

**ALL INDIA COORDINATED RESEARCH PROJECT ON SUGARCANE**

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**ENTOMOLOGY  
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**SUBMITTED BY**

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**Project No. E.4.1. Evaluation of zonal varieties/genotypes for their reaction against major insect pests of sugarcane.**

**Evaluation of AVT Ratoon crop against insect pest's reaction:**

Ratoon of eight genotypes comprising of eight AVT Early along with two standard varieties were evaluated against black bug (BB), top borer (TB) stalk borer (SB) and root borer (RB). The per cent of BB affected tillers was ranged from 16.2 to 33.4 per cent. The minimum affected tillers (16.2 %) was recorded in genotype CoS 08233 followed by Co 07023 (19.9%). Incidence of TB was varied from 0.0 to 2.9 per cent which was below ETL (<10.0 %). Root borer incidence ranged from 10.0 to 33.0 per cent. The genotypes; CoLk 07201(10.0 %) and Co 07023 (14.9%) showed least susceptible reaction (<15.0%) and five genotypes namely; CoPb 08211, CoPb 08212, CoS 08233, Co 06032 and Co 07261 exhibited moderately susceptible (MS) (15.1- 30.0%) while the genotype Co 07025 (33.0%) was highly susceptible (HS) to root borer. The infestation index of stalk borer ranged from 0.0 to 9.1. The six genotypes; CoS 08233, Co 06032, Co 07023, Co 07025, Co 07261 and CoLk 07201 had infestation index ( 2.0) hence rated as least susceptible to stalk borer while genotypes CoPb 08211 and CoPb 08212 were moderately susceptible to stalk borer (infestation index 2.1 to 5.0).

**Table1. Reaction of sugarcane genotypes against major insect pests in ratoon at Karnal (SBI)**

Sl. No.	Variety/Genotypes	Incidence (%)			Stalk Borer	
		Black bug	Top Borer	Root borer	Intensity (%)	Infestation Index
<b>AVT (Early) Ratoon(8+2)</b>						
1.	CoPb 08211	25.3	0.00	20.9	20.9	2.9
2.	CoPb 08212	22.3	0.00	22.8	22.8	2.6
3.	CoS 08233	16.2	0.5	19.9	19.9	1.7
4.	CoJ 64	32.3	0.00	21.0	21.0	1.1
5.	Co 06032	21.6	0.00	21.6	21.6	1.6
6.	Co 07023	19.9	0.00	14.9	15.9	0.0
7.	Co 07025	33.4	0.00	33.0	24.5	2.0
8.	CoS 8436	24.2	0.00	18.6	18.6	9.1
9.	Co 07261	22.3	0.00	24.4	24.4	2.0
10.	CoLk 07201	21.8	2.9	10.0	13.9	1.9

**Plant crop**

Evaluated nineteen sugarcane genotypes along with three standard varieties for their reaction against major insect pest's viz., early shoot borer (ESB), top borer (TB), stalk borer (SB) and root borer (RB).

The incidence of ESB was below ETL (<15.0%). In case of TB all the clones showed least susceptible reaction (<10.0%) to top borer except CoLk 09204 which was MS (>20.0%). Root borer incidence ranged from 24.3 to 80.0 per cent. None of the genotypes showed least susceptible reaction while two genotypes (Co 08235 and CoPb 08217) showed moderately susceptible reaction to root borer (15.1 to 30.0%). Stalk borer infestation index varied from 0.9 to 7.8. Six Genotypes namely; CoH 09263, CoH 09264, CoLk 09202, CoLk 09204, CoS 08234 and CoPb 09181 were least susceptible (<2.0) and 12 genotypes namely; CoH 09262, CoS 09246, Co 09022, CoPb 09214, CoS

09232 (1st Plant) and CoH 08263, CoH 08264, CoPb 08217, Co 08235, CoPb 08211, CoPb 08212 and CoS 08233 (2<sup>nd</sup> plant) showed moderately susceptible reaction to stalk borer (2.1-5.0).

**Table 2. Reaction of sugarcane genotypes against major insect pests in plant crop at Karnal (SBI)**

Sl. No.	Varieties/ Genotypes	Incidence (%)		Stalk Borer	
		Top Borer	Root borer	Intensity (%)	Infestation Index
<b>AVT (Early) - 1 Plant (19+2)</b>					
1.	CoH 09262	1.67	62.5	32.8	4.4
2.	CoH 09263	1.08	43.8	11.2	1.1
3.	CoLk 09202	3.59	47.8	14.3	1.6
4.	CoPb 09181	2.22	54.5	13.3	1.0
5.	CoS 09246	0.33	46.4	30.6	3.8
<b>AVT (Midlate) – 1 Plant</b>					
6.	Co 09022	0.80	36.0	31.7	5.0
7.	CoH 09264	3.66	80.0	11.2	1.9
8.	CoLk 09204	11.8	38.9	9.0	0.9
9.	CoPb 09214	2.6	34.8	35.9	2.1
10.	CoS 09232	1.8	24.3	27.6	3.7
<b>AVT (Midlate)-II Plant</b>					
11.	CoH 08263	6.8	47.8	36.4	3.6
12.	CoH 08264	2.8	29.6	25.7	5.0
13.	CoPb 08217	4.7	30.0	10.8	2.37
14.	CoS 08234	2.7	38.5	18.4	2.00
15.	Co 08235	3.5	54.5	15.6	2.6
<b>AVT (Early) – II Plant</b>					
16.	CoJ 64	3.9	43.8	37.5	7.8
17.	CoPb 08211	0.4	50.0	42.4	4.9
18.	CoPb 08212	2.5	46.2	14.7	3.6
19.	CoS 08233	0.6	66.7	30.0	4.2
20.	Co 0238	7.7	37.8	15.0	2.4
21.	CoS 8436	0.5	52.4	44.6	7.8

**Project No. E.28. Survey and surveillance of sugarcane insect- pests.**

Surveyed the reserved area of 13 sugar mills of Haryana in respect of insect pest incidence in sugarcane. In Haryana black bug population was 7.0 to 48.0, 19.0 to 54.0, 11.0 to 35.0 and 17 .0 to 37.0 / clump in ratoon of varieties CoS 8436, CoH 119, Co 0118 and Co 0238, respectively. The High incidence of black bug was recorded in Kaithal followed by Karnal, Panipat & Gohana area. Early shoot borer incidence ranged from 12.0-70.0, 9.0-38.0, 17.0-56.0 and 21.0-46.0 per cent in cane cultivars CoS 8436, CoH 119, Co 0118 and Co 0238 respectively. The severe incidence was found in Gohana, Rohtak and Palwal area. The per cent incidence of root borer was recorded 21.0-54.0, 20.0 -57.0, 25.0-48.0, 28.0-60.0 per cent in CoS 8436, CoH 119, Co 0118 and Co 0238 per cent respectively. The incidence of root borer was severe in Rohtak, Gohana and Panipat and Jind sugar mills area. The stalk borer incidence was severe in entire cane growing tracts of Haryana. The stalk borer incidence was 37.0 to 93.0, 45.0 to 92.0, 25.0 to 80.0 and 50.0 to 85.0 per cent in varieties CoS 8436, CoH 119, Co 0118 and Co 0238, respectively. Early shoot borer, top borer, root borer, black bug, mealy bug and were identified as key pests where as internode borer and pink borer introduced as new insects in Haryana area.

**Table- 3: Status of key insect pest's of sugarcane in Haryana.**

SN	Major Varieties	population / clump		Infestation (%)			
		Black bug	Mealy bug	ESB	TB	RB	SB
1	CoS 8436	7.0 to 48.0	13.0-36.0	12.0-70.0	5.0-12.6	21.0-54.0	37.0 to 93.0
2	CoH 119	19.0 to 54.0,	16.0-28.0	9.0- 38.0	8.0-17.3	20.0-57.0	45.0 to 92.0
3	Co 0118	11.0 to 35.0	11.0-17.0	17.0-56.0	6.0-21.6	25.0-48.0	25.0 to 80.0
4	Co 0238	17 .0 to 37.0	9.0-13.0	21.0-46.0	11.3-28.4	28.0-60.0	50.0 to 85.0

**Sub-project (c) Monitoring of insect pests and bio agents in sugarcane agro ecosystem.**

**Prevalence of insect pests of sugarcane and their bio agents:** Monitored major insect pests and their bio-agents in sugarcane variety CoS 8436, the incidence of early shoot borer (ESB), top borer (TB) and Stalk borer (SB) was recorded 12.3, 17.5 and 13.0 per cent respectively. The population of sucking insects viz., white fly and Pyrilla was (02.6 puparia/cm<sup>2</sup>) and (16.0 individual/ leaf) respectively. The parasitization of pyrilla by *Epiricania melanoleuca* was 28.0%. A coleopteron parasite collected from pyrilla nymph which was identified as *Stethorus pauperculus* Weise by IARI, New Delhi. The pyrilla eggs were parasitized by *Tetrastichus pyrillae* (32.6%). The parasitization of top borer larvae by *Isotima javensis* and *Stenobracon species* was 2.0 and 8.0 per cent respectively. The parasitization of stalk borer larvae by *Cotesia flavipes* was recorded 2.1 per cent.