malformation of shoots and leaves. The first sampling on April 2003 revealed the absence of local natural enemies on mealybug *M. hirsutus* infesting sapota. Since the Australian ladybird beetle, *Cryptolaemus montrouzieri* Mulsant has been reported as a voracious feeder of many mealybug species (Mani and Krishnamoorthy, 1997), it was chosen to evaluate its efficacy in the suppression of *M.hirsutus* on sapota.

The field experiment was conducted on three-year-old sapota cv. Cricket ball at IIHR Farm, Bangalore during April-June 2003. The sapota orchard consisted of 16 plants which were found infested with *M.hirsutus*. The data on he population of the mealybug was recorded on ten plants infested with the mealybug. In each plant, four shoots were chosen to count the number of mealybugs and the predators, if any, using a hand lens (10x) at

* Present address: National Research Centre for Grapes, Pune-412307.

Table 1. Population of *M. hirsutus* and *C. montrouzieri* on sapota

Date	Population/plant (4shoots) (Mean ± S.D)		Per cent reduction in the mealybug population
	Mealybugs	*C. montrouzieri*	
22-04-2003	54.20 ± 12.64	—	—
05-05-2003	43.54±9.52	3.84±0.96	19.6
16-05-2003	24.26±8.48	2.80±1.18	55.2
01.06-2003	9.65±3.26	1.68±1.25	82.2
15-06-2003	1.50± 0.46	1.42±0.84	97.2

S.D = Standard deviation

fortnightly intervals. *Cryptolaemus montrouzieri* was maintained in the laboratory as outlined by Chacko *et al.* (1978). Three to four-day-old larvae of *C. montrouzieri* were released @ 20/ plant on 23 rd April and again on 9th May 2003. The mealybug infested shoots were kept in cloth walled cages for recording the emergence of natural enemies, if any.

The mean number of mealybugs per plant (4 shoots) was 54.20 when the study was initiated on 22nd April 2003 (Table 1). There was a substantial reduction in the population of mealybugs on May 16 following the first release of *C. montrouzieri.* Periodical sampling did not yield any parasitoid/ predator except *C. montrouzieri* during the study period, though several natural enemies have been reported on *M. hirsutus* in India (Mani, 1987). The population of *C. montrouzieri* ranged from 1.42 to 3.84/ plant. The results indicated that there was a gradual decrease in the mealybug population, and a mean of 1.25 mealybugs /plant was recorded by 15 th June 2003.

In the present study, there was 97.23% reduction in the mealybug population within two months of release of *C. montrouzieri* on sapota plants. None of the weather factors namely, maximum and minimum temperature, morning and evening relative humidity and rainfall, was found to be significantly influencing the mealybug population in the present study. Periodical sampling of mealybugs did not yield any local natural enemy in the present study. Hence, the reduction in the mealybug population was attributed to the predation by *C. montrouzieri* . Similar efficacy of *C. montrouzieri* in the suppression of *M.hirsutus* on grapes (Mani and Thontadarya, 1988), acid lime (Mani and Krishnamoorthy, 1999), guava (Mani and Krishnamoorthy, 2001) and ber (Mani *et al.*, 2007) has been reported in India.

Not many effective chemicals are available for the control of mealybugs on fruit crops including sapota. There is good scope for using the proven natural enemies, particularly *C. montrouzieri*, which can be multiplied and supplied by commercial insectaries to the growers to manage *M. hirsutus* and other species of mealybugs. The release of *C. montrouzieri* helps to control the mealybug, thereby reducing the pesticide load in the orchards and leading to the conservation of other locally occurring beneficials which also play a role in regulating the pest populations including the mealybugs.

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