

**PART II A**  
**Weekly meteorological data of Akola for the year 2011-12**

Met Week	Date	Rainfall (mm)	Temperature (Oc)		RH I %	RH II %
			Max	Min		
1	2	3	4	5	6	7
1	1-7 Jan.11	0.0	25.1	8.8	78	25
2	8-14	0.0	27.4	7.0	73	18
3	15-21	0.0	29.3	9.9	71	24
4	22-28	0.0	31.2	12.3	73	25
5	29-4 Feb.	0.0	31.5	13.8	68	25
6	5-11	0.0	32.7	13.3	63	19
7	12-18	0.0	32.9	16.4	58	26
8	19-25	3.7	30.9	15.7	64	28
9	26-4 Mar.	3.0	33.5	18.0	68	26
10	5-11	0.0	36.4	18.6	51	17
11	12-18	0.0	36.5	15.3	43	15
12	19-25	0.8	38.7	22.2	40	16
13	26-1 Apr.	0.0	39.0	19.0	34	10
14	2-8	24.8	37.7	22.0	50	25
15	9-15	0.0	38.7	23.3	54	20
16	16-22	0.0	40.4	25.5	47	21
17	23-29	4.0	39.9	23.1	44	16
18	30-6 May	0.0	41.7	26.8	47	21
19	7-13	0.0	41.6	27.9	50	20
20	14-20	0.2	43.4	28.7	43	19
21	21-27	2.0	41.1	28.0	58	29
22	28-3 June	21.6	42.0	28.1	55	24
23	4-10	31.9	37.3	25.1	75	40
24	11-17	23.5	38.0	25.4	66	33
25	18-24	0.0	35.7	27.1	66	42
26	25-1 July	17.2	33.1	24.8	77	45
27	2-8	43.7	34.6	25.0	79	54
28	9-15	26.4	31.4	23.8	88	59
29	16-22	58.1	30.4	24.0	91	69
30	23-29	26.0	29.8	23.8	89	67
31	30-5 Aug.	17.5	30.9	24.1	88	65
32	6-12	8.5	30.5	23.7	87	64
33	13-19	47.6	30.1	23.3	89	65
34	20-26	18.9	31.3	23.4	94	65
35	27-2 Sept.	46.6	28.5	23.2	95	82
36	3-9	63.1	29.8	23.2	92	68
37	10-16	21.5	29.9	23.4	90	70
38	17-23	3.5	30.9	22.5	89	57
39	24-30	0.0	32.7	22.5	85	44
40	1-7 Oct.	0.0	34.9	21.3	79	35
41	8-14	0.8	35.5	21.0	80	35
42	15-21	0.9	35.7	20.1	80	29
43	22-28	0.0	34.6	15.9	70	19
44	29-4 Nov.	0.0	32.9	15.3	65	24
45	5-11	0.0	33.8	14.7	63	21
46	12-18	0.0	33.5	14.6	63	18
47	19-25	0.0	32.0	12.9	69	23
48	26-2 Dec.	0.0	31.4	15.4	75	31
49	3-9	0.0	31.6	13.9	72	25
50	10-16	0.0	29.9	11.4	72	25
51	17-23	0.0	29.6	11.3	65	23
52	24-31	0.0	29.5	11.4	69	23

## Details of Research work carried out during the year 2011-2012

### Experiment No. 1

Project code	-	AICRP E-4.1
Name of Research Station	-	Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Location of Project	-	Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Project title	-	<b>Evaluation of zonal varieties/ genotypes for their reaction against major insect pests of sugarcane in Advance Varietal Trial Early II plant</b>
Duration of project	-	One year
Date of start	-	06-01-2011
Period for which report submitted	-	2011-2012
Principal Investigator	-	
Name	-	B. G. Banbote
Designation	-	Junior Res. Assistant
Address	-	Senior Research Scientist Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Objectives	-	To screen the sugarcane varieties in AICRP Trials for their reactions to major pests.
Technical details		
Progressive year	-	First (2011-121)
Design	-	Randomized Block Design
Replication	-	Three
Plot size	-	6.00x 5.40m <sup>2</sup>
Spacing	-	90 cm row to row
Fertilizer	-	175 kg N + 100 kg P <sub>2</sub> O <sub>5</sub> + 100 kg K <sub>2</sub> O ha <sup>-1</sup>
Date of planting	-	06/01/2011
Date of harvesting	-	06-11-2011
Treatments :Eight varieties	1) Co 06001	5) PI 06132
	2) Co 06002	6) Co 85004 (Ch)
	3) Co 06022	7) Co 94008 (Ch)
	4) CoM 06082	8) CoC 671 (Ch)

### Observations recorded

#### For shoot borer:

1. Per cent incidence (based on dead hearts)
2. No. of bored plants / ha
3. Observations to be recorded in post germination phase at 30 days interval up to 120 days

#### For top borer:

Per cent incidence during the 3<sup>rd</sup> and 4<sup>th</sup> broods (July, Aug, and Sept.) in North West, North Central and North East zones during 5<sup>th</sup> and 7<sup>th</sup> Months and at harvest in peninsular and East coast zones

**For stalk and internodes borers:**

1. At harvest both per cent incidence and per cent intensity (25 canes /replications may be recorded. The infestation index may also be computed as follows.

$$\text{Infestation index} = \frac{\% \text{ incidence} \times \% \text{ intensity}}{100}$$

2. The yield and quality parameters are also to be recorded in both healthy and bored canes and CCS /plot calculated separately.

