

AICRP - ON GOING EXPERIMENTS

2013-14

Project No. E.4.1 (1)

Title : Evaluation of genotypes for their reaction against major insect pests [IVT (Early)].

Objective : To grade the entries in the trials for their behaviour towards damage by key pest in the area.

Year of start : 1985-86

Duration : Long term

Location : Central Sugarcane Research Station, Padegaon

Experimental Details :

- 01 Date of Planting** : 19/01/2013
- 02 Varieties** : 12+03=15
- 03 Fertilizers** : 250:115:115 NPK (Kg ha⁻¹)
- 04 Intercultural operations** : Weeding as and when required and earthing up after 4.5 months after planting.
- 05 Irrigation** : At an interval of 10-15 days as per availability
- 06 Plant protection measures** : Not applied.
- 07 Plot size** : 6m X 2 m
- 08 Design** : RBD
- 09 Replications** : Three
- 10 Harvesting date** : 27/02/2014

Methods of recording observations :

01 Early shoot borer :

The observations on the total number of shoots and number of dead hearts due to the early shoot borer were recorded at 30, 60, 90 and 120 days after planting and cumulative per cent infestation was worked out.

02 Internode borer, scale insect and mealy bugs :

The observations were recorded at harvest on 25 canes. The per cent incidence and intensity of internode borer, scale insect and mealy bugs were worked out.

Results:

The data are presented in table 1. From the table, it is seen that the differences due to various genotypes in respect of cumulative per cent infestation of early shoot borer, internode borer, mealy bug and scale insect were statistically significant. It was observed that, there was no incidence of top shoot borer in all entries.

Early shoot borer (ESB):

The cumulative per cent infestation of early shoot borer ranged from 11.54 to 38.61 per cent. The least incidence was observed in Co 10005 (11.54 %) followed by CoM 10082 (13.12), Co 85004 (13.58), Co 10004 (14.08) and CoM 10081 (15.09) per cent. A total of 4, 10 and 1 test genotypes were observed less susceptible, moderately susceptible and highly susceptible to early shoot borer, respectively.

Internode borer (IB):

Regarding internode borer, the incidence ranged from 26.67 to 66.67 per cent. The genotype Co 10005 recorded the least incidence (26.67%) of internode borer followed by CoM 10082 (30) and Co 85004 (33.33) per cent. Not a single entry noticed less susceptible reaction to internode borer. The 6 and 9 test genotypes observed moderately susceptible and highly susceptible reaction to internode borer respectively.

Top shoot borer (TSB):

All test genotypes noticed no incidence of top shoot borer and ultimately showed less susceptible reaction for top shoot borer.

Mealy bug (MB):

The incidence of mealy bug, ranged from 66.67 to 96.67 %. The Co 94008 recorded least incidence of mealy bug (66.67) per cent followed by Co 10004 (70) and Co 10005 (73.33) per cent. Not a single test genotypes observed less susceptible as well as moderately susceptible reaction to mealy bug.

Scale insect (SI):

In case of scale insect the incidence ranged from 0 to 40 per cent. The entries viz. Co 10027, CoN 10071 and CoT 10366 recorded no incidence of scale insect, whereas highest incidence (40%) was observed in Co 10005 as well as Co 10006. The 7,5&3 test genotypes recorded less susceptible, moderately susceptible & highly susceptible reactions to scale insect, respectively .

Conclusion :

None of the entries recorded less susceptible reaction to internode borer as well as mealy bug. All test genotypes recorded less susceptible reaction to top shoot borer, where as highly susceptible reaction to mealy bug. The entry Co 10005 recorded least incidence to early shoot borer (11.54%) as well as internode borer (26.67%), where as highest incidence to scale insect (40%). The entry Co 10006 observed highest incidence to early shoot borer (38.61%) as well as scale insect (40%). The cumulative per cent infestation of early shoot borer ranged from 11.54 to 38.61 per cent. Regarding internode borer, the incidence ranged from 26.67 to 66.67 per cent. All test genotypes noticed no incidence of top shoot borer and ultimately showed less susceptible reaction for top shoot borer. The incidence of mealy bug, ranged from 66.67 to 96.67 %. In case of scale insect the incidence ranged from 0 to 40 per cent.

