ANNUAL REPORT (2014-15)
AICRP ON SUGARCANE (ENTOMOLOGY),
Zonal Agricultural Research Station, Powarkheda (M.P.)

Technical Programme 2014-15:

S. No.	Experiments Allotted	C/ NC*
1.	E. 4.1: Evaluation of zonal varieties/genotypes for their reaction against major insect pests	C
2.	E. 28: Survey and surveillance of sugarcane insect pests.	C
3.	E. 30: Monitoring of insect pests and bio-agents in sugarcane agro-ecosystem	C
4.	E. 36: Management of borer complex of sugarcane through lures	C
5.	E.37: Bio-efficacy of new insecticides for the control of sugarcane early shoot borer	C

***C/NC – Conducted/ Not Conducted**

E. 4.1: Evaluation of zonal varieties/genotypes for their reaction against major insect pests.

Objective...: To screen the entries of the zonal varietal trails for their behaviour towards damage caused by key pests in the area

Year of Start: 1985-86 (Continuing)

Experimental details:

Sixteen entries with three checks of early, and fourteen entries with two checks of mid-late group were screened for their reaction against infestation of key pests of the area. The infestation of insect pests recorded and the reactions are given in Table -1 & 2. The entries couldn't be evaluated for their reaction to early shoot borer, as the pest infestation remained below 2.5 per cent, ie., below ETL.

Results:

Early group:

Pyrilla (pyrilla/leaf):

All genotypes and check varieties received pyrilla population in-between 14.67 to 18.90 pyrilla/leaf and all graded as moderate susceptible (MS). The check varieties i.e., Co 85004, Co 94008 and Co C 671 received 17.72, 17.98 and 18.03 pyrilla/leaf, respectively.

The evaluated entries differed significantly in respect of infestation of pyrilla. The CoM 11084, Co 11004 and CoM 11081 (14.67 to 15.15 pyrilla/ leaf) received significantly the lowest pyrilla population as Compared to others and the checks. The Co N 11071 received the maximum pyrilla population (18.90 pyrilla/ leaf), followed by Co 11018, Co 11016, Co 09007 and Co C 671 (18.68 to 18.03 pyrilla/leaf), all were significantly at par with each other.

Table-1: Reaction of different entries (Early group) against pyrilla Powarkheda, Madhya Pradesh (2014-15)

S. No.	Trial	Entries	Pyrilla/leaf	Grade	Rank
1	AVT (E) I	Co 09004	16.10	**MS**	**4**
2	AVT (E) I	Co 09007	18.52	**MS**	**16**
3	AVT (E) I	Co 09072	17.23	**MS**	**9**
4	IVT (E) (14-15)	CoM 11081	15.15	**MS**	**3**
5	IVT (E) (14-15)	Co 11084	14.67	**MS**	**1**
6	IVT (E) (14-15)	Co 11004	15.03	**MS**	**2**
7	IVT (E) (14-15)	CoM 11082	16.67	**MS**	**6**
8	IVT (E) (14-15)	Co N 11072	16.20	**MS**	**5**
9	IVT (E) (14-15)	Co 11001	17.40	**MS**	**10**
10	IVT (E) (14-15)	PI 11131	16.87	**MS**	**8**
11	IVT (E) (14-15)	Co 11016	18.65	**MS**	**17**
12	IVT (E) (14-15)	CoM 11083	16.80	**MS**	**7**
13	IVT (E) (14-15)	Co T 11366	17.98	**MS**	**13**
14	IVT (E) (14-15)	Co 11017	17.93	**MS**	**12**
15	IVT (E) (14-15)	Co N 11071	18.90	**MS**	**19**
16	IVT (E) (14-15)	Co 11018	18.68	**MS**	**18**
17	**Check**	**Co 94008**	17.98	**MS**	**11**
18	**Check**	**Co C 671**	18.03	**MS**	**14**
19	**Check**	**Co 85004**	17.72	**MS**	**15**
S Em +/_			0.32		
CD at 5%			0.91		

Pyrilla (per leaf):

The pyrilla population ranged between 11.02 to 21.63 pyrilla/leaf in various genotypes evaluated and check varieties. The check varieties, i.e., Co 99004 and Co 86032 received 19.47 and 19.67 pyrilla per leaf.