**For Pyrilla:**

Population of nymph, adults and egg masses be recorded from a unit of 10 canes (20 leaves) and average per leaf be reported.

**For White fly:**

Population of nymph and puparia be recorded from a unit of 10 canes (20 leaves) from proximal, middle and distal region. Average population / 2.5 cm<sup>2</sup> be reported.

**For white grub:**

Grub as well as adults population be recorded by digging 1 square meter area at 5 sites in the field. Population / ha be calculated and reported.

Observations also to be recorded on termites, thrips and mites infestation and broad categorization be made as less susceptible, susceptible and highly susceptible.

**Grades of insect pests infestation:**

<b>Pests</b>	<b>LS</b>	<b>MS</b>	<b>HS</b>
Early shoot borer	Below 15 .0	15.1-30.0	Above 30.0
Inter node borer	Below 20.0	20.1 – 40.0	Above 40.0
Scale insect	Below 10.0	10.1 – 35.0	Above 35.0
Mealy bug	Below 05.0	5.1 – 30.0	Above 30.0
Root borer	Below 15.0	15.1 – 30.0	Above 30.0
Top borer	Below 10.0	10.1 – 20.0	Above 20.0
Pyrilla	Below 05.0	05.1-20	Above 20.0
White fly	Below 02.0	2.1 – 5.0	Above 05.0
Stalk borer	Below 02.0	2.1-5.0	Above 05.0

**Woolly aphid:**

- 0 Resistant – Free
- 1 (MR) less than 25% leaf area covered
- 2 (MS) 25 % leaf area covered
- 3 (S) 25 – 50 % leaf area covered
- 4 (HS) More than 50 % leaf area covered

**Table 1 : Reaction of Sugarcane varieties/genotypes to major pests in AVT Early II Plant**

Sr. No.	Genotypes	Early shoot borer		Mealy Bugs	
		Average % Infestation	Reaction	% intensity	Reaction
1	Co 06001	14.92	LS	2.63	LS
2	Co 06002	14.73	LS	3.03	LS
3	Co 06022	17.71	MS	0.00	LS
4	CoM 06082	11.68	LS	0.00	LS
5	PI 06132	18.77	MS	5.71	MS
6	Co 85004 (Ch)	14.53	LS	7.69	MS
7	Co 94008 (Ch)	13.83	LS	0.00	LS
8	CoC 671 (Ch)	19.06	MS	2.72	LS

LS = Less susceptible, MS= Moderately susceptible and HS = Highly susceptible.

**Results :**

**Early Shoot Borer:** Data (Table 1) showed that the entries Co 06001, Co 06002, CoM 06082, , Co 85004 (Ch) and Co 94008 (Ch) were found less susceptible to early shoot borer and the entries Co 06022, PI 06132 and CoC 671 (Ch) were found moderately susceptible to early shoot borer.

**Mealy Bugs:** The entries, Co 06001, Co 06002, Co 06022, CoM06082 ,Co 94008 (Ch) and CoC 671 (Ch) were found less susceptible to mealy bugs. The entries PI06132 and Co 85004 (Ch) were found moderately susceptible to mealy bugs.

## Experiment No2

Project code	-	AICRP E-4.1
Name of Research Station	-	Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Project title	-	<b>Evaluation of zonal varieties / genotypes for their reaction against major insect pests of sugarcane in Advance Varietal Trial Early I Plant</b>
Duration of project	-	One year
Date of start	-	02-02-2011
Period for which report submitted	-	2011-2012
Principal Investigator	-	
Name	-	B. G. Banbote
Designation	-	Junior Res. Assistant Senior Research Scientist
Address	-	Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Objectives	-	To screen the sugarcane varieties in AICRP Trials for their reactions to major pests.
621.1	Technical details	
1.	Progressive year	- First (2011-2012)
2.	Design	- Randomized Block Design
3.	Replication	- Three
4.	Plot size	- 6.00 x 5.40 m <sup>2</sup>
5.	Spacing	- 90 cm row to row
6.	Fertilizer	- 175 kg N + 100 kg P <sub>2</sub> O <sub>5</sub> + 100 kg K <sub>2</sub> O ha-1
7.	Date of planting	- 02-02-2011
8.	Date of harvesting	- 02-12-2011
9.	Treatments Seven Genotypes	1) Co 07012                      5) Co 85004 (Ch) 2) Co 07015                      6) Co 94008 (Ch) 3) CoN 07071                    7) CoC 671 (Ch) 4) Plo7131

### Observations recorded

As per experiment No 1

**Table 2: Reaction of Sugarcane varieties / genotypes to major pests in AVT Early I Plant**

Sr. No.	Genotypes	Early shoot borer		Scale insect		Mealy Bugs	
		Average % Infestation	Reaction	% intensity	Reaction	% intensity	Reaction
1	Co 07012	5.33	LS	8.98	LS	2.85	LS
2	Co 07015	7.07	LS	9.37	LS	7.50	MS
3	CoN 07071	5.69	LS	7.07	LS	2.56	LS
4	PI 07131	8.63	LS	2.50	LS	4.87	LS
5	Co 85004 (Ch)	11.76	LS	5.12	LS	6.66	MS
6	Co 94008 (Ch)	12.52	LS	3.40	LS	0.00	LS
7	CoC 671 (Ch)	7.06	LS	6.66	LS	2.17	LS

LS = Less susceptible, MS= Moderately susceptible and HS = Highly susceptible.