Project No. E.4.1 (2)

Title : **Evaluation of genotypes for their reaction against major insect pests [AVT Early II Plant].**

Objective : To grade the entries in the trial for their behaviour towards damage by key pest in the area.

Year of start : 1985-86

Duration : Long term

Location : Central Sugarcane Research Station, Padegaon

Experimental Details

- 01 Date of Planting** : 19/01/2013
- 02 Varieties** : 02+03=05
- 03 Fertilizers** : 250:115:115 NPK (Kg ha⁻¹)
- 04 Intercultural operations** : Weeding as and when required and earthing up after 4.5 months after planting.
- 05 Irrigation** : At an interval of 10-15 days as per availability
- 06 Plant protection measures** : Not applied.
- 07 Plot size** : 6m X 2 m
- 08 Design** : RBD

- 09 Replications** : Three
10 Harvesting date : 27/02/2014

Results:

The data are presented in table 2. From the table, it is seen that the differences due to various genotypes in respect of cumulative per cent infestation of early shoot borer, internode borer, mealy bug and scale insect were statistically significant. It was observed that, there was no incidence of top shoot borer in all entries.

Early shoot borer (ESB):

The cumulative per cent infestation of early shoot borer ranged from 22.40(Co 08001) to 31.20 (Co 94008) per cent. Not a single test genotype was observed less susceptible reaction to early shoot borer. The Co 08001 recorded least incidence followed by VSI 08121 (29.30) per cent.

Internode borer (IB):

In case of internode borer, the infestation ranged from 26.67 to 66.67 per cent. The Co 85004 recorded least incidence of internode borer (26.67) per cent followed by Co 94008 (46.67) per cent. None of the genotypes observed less susceptible reaction to internode borer. The 1 and 4 test genotypes recorded moderately susceptible and highly susceptible reaction to internode borer, respectively.

Top shoot borer (TSB):

All test genotypes noticed no incidence and ultimately showed less susceptible reaction for top shoot borer.

Mealy bug (MB):

Regarding mealy bug, the incidence ranged from 63.33 to 93.33 %. However, all test genotypes recorded highly susceptible reaction to mealy bugs. The CoC 671 observed least infestation to mealy bug (63.33%) followed by Co 94008 (66.67%). Not a single entry showed less susceptible & moderately susceptible reaction to mealy bug.

Scale insect (SI):

The incidence of scale insect, ranged from 0 to 16.67 %. The 4 & 1 test genotypes observed less susceptible and moderately susceptible reactions to scale insect respectively. Only one entry i.e. Co 94008 observed moderately susceptible reactions to scale insect (16.67%).

Conclusion :

The entry Co 08001 observed least incidence of early shoot borer (22.40%) as well as to scale insect (no incidence). The Co 85004 recorded least incidence of internode borer (26.67%) where as highest incidence to mealy bug (93.33%). The Co 94008 showed highest incidence to early shoot borer (31.20%) as well as scale insect (16.67%). The CoC 671 showed least incidence to mealy bug (63.33%), where as highest incidence to internode borer (66.67%). Not a single entry recorded less susceptible reaction to early shoot borer as well as internode borer, where as highest to that of scale insect. The cumulative per cent infestation of early shoot borer ranged from 22.40 (Co 08001) to 31.20 (Co 94008) per cent. In case of internode borer, the infestation ranged from 26.67 to 66.67 per cent. Regarding mealy bug, the incidence ranged from 63.33 to 93.33 per cent. The incidence of scale insect, ranged from 0 to 16.67 per cent.

Project No. E.4.1 (3)

Title : **Evaluation of genotypes for their reaction against major insect pests [AVT (Early Ratoon)].**

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

Year of start : 1985-86

Duration : Long term

Location : Central Sugarcane Research Station, Padegaon.