Pyrilla (population per leaf) received in various entries differed significantly. The Co 11012 (11.02 pyrilla/leaf) received significantly the lowest population, followed by Co 11005 (14.73 pyrilla/leaf). The Co 11022 was next in order, but was significantly at par with Co 11020, Co 11024 and CoM 11085 (17.48 to 17.87 pyrilla/leaf). The Co 11021 received numerically the maximum pyrilla (21.63 pyrilla/leaf), precede by CoM 11086, Co N 11073

and Co N 11074 (21.47 to 21.02 pyrilla/leaf); all four were significantly at par with each other.

Table-2: Reaction of different entries (Midlate group) against Pyrilla Powarkheda, Madhya Pradesh (2014-15)

S. No.	Trial	Entries	Pyrilla/leaf	Grade	Pyrilla rank
1	IVT (ML) (14-15)	Co 11005	14.73	**MS**	**2**
2	IVT (ML) (14-15)	Co 11020	17.48	**MS**	**4**
3	IVT (ML) (14-15)	Co 11022	17.33	**MS**	**3**
4	IVT (ML) (14-15)	CoM 11085	17.87	**MS**	**6**
5	IVT (ML) (14-15)	Co 11007	18.47	**MS**	**7**
6	IVT (ML) (14-15)	CoM 11087	19.82	**MS**	**12**
7	IVT (ML) (14-15)	Co 11024	17.65	**MS**	**5**
8	IVT (ML) (14-15)	Co 11019	19.40	**MS**	**9**
9	IVT (ML) (14-15)	Co N 11073	21.17	**HS**	**14**
10	IVT (ML) (14-15)	Co 11021	21.63	**HS**	**16**
11	IVT (ML) (14-15)	Co N 11074	21.02	**HS**	**13**
12	IVT (ML) (14-15)	CoM 11086	21.47	**HS**	**15**
13	IVT (ML) (14-15)	Co 11023	19.37	**MS**	**8**
14	IVT (ML) (14-15)	Co 11012	11.02	**MS**	**1**
15	**Check**	**Co 99004**	19.47	**MS**	**10**
16	**Check**	**Co 86032**	19.67	**MS**	**11**
S Em +/_			**0.28**		
CD at 5%			**0.82**		

Summary:

This year the early shoot borer infestation remained below the ETL i.e., <2.5%, hence the entries couldn't be evaluated for their reaction towards the ESB. All sixteen entries of early group and fourteen entries of mid late group, graded as moderately susceptible for pyrilla, except the Co N 11073 Co 11021 Co N 11074 CoM 11086 which showed highly susceptible reaction towards the pyrilla. In early entries evaluated, the Co 11084, Co 11004 and CoM 11081 (14.67 to 15.15 pyrilla/ leaf) received significantly the lowest pyrilla population as Compared to others and the checks. In mid late, the Co 11012 (11.02 pyrilla/leaf) and Co 11005 (14.73 pyrilla/leaf) received significantly the lowest pyrilla population.

E. 28: Survey and surveillance of sugarcane insect pests.

Objectives: To identify key insect pests of sugarcane in the area.

Duration : Long term. **Year of Start: 2003-04**

Experimental Details:

The Bankhedi, Kareli Sugar Factory area and Hoshangabad sugarcane growing area were surveyed for the purpose of recording the sugarcane insect pests status and their natural enemies

Results:

Areas were surveyed and insect pest status is averaged for the location, some imperative observations emerged are as under –

1. The Co 86032, Co J 64, Co M 265, Co Lk 1008 and Co 0238 are important sugarcane varieties grown in the area, while the Co 7318, Co 6304, CoC 671, CoJN 86 141, CoJN 86-600 and Co 99004 are also under cultivation.

Table: 3. Occurrence of naturally occurring insect pests on sugarcane

Sr.No.	Location	Name of pest (% incidence/Population)	Min.	Max.	Average
1	**Kareli**	ESB (%)	3.80	6.60	5.20
		TSB (%)	1.87	5.40	3.64
		RB (%)	3.00	5.40	4.20
		Pyrilla /Leaf	11.12	20.23	15.68
		E. melanoleuca/plant	8.77	12.62	10.70
		Whitefly (per 2.5 sq.cm.)	0.43	1.18	0.81
2	**Bankhedi**	ESB (%)	4.65	7.90	6.28
		TSB (%)	2.25	4.25	3.25
		RB (%)	1.70	3.90	2.80
		Pyrilla /Leaf	22.04	27.16	24.60
		E. melanoleuca/plant	15.64	18.78	17.21
		Whitefly (per 2.5 sq.cm.)	0.41	1.05	0.73
3	**Hoshangabad**	ESB (%)	0.48	1.68	1.08
		TSB (%)	0.24	0.84	0.54
		RB (%)	0.40	1.76	1.08
		Pyrilla /Leaf	15.20	19.36	17.28
		E. melanoleuca/plant	9.84	13.42	11.63
		Whitefly (per 2.5 sq.cm.)	0.29	1.14	0.80