**Results :**

**Early Shoot Borer:** Data (Table2) revealed that the entries Co 07012, Co 07015, CoN 07071, PI07131, Co 85004 (Ch), Co94008 and CoC671(Ch) were found less susceptible to early shoot borer.

**Scale Insect:** The entries Co 07012, Co 07015, CoN 07071, PI07131, Co 85004 (Ch), Co94008 and CoC671(Ch).

**Mealy bugs** The entries Co07012, CoN07071, PI07131, Co94008 and CoC671(Ch)) were found less susceptible to mealy bugs while the entries Co07015 and Co85004 were found moderately susceptible to mealy bugs

### Experiment No 3

Project code	- AICRP E-4.1
Name of Research Station	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Location of Project	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Project title	- <b>Evaluation of zonal varieties / genotypes for their reaction against major insect pests of sugarcane in Advance Varietal Trial Midlate II Plant</b>
Duration of project	- One year
Date of start	- 07-01-2011
Period for which report submitted	- 2011-2012
Principal Investigator	-
Name	- B. G. Banbote
Designation	- Junior Res. Assistant Senior Research Scientist
Address	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Objectives	- To screen the sugarcane varieties in AICRP Trials for their reactions to major pests.

#### Technical details

1. Progressive year	- First (2011-2012)
2. Design	- Randomized Block Design
3. Replication	- Three
4. Plot size	- 6.00 x 4.50 m <sup>2</sup>
5. Spacing	- 90 cm row to row
6. Fertilizer	- 175 kg N + 100 kg P <sub>2</sub> O <sub>5</sub> + 100 kg K <sub>2</sub> O ha <sup>-1</sup>
7. Date of planting	- 07-01-2011
8. Date of harvesting	- 07-11-2011
9. Treatments : Thirteen genotypes	1) Co 06007                      8) Co 06027 2) Co 06010                    9) CoM06082) 3) Co 06012                    10) CoM06084 4) Co 06013                    11)CoSnK3632) 5) Co 06014                    12)Co86032 (Ch) 6) Co 06015                    13) Co 99004 (Ch 7) Co 06020

#### Observations to be recorded

As per experiment No 1.

**Table 3: Reaction of Sugarcane varieties/genotypes to major pests in AVT Midlate II Plant**

Sr. No.	Genotypes	Early shoot borer		Mealy Bugs	
		Average % Infestation	Reaction	% intensity	Reaction
1	Co 06007	13.76	LS	0.00	LS
2	Co 06010	7.64	LS	0.00	LS
3	Co 06012	6.18	LS	4.54	LS
4	Co 06013	11.25	LS	3.57	LS
5	Co 06014	12.91	LS	0.00	LS
6	Co 06015	5.18	LS	5.21	MS
7	Co 06020	13.21	LS	0.00	LS
8	Co 06027	10.79	LS	0.00	LS
9	CoM 06082	6.90	LS	1.06	LS
10	CoM 06084	10.76	LS	2.27	LS
11	CoSnk 03632	10.28	LS	2.97	LS
12	Co 86032 (Ch)	15.82	MS	0.00	LS
13	Co 99004 (Ch)	12.44	LS	2.32	LS

LS = Less susceptible, MS= Moderately susceptible and HS = Highly susceptible.

**Results :**

**Early Shoot Borer:** Data (Table 3) revealed that the entries Co 06007, Co 06010, Co 06012, Co 06013, Co 06014, Co06015, Co06020, Co06027, CoMO6082, CoMo6084, CoSnK3632 and Co99004 were found less susceptible to early shoot borer while the genotypes Co 86032 was found moderately susceptible to early shoot borer.

**Mealy Bugs:** The entries Co 06007, Co 06010, Co 06012, Co 06013, Co 06014, , Co06020, Co06027,CoMO6082,CoMo6084,CoSnK3632 Co86032and Co99004 were found less susceptible to mealy bugs while the genotypes Co06015 was found moderately susceptible to mealy bugs



## Experiment No 4

Project code	- AICRP E-4.1
Name of Research Station	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Location of Project	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Project title	- <b>Evaluation of zonal varieties / genotypes for their reaction against major insect pests of sugarcane in Advance Varietal Trial Midlate I plant</b>
Duration of project	- One year
Date of start	- 03-02-2011
Period for which report submitted	- 2011-2012
Principal Investigator	-
Name	- B. G. Banbote
Designation	- Junior Res. Assistant Senior Research Scientist
Address	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Objectives	- To screen the sugarcane varieties in AICRP Trials for their reactions to major pests.