Experimental Details :

01 Date of Planting : 07/02/2013

02 Varieties : 02+03=05

03 Fertilizers : 250:115:115 NPK (Kg ha⁻¹)

04 Intercultural operations : Weeding as and when required and earthing up after 4.5 months after planting.

05 Irrigation : At an interval of 10-15 days as per availability

- 06 Plant protection measures** : Not applied.
- 07 Plot size** : 6m X 2 m
- 08 Design** : RBD
- 09 Replications** : Three
- 10 Harvesting date** : 29/02/2014

Results:

The data is presented in table 3. From the table, it is seen that the differences due to various genotypes in respect of cumulative per cent infestation of early shoot borer, internode borer, mealy bug and scale insect were statistically significant. It was observed that, there was no incidence of top shoot borer in all entries.

Early shoot borer (ESB):

The cumulative per cent infestation of early shoot borer ranged from 14.22 (VSI 08121) to 24.84 (CoC 671) per cent. The 1&4 test genotypes showed less susceptible and moderately susceptible reaction to early shoot borer, respectively. The least incidence recorded in VSI 08121(14.22) per cent followed by Co 85004 (19.19%) and Co 94008 (20.34%).

Internode borer (IB):

The internode borer incidence ranged from 27.50 to 50.00per cent. The least incidence of internode borer observed in Co 85004 as well as CoC 671, which recorded 27.50% infestation. Not a single entry recorded less susceptible reaction to internode borer. The 3&2 test genotypes observed moderately susceptible and highly susceptible reaction to internode borer, respectively.

Top shoot borer (TSB):

All test genotypes noticed no incidence and ultimately showed less susceptible reaction for top shoot borer.

Mealy bug (MB):

The incidence of mealy bug ranged from 82.50 (Co 08001) to cent per cent (Co 85004 and CoC 671). However, all test genotypes recorded highly susceptible reaction to mealy bug.

Scale insect (SI):

The incidence of scale insect ranged from 75 (Co 08001) to cent per cent (Co 85004). All test genotypes recorded highly susceptible reaction to scale insect.

Conclusion :

Not single test genotypes recorded less susceptible reaction to internode borer mealy bug as well as scale insect. All test genotypes observed highly susceptible reaction to scale insect. Only one test genotypes i.e. VSI 08121 observed less susceptible reaction early shoot borer. The cumulative per cent infestation of early shoot borer ranged from 14.22 (VSI 08121) to 24.84 (CoC 671) per cent. The internode borer incidence ranged from 27.50 to 50.00 per cent. All test genotypes noticed no incidence and ultimately showed less susceptible reaction for top shoot borer. The incidence of mealy bug ranged from 82.50 (Co 08001) to cent per cent (Co 85004 and CoC 671). The incidence of scale insect ranged from 75 (Co 08001) to cent per cent (Co 85004).

Project No. E.4.1 (4)

Title : **Evaluation of genotypes for their reaction against major insect pests [IVT ML].**

Objective : To grade the entries in the trials for their behaviour towards damage by key pest in the area.

Year of start : 1985-86

Duration : Long term

Location : Central Sugarcane Research Station, Padegaon

Experimental Details :

- 01 Date of Planting** : 19/01/2013
- 02 Varieties** : 14+02=16
- 03 Fertilizers** : 250:115:115 NPK (Kg ha⁻¹)
- 04 Intercultural operations** : Weeding as and when required and earthing up after 4.5 months after planting.
- 05 Irrigation** : At an interval of 10-15 days as per availability
- 06 Plant protection measures** : Not applied.
- 07 Plot size** : 6m X 2m
- 08 Design** : RBD
- 09 Replications** : Three

10 Harvesting date : 28/02/2014

Results:

The data is presented in table 4. From the table, it is seen that the differences due to various genotypes in respect of cumulative per cent infestation of early shoot borer, internode borer, mealy bug and scale insect were statistically significant. It was observed that, there was no incidence of top shoot borer in all entries.

