

Natural enemies of the whitefly, *Lipaleyrodes euphorbiae* David and Subramaniam (Homoptera : Aleyrodidae)

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ABSTRACT : A severe infestation of the whitefly, *Lipaleyrodes euphorbiae* David and Subramaniam was observed in 1992 on star gooseberry (*Phyllanthus acidus* Linnaeus) at Indian Institute of Horticultural Research Farm, Bangalore. The whitefly infestation was higher during January to June than during July to December. Six natural enemies were found associated with the whitefly. *Eretmocerus* sp., *Acletoxenus indicus* Malloch, *Triommata coccidivora* (Felt), *Mallada boninensis* (Okamoto) and *Cheilomenes sexmaculata* (Fabricius) are reported for the first time on *L. euphorbiae*. However, only *Eretmocerus* sp. and *A. indicus* were collected in large numbers. No definite trend was observed in the whitefly infestation during 1992-94. Morning relative humidity (%) alone had a negative correlation with the whitefly infestation. The activity of *Eretmocerus* sp. was observed only from January to March, 93 and the predator *A. indicus* was found feeding on the whitefly nymphs during December, 92; and April and September-November 1993.

KEY WORDS : *Lipaleyrodes euphorbiae*, natural enemies, star gooseberry, whitefly

The whitefly, *Lipaleyrodes euphorbiae* David and Subramaniam was first observed on euphorbiaceous weeds in 1986 in Tamil Nadu (Jeritta and David, 1986). It appeared in large numbers on star gooseberry (*Phyllanthus acidus* Linnaeus) at Indian Institute of Horticultural Research Farm, Bangalore in 1992. Whiteflies remained in colonies mostly on the under surface of leaves and sucked the sap. They also excreted large quantity of honey dew making the plant parts sticky. So far, not much work has been carried out on the natural enemies of *L. euphorbiae*, except that of Jeritta and David (1986). The present study reports the results on the whitefly infestation and its natural enemies in star gooseberry ecosystem.

MATERIALS AND METHODS

Observations were recorded on natural enemies of the whitefly, *Lipaleyrodes euphorbiae* from December 1992 to March 1994 at monthly interval on the star gooseberry trees located at Indian Institute of Horticultural Research Farm at Hessarghatta. Ten compound leaves per tree were chosen to record the healthy and whitefly infested leaves. At each sampling, infested leaves were brought and kept in wooden cages (30 x 30 x 30 cm) for observing the

emergence of parasitoids/predators. The parasitoids and predators that emerged, were collected, preserved and got identified from International Institute of Entomology, London. During the study period, insecticides were not applied. Correlations of the whitefly infestation with abiotic factors like maximum temperature, minimum temperature, morning relative humidity (%), evening relative humidity (%) and rainfall were worked out.

RESULTS AND DISCUSSION

Perusal of literature revealed the record of whiteflies like *Trialeurodes rara* Singh (David and Kumarasamy, 1975) and *Aleyrodes sizoukinensis* Kuw. (Sundara Babu, 1971) in Tamil Nadu. However, *L. euphorbiae* was reported later in 1994 at Madurai by David (1994). The same whitefly species was earlier observed on euphorbiaceous weeds like *Phyllanthus fraternus* and *P. maderaspatensis* in Tamil Nadu (Jeritta and David, 1986).

Six natural enemies; one parasitoid, *Eretmocerus* sp. (Aphelinidae) and five predators, *Acletoxenus indicus* Malloch (Drosophilidae), *Mallada boninensis* (Okamoto) (Chrysopidae), *Triommata coccidivora*

(Felt) (Cecidomyiidae), *Cheilomenes sexmaculata* Fabricius) and *Scymnus* sp. (Coccinellidae) were recorded on *L. euphorbiae* infesting star gooseberry. Among them, *Eretmocerus* sp. and *A. indicus* were collected in large numbers. *Eretmocerus* spp. form an important natural enemy complex of various whiteflies (Clausen, 1977). The present record of *Eretmocerus* sp. appeared to be new on *L. euphorbiae* since only an eulophid, *Euderomphale bemisiae* had been observed earlier on this whitefly in Tamil Nadu (Jeritta and David, 1986). All the five predators were reported for the first time on *L. euphorbiae* in the present study, though they were recorded on other whitefly species. *Acletoxenus indicus* was known to attack *Aleurocanthus woghmi* Ashby in Western India (Clausen, 1977). *Mallada boninensis* (Joshi and Yadav, 1990), *C. sexmaculata* (Venugopala Rao *et al.*, 1989) and *Scymnus* sp. (Pathummal Beevi *et al.*, 1987) were also recorded earlier on the whitefly *Bemisia tabaci* Gennadius.