### Technical details

1. Progressive year - First (2011-2012)
2. Design - Randomized Block Design
3. Replication - Three
4. Plot size - 6.00 x 5.40 m<sup>2</sup>
5. Spacing - 90 cm row to row
6. Fertilizer - 175 kg N + 100 kg P<sub>2</sub>O<sub>5</sub> + 100 kg K<sub>2</sub>O ha<sup>-1</sup>
7. Date of planting - 03-02-2011
8. Date of harvesting - 02-02-2012
9. Treatments : Eight genotypes  
1) Co 07006                      5) Co 07010  
2) Co 07007                      6) CoSnK 07103  
3) Co 07008                      7) ) Co 86032 (Ch)  
4) Co 07009                      8) Co99004(Ch)

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### Observations recorded

As per experiment No 1

**Table 4: Reaction of Sugarcane varieties/genotypes to major pests in AVT Midlate I Plant**

Sr. No.	Genotypes	Early shoot borer		Scale Insect	
		Average % Infestation	Reaction	% intensity	Reaction
1	Co 07006	7.91	LS	3.40	LS
2	Co 07007	10.29	LS	0.00	LS
3	Co 07008	4.99	LS	8.91	LS
4	Co 07009	5.13	LS	4.80	LS
5	Co 07010	4.78	LS	0.00	LS
6	CoSnk 07103	6.30	LS	0.00	LS
7	Co 86032 (Ch)	10.37	LS	4.00	LS
8	Co 99004 (Ch)	9.36	LS	0.00	LS

LS = Less susceptible, MS= Moderately susceptible and HS = Highly susceptible.

**Results :**

**Early Shoot Borer:** Data (Table 4) revealed that the entries Co 07006,CoO7007, Co 07008,CoO7009,CoO7010,CoSnKO7103,Co86032 and Co99004were found less susceptible to early shoot borer

**Scale insect:** The entries Co 07006,CoO7007, Co 07008, CoO7009, CoO7010, CoSnKO7103, Co86032 and Co99004were found less susceptible to scale insect

## Experiment No5

Project code	- AICRP E-4.1
Name of Research Station	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Location of Project	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Project title	- <b>Evaluation of zonal varieties / genotypes for their reaction against major insect pests of sugarcane in Initial Varietal Trial Early I Plant</b>
Duration of project	- One year
Date of start	- 05-02-2011
Period for which report submitted	- 2011-2012
Principal Investigator	-
Name	- B. G. Banbote
Designation	- Junior Res. Assistant Senior Research Scientist
Address	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Objectives	- To screen the sugarcane varieties in AICRP Trials for their reactions to major pests.

### Technical details

1. Progressive year - First (2011-2012)
2. Design - Randomized Block Design
3. Replication - Three
4. Plot size - 6.00 x 5.40 m<sup>2</sup>
5. Spacing - 90 cm row to row
6. Fertilizer - 175 kg N + 100 kg P<sub>2</sub>O<sub>5</sub> + 100 kg K<sub>2</sub>O ha-1
7. Date of planting - 05-02-2011
8. Date of harvesting - 05-12-2011
9. Treatments Eight Genotypes  
1) Co 08001                      5) VSI08121  
2) Co 08006                      6) Co 85004 (Ch)  
3) CoN 08071                    7) Co 94008 (Ch)  
4) Pl08131                        8) CoC 671 (Ch)

### Observations recorded

As per experiment No 1

**Table 5: Reaction of Sugarcane varieties / genotypes to major pests in IVT Early I Plant**

Sr. No.	Genotypes	Early shoot borer		Scale insect		Mealy Bugs	
		Average % Infestation	Reaction	% intensity	Reaction	% intensity	Reaction
1	Co 08001	12.70	LS	0.00	LS	0.00	LS
2	Co 08006	11.11	LS	0.00	LS	0.00	LS
3	CoN 08071	05.98	LS	0.00	LS	2.85	LS
4	PI 08131	12.92	LS	0.00	LS	0.00	LS
5	VSIO8121	12.54	LS	0.00	LS	10.52	MS
6	Co 85004(Ch)	11.22	LS	04.67	LS	11.90	MS
7	Co94008(ch)	23.08	MS	0.00	LS	0.00	LS
8	CoC 671 (Ch)	13.85	LS	05.00	LS	2.56	LS

LS = Less susceptible, MS= Moderately susceptible and HS = Highly susceptible.

**Results :**

**Early Shoot Borer:** Data (Table5) revealed that the entries Co 08001, Co 08006, CoN 08071, PIo8131, VSIO8121, Co 85004 (Ch), and CoC671 (Ch) were found less susceptible to early shoot borer while the genotypes Co 94008 (Ch) was found moderately susceptible to early shoot borer.

**Scale Insect:** The entries Co 08001, Co 08006, CoN 08071, PIo8131, VSIO8121, Co 85004 (Ch), Co94008 and CoC671(Ch) were found less susceptible to scale insect.