Early shoot borer (ESB):

The cumulative per cent infestation of early shoot borer ranged from 13.78 to 26.25 per cent. The 2&14 test genotypes showed less susceptible and moderately susceptible reaction to early shoot borer, respectively. The Co 10015 recorded least incidence of early shoot borer (13.78%) followed by CoVC 10061 (15.03) and CoVSI 10121 (15.93) per cent.

Internode borer (IB):

Regarding internode borer, the incidence ranged from 26.67 to 60 per cent. Not a single entry recorded less susceptible reaction to internode borer. The 11 and 5 test genotypes observed moderately susceptible and highly susceptible reaction to internode borer respectively. The entry Co 10015 recorded least incidence of internode borer (26.67%) followed by CoM 10083, CoT 10368 and PI 10132(30 per cent each).

Top shoot borer (TSB):

All test genotypes noticed no incidence and ultimately showed less susceptible reaction for top shoot borer.

Mealy bug (MB):

The mealy bug incidence ranged from 30.00 to 93.33 per cent. All test genotypes showed highly susceptible reaction to mealy bug, except Co 10031 which recorded moderately susceptible reaction (30.00%). It was followed by Co 10033, which observed 53.33% incidence of mealy bug.

Scale insect (SI):

In case of scale insect, the incidence ranged from 0 to 56.67 %. The 9,4&3 test genotypes recorded less susceptible, moderately susceptible & highly susceptible reactions to scale insect, respectively .

Conclusion :

The entry Co 10015 observed least incidence of early shoot borer (13.78%), internode borer (26.67%), and scale insect (no incidence). Co 10031 recorded highest incidence of internode borer (60%), whereas least incidence of mealy bug (30%). Not a single entry observed less susceptible reaction to internode borer and mealy bug. The 2&9 test genotypes showed less susceptible reaction to early shoot borer and scale insect respectively. The cumulative per cent infestation of early shoot borer ranged from 13.78 to 26.25 per cent. Regarding internode borer, the incidence ranged from 26.67 to 60 per cent. All test genotypes noticed no incidence and ultimately showed less susceptible reaction for top shoot borer. The mealy bug incidence ranged from 30.00 to 93.33 per cent. In case of scale insect, the incidence ranged from 0 to 56.67 per cent.

Project No. E.4.1 (5)

Title : **Evaluation of genotypes for their reaction against major insect pests [AVT ML II PL] .**

Objective : To grade the entries in the trials for their behaviour towards damage by key pest in the area.

Year of start : 1985-86

Duration : Long term

Location : Central Sugarcane Research Station, Padegaon.

Experimental :

Details

01 Date of Planting : 19/01/2013

02 Varieties : 05+02=07

03 Fertilizers : 250:115:115 NPK (Kg ha⁻¹)

04 Intercultural operations : Weeding as and when required and earthing up after 4.5 months after planting.

05 Irrigation : At an interval of 10-15 days as per availability

06 Plant protection measures : Not applied.

07 Plot size : 6m X 2 m

08 Design : RBD

- 09 Replications** : Three
10 Harvesting date : 28/02/2014

Results:

The data is presented in table 5. From the table, it is seen that the differences due to various genotypes in respect of cumulative per cent infestation of early shoot borer, internode borer, mealy bug and scale insect were statistically significant. It was observed that, there was no incidence of top shoot borer in all entries.

Early shoot borer (ESB):

The cumulative per cent infestation of early shoot borer ranged from 11.84 (Co 08008) to 32.82 (Co 08016). Total 1, 5&1 test genotypes recorded less susceptible, moderately susceptible & highly susceptible reaction to early shoot borer, respectively. The entry Co 08008 recorded least incidence of early shoot borer followed by Co 08009 (19.08) and Co Snk 08101 (22.05) per cent.