Note - ESB – Early shoot borer; TSB – Top Shoot Borer; RB – Root Borer

2. In area, pyrilla is major while early shoot/ root borer, scale, whitefly and mealy bug are the minor insect pests infesting sugarcane.
3. Early shoot borer infestation were observed to be 5.20, 6.28 and 1.08 per cent in various varieties at Kareli, Bankhedi and Hoshangabad, respectively. No bio agent activity observed against early shoot borer.
4. The pyrilla infestation observed was 15.68, 24.60 and 17.28 pyrilla per leaf at Kareli, Bankhedi and Hoshangabad, respectively. The larval cum adult parasitoid, *E. melanoleuca* and egg parasitoid, *T. pyrillae* also observed to parasitized the pyrilla effectively.

Summary:

The Co 86032, Co J 64, Co M 265, Co Lk 1008 and Co 0238 are important sugarcane varieties grown in the area, The pyrilla observed to worked as key pests, while the early shoot borer, top shoot borer, root borer, whitefly, mealy bug and scale insect worked as minor insect pests of sugarcane. Severe infestation of pyrilla observed at Bankedi factory areas, the trash burning and adoption of adsali cultivation seems to be possible cause for this severity. This year, early shoot borer infestation remained below ETL i.e., 5.20, 6.28 and 1.08 per cent in various varieties at Kareli, Bankhedi and Hoshangabad, respectively.

E. 30: Monitoring of Insect Pests and their Bio-agents in Sugarcane Agro-ecosystem.

Objectives: To monitor the key insect pests and their natural enemies of sugarcane in the area.

Year of start: 2006-07 Variety: Co 86032 Area: 0.2 ha

Experimental Details:

For monitoring the insect pests and the bio agents activity in sugarcane, Co 86032 was planted in 0.2 ha area by following the recommended package of practices except application of insecticides. At each Standard meteorological week (SMW) the observations on infestation of both key pests i.e., early shoot borer and pyrilla and their natural enemies were recorded. Data regarding meteorological parameters were taken from Agro-Meteorological Project, ZARS, Powarkheda. (Table 4 and 5 & Fig. 1 to 3).

RESULT:

In the season, cumulative infestation of early shoot borer remained 2.20 per cent. The infestation initiated at last week of February. This year, the infestation of ESB remained negligible. The untimely 111 mm rains i.e., at 2,3,4 (Jan), 8,9 (March), 16 (April) and 22 (May) SMW may contributes unfavorable climate for such low ESB infestation. Maximum

ESB infestation (>0.4% per week) observed during 12 to 14th SMW. The activity of ESB seized after 17th SMW.

This year the pyrilla activity remained higher as compared to normal, untimely rains during summers may provide favourable climate for survival of pyrilla population in summer and hence possibly contributes more carry-on pyrilla population for rainy season.

Table 4: Activity of Early Shoot Borer and meteorological data, 2014, ZARS, Powarkheda (M.P.)

