



**Screening of sugarcane varieties against  
sugarcane woolly aphid**

***Ceratovacuna lanigera* Zehntner**

**(Aphididae:Homoptera)**

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Alate adult



Sooty mould

## **In Andhra Pradesh**

- **Srikakulam**
- **Vizianagaram**
- **Visakhapatnam**
- **East Godavari**
- **West Godavari**
- **Krishna**
- **Nellore**
- **Chittoor**
- **Medak**
- **Nizamabad**



- Woolly aphid excretes honeydew
- Promotes growth of fungus (*Capnodium*)
- The development of mould on leaf surfaces greatly affects photosynthesis in the infested sugarcane.



- Woolly Aphid result in the death of young shoots and adversely affect the final cane yield

- When growing cane is heavily infested, the canes are shortened, becomes less vigorous and sugar content is reduced

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- The loss in cane and sugar yield is reported to be 26% and 24% , respectively.

- The pest population starts increasing in February and reaches its peak in April-June and decreases subsequently due to rains

- Adults travel @ 1.5-2 km / hr

Sugarcane (*Saccharum officinarum* L.) is one of the important commercial crops in India.

For many years farmers are growing this crop with least emphasis on pest and disease management

However, during 2002 the sugarcane woollyaphid, *Ceratovacuna lanigera* Zehntner gained entry into the state and started causing concern to the growers of sugarcane

The outbreak of the white woolly aphid, *Ceratovacuna lanigera*, was observed in Andhra Pradesh infesting more than 40,000 ha

Resulting in serious economic losses of 15-25 t/ha

sugar loss of 0.5-2 units.

During October- Nov 2003, it was observed at Zaheerabad area in A.P in South India.

## Favourable conditions for pest built up

- a) Monoculture of sugarcane
- b) cloudy weather
- c) intermittent rains
- d) Temperatures ranges from
- e) 19-35°C and 80-95% RH are most favourable for increasing population of Sugarcane Woolly Aphid.



Evaluation of prominent varieties was taken up

The planting of sugarcane genotypes was undertaken in 'V' shaped ridges and furrows.

12 genotypes and one check variety were used

Each genotype was grown in 13 m row length with spacing of 0.9 m between the rows.

Planting was done in such a way that each row of test entry was alternatively planted with the susceptible and local check variety.

Artificial infestation was done during the grand growth stage of crop (90 days after planting).

For artificial infestation five canes in each test variety were selected randomly and three leaves from top, middle and bottom portion of each cane were stapled with aphid-infested leaves.

After infestation, they were observed daily and observations were recorded at regular interval of seven days up to 98 days after infestation.

For recording observation on sugarcane woolly aphid (SWA) density a scale of 0-4 grade was adopted where in

- 0 =No infestation,
- 1 =1-25 per cent leaf area covered with SWA,
- 2 =26-50 per cent leaf area covered with SWA
- 3 =51-75 per cent leaf area covered with SWA,
- 4 =76-100 per cent leaf area covered with SWA.

The mean pest grades were calculated in different test varieties and were classified into different groups (severe, medium and low) based on per cent leaf area covered by SWA colonies

*Genotype viz., Co7804 was almost free from infestation (0 -1grade) throughout the crop growth period.*

exhibited resistance to SWA under artificial infestation because the released aphids could not colonize on test genotype.

In check variety Co-8371, aphids colonized with in 24 hours after release.

The resistant reaction of the clone may be attributed to

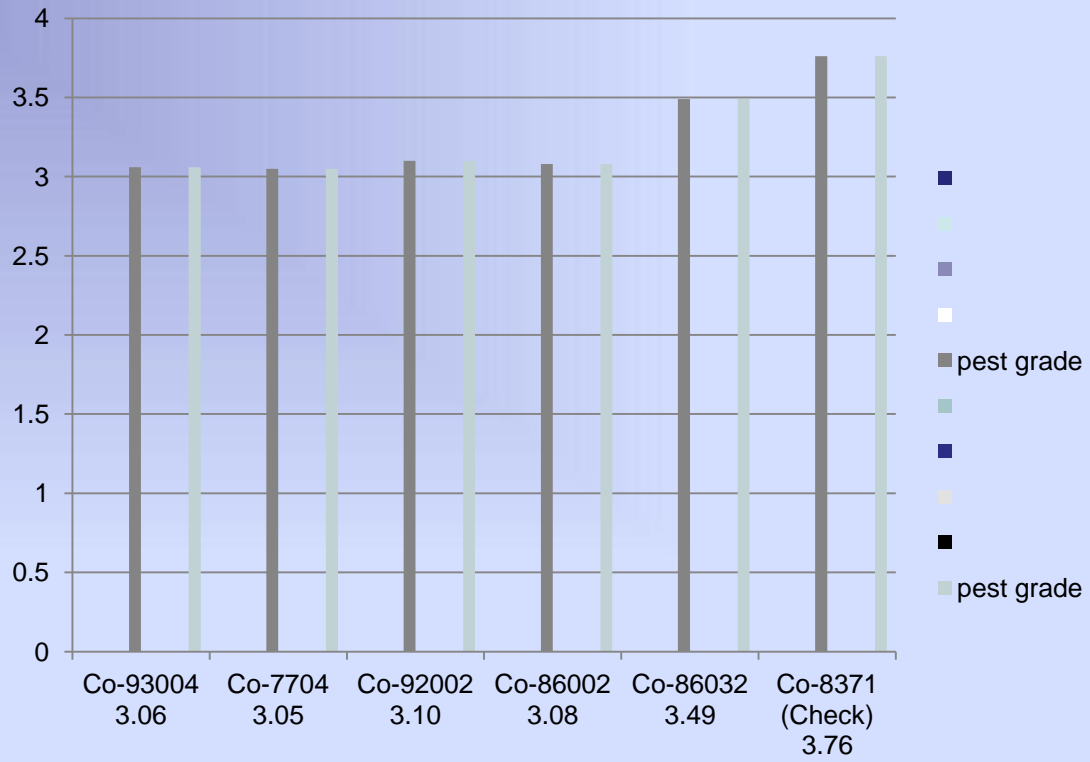
lower level of nitrogen (2.07%)

higher content of silicon (2.39) calcium (1.20%)