Internode borer (IB):

Regarding internode borer, the infestation ranged from 30 (Co 08008) to 60 (CoSnk 08101) per cent. Among seven entries tested, 4 showed moderately susceptible reaction and 3 observed highly susceptible reaction to internode borer. The Co 08008 recorded least incidence of internode borer (30%) followed by Co 08009 and Co 99004 (33.33% each). Not a single entry recorded less susceptible reaction to internode borer.

Top shoot borer (TSB):

All test genotypes noticed no incidence and ultimately showed less susceptible reaction for top shoot borer.

Mealy bug (MB):

The incidence of mealy bug ranged from 63.33 to 96.67 %. The all test genotypes recorded highly susceptible reaction to mealy bugs. The least incidence of mealy bug observed in Co 08008 (63.33) followed by Co 08009 (66.67%). However, Co 08020 recorded least % intensity (5.41) of mealy bug.

Scale insect (SI):

In case of scale insect, the infestation ranged from 0 to 20 %. The entries Co 99004, Co 86032 and Co Snk 08101 recorded no incidence of scale insect followed by Co 08016 (6.67%). The 4 & 3 test genotypes observed less susceptible and moderately susceptible reactions to scale insect, respectively.

Conclusion :

The entry Co 08008 observed least incidence of early shoot borer (11.84%), internode borer (30%) and mealy bug (63.33%). All test genotypes showed less susceptible reaction to top shoot borer where as highly susceptible reaction to mealy bugs. Not single entries observed less susceptible reaction to internode borer as well as mealy bug. The cumulative per cent infestation of early shoot borer ranged from 11.84 (Co 08008) to 32.82 (Co 08016). Regarding internode borer, the infestation ranged from 30 (Co 08008) to 60 (CoSNK 08101) per cent. All test genotypes noticed no incidence and ultimately showed less susceptible reaction for top shoot borer. The incidence of mealy bug ranged from 63.33 to 96.67 %. In case of scale insect, the infestation ranged from 0 to 20 per cent.

Project No. E.4.1 (6)

Title : **Evaluation of genotypes for their reaction against major insect pests [AVT ML - Ratoon].**

Objective : To grade the entries in the trials for their behaviour towards damage by key pest in the area.

Year of start : 1985-86

Duration : Long term

Location : Central Sugarcane Research Station, Padegaon

Experimental Details :

- | | | |
|-----------|----------------------------------|---|
| 01 | Date of Planting | : 07.02.2013 |
| 02 | Varieties | : 05+02=07 |
| 03 | Fertilizers | : 250:115:115 NPK (Kg ha ⁻¹) |
| 04 | Intercultural operations | : Weeding as and when required and earthing up after 4.5 months after planting. |
| 05 | Irrigation | : At an interval of 10-15 days as per availability |
| 06 | Plant protection measures | : Not applied. |
| 07 | Plot size | : 6m X 2 m |

08	Design	: RBD
09	Replications	: Three
10	Harvesting date	: 29/02/2014

Results:

The data is presented in table 6. From the table, it is seen that the differences due to various genotypes in respect of cumulative per cent infestation of early shoot borer, internode borer, mealy bug and scale insect were statistically significant. It was observed that, there was no incidence of top shoot borer in all entries.

Early shoot borer (ESB):

The cumulative per cent infestation of early shoot borer ranged from 12.57(Co 08020) to 22.60 (CoSnk 08101) per cent. The 2&5 test genotypes showed less susceptible and moderately susceptible reaction to early shoot borer, respectively. The Co 08020 recorded least incidence (12.57) per cent followed by Co 08008 (14.69%) and Co 08009 (15.55%).

Internode borer (IB):

Regarding internode borer, the incidence ranged from 10 (Co 86032) to 53.33 (Co 08020) per cent. The 3, 1 & 3 test genotypes observed less susceptible, moderately susceptible and highly susceptible reaction to internode borer, respectively. The least incidence of internode borer observed in Co 86032 (10%) followed by Co 08009 (13.33%) and Co 08016(20%).