SMW	Date (2014)	Max. Temp. (OC)	Min. Temp (OC)	RH%	Rainfall (mm)	ESB infestation (%)	
						Weekly	Cumulative
3	**15 to 21/1**	27.90	10.80	87.00	11.60	0.00	0.00
4	**22 to 28/1**	27.70	10.80	92.00	10.20	0.00	0.00
5	**29/1 to 4/2**	29.20	9.40	88.00	0.00	0.00	0.00
6	**5 to 11/2**	32.10	11.00	88.00	0.00	0.00	0.00
7	**12 to 18/2**	27.90	9.80	70.00	0.00	0.00	0.00
8	**19 to 25/2**	33.00	8.90	69.00	2.00	0.20	0.20
9	**26/2 to 4/3**	28.40	12.60	92.00	0.00	0.00	0.20
10	**5 to 11/3**	32.50	14.40	77.00	0.00	0.20	0.40
11	**12 to 18/3**	38.70	16.20	79.00	0.00	0.00	0.40
12	**19 to 25/3**	38.50	14.40	77.00	0.00	0.40	0.80
13	**26/3 to 1/4**	39.40	19.00	50.00	0.00	0.60	1.40
14	**2 to 8/4**	40.20	18.40	36.00	0.00	0.40	1.80
15	**9 to 15/4**	40.40	18.60	25.00	0.00	0.20	2.00
16	**16 to 22/4**	41.50	20.70	55.00	8.20	0.00	2.00
17	**23 to 29/4**	41.90	20.20	50.00	0.00	0.20	2.20
18	**30/4 to 6/5**	43.30	22.40	34.00	0.00	0.00	2.20
19	**7 to 13/5**	40.90	22.00	56.00	0.00	0.00	2.20
20	**14 to 20/5**	42.00	21.00	41.00	0.00	0.00	2.20
21	**21 to 27/5**	43.70	22.40	39.00	0.00	0.00	2.20
22	**28/5 to 3/6**	44.80	25.40	56.00	2.40	0.00	2.20
23	**4 to 10/6**	46.20	27.20	67.00	0.00	0.00	2.20
24	**11 to 17/6**	43.90	22.00	44.00	60.60	0.00	2.20
25	**18 to 24/6**	38.80	20.20	0.00	22.80	0.00	2.20

In 1st phase, the pyrilla infestation initiated at 10th SMW (2nd week of March), reached to its peak at 17th SMW (last week of April). This year, during 1st phase, pyrilla population did'nt observed zero as past. Although, during 23rd SMW, it was observed the lowest number i.e., 0.30 pyrilla/leaf. Thereafter, the pyrilla observed increasing trend and reach to its peak activity at 32 SMW (2nd week of Aug), at this week the maximum egg masses of pyrilla also observed. Maximum parasitism of *E. malanoleuca* (29.80%) recorded one week after (i.e., at 34th SMW). While, maximum egg masses/ live cocoons of *E. melanoleuca* and *T. pyrillae* (% parasitism) observed at 36th SMW, i.e., three weeks after the peak pyrilla infestation.

Table 5: Seasonal incidence of pyrilla and its bio-agents and meteorological data, ZARS, Powarkheda (M.P.).

SMW 2014	Max. Temp. (^{o}C)	Min. Temp (^{o}C)	RH%	Rainfall (mm)	Pyrilla (/leaf)	Pyrilla Egg Masses	*E. malanoleuca* (%)	*E. malanoleuca EM & C*	*T. pyrillae*%
10 (March)	32.5	14.4	71.0	0.0	0.70	0.10	0.60	0.05	0.00
11(March)	38.7	17.0	74.0	0.0	1.10	0.35	2.40	1.10	7.40
12 (March)	38.5	16.0	57.0	0.0	1.50	0.50	2.20	1.95	8.80
13 (March)	39.4	19.0	62.0	0.0	2.45	0.90	4.20	2.65	9.60
14 (April)	40.2	18.4	28.0	0.0	4.55	1.20	4.60	2.50	13.20
15 (April)	**40.4**	**18.6**	**21.0**	**0.0**	**5.10**	**1.05**	**9.00**	**2.80**	**15.60**
16 (April)	**40.9**	**20.7**	**47.0**	**8.2**	**5.80**	**1.15**	**10.00**	**3.50**	**24.80**
17 (April)	**41.9**	**20.2**	**40.0**	**0.0**	**6.50**	**1.25**	**10.20**	**2.50**	**28.00**
18 (May)	**42.9**	**22.4**	**24.0**	**0.0**	**5.30**	**0.60**	**8.80**	**1.75**	**15.20**
19 (May)	40.1	22.0	43.0	0.0	3.95	0.55	8.20	1.05	9.40
20 (May)	41.9	21.0	38.0	0.0	2.70	0.20	5.40	0.80	4.50
21 (May)	43.1	22.4	34.0	0.0	1.30	0.20	3.20	0.40	0.00
22 (May)	44.8	25.4	36.0	2.4	0.90	0.10	0.60	0.20	0.00
23 (June)	46.2	27.2	51.0	0.0	0.30	0.00	0.00	0.00	0.00
24 (June)	39.5	25.4	52.0	60.6	0.65	0.00	0.00	0.00	0.00
25 (June)	37.3	24.6	70.0	22.8	1.75	0.00	0.40	0.00	0.00
26 (June)	38.5	24.3	56.0	10.2	3.80	0.00	0.80	0.45	0.00
27 (July)	37.2	24.6	64.0	26.3	6.00	0.35	2.00	0.20	5.00
28 (July)	34.1	23.7	69.0	117.4	9.10	0.85	3.40	0.55	12.00
29 (July)	29.2	21.2	87.0	96.8	12.00	1.15	4.60	1.65	13.60
30 (July)	**26.5**	**20.2**	**90.0**	**145.8**	**15.30**	**1.40**	**7.20**	**2.65**	**25.80**
31 (Aug)	**30.5**	**21.7**	**93.0**	**35.6**	**18.45**	**1.90**	**10.20**	**3.15**	**30.00**
32 (Aug)	**28.8**	**21.3**	**90.0**	**60.5**	**21.35**	**2.75**	**17.00**	**5.85**	**36.60**
33 (Aug)	**30.4**	**20.4**	**90.0**	**0.0**	**16.60**	**2.40**	**26.40**	**6.70**	**62.00**
34 (Aug)	35.0	22.6	84.0	6.2	13.45	2.35	**29.80**	5.80	71.40
35 (Aug)	32.8	20.6	82.0	68.4	10.45	1.80	25.60	8.70	78.60
36 (Sept)	31.5	21.2	93.0	192.4	8.10	1.95	21.20	13.10	**90.00**
37 (Sept)	28.9	20.5	81.0	14.9	5.40	1.60	15.60	11.40	76.40
38 (Sept)	33.10	17.40	90.00	50.2	2.60	1.05	10.80	5.10	57.00
39 (Sept)	35.80	19.50	89.00	0.0	1.30	0.85	8.00	2.05	15.00
40 (Oct)	36.10	19.00	69.00	14.90	0.35	0.20	4.60	2.50	4.30
41 (Oct)	36.10	16.40	75.00	0.00	0.25	0.15	2.00	1.67	0.30
42 (Oct)	34.90	19.40	65.00	0.00	0.05	0.00	0.80	0.50	0.00
43 (Oct)	34.50	16.00	58.00	0.00	0.00	0.00	0.00	0.00	0.00

Summary:

In Monitoring of Insect Pests and their Bio-agents in Sugarcane Agro-ecosystem, it is observed that the cumulative infestation of early shoot borer remained 2.20 per cent. The infestation initiated at last week of February. This year, the infestation of ESB remained negligible may be because of untimely (111 mm rains) at 2,3,4, 8,9,16, and 22 SMW which possibly contributes unfavorable climate.

This year the pyrilla activity remained higher as compared to normal, untimely rains during summers may provide favourable climate for survival of pyrilla population in summer and hence possibly contributes more carry-on pyrilla population for rainy season.

In 1st phase, the pyrilla infestation initiated at 10th SMW (2nd week of March), reached to its peak at 17th SMW (last week of April). In the 2nd phase, pyrilla reached to its peak activity at 32 SMW (2nd week of Aug), at this week the maximum egg masses of pyrilla also noticed. Maximum parasitism of E. malanoleuca (29.80%) recorded one week after (i.e., at 34th SMW). While, maximum egg masses/ live cocoons of E. melanoleuca and T. pyrillae (% parasitism) observed at 36th SMW, i.e., three weeks after the peak pyrilla infestation.

Fig.1: Seasonal Incidence of Early Shoot Borer & Meteorological Data (2014)
ZARS, Powarkheda (M.P.)

