UNIVERSITY OF AGRICULTURAL SCIENCES,BANGALORE

ZONAL AGRICULTURAL RESEARCH STATION,VC FARM, MANDYA

RESULTS

CROP PROTECTION (ENTOMOLOGY)
2014-15

3. Plant Protection (Sugarcane Entomology)

Experiment No. E.4.1

1. Title: Evaluation of zonal varieties/genotypes for their reaction against major insect pests

2. **Objective:** To grade the entries in the Zonal varietal trials for their reaction towards damage by key pests in the area.

3. **Experimental details:**

a) Location: ZARS V.C.Farm Mandya b) Design: RBD

b) No. of entries: IVT Early (14+2treatments with 3Rep),
IVTMidlate (13+3treatments with 3Rep)
IVT Ist PC (3+3treatments with 4Rep)

d) Irrigation/Rain fed: Irrigated

f) Fertilizer: Fertilizer:25:100:125 NPK(kg /ha)

g) Spacing: 120cm x 30cm h) Plot size: 43.2m^2

4. Date of Sowing: 13.12.2013 IVT Mid-late, 16.12.2013 IVT Early, 20.01.2014 AVT I^{st} PC

5. **Results:**

Table: 1. **Reaction of Sugarcane genotypes under IVT Mid-late trial against ESB, TSB, INB and mealybug**

Genotype	Percent incidence			
	Early shoot borer	Top shoot borer	Internode borer	Mealybug
Co 11005	05.37	0.68	35.62	14.04
Co 11007	06.33	0.44	27.51	14.85
Co 11012	08.56	0.00	10.52	12.28
Co 11019	07.87	0.00	19.10	05.37
Co 11020	06.35	0.00	23.08	09.79
Co 11021	03.90	0.00	29.56	02.83
Co 11022	13.16	0.00	30.92	00.66
Co 11023	05.51	1.52	04.73	01.57
Co 11024	02.84	0.00	39.59	03.27
CoM11085	05.16	0.33	35.53	17.76
CoM11086	04.98	0.00	20.0	05.87
CoM11087	04.60	0.00	24.48	07.16
CoN 11073	05.27	1.97	25.56	05.90
CoN 11074	04.34	0.00	27.77	02.14
Co 86032	04.10	0.95	21.45	12.30
Co 99004	04.56	0.37	25.83	09.75

Table: 2 Reaction of Sugarcane genotypes under IVT Early trial against ESB, TSB, INB and Mealybug

Genotype	Percent incidence			
	Early shoot borer	Top shoot borer	Internode borer	Mealybug
Co 09004	04.25	00.81	17.81	12.45
Co 09007	05.75	00.93	22.79	03.72
Co 09072	08.00	00.00	23.48	12.08
CoC 671	03.75	00.43	17.39	07.82
Co 85004	03.66	00.67	13.66	06.66
Co 94008	05.25	00.00	24.87	02.92

Table: 3 Reaction of Sugarcane genotypes under AVT Early I PC trial against ESB, TSB, INB and mealybug

Genotype	Percent incidence			
	Early shoot borer	Top shoot borer	Internode borer	Mealybug
Co 11001	09.93	00.38	17.45	03.40
Co 11004	04.41	00.00	19.71	36.69
Co 11016	09.09	02.59	11.85	29.26
Co 11017	09.19	01.39	22.02	04.89
Co 11018	05.71	00.00	13.43	04.85
CoM 11081	09.22	00.79	26.48	07.11
CoM 11082	13.09	00.00	12.69	03.05
CoM 11083	09.15	00.44	16.59	03.49
CoM 11084	09.05	00.71	14.64	00.36
CoN 11071	08.44	00.00	18.00	44.88
CoM 11072	07.94	00.00	18.49	07.14
CoT 11366	09.14	00.50	21.11	02.01
PI 11131	09.18	00.46	19.63	00.00
CoC 671	02.37	00.00	18.75	11.25
Co 94008	03.79	00.00	17.63	00.00
Co 85004	01.84	00.03	14.72	03.24

6. Inference: Among the genotypes screened under different categories, the following genotypes have shown less susceptible reaction against Early shoot borer, Top shoot borer and Internode borer. PI 11131 was the only genotype which has recorded less susceptible reaction against Sugarcane mealy bug.

Trial(#Genotypes screened)	Genotypes showing LS reaction to different pests
IVT Early(14+2)	Co 11018*●◊, **PI 11131***●◊ Co M 11083*●◊, CoM 11084*●◊
IVT Mid late(13+3)	Co 11012*●◊, Co 11023*●◊,
IVT Early (1st PC) (3+3)	Co 09004*●◊,

* - ESB; ● - TSB; ◊ - INB

7. Scientists involved: Dr.V.N.Patel , Dr. T. E. Nagaraja, and Mr. B. T. Ravindra Babu and Ms. Sunitha B. P

Experiment No. E.28

1. Title: Survey and surveillance of sugarcane insect pests.

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

3. Experimental details:

Survey was conducted once in a month in different sugar factory areas of Mandya district and the findings were presented briefly in the table given below

4. Results:

Sl.No	Pest	Level of Incidence (%)
1	Early Shoot Borer	4.00– 28.50
2	Top Shoot Borer	1.75 -10.25
3	Inter Node Borer	12.0 – 58.50
4	Sugarcane Pyrilla	<0.50 adult / nymph / clump
5	Mealy bug	58.82 %Incidence with22.68 % Intencity at Hudaghatta Village
6	Woolly aphid	Few clumps to one gunta area (40-50%leaf area covered)
7	Mite	0.5 to 1.0 gunta area of one acre plot infested at Hagalahally village of Maddur taluk.
8	Leaf roller	4 leaves / clump affected at Gejjalagere Village
9	Mythimna separata	12 larvae / clump at Mallanayakana katte
10	Root aphid	10 gunta area of one acre plot infested at Holalu village
11	Root grub	8 instances larval population ranging from 3-12 grubs/clump

5. Inference: Among the borer pests Internode borer and among the sucking pests Mealy bug registered higher level of incidence.

6. Scientists involved: Dr**.**V.N.Patel , Dr. T. E. Nagaraja, and Mr. B. T. Ravindra Babu and Ms. Sunitha B. P

Experiment No. E.30

1. Title: Monitoring of insect pests and bio-agents in sugarcane agro ecosystem

2. Objective: To find out the activity of sugarcane pests and their bio-agents.

3. Experimental details:

c) Location: ZARS V.C.Farm Mandya
b) Design: Single block of 0.5ac
c) No. of entries: Co 86032
d) Irrigation/Rain fed: Irrigated
d) Replication: -
f) Fertilizer: 25:100:125 NPK (kg /ha)
g) Spacing:
h) Plot size: 0.5ac

1. Date of Sowing: 24.02.2014

5. **Results:** Cumulative incidence of ESB in Co 86032 sugarcane variety was 12.50 % in the first four months after planting. Seven months after planting the incidence of TSB was3.87%. ESB egg masses were found parasitized by *Trichogramma sp*(22.2%). Aphid, whitefly, and pyrilla appeared in very small numbers but failed to establish and spread. Encarsia (3 adults/leaf), Dipha (1 larva

/pupa/leaf) kept the woolly aphid under control. Sugarcane pink mealy bug *S.sacchari* infested 16.66% millable canes with an intensity of 40.54%.

6. **Inference:** The incidence of ESB and TSB was greatly reduced because of more rainfall during the month of May and August-October. Incidence of INB and Mealybug was more because of favorable conditions prevailed during later part of the season.

7. Scientists involved: V.N.Patel, T.E.Nagaraja, B.T.Ravindrababu and Sunitha. B.P.

Experiment No. E.36

1. Title: Management of borer complex of sugarcane through lures.

2. **Objective:** To manage the sugarcane borers.

