

Preliminary Studies on *Cryptolaemus montrouzieri* Muls. Against the White-Tailed Mealybug *Ferrisia virgata* (Cockerell) Infesting Tobacco Plants

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ABSTRACT

On an average 2—3 grubs and adults of the coccinellid predator, *Cryptolaemus montrouzieri* Muls. per tobacco plant controlled the mealybug, *Ferrisia virgata* (Cockerell) successfully under glasshouse conditions in a period of a month. The population of vectors viz. aphid, *Myzus persicae* (Sulz.) and white fly *Bemisia tabaci* (Gennadius) remained undisturbed on the same plants infested with *F. virgata* probably due to the host-specific nature of the predator.

KEY WORDS: *Cryptolaemus montrouzieri*, *Ferrisia virgata*, control, tobacco

The white-tailed mealybug, *Ferrisia virgata* (Cock.) feeds on more than one hundred species of plants including a variety of crops, ornamental plants and weeds (Gautam and Kataria, 1986). It is known to inflict injuries to the seedlings of tobacco from South India (Anonymous, 1954) and Bihar (Mohammed Ali, 1961). In Delhi, it was found competing for food with the aphid, *Myzus persicae* (Sulz.) and whitefly, *Bemisia tabaci* (Gennadius) maintained on tobacco seedlings in the glasshouse. During the month of April 1987, populations of the vectors, *M. persicae* and *B. tabaci* were observed declining due to competition by *F. virgata*, which became a more serious pest. Studies were therefore undertaken to test the usefulness of the coccinellid predator, *Cryptolaemus montrouzieri* (Muls.) in controlling the mealy bug.

MATERIALS AND METHODS

Tobacco seedlings were transplanted in earthen pots on 3rd January, 1987 and raised in the glasshouse where the humidity was maintained at 80-90 per cent with the help of a humidifier. On 25th April, 1987 when heavy infestation by the mealybugs was noticed, the population was assessed by counting the nymphs and adults in a square centimetre area per leaf and on stem. In ten selected plants out of 30, the population was recorded from five randomly selected leaves and on three places of stem per plant.

The predator, *C. montrouzieri* was mass-multiplied on *F. virgata* at $27 \pm 1.5^\circ\text{C}$ and $50 \pm 5\%$ R.H. (Sweetman, 1963; Gautam,

1987). Grubs (3-10 days old) and adults (one week old) were released on the potted plants on different dates viz, 29.4.87, 6.5.87, 14.5.1987, 19.5.87, and 27.5.87. Releases of 2-3 predators/plant irrespective of its stage were made on the basis of availability of the predator in the laboratory. All the releases were made in the evening (3.30 pm) except for the first one which was done in the morning (11.00 am).

RESULTS AND DISCUSSION

Observations recorded on the population of mealybugs as well as the predator are given in Table 1. Before release, the population of *F. virgata* was so severe that 6-26 mealybugs were observed in a square cm area per leaf and 3-5 per cm of stem length. The predator, *C. montrouzieri* reduced the mealybug infestation to 6 mealybugs/plant a fortnight after the first release as against 16 mealybugs/plant at pre-release stage (Table 1). Further, it was interesting to note that wherever predators were observed, 15-22 cm area of predator activity zone at base of the stem was completely free from the mealybug infestation. By the end of the release (27.5.87), the infestation came down to 3 mealybugs per plant and grubs and pupae were seen on plants, below and on the earthen pots. After a week, it was observed on 19.6.1987 that the population declined to zero (Table 1). A pupal case, a dead adult predator, aphids and white flies were observed on the tobacco plants. Thus, a total of 81 predators comprising of 64 grubs and 17 adults (2-3 predators/plant) gave good control and

TABLE 1. Releases and recovery of the predator, *Cryptolaemus montrouzieri* against *Ferrisia virgata*

Releases of the predator		Date and time	Mealybug population (Number/cm)	Recovery of predators on		
Date & time	Population			Plant	Pot	Wall
29-4-87 (11-00 AM)	24 grubs	29-4-87 (10-00 AM)	16	—	—	—
6-5-87 (3-30 PM)	7 adults	6-5-87 (2-30 PM)	14	0.00	0.00	1.00
14-5-87 (3-30 PM)	10 adults	14-5-87 (2-30 PM)	8	5 adults 3 grubs 6 pupae	0.00	0.00
19-5-87 (3-30 PM)	20 grubs	19-5-87 (2-30 PM)	6	2 adults	0.00	0.00
27-5-87 (3-30 PM)	20 grubs	27-5-87 (2-30 PM)	3	1 grub 2 pupae	3 pupae	0.00
19-6-87 (3-30 PM)	0.00	19-6-87 (3-00 PM)	0	0.00	0.00	1 pupal case and one adult (dead)

cleared the mealybug population infesting tobacco plants in the glass house. Releases of 3-10 beetles per plant of citrus or grapevine were found very successful in controlling *F. virgata* in Saipan island (Sakimura, 1935), California, Israel, United States, Java, Celebes, Australia (Sweetman, 1963) and in India (Anonymous, 1987).

The coccinellid, *C. montrouzieri* is known to be established in South India (Puttarudriah and Channabasavanna, 1953; Kumar, 1981). Thus, it is suggested that inoculative releases of *C. montrouzieri* at Delhi may help the predator's establishment and control of *F. virgata* which occurs on a variety of crops including ornamental plants.

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