



ICAR-Sugarcane Breeding Institute, Regional Centre
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To

Director,
ICAR- Sugarcane Breeding Institute,
Coimbatore- 641007

Through: proper channel

Sub: Submission of *AICRP Annual Report of Sugarcane Entomology (2015-16)* -- reg.

Sir,

I am submitting herewith the Annual Report of Sugarcane Entomology (2015-16) for onward transmission to the Principal investigator (Entomology) Dr. G.G.Radadia, Professor of Entomology, N.M.College of Agriculture, Navsari Agricultural University, Navsari -396 450 (drradadia@yahoo.com) and Project co-coordinator AICRP on Sugarcane, ICAR- Indian Institute of Sugarcane Research, Lucknow – 226 002 (UP).

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With kind regards,

Yours faithfully,

(S.K.Pandey)

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

Objective: To grade the entries in the zonal varietal trials for their behavior towards damage by key pests in the area.

Location: ICAR- Sugarcane Breeding Institute –Regional Centre, Karnal

Year of Start: 2008 (Continuing project)

Results

AVT Ratoon: A total of eight genotypes along with two check varieties were evaluated against black bug (BB), early shoot borer (ESB), top borer (TB) root borer (RB) and stalk borer (SB) (Table-1). The entire test genotypes viz. Co 10035, CoH 10261, CoS 10231, CoH 10262, CoPant 10221, CoPb 1018, Co 10036 and CoPb 10182 showed least susceptible (LS) reaction to BB (<25.0 individual/leaf), ESB (<15.0%) and TB (<10.0%). These genotypes were also LS to SB (infestation index < 2.0). In case of RB, one genotype, Co 10036 showed MS reaction (15.1 to 30 %) where as seven genotypes; Co 10035, CoH 10261, CoS 10231, CoH 10262, CoPant 10221, CoPb 10181 and CoPb 10182 were highly susceptible (HS>30%).

AVT 1st plant: A total of ten genotypes along with two check varieties were evaluated against early shoot borer (ESB), top borer (TB) root borer (RB) and stalk borer (SB) (Table-2). All the genotypes; CoS 11232, CoPb 11214, CoH 11262, CoLk 11204, CoH 11263, Co 11027, CoLk 11203, CoLk 11202, CoLk 11201 and CoLk 11206 showed LS reaction to ESB (<15.0%) and top borer (<10.0%). These genotypes were also LS to SB (infestation index < 2.0). In case of RB, 4 genotypes namely ; CoLk 11204, CoH 11263, Co 11027 and CoLk 11202 exhibited MS reaction (15.1-30%) whereas six genotypes viz., CoS 11232, CoPb 11214, CoLk 11206, CoLk 11203, CoLk 11201 and CoH 11262 were HS (>30%).

AVT 2ndPlant: A total of eight genotypes (CoPb 10182, CoPb 10181, CoPant 10221, CoH 10262, Co 10036, CoS 10231, CoH 10261 and Co 10035) along with two check varieties; CoS 8436 and Co 0238 were evaluated against early shoot borer (ESB), top borer (TB), root borer (RB) and stalk borer (SB) (Table-3). All the test genotypes; showed LS reaction to ESB (<15.0%) and TB borer (<10.0%). One genotype; CoPant 10221 exhibited MS reaction (15.1-30%) to RB while seven genotypes viz., CoPb 10182, CoPb 10181, CoH 10262, Co 10036, CoS 10231, CoH 10261 and Co 10035 were HS (>30%). In case of SB, 6 genotypes; (CoPb 10182, CoPant 10221, CoH 10262, Co 10036, CoH 10261 and Co 10035) showed LS reaction (infestation index < 2.0) where as 2 genotypes; CoPb 10181 and CoS 10231 exhibited MS reaction (infestation index 2.1 to 5.0).

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

Objective: To identify the key insect- pests in the area.

Location: I CAR- Sugarcane Breeding Institute –Regional Centre, Karnal

Year of Start: 2008 (Continuing project)

Results:

Surveyed the Co-operative sugar mills area of (Haryana) namely; Shahabad, Karnal, Jind, Panipat, Sonipat and Palwal (Table - 4). The incidence of early shoot borer, top borer and root borer was below <15.0, <10.0 and <15.0 – 30.0%, respectively). Severe incidence of red webbing mite (80.5%) was recorded in some of the plots of variety Co 89003 in Karnal area. The mean population of pyrilla was 2.2 to 12.5/ leaf in different varieties. Incidence of pink borer was recorded 10.0 % in July planted sugarcane variety Co 05011. Stalk borer infestation index was < 2 in all the varieties; Co 0238, CoH 119, Co 89003, Co 05011 and Co 89003, except CoS 8436 (2.6). The incidence of pink borer in ratoon sprouts was ranged from traces to 10.0 per cent.

Internode borer identified as new pests of sugarcane. Root borer and pink borer were minor pests earlier now they have gained the status of major pest. Early shoot borer, top borer, stalk borer, black bug, pyrilla and white grub were identified as key pests and army worm, mealy bugs, white fly and thrips as occasional pest of sugarcane in North Western Zone.

Project No. E.30: Monitoring of insect pests and bio agent's in sugarcane agro- ecosystem.

Objective: To monitor the key insect-pests and natural enemies in the area.

Location: ICAR- Sugarcane Breeding Institute –Regional Centre, Karnal

Year of Start: 2008 (Continuing project)

Results

Monitoring study was carried out in non-replicated trail with sugarcane variety Co 0238. The incidence of early shoot borer and top borer was below <15.0 and <10%, respectively (Table-5). Stalk borer infestation index was <1.0. The incidence of root borer and termite was 35.8 and 24.0%, respectively. The population of pyrilla was @12.0 individual/leaf.

It was observed that a minor insect, *pink borer* damaged the crop like shoot borer, top borer and stalk borer right from the shoot stage till harvest. Black bug was reported a premonsoon pest of sugarcane ratoon crop but its severe incidence was observed in the plant crop during post monsoon period July to October also. Further it was also noticed that grass hopper has changed its egg laying behavior and laid their eggs on sugarcane leaves.

Epiricania melanoleuca was identified as effective parasitoid of pyrilla adult's and nymphs (27.2%) and *Tetrasticus pyrillae* was identified as eggs parasitoid of pyrilla (3.6%). *Cotesia flavipes* was also identified as an effective parasitoid of stalk borer larvae (4.6%).

Table1. Reaction of sugarcane genotypes against major insect pests in AVT ratoon

Sl. No.	Variety/Genotypes	Popn./ leaf	Incidence (%)			Stalk borer		
		BB	Early Shoot borer	Top borer	Root borer	Incidence (%)	Intensity (%)	Infestation Index
1	Co 10035	8.6	2.6	3.2	38.6	0.0	0.0	0.0
2	Co 0238	6.3	2.0	6.5	31.5	3.5	9.7	0.3
3	CoH 10261	8.5	0.9	3.1	42.3	2.8	4.2	0.1
4	CoS 10231	7.3	3.2	5.2	33.1	0.0	0.0	0.0
5	Co 10036	6.4	2.7	2.1	29.3	6.5	9.2	0.6
6	CoH 10262	8.6	3.4	3.1	34.3	10.4	8.7	0.9
7	CoPant 10221	7.2	2.6	4.3	43.2	12.8	14.4	1.8
8	CoPb 10181	8.3	3.0	6.2	37.6	14.7	11.3	1.7
9	CoPb 10182	6.6	2.5	2.3	31.4	1.4	11.1	0.2
10	CoS 8436	8.2	2.2	3.3	33.3	16.4	12.6	2.1

Table- 2. Reaction of sugarcane genotypes against major insect pests in AVT 1st plant

Sl. No.	Variety/Genotypes	Incidence (%)			Stalk borer		
		Early shoot borer	Top borer	Root borer	% Incidence	Intensity (%)	Infestation Index
1	Co 05011	1.1	0.1	27.5	12.1	3.1	0.4
2	CoS 11232	1.7	0.2	51.4	3.0	5.6	0.2
3	CoPb 11214	1.4	0.0	45.1	9.8	7.2	0.7
4	CoLk 11206	1.9	0.7	37.4	8.4	13.2	1.1
5	CoLk 11204	2.0	0.1	21.2	2.8	2.6	0.1
6	CoH 11263	1.5	0.0	22.2	8.3	18.3	1.5
7	Co 11027	1.8	0.0	16.9	4.5	13.3	0.6
8	Co 0238	1.1	0.7	29.5	9.1	6.2	0.6
9	CoLk 11203	1.3	0.2	34.4	12.8	11.4	1.5
10	CoLk 11202	1.6	0.0	18.2	2.0	3.3	0.1
11	CoLk 11201	1.0	0.2	33.3	2.2	6.7	0.1
12	CoH 11262	1.4	0.0	37.6	10.2	7.2	0.7

Table- 3. Reaction of sugarcane genotypes against major insect pests in AVT II Plant

Sl. No.	Variety/Genotypes	Incidence (%)			Stalk borer		
		Early shoot borer	Top borer	Root borer	Incidence (%)	Intensity (%)	Infestation Index
1	CoS 8436	0.91	0.25	50.0	16.7	6.9	1.2
2	CoPb 10182	1.00	0.16	50.0	3.3	6.1	0.2
3	CoPb 10181	1.57	0.00	43.3	26.7	11.6	3.1
4	CoPant 10221	0.95	0.00	20.0	13.3	7.1	0.9
5	CoH 10262	0.96	0.00	43.3	16.7	5.9	1.0
6	Co 10036	1.14	0.25	33.3	6.7	4.6	0.3
7	CoS 10231	1.28	0.00	43.3	23.3	12.4	2.9
8	CoH 10261	1.49	0.00	43.3	13.3	11.1	1.5
9	Co 0238	0.53	1.34	20.5	6.7	6.5	0.4
10	Co 10035	1.65	0.27	56.7	6.7	2.5	0.2

Table- 4: Incidence of major insect pests of sugarcane in Haryana.

Sl. No.	Major Varieties	Incidence (%)				Population/ leaf	Infestation Index
		Early Shoot borer	Top borer	Root borer	Red mite	Pyrilla	Stalk borer
1	Co 89003	T to 14.4	T to 3.5	T to 12.3	T to 80.5	T to 08.0	1.9
2	CoS 8436	T to 11.3	T to 5.6	T to 09.2	T to 9.0	T to 06.0	2.6
3	CoH119	T to 10.6	T to 6.5	T to 13.3	T to 10.3	T to 12.5	1.3
4	Co 0118	T to 10.1	T to 4.3	T to 09.5	T to 8.6	T to 09.3	1.6
5	Co 0238	T to 12.0	T to 7.6	T to 10.0	T to 3.6	T to 08.0	1.2
6	Co 05011	T to 11.6	T to 3.5	T to 11.6	T to 5.3	T to 02.2	1.8

T= Traces

Table – 5. Incidence of major insect- pests and their bio-agents in sugarcane ecosystem

S. No	Insect-pests	Infestation / Population	Bio- agents	Parasitisation (%)
1	ESB	9.3 %	-	-
2	Top borer	5.9%	<i>Isotima javensis</i>	3.3 (Larvae)
3	Stalk borer	1.0 (Infestation index)	<i>Cotesia flavipes</i>	4.6 (Larvae)
4	Pyrilla	(12.0 individual/ leaf)	<i>Epiricania melanoleuca</i>	27.2 (Nymph and adults)
			<i>Tetrasticus pyrillae.</i>	3.6 (eggs)
5	Mites	2.3 %		
6	Black bug	T to 38/ leaf		

T= Traces