

***Ceratovacuna lanigera* Zehntner (Homoptera: Aphididae) a serious pest of sugarcane in Maharashtra and attempts at its management by biological means**

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ABSTRACT: Serious and unprecedented infestations by the sugarcane woolly aphid, *Ceratovacuna lanigera* Zehntner were witnessed on the leaves of 4-9 month old sugarcane crop in Kolhapur and Pune districts of Maharashtra during September-October, 2002. During surveys for natural enemies, seven predators were recorded in Kolhapur, of which *Dipha ?aphidivora* (Meyrick) was observed to be the most promising. In Pune district, only *Cheilomenes sexmaculata* (Fabricius) was recorded. Limited field releases of the coccinellid, *Synonycha grandis* (Thunberg) collected from the bamboo woolly aphids at Bangalore and the chrysopid, *Chrysoperla carnea* (Stephens) were made in a small area at Kolhapur. *S. grandis* adults and *C. carnea* eggs were recovered 2 to 3 weeks after release, indicating their survival in the field.

KEY WORDS: Biological control, *Ceratovacuna lanigera*, sugarcane, *Synonycha grandis*

The sugarcane woolly aphid (SWA), *Ceratovacuna lanigera* Zehntner (Homoptera: Aphididae) is one of the most important pests of sugarcane in Southeast Asia (Arakaki, 1992). Recorded for the first time in India on sugarcane in West Bengal (Basu and Banerjee, 1958), it was relegated to the status of a pest of little significance confined to northeast India (Gupta and Goswami, 1995) till in September-October, 2002 when it attained unprecedented levels on sugarcane in Maharashtra. Heavy infestation by *C. lanigera* has been reported to cause significant reduction in the yield attributes of cane and up to 15 percent reduction in sugar content (Gupta and Goswami, 1995).

The coccinellid predator, *Synonycha grandis* (Thunberg) is known to predate on SWA in China (Deng *et al.*, 1981, 1987). Since this coccinellid is also known to occur on the bamboo woolly aphid, *Pseudoregma bambusicola* (Takahashi), grubs and adults were collected from bamboo in Bangalore. *S. grandis* collected in September and October, 2002 (57 adults and 29 larvae) were released in Kolhapur, Maharashtra in a 0.1 hectare sugarcane plot heavily infested with *C. lanigera*. Six adults were recovered from the field during the second visit, a fortnight later, indicating that the beetles had survived on the aphids. In addition to *S. grandis*, 10,000 larvae of *Chrysoperla carnea* supplied by PDBC were also released into a sugarcane field from

where a few eggs of the chrysopid were recovered three weeks after the release.

A roving survey conducted at Kolhapur in October, 2002 revealed the presence of seven species of predators. *D. ?aphidivora* (Lepidoptera: Pyralidae) was the only predator, which showed promise for use in biological control programme as the leaves on which the larvae of this moth occurred had conspicuously lower populations of *C. lanigera* even when adjacent leaves had dense populations of the aphid. Cheng *et al.* (1994) in China and Tripathi (1995) in Northeast India were also of the opinion that this predator has great promise for use in the biocontrol of the SWA. Three species of syrphids namely *Dideopsis aegrota* (Fabricius); *Ischiodon scutellaris* (Fabricius) and *Episyrphus balteatus* (De Geer); two species of coccinellids namely *Cheilomenes sexmaculata* (Fabricius) and *Harmonia octomaculata* (Fabricius) and the green lacewing, *C. carnea* were the other predators encountered during the survey.

Ischiodon scutellaris, *E. balteatus* and *H. octomaculata* were recorded on the SWA for the first time. *D. aegrota* has been found to be a voracious feeder of *A. craccivora* (Joshi *et al.*, 1999). Nevertheless, the efficacy of all these predators in bringing down populations of *C. lanigera* remains to be established. *C. carnea* has been found to be ineffective in significantly reducing *C. lanigera* populations elsewhere (CABI, 2000).

A third survey during the last week of October, 2002 showed that the SWA was present in the Pune district in Maharashtra. However, only *C. sexmaculata* could be seen feeding on the SWA in Pune. Further attempts are underway at the Project Directorate of Biological Control to evaluate *D. ?aphidivora* and *S. grandis* as possible bioagents for the management of *C. lanigera*.

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REFERENCES

- Arakaki, N. 1992. Seasonal occurrence of the sugarcane woolly aphid, *Ceratovacuna lanigera* (Homoptera: Aphididae) and its predators in sugarcane fields of Okinawa island. *Applied Entomology and Zoology*, **27**: 99-105.
- Basu, A. N. and Banerjee, S. N. 1958. Aphids of economic plants of West Bengal. *Indian Agriculturist*, **2**: 89-112.
- CABI, 2002. Crop Protection Compendium, Global Module, Wallingford, UK: CAB International.
- Cheng, W. Y., Wang, Z. T., Hung, T. H. and Hung, J. K. 1994. Factors and their effect on the occurrence of sugarcane woolly aphid. *Report of the Taiwan Sugar Research Institute*, No. **145**: 1-24.
- Deng, G. R., Yang, H. H. and Jang, M. X. 1981. A study utilizing *Synonycha grandis* (Thunberg) to control *Ceratovacuna lanigera* Zehntner. *Natural Enemies of Insects*, **3**: 1-2.
- Deng, G. R., Yang, H. H. and Jang, M. X. 1987. Augmentation of coccinellid beetles for controlling sugarcane woolly aphid. *Chinese Journal of Biological Control*, **3**: 166-168.
- Gupta, M. K. and Goswami, P. K. 1995. Incidence of sugarcane woolly aphid and its effect on yield attributes and juice quality. *Indian Sugar*, **44**: 883-885.
- Joshi, S., Venkatesan, T., Ballal, C. R. and Rao, N. S. 1999. Comparative biology and predatory efficiency of six syrphids on *Aphis craccivora* Koch. *Pest Management in Horticultural Ecosystems*, **5**: 1-6.
- Tripathi, G. M. 1995. Record of parasite and predator complex of sugarcane woolly aphid, *Ceratovacuna lanigera* Zehnt. in Nagaland. *Indian Sugar*, **44**: 839-841.