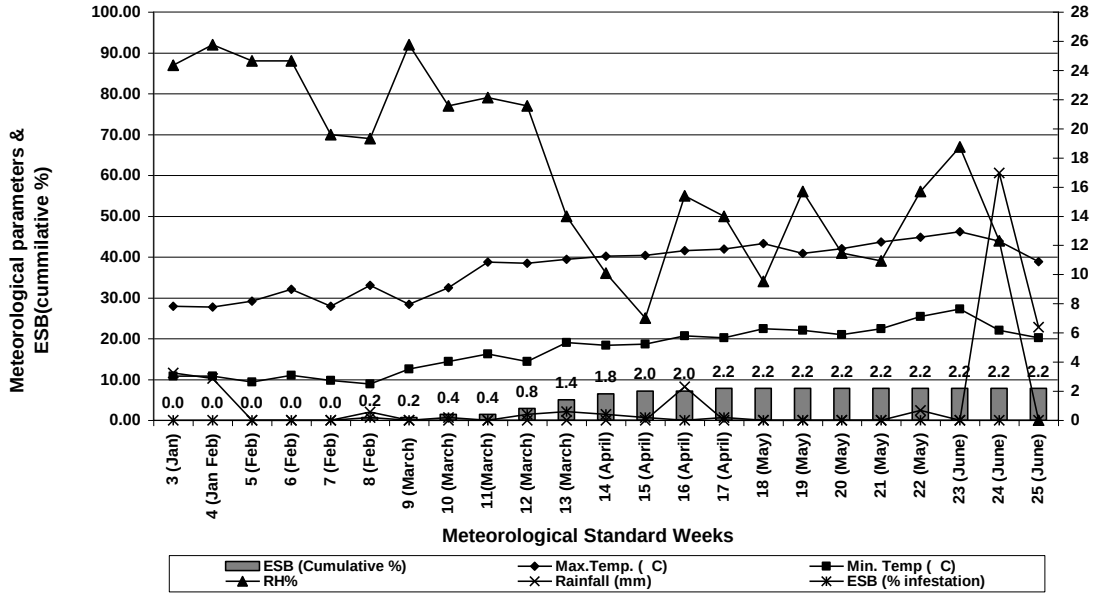


Fig. 2: Seasonal incidence of Pyrilla & Its natural enemies with Meteorological parameters (2014), ZARS, Powarkheda (M.P.)

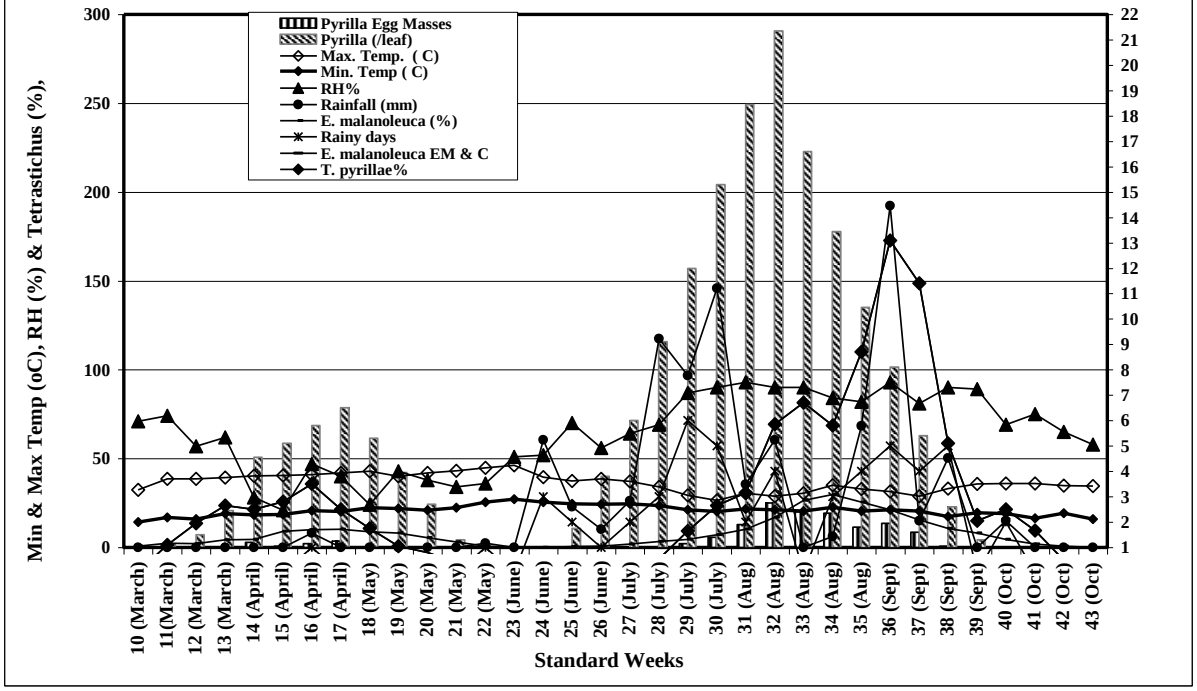
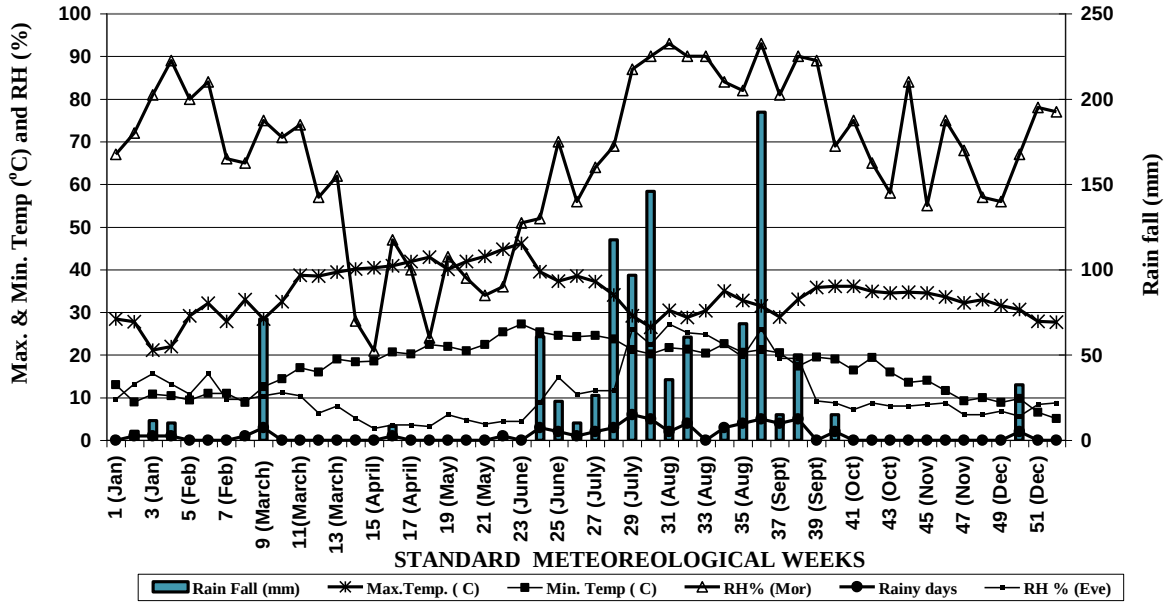