3. **Experimental details:**

a)Location: ZARS V.C.Farm Mandya b) Design:RCBD
c) No. of entries Co 86032 d) Irrigation/Rain fed: Irrigated
e) Replication: - 3 f) Fertilizer: 25:100:125 NPK (kg /ha)
g) Spacing: 90cmx30cm h) Plot size: 0.5ac

4. Date of Sowing: 24.02.2014

1. **Results:** ESB & TSB moths were active throughout the year. Characteristic peak of ESB was absent during 20th Standard week (May3rd week) because of unusual heavy rainfall (242.5mm, 10 rainy days) during the month of May. Top shoot borer activity was also very low because of heavy rainfall received from July to October 2014 (564.6mm, 32rainy days).Moth activity of Inter node borer was low throughout the season.

5. During the season, highest early shoot borer incidence of 5.20% was observed in the 17th SMW in the lure managed block where as it was 5.25% in control block. The cumulative ESB incidence in the control block remained at 13.60% while it was 9.8% in the lure managed block. Top shoot borer incidence was 2.15% in lure managed block and it remained at 2.90% in the control block.

6. **Inference:** Incidence of borer pests between lure managed block and control plot did not differ significantly.

7. **Scientists involved:** Dr.V.N.Patel , Dr. T. E. Nagaraja, and Mr. B. T. Ravindra Babu and Ms. Sunitha B. P

Experiment No. E.37

1.Title: Bioefficacy of new insecticides for the control of sugarcane early shoot borer.

2. Objective: To find out the effective strategy for the management of sugarcane early shoot borer.

3. Experimental details:

a) Location: ZARS V.C.Farm Mandya b) Design: RBD
c) Variety: Co 86032 d) Irrigation/Rain fed: Irrigated

e) Replication: Three
f) Fertilizer: 25:100:125 NPK (kg /ha)
g) Spacing: 90cm x30cm
h) Plot size: 27m^2

4. Date of Sowing: 17.02.2014
5. Results:

Treatments	**Mean % Incidence of ESB**	**Yield Tonnes/ ha**
T1 -Soil application Fipronil 0.3G @ 25Kg / ha at Planting and 60 DAP	5.30(13.28)	71.14
T2-Soil application Chlorantraniliprole 0.4G @ 22.5kg / ha at Planting and 60 DAP	2.16(8.44)	76.10
T3-Spraying Chlorantroniliprole 18.5SC @ 375ml / ha at 30 and 60 DAP	2.90(10.10)	74.00
T4 -Spraying of Spinosad 45 SC @ 375ml / ha at 30 and 60 DAP	10.15(18.55)	62.59
T5-Spraying of Flubendiamide 39.35SC @ 125ml / ha at 30 and 60 DAP	7.25(15.61)	63.46
T6 -Soil application Phorate 10G @ 15kg / ha at Planting and 60 DAP	13.75(21.73)	60.12
T7 -Soil application Carbofuron 3G @ 33kg / ha at Planting and 60 DAP	12.90(21.03)	59.01
T8 -Chlorpyriphos 20 EC @ 1500ml / ha 30 and 60 DAP	17.66(24.82)	57.04
T9 -Untreated Control	24.60(29.71)	51.60
CD at 5%	**2.38**	**5.30**
CV	**7.59**	**4.79**

6. Inference:
The bio-efficacy of five new insecticides tested against sugarcane early shoot borer revealed that, soil application of Chlorantraniliprole 0.4G@22.5kg/ha at the time of planting and 60DAP recorded least cumulative incidence of ESB (2.16%), followed by spraying of Chlorantraniliprole 18.5SC@375ml/ha at 30 and 60days after planting (2.90%) compared to control (24.60%). All other treatments were found significantly superior over untreated check.

7. Scientists involved: Dr.V.N.Patel , Dr. T. E. Nagaraja, and Mr. B. T. Ravindra Babu and Ms. Sunitha B. P.