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Sugarcane Woolly Aphid (SWA), *Ceratovacuna lanigera* (Aphididae: Hemiptera)

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Abstract

Sugarcane is one of the major cash crops in India. It was severely damaged by many insect pests including lepidopteran borers and sucking pests. In recent years, sugarcane woolly aphid is most destructive among sucking pests. The infestation of woolly aphid starts after rainy season and severe infestation during summer with prolonged dry condition with high relative humidity. This pest transmitted by wind and also by the transportation of setts from affected field to unaffected areas. Woolly aphid can be well efficiently managed by several integrated pest management strategy including, cultural, physical, mechanical, bio-control agents, bio-pesticides and chemical methods.

Introduction

The sugarcane woolly aphid (SWA), *Ceratovacuna lanigera* was first reported in West Bengal and in Tamil Nadu during 2004, and has spread to all the districts bordering of Karnataka and Andhra Pradesh. Earlier it was minor pest in India, after severe outbreak in Maharashtra during July 2002; it's become known to be economically important pest. It attacks all the stages of sugarcane. SWA body is fully covered with white coating material secreted from wax gland and it confused with mealybug. The woolly aphid is locally known as "Panjuasuvini" in Tamil.

Bionomics

SWA population increases from August to September and November to February. They multiply by parthenogenetic viviparity in a short period of time. There are 4 nymphal instars completed in about 20 days. Nymphs are yellowish in color with less powdery substance. There are two forms of adult, alate and apterate. Alate forms are white in color. Apterate form possess wax gland in seventh and eighth tergites and also on lateral margin of the body and wax glands are absent in alate form aphid. Cornicles are absent in this aphid.



Figure 1: Sugarcane woolly aphids covered with white waxy coating

Damage Symptoms

The thousands of nymphs and adults congregate on the lower surface of the leaves and de-sap the plant. It can develop even on the upper surface of leaves under complete shade condition. The infested leaves show yellowish white spots, become brittle and finally dry up. Due to continuous sucking of sap leads to shortening of internodes, plants become stunted and reduction in weight and sugar content of the stalk. It produces lot of honey dew secretion that falling on to the leaves, leads to development of black sooty mould growth. The blackening of active green leaves impairs the photosynthetic efficiency of the plant. Deposition of wooly matter on the soil confirms the presence of aphids in the sugarcane field.



Figure 2: Sugarcane woolly aphid on lower surface of the leaves

Integrated Pest Management (IPM)

1. Cultural Method

- The spacing between the beds should be wide enough for a person to walk through.
- Do not use the infested seed material for planting.
- Avoid excess and late application of nitrogenous fertilizers.
- Use of organic fertilizers.

- Avoid ratoon crop.
- Practice wide-row/ paired-row planting system and de-trashing to allow greater aeration and light to discourage SWA establishment.
- Detrash the dry infested leaves and burn them to reduce the pest load.
- Destroy the weeds like *Cynodon dactylon* to prevent breeding of the pest on alternative hosts.

2. Biological Method

- The lepidopteran, *Dipha aphidivora* (400 larva or pupa/acre) and green lacewing, *Chrysoperla zastrowii sillemi* (1000 eggs or larva/acre), *Micromus igorotus* and *Eupeodes confrater* (1000 larvae/ha) are potential predators of woolly aphid.
- Other natural enemies, include Coccinellid beetles (*Cheilomenes sexmaculata*, *Coccinella septempunctata* and *Hormoniasoma maculata*) and Syrphids (*Dideopsis aegrota*, *Ischiodon scutellaris* and *Episyrphus balteatus*).
- Spray pathogens like *Cladosporium oxysporum*, *Metarhizium anisopliae*, *Lecanicillium lecanii* and *Beauveria bassiana* @ 1 ml/lit.

3. Chemical Method

- Before planting soak, the setts in 0.06% dimethoate suspension for 15 minutes.
- Dip the seed sets in Chlorpyrifos 20 EC solution (2 ml/lit) before planting.
- The setts are treated with malathion 50 EC 0.1% solution for 15 minutes.
- Spray with acephate 75 SP 1 g/lit or Chlorpyrifos 20 EC 2 ml/lit.

Conclusion

The above mentioned IPM measures can be successfully imposed wherever applicable for the management of sugarcane woolly aphid. The minimum yield loss caused by this pest can even be avoided. The natural enemies normally occur in the field will be greatly conserved which paves way for effective pest management.

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