**Mealy bugs** The entries Co 08001, Co 08006, CoN 08071,PIo8131, Co94008 and CoC671(Ch) were found less susceptible to mealy bugs while VSIO8121 and Co85004 were found moderately susceptible to mealy bugs

## Experiment No. 6

Project code	- AICRP E-4.1
Name of Research Station	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Location of Project	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Project title	- <b>Evaluation of zonal varieties / genotypes for their reaction against major insect pests of sugarcane in Initial Varietal Trial Midlate I Plant</b>
Duration of project	- One year
Date of start	- 06-02-2011
Period for which report submitted	- 2011-2012
Principal Investigator	-
Name	- B. G. Banbote
Designation	- Junior Res. Assistant Senior Research Scientist
Address	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Objectives	- To screen the sugarcane varieties in AICRP Trials for their reactions to major pests.

### Technical details

1. Progressive year	- First (2011-2012)
2. Design	- Randomized Block Design
3. Replication	- Three
4. Plot size	- 6.00 x 4.50 m <sup>2</sup>
5. Spacing	- 90 cm row to row
6. Fertilizer	- 175 kg N + 100 kg P <sub>2</sub> O <sub>5</sub> + 100 kg K <sub>2</sub> O ha <sup>-1</sup>
7. Date of planting	- 06-02-2011
8. Date of harvesting	- 06-01-2012
9. Treatments Twenty Genotypes	1) Co 08007                      11) CoR08141 2) Co 08008                      12) CoSnK08101 3) Co 08009                      13) CoVCO8061 4) CoO8016                      14) CoVCO8062 5) CoO8018                      15) CoVCO8063 6) CoO8019                      16) CoVCO8064 7) CoO8020                      17) CoVSIO8122 8) CoJNO8091                    18) CoVSIO8123 9) CoMO8081                    19) Co86032 10) CoNO8072                    20) Co99004

### Observations recorded

As per experiment No 1

**Table 6: Reaction of Sugarcane varieties / genotypes to major pests in IVT Midlate I Plant**

Sr. No.	Genotypes	Early shoot borer		Scale insect		Mealy Bugs	
		Average % Infestation	Reaction	% intensity	Reaction	% intensity	Reaction
1	Co 08007	9.93	LS	0.00	LS	0.00	LS
2	Co 08008	7.87	LS	0.00	LS	0.00	LS
3	Co 08009	14.75	LS	0.00	LS	0.00	LS
4	CoO8016	11.98	LS	0.00	LS	0.00	LS
5	CoO8018	4.86	LS	0.00	LS	0.00	LS
6	CoO8019	10.54	LS	0.00	LS	0.00	LS
7	CoO8020	8.45	LS	0.00	LS	0.00	LS
8	CoJNO8091	4.94	LS	0.00	LS	0.00	LS
9	CoMO8081	7.59	LS	4.0	LS	0.00	LS
10	CoNO8072	8.53	LS	0.00	LS	0.00	LS
11	CoRO8141	7.77	LS	0.00	LS	0.00	LS
12	CoSnKO8101	12.08	LS	0.00	LS	0.00	LS
13	CoVCO8061	10.42	LS	0.00	LS	0.00	LS
14	CoVCO8062	7.7	LS	0.00	LS	4.13	LS
15	CoVCO8063	6.24	LS	0.00	LS	0.00	LS
16	CoVCO8064	7.38	LS	4.58	LS	0.00	LS
17	CoVSIO8122	12.55	LS	4.00	LS	0.00	LS
18	CoVSIO8123	10.24	LS	0.00	LS	0.00	LS
19	Co86032 (ch)	12.8	LS	0.00	LS	3.57	LS
20	Co99004(ch)	14.17	LS	0.00	LS	4.34	LS

LS = Less susceptible, MS= Moderately susceptible and HS = Highly susceptible.

**Results :**

Data (Table6) revealed that the entries CoO8007, CoO8008, CoO8009, CoO8016, , CoO8018, CoO8019, CoO8020, CoJNO8091, CoMO8081, CoNO8072, CoRO8141, CoSnK08101, CoVCO8061, CoVCO8062, CoVCO8063, CoVCO8064, CoVSIO8122, CoVSIO8123, Co86032 and Co99004 were found less susceptible to early shoot borer, scale insect and mealy bugs also.

## Experiment No7

Project code	- AICRP E-30
Name of Research Station	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Location of Project	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Project title	- <b>Monitoring of insect pests and bio-agents in sugarcane agro ecosystem</b>
Duration of project	- Long term
Date of start	- 07-01-2011
Period for which report submitted	- 2011-2012
Principal Investigator	-
Name	- B. G. Banbote
Designation	- Junior Res. Assistant Senior Research Scientist
Address	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Immediate objectives	- To monitor the key insect pests and natural enemies in the area.

### Technical details

1. Progressive year - Fourth (2011-2012)
2. Duration - Long term
3. Plot size - 0.5 acre
4. Spacing - 90 cm row to row
5. Fertilizer - 175 kg N + 100 kg P<sub>2</sub>O<sub>5</sub> + 100 kg K<sub>2</sub>O ha<sup>-1</sup>
6. Variety - Co 86032
7. Date of planting - 07-01-2011
8. Date of harvesting - 31-12-2011
9. Methodology -
  1. Planting of sugarcane variety recommended for the region.
  2. All recommended practices to be followed except application of insecticide.