Top shoot borer (TSB):

All test genotypes noticed no incidence, and ultimately showed less susceptible reaction for top shoot borer.

Mealy bug (MB):

The incidence of mealy bug ranged from 66.67 to 90.00 per cent. The least incidence of mealy bug observed in Co 08009 and Co 86032, which recorded 66.67% infestation each. It was followed by Co 99004 (73.33%). However, all entries noticed highly susceptible reaction to mealy bug.

Scale insect (SI):

The incidence of scale insect ranged from 40 (Co 99004) to 93.33 (Co 08016) per cent. Not a single entry observed less susceptible and moderately susceptible reactions to scale insect. However, all test genotypes recorded highly susceptible reaction to scale insect.

Conclusion :

The entry Co 08020 observed least incidence of early shoot borer (22.57%), where as highest incidence of internode borer (53.33%). The variety, Co 86032 recorded least incidence of internode borer (10%) as well as mealy bug (66.67%). The CoSnk 08101 observed highest incidence of early shoot borer (22.60%) as well as scale insect (93.33%). All test genotypes recorded highly susceptible reaction to mealy bug as well as scale insect, where as less susceptible reaction to top shoot borer. The 2&3 test genotypes noticed less susceptible reaction to early shoot borer as well as internode borer, respectively. The cumulative per cent infestation of early shoot borer ranged from 12.57(Co 08020) to 22.60 (CoSnk 08101) per cent. Regarding internode borer, the incidence ranged from 10 (Co 86032) to 53.33 (Co 08020) per cent. All test genotypes noticed no incidence, and ultimately showed less susceptible reaction for top shoot borer. The incidence of mealy bug ranged from 66.67 to 90.00 per cent. The incidence of scale insect ranged from 40 (Co 99004) to 93.33 (Co 08016) per cent.

Experiment : **Project No. E.28**
No.2

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

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

Year of start : 2004-05

Duration : Long term

Methodology :

Roving survey of sugarcane fields were carried out in 5-8 km area around Central Sugarcane Research Station, Padegaon. Survey was carried out during 2013-14 on farmers field in different villages viz., Padegaon Farm (Phaltan), Padegaon (Khandala), Pimpri kd.(Purandar) and Balu Patalachi wadi (Khandala) etc. In most of the fields, Co 86032 and CoM 0265 varieties were planted. The observations on the incidence of borers on 100 canes were examined at five places and for sucking pests 20 canes were observed.

Results :

Early shoot borer :

The early shoot borer incidence was highest in *suru* planting which was ranged from 8.33 to 20.67 per cent. Maximum incidence was observed in late planting and in light soils. This year (2013), the incidence of early shoot borer was high during late planting may be due to less availability of irrigation water and high temperature.

In case of *Adsali* planting, the incidence of early shoot borer ranged from 04 to 16.67 per cent. In *preseasonal* planting, incidence of early shoot borer ranged from 3.03 to 11.00 per cent. Hence, to avoid the incidence of early shoot borer, *preseasonal / adsali* planting of sugarcane is most suitable time.

Internode borer :

The per cent incidence of internode borer in *Adsali* planting ranged from 30.00 to 50.00 per cent, in *preseasonal* planting, it was from 10.00 to 40.00 per cent and in *suru* it was 20.00 to 40.00 per cent. Though, the incidence of internode borer appeared so highly, its intensity ranged from 1.67 to 4.67 per cent in *Adsali*, 1.33 to 3.67 per cent in pre-seasonal and 1.00 to 2.67 per cent in seasonal planting.

Other pests :

The incidence of top shoot borer ranged from low to traces. During this year, the incidence of sugarcane woolly aphid observed only on few stools on sugarcane i.e. 1-3 % in the field is highly infested with sugarcane woolly aphid. The stools, which are infected by sugarcane woolly aphid, covered the leaf area up to 70-80% with sugarcane woolly aphid mostly during July to December, 2013. Near water bodies, some plots are infested up to 20 to 40 per cent.

However, very negligible incidence of sugