

Occurrence of Mealybugs and their Natural Enemies on Custard Apple Around Bangalore, S. India

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About 20 insect pests have been found attacking custard apple, *Annona squamosa* Linn., some of them causing substantial loss (Butani, 1976). Mealybugs, fruit borer and fruitfly are the pests of major importance (Ayyar, 1938). Surveys were carried out during 1986-87 on custard apple around Bangalore to determine the mealybug species attacking the crop and their natural enemies.

The survey revealed the presence of three mealybug species namely *Planococcus citri* (Risso), *Maconellicoccus hirsutus* (Green) and *Ferrisia virgata* (Ckll.). Mealybug population started appearing in the last week of May, and continued upto November. Among them, *M. hirsutus* was predominant covering the entire fruits thereby reducing the market value. About 60% of the infested fruits were attacked by *M. hirsutus*. *F. virgata* was also found to be equally important causing damage to the custard apple fruits (40% of the infested fruits) at the I.I.H.R. Farm. The severity of *M. hirsutus* on custard apple has been reported for the first time in Karnataka in the present study, while the severity of *F. virgata* had been recorded earlier by Ayyar (1941) and Shukla and Tandon (1984). In a farmer's orchard near Devanahalli, the fruits were found infested with *P. citri*. There has been no record of *P. citri* on custard apple in India. However, other species like *P. pacificus* Cox and *P. lilacinus* (Ckll.) were reported on custard apple by Shukla and Tandon (1984).

There is no earlier report of natural enemies of mealybugs infesting custard apple in India. The encyrtid parasitoids *Anagyrus dactylopii* (How.) and *Aenasius advena* Comp. were collected from

M. hirsutus and *F. virgata* respectively but the percentage of parasitism by both the parasitoids did not exceed five per cent. However, Manjunath (1985) reported *A. dactylopii* parasitising *M. hirsutus* upto 70 per cent on grapes around Bangalore. The low activity of the parasitoids in the present study may be due to the adverse influence of the host plant on these natural enemies. A total of five predators namely a lycaenid, *Spalgis epius* Westwood, Coccinellids *Scymnus coccivora* Ayyar and *Cryptolaemus montrouzieri* Muls., a cecidomyiid *Triommata coccidivora* (Felt.) and a drosophilid *Cacoxenus perspicax* (Knab) were recorded in the present study. All of them however are known general predators reported on many other mealybug species also.

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Key words: Mealybugs, Natural enemies, Custard apple

REFERENCES

- Ayyar, T.V.R. 1938. An annotated conspectus of insects affecting fruit crops in S. India. *Madras Agric. J.* 26, 341-351.
- Ayyar, T.V.R. 1941. Notes on some South Indian mealybugs. *Indian J. Ent.*, 3, 107-113.
- Butani, D.K. 1976. Insect pests of fruit crops and their control-custard apple. *Pesticides*, 10, 27-28.
- Manjunath, T.M. 1985. *Maconellicoccus hirsutus* (Green) on grapevine. *F.A.O. Plant Prot. Bull.*, 33, 74.
- Shukla, R.P. and Tandon, P.L. 1984. Insect pests on custard apple. *F.A.O. Plant Prot. Bull.*, 32, 31.