### Observations recorded :

1. Observations on incidence of borers was recorded by examining 100 canes at 5 places (four corners and in middle) sucking pests by examining 20 canes and others as mentioned in technical programme of E 4.1
2. Meteorological data (Weekly average) was recorded on temp. (max and min) relative humidity, no of rainy days and total rain fall.

**Table 7: Monitoring of Insect pests and bio- agents in sugarcane agro ecosystem during 2011-12.**

Months	Fort-night	Early shoot borer % infestation	Thrips / Leaf	Mealy bugs % intensity	Scale Insect % intensity	Pyrilla / Leaf	Bio- agents/cane	
							Lady bird beetle	Spiders
1	2	3	4	6	7		8	9
Feb 2011	I	00.00	00.00	00.00	00.00	00.00	00.00	00.00
	II	<b>02.00</b>	00.00	00.00	00.00	00.00	00.00	00.00
Mar 2011	I	<b>06.00</b>	<b>00.33</b>	00.00	00.00	00.00	<b>02.00</b>	<b>01.00</b>
	II	<b>07.00</b>	<b>00.53</b>	00.00	00.00	00.00	<b>09.00</b>	<b>02.00</b>
April 2011	I	<b>09.00</b>	<b>00.40</b>	00.00	00.00	00.00	<b>06.00</b>	<b>02.00</b>
	II	<b>07.00</b>	<b>00.13</b>	00.00	00.00	00.00	<b>05.00</b>	<b>04.00</b>
May 2011	I	<b>06.00</b>	<b>00.03</b>	00.00	00.00	00.00	<b>04.00</b>	<b>03.00</b>
	II	<b>04.00</b>	00.00	00.00	00.00	00.00	<b>04.00</b>	<b>01.00</b>
Jun 2011	I	<b>03.00</b>	00.00	00.00	00.00	00.00	<b>03.00</b>	<b>01.00</b>
	II	<b>03.00</b>	00.00	00.00	00.00	00.00	00.00	00.00
July 2011	I	00.00	00.00	<b>07.38</b>	00.00	00.00	00.00	00.00
	II	00.00	00.00	<b>01.18</b>	<b>06.12</b>	00.00	00.00	<b>02.00</b>
Aug 2011	I	00.00	00.00	<b>03.10</b>	<b>00.79</b>	00.00	00.00	<b>01.00</b>
	II	00.00	00.00	<b>01.38</b>	<b>00.34</b>	00.00	<b>01.00</b>	00.00
Sept 2011	I	00.00	00.00	<b>01.73</b>	00.00	00.00	00.00	00.00
	II	00.00	00.00	<b>01.64</b>	00.00	00.00	00.00	00.00
Oct 2011	I	00.00	00.00	00.00	00.00	<b>00.23</b>	00.00	00.00
	II	00.00	00.00	00.00	00.00	<b>00.40</b>	00.00	00.00
Nov 2011	I	00.00	00.00	00.00	00.00	<b>00.33</b>	00.00	00.00
	II	00.00	00.00	00.00	00.00	<b>00.43</b>	00.00	00.00
Dec 2011	I	00.00	00.00	00.00	00.00	<b>00.23</b>	00.00	00.00
	II	00.00	00.00	00.00	00.00	00.00	00.00	00.00

**Results :**

**Early Shoot Borer:** From the data (Table 7) revealed that the incidence of early shoot borer was observed first in 2<sup>nd</sup> fortnight of Feb 2011 and it was continued up to 2<sup>nd</sup> fortnight of June 2011. The maximum infestation was observed in 1<sup>st</sup> fortnight (9.00 %) of April 2011.

**Thrips:** The incidence of thrips was initiated in the 1<sup>st</sup> fortnight of March 2011 and it was continued up to 1<sup>st</sup> fortnight of May 2011

**Mealy bugs:** The incidence of mealy bugs was initiated in 1<sup>st</sup> fortnight of July, 2011 and it was continued up to 2<sup>nd</sup> fortnight of September 2011. The highest intensity(7.38%) was observed in 1<sup>st</sup> fortnight of July 2011.

**Scale insects:** The incidence of scale insect was initiated in 2<sup>nd</sup> fortnight of July, 2011 and it was continued up to 2<sup>nd</sup> fortnight of August. 2011.. The highest intensity (6.12 %) was observed in 2<sup>nd</sup> fortnight of July 2011.

**Pyrilla:** The incidence of pyrilla was observed first in 1<sup>st</sup> fortnight of October 2011 and it was continued up to 1<sup>st</sup> fortnight of Dec. 2011.

In sugarcane ecosystem the population of natural enemies like ladybird beetles and spiders were observed during the year 2011-12.



## Experiment No. 8

Project code	- E -32
Name of Research Station	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Location of Project	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Project title	- <b>Population dynamics of sugarcane borers (Early shoot borer, Internode borer, Top shoot borer and stalk borer) through pheromone traps.</b>
Duration of project	- Long-term
Date of start	- 07-01-2011
Period for which report submitted	- 2011-2012
Principal Investigator	-
Name	- B. G. Banbote
Designation	- Junior Res. Assistant Senior Research Scientist
Address	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Objectives	- To study the population dynamics of sugarcane borers through pheromone traps and influence of weather parameters on moth catches.

### Technical details

1. Progressive year - Long term
2. Plot size - 0.40 hectare
3. Spacing - 90 cm row to row
4. Variety - Co86032
5. Fertilizer - 175 kg N + 100 kg P<sub>2</sub>O<sub>5</sub> + 100 kg K<sub>2</sub>O ha<sup>-1</sup>
6. Date of planting - 07-01-2011
7. Date of harvesting - 30-12-2011
8. Treatments - Pheromone lures of sugarcane Early shoot borer, Inter-node borer and Top shoot borer.

**Methodology:** Three pheromone traps for each borer were installed in the second fortnight of February till harvest of the crop. The pheromone lures were changed after two months

### Observations to recorded

Observations on No. of moths of early shoot borer trapped were recorded at weekly interval. The mean no. of moth captured were worked out .The correlation and regression of moth captured were worked out with weekly metrological parameters.

**Table 8: No of early shoot borer moth trapped weekly with weather parameters during 2011-12**

Week	Date of observation	Early shoot borer moth catches	Early shoot borer % Incidence	Temperature °C		Relative humidity %		Rain fall m m
				Max	Min	Mor	Even	
1	22.02.11	0	2.63	32.9	16.4	58	26	0.0
2	02.03.11	0	3.75	30.9	15.7	64	28	3.7
3	09.03.11	2	7.22	33.5	18.0	68	26	3.0
4	16.03.11	10	7.77	36.4	18.6	51	17	0.0
5	23.03.11	4	7.89	36.5	15.3	43	15	0.0
6	30.03.11	4	6.61	38.7	22.2	40	16	0.8
7	08.04.11	2	7.56	39.0	19.0	34	10	0.0
8	15.04.11	2	4.86	37.7	22.0	50	25	24.8
9	22.04.11	4	2.68	38.7	23.3	54	20	0.0
10	29.04.11	2	2.13	40.4	25.5	47	21	0.0
11	06.05.11	3	1.59	39.9	23.1	44	16	4.0
12	13.05.11	5	2.59	41.7	26.8	47	21	0.0
13	20.05.11	0	3.75	41.6	27.9	50	20	0.0
14	27.05.11	0	4.10	43.4	28.7	43	19	0.2
15	03.06.11	0	2.23	41.1	28.0	58	29	2.0
16	10.06.11	0	0.78	42.0	28.1	55	24	21.6
17	17.06.11	0	2.08	37.3	25.1	75	40	31.9
18	24.06.11	0	1.38	38.0	25.4	66	33	23.5
19	01.07.11	0	2.14	35.7	27.1	66	42	0.0
20	08.07.11	0	0.00	33.1	24.8	77	45	17.2
21	15.07.11	0	0.00	34.6	25.0	79	54	43.7
22	22.07.11	0	0.00	31.4	23.8	88	59	26.4
23	29.07.11	0	0.00	30.4	24.0	91	69	58.1
24	05.08.11	0	0.00	29.8	23.8	89	67	26.0
25	12.08.11	0	0.00	30.9	24.1	88	65	17.5
26	19.08.11	0	0.00	30.5	23.7	87	64	8.5
27	26.08.11	0	0.00	30.1	23.3	89	65	47.6
28	02.09.11	0	0.00	31.3	23.4	94	65	18.9
29	09.09.11	0	0.00	28.5	23.2	95	82	46.6
30	16.09.11	0	0.00	29.8	23.2	92	68	63.1
31	23.09.11	0	0.00	29.9	23.4	90	70	21.5
32	30.09.11	0	0.00	30.9	22.5	89	57	3.5
33	07.10.11	0	0.00	32.7	22.5	85	44	0.0
34	14.10.11	0	0.00	34.9	21.3	79	35	0.0
35	21.10.11	0	0.00	35.5	21.0	80	35	0.8
36	28.10.11	0	0.00	35.7	20.1	80	29	0.9
37	04.11.11	0	0.00	34.6	15.9	70	19	0.0
38	11.11.11	0	0.00	32.9	15.3	65	24	0.0
39	18.11.11	0	0.00	33.8	14.7	63	21	0.0
40	25.11.11	0	0.00	33.5	14.6	63	18	0.0
41	02.12.11	0	0.00	32.0	12.9	69	23	0.0
42	09.12.11	0	0.00	31.4	15.4	75	31	0.0
42	16.12.11	0	0.00	31.6	13.9	72	25	0.0
44	23.12.11	0	0.00	29.9	11.4	72	25	0.0

Weather parameters of preceding week were taken for correlation

**Table 8 : Correlation and regression of early shoot borer moth catches with weather parameters. (44 observations)**

Weather parameters	Early shoot borer moth catches	Correlation		Early shoot borer % Incidence	Correlation	
		Cal. "r" value	t (cal)		Table 't' value 1.960	Cal. "r" value
<b>Temperature</b>						
Maximum	0.010	0.066	NS	0.504	3.78	Sig
Minimum	-0.033	0.214	NS	-0.024	-0.155	NS
<b>Relative humidity</b>						
Morning	-0.550	4.29	Sig.	-0.730	-6.952	- Sig
Evening	-0.420	-3.0	- Sig.	-0.544	-4.21	- Sig
<b>Rainfall</b>	-0.253	-1.69	NS	-0.307	-2.102	- Sig

Weather parameters of preceding week were taken for Correlation

**Results :**

From the table 8 revealed that, significant correlation was observed between early shoot borer moth catches with morning relative humidity and negative significant with evening humidity. Non significant correlation were observed with temperature and rainfall.

Significant correlation was observed between early shoot borer infestation and maximum temperature and non significant with minimum temperature. Negative significant correlation were observed with humidity and rainfall.

This experiment will be discontinued from 2012-13.

## Experiment No. 9

Project code	- AICRP E-33
Name of Research Station	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Location of Project	- Sugarcane Research Centre, Dr.P.D.K.V., Akola.
Project title	- <b>Bio-efficacy of insecticides against mealy bugs in sugarcane</b>
Duration of project	- Three year
Date of start	- 08-03-2011
<b>Principal Investigator</b>	-
Name	- B. G. Banbote
Designation	- Junior Res. Assistant
Dept. / Section	- Senior Research Scientist Sugarcane Research Centre, Dr.P.D.K.V., Akola
Location	- Akola
Address	- Senior Research Scientist Sugarcane Research Centre, Dr.P.D.K.V., Akola
Objectives	- To evaluate efficacy of insecticides against mealy bugs in sugarcane

### Technical programme

Design	- Randomized Block Design
Replications	- Three
Plot size	- 6.00 x 5.40 m <sup>2</sup>
Date of Planting	- 08/03/2011
Date of harvesting	- 10/02/2012
Variety	- Co 7219
Treatments	- <b>Nine</b>

- 1 Sett treatment of Imidacloprid 70%WG/SP 25g a.i./ha+Spraying of Imidacloprid 17.8SL0.005%
- 2 Sett treatment of Imidacloprid 70%WG/SP 25ga.i./ha+Spraying of Thiamethoxam 25 WG 0.004%
- 3 Sett treatment of Imidacloprid 70%WG/SP 25g a.i./ha+Spraying of Clothianidin 50 WSG 0.004%
- 4 Sett treatment of Imidacloprid 70%WG/SP 25g a.i./ha+Spraying of Acetamaprid 20SP 0.004%
- 5 Sett treatment of Thiamethoxam 35%FS 10g a.i./ha+Spraying of Imidacloprid 17.8SL 0.005%
- 6 Sett treatment of Thiamethoxam 35%FS 10g a.i./ha+Spraying of Thiamethoxam 25WG 0.004%
- 7 Sett treatment of Thiamethoxam 35%FS 10g a.i./ha+Spraying of Clothianidin 50WSG 0.004%
- 8 Sett treatment of Thiamethoxam 35%FS 10g a.i./ha+Spraying of Acetamaprid 20SP 0.004%
- 9 Untreated control

**Method of application :**

- i. Dose of a.i. is based on 35000 three eye bud setts.
- ii. Spraying will be done at the time of cane formation (Approximately 4-5 months after planting)

**Method of observation :**

- i. Germination percentage at 30 and 45 DAP
- ii. Randomly select 10 canes from 3 meter row length and count number of infested internodes out of total number of internodes
- iii. Before spraying and 7,15 and 30 DAS and at harvest
- iv. Yield and quality parameters.

### Result :

This year there was no incidence of mealybugs on trial plots hence the treatment of insecticide could not imposed. Hence this trial vitiated. This trial will not be conducted during 2012-13 due to shortage of irrigation water.

## **PART V**

### **List of On going projects to be undertaken during 2012-13.**

1. Evaluation of zonal varieties for their reaction against major insect pests of sugarcane in AVT Early I Plant
2. Evaluation of zonal varieties for their reaction against major insect pests of sugarcane in AVT Early II Plant
3. Evaluation of zonal varieties for their reaction against major insect pests of sugarcane in AVT Midlate I Plant
4. Evaluation of zonal varieties for their reaction against major insect pests of sugarcane in AVT Midlate II Plant
5. Monitoring of insect pests and bio agents in sugarcane agro ecosystem
6. Survey and surveillance of sugarcane insect pests

(For office use only)

**DR PANJABRAO DESHMUKH KRISHI  
VIDYAPEETH, AKOLA**

**ANNUAL REPORT OF RESEARCH WORK DONE  
ON SUGARCANE ENTOMOLOGY**

**2011-2012**

Submitted to  
**ALL INDIA CO-ORDINATED RESEARCH PROJECT  
ON SUGARCANE**



Submitted by

**SENIOR RESEARCH SCIENTIST  
SUGARCANE RESEARCH CENTRE  
DR.PANJABRAO DESHMUKH KRISHI VIDYAPEETH,  
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