The infestation of the whitefly and its natural

enemies in different months is depicted in figure 1. The percentage of whitefly infested leaves was found to be more in January-June, 93. The pest infestation remained low in July-November, 93. Pathummal Beevi *et al.* (1988) also reported the incidence of *B. tabaci* in January-May on brinjal in Tamil Nadu. However, there was no definite trend in the whitefly infestation on star gooseberry in the present study. Correlation studies revealed that there were no significant correlations between the whitefly incidence and the climatic factors except the morning relative humidity which had negative influence ($r = -0.53$) on the whitefly infestation (at 5% level). Parasitisation by *Eretmocerus* spp. was observed in January-March 1993 but not in other months. *Acletoxenus indicus* was found associated with the whitefly nymphs during December, 92, April and September to November 1993. Definite relationship between the whitefly infestation and natural enemies could not be established since their association with the pest was for a shorter duration.

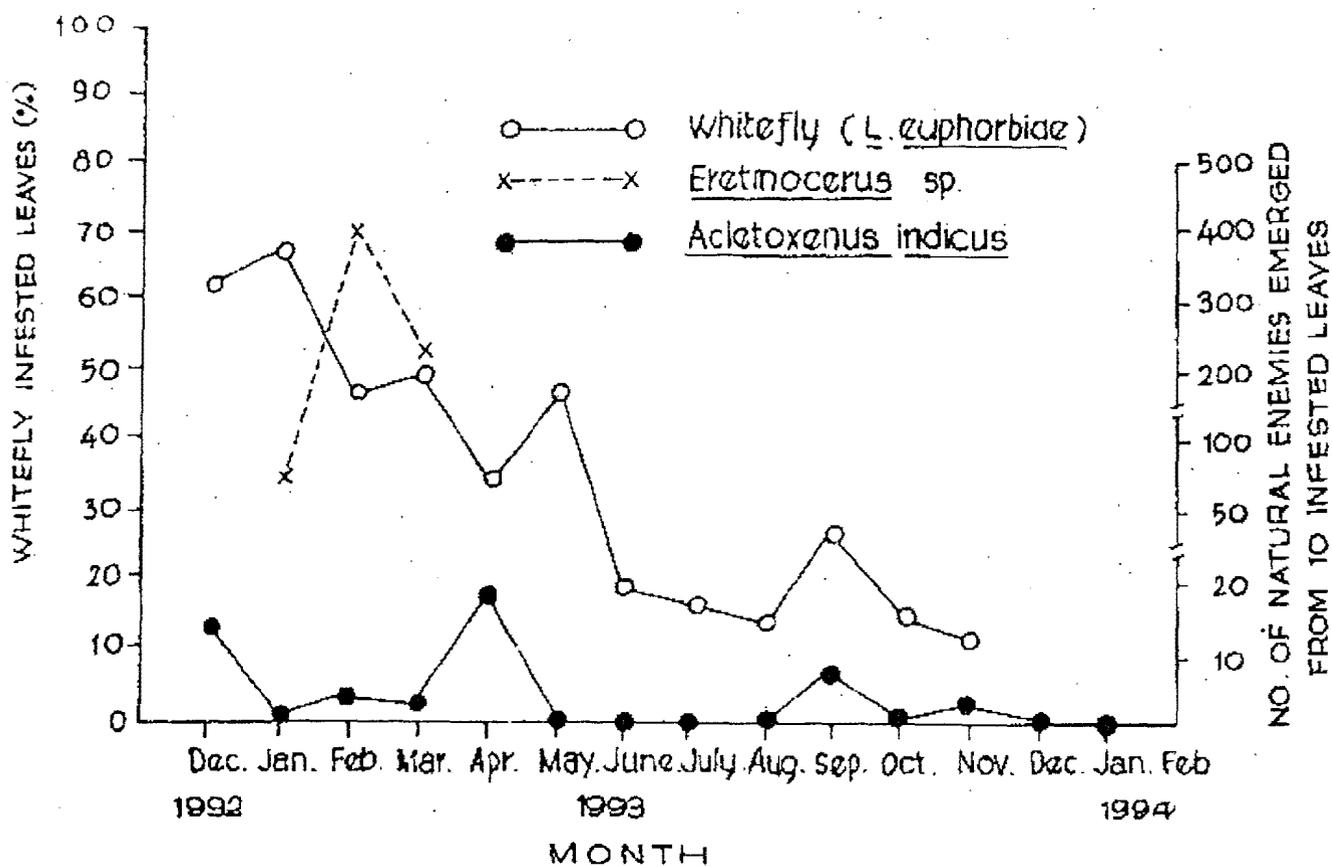


Fig. 1. Seasonal incidence of *L. euphorbiae* and its natural enemies

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