Fig. 3: METEOREOLOGICAL SITUATIONS DURING 2014, ZARS, POWARKHEDA (M. P.)



Project E.36: Management of borer complex of sugarcane through lures.

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Project E.37: Bio-efficacy of new insecticides for the control of sugarcane early shoot borer

Results: As the test insect i.e., early shoot borer population observed below the economic threshold level, hence, treatments couldn't be evaluated.

Annexure - 1

Table: 6. Occurrence of naturally occurring insect pests on sugarcane

Sr.No.	Variety	Location	Name of pest % incidence/Population	Min.	Max.	Average
1.1	Co LK 1008	Kareli	ESB (%)	4.00	7.80	5.90
			TSB (%)	2.20	7.00	4.60
			RB (%)	4.60	5.80	5.20
			Pyrilla /Leaf	11.10	21.25	16.18
			Epiricania melanoleuca/plant	7.80	15.00	11.40
			Whitefly (per 2.5 sq.cm.)	0.60	2.25	1.43
1.2	Co J 64		ESB (%)	5.20	7.00	6.10
			TSB (%)	2.40	6.20	4.30
			RB (%)	3.00	6.60	4.80
			Pyrilla /Leaf	12.25	25.00	18.63
			Epiricania melanoleuca	11.25	13.35	12.30
			Whitefly (per 2.5 sq.cm.)	0.60	0.85	0.73
1.3	Co M 265		ESB (%)	2.20	5.00	3.60
			TSB (%)	1.00	3.00	2.00
			RB (%)	1.40	3.80	2.60
			Pyrilla /Leaf	10.00	14.45	12.23
			Epiricania melanoleuca	7.25	9.50	8.38
			Whitefly (per 2.5 sq.cm.)	0.10	0.45	0.28
1	Average of (1.1,1.2,1.3)		ESB (%)	3.80	6.60	5.20
			TSB (%)	1.87	5.40	3.64
			RB (%)	3.00	5.40	4.20
			Pyrilla /Leaf	11.12	20.23	15.68
			Epiricania melanoleuca	8.77	12.62	10.70
			Whitefly (per 2.5 sq.cm.)	0.43	1.18	0.81
2.1	Co M 265	Bankhedi	ESB (%)	4.40	7.60	6.00
			TSB (%)	2.60	4.40	3.50
			RB (%)	1.00	3.80	2.40
			Pyrilla /Leaf	22.05	27.70	24.88
			Epiricania melanoleuca	14.40	22.80	18.60
			Whitefly (per 2.5 sq.cm.)	0.90	2.10	1.50
2.2	CoLK 1008		ESB (%)	3.60	6.20	4.90
			TSB (%)	2.80	3.80	3.30
			RB (%)	1.00	1.40	1.20
			Pyrilla /Leaf	21.70	23.90	22.80
			Epiricania melanoleuca	16.65	18.35	17.50
			Whitefly (per 2.5 sq.cm.)	0.00	0.35	0.18
2.3	Co 238		ESB (%)	4.60	8.80	6.70
			TSB (%)	1.20	4.40	2.80
			RB (%)	1.80	4.60	3.20
			Pyrilla /Leaf	24.95	28.25	26.60
			Epiricania melanoleuca	17.10	18.95	18.03
			Whitefly (per 2.5 sq.cm.)	0.30	1.20	0.75

2.3	CoJ 64	Bankhedi	ESB (%)	6.00	9.00	7.50
			TSB (%)	2.40	4.40	3.40
			RB (%)	3.00	5.80	4.40
			Pyrilla /Leaf	19.45	28.80	24.13
			Epiricania melanoleuca	14.40	15.00	14.70
			Whitefly (per 2.5 sq.cm.)	0.45	0.55	0.50
2	Average of (2.1,2.2,2.3)		ESB (%)	4.65	7.90	6.28
			TSB (%)	2.25	4.25	3.25
			RB (%)	1.70	3.90	2.80
			Pyrilla /Leaf	22.04	27.16	24.60
			Epiricania melanoleuca	15.64	18.78	17.21
			Whitefly (per 2.5 sq.cm.)	0.41	1.05	0.73
3.1	Co 86032	Hoshangabad	ESB (%)	0.80	1.60	1.20
			TSB (%)	0.00	0.00	0.00
			RB (%)	0.00	2.40	1.20
			Pyrilla /Leaf	16.75	22.05	19.40
			Epiricania melanoleuca/plant	10.45	16.40	13.43
			Whitefly (per 2.5 sq.cm.)	0.60	1.65	1.13
3.2	Co 99004		ESB (%)	0.00	1.00	0.50
			TSB (%)	0.40	1.20	0.80
			RB (%)	0.60	1.80	1.20
			Pyrilla /Leaf	17.05	19.25	18.15
			Epiricania melanoleuca	11.20	12.45	11.83
			Whitefly (per 2.5 sq.cm.)	0.50	1.40	0.95
3.3	CoJN 86 600		ESB (%)	0.60	1.60	1.10
			TSB (%)	0.00	0.60	0.30
			RB (%)	1.40	2.00	1.70
			Pyrilla /Leaf	14.75	18.80	16.78
			Epiricania melanoleuca	8.90	11.25	10.08
			Whitefly (per 2.5 sq.cm.)	0.10	0.40	0.25
3.4	CoC 671		ESB (%)	1.00	2.40	1.70
			TSB (%)	0.20	1.20	0.70
			RB (%)	0.00	1.80	0.90
			Pyrilla /Leaf	15.20	22.25	18.73
			Epiricania melanoleuca	10.30	14.35	12.33
			Whitefly (per 2.5 sq.cm.)	0.25	1.45	0.85
3.4	CoJN 86 141		ESB (%)	0.00	1.80	0.90
			TSB (%)	0.60	1.20	0.90
			RB (%)	0.00	0.80	0.40
			Pyrilla /Leaf	12.25	14.45	13.35
			Epiricania melanoleuca	8.35	12.65	10.50
			Whitefly (per 2.5 sq.cm.)	0.00	0.80	0.40
3	Average of (4.1,4.2,4.3, 4.4)		ESB (%)	0.48	1.68	1.08
			TSB (%)	0.24	0.84	0.54
			RB (%)	0.40	1.76	1.08
			Pyrilla /Leaf	15.20	19.36	17.28
			Epiricania melanoleuca	9.84	13.42	11.63
			Whitefly (per 2.5 sq.cm.)	0.29	1.14	0.80