lower level of soluble sugars in the leaves

**Tab 1. Leaf characters of sugarcane genotypes and their reaction to sugarcane woolly aphid, *Ceratovacuna lanigera***

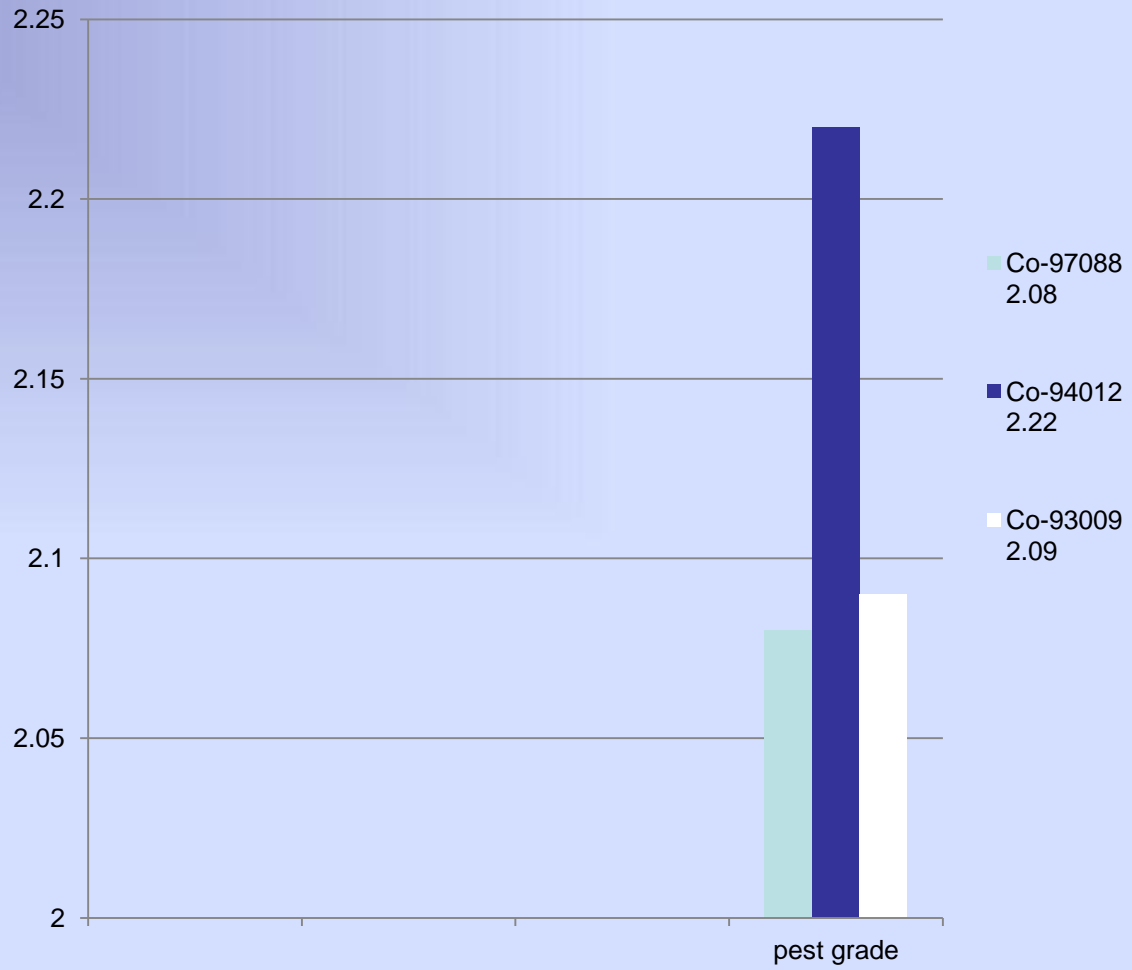
<b>Genotype</b>	<b>LC</b>	<b>Mean pest grade</b>
<b>Co-7704</b>	<b>N, D</b>	<b>3.05</b>
<b>Co-92002</b>	<b>N, D</b>	<b>3.10</b>
<b>Co-86002</b>	<b>N, D</b>	<b>3.08</b>
<b>Co-86032</b>	<b>B, D</b>	<b>3.49</b>
<b>Co-8371 (Check)</b>	<b>B, D</b>	<b>3.78</b>





## Genotype LC Mean pest grade

Genotype	LC	Mean pest grade
<b>Medium infestation (25 to 50%)</b>		
Co-97088	B, D	2.08
Co-94012	B, E	2.22
Co-93009	N, E	2.09



## Low infestation (1 to 25%)

Co-8217	N, E	1.62
Co-93020	N, D	1.82
Co-88025	N, E	1.88
Co-7804	N, E	0.71
No infestation		(0 to 1%)

LC = Leaf character, D= Droopy, B = Broad, E = Erect, N = Narrow

genotypes

Low infestation (1 to 25%)

**Mean pest grade**

Co-8217	1.62
Co-93020	1.82
Co-88025	1.88
Co-7804	0.71

**Genotype**

**Severe infestation (above 50%)**

**Mean pest grade**

Co-93004	3.06
Co-7704	3.05
Co-92002	3.10
Co-86002	3.08
Co-86032	3.49
Co-8371 (Check)	3.76

**Genotype**

**Medium infestation (25 to 50%)**

**Mean pest grade**

Co-97088	2.08
Co-94012	2.22
Co-93009	2.09

Phukan (1978) observed that the varieties having lower percentage of nitrogen, total soluble sugars and higher silica, were, less susceptible to SWA.

Five genotypes and check were found susceptible (3.06 to 3.49 grade)

three entries moderately susceptibility (2.08 to 2.22 grade)

four genotypes are tolerant (0.71 to 1.88 grade).

The erect leaves of the resistant clone are not suitable for the colonization of aphid.

Patil (2002) reported that early maturing high sugared soft sugarcane varieties with broad and dropping leaves were more suitable for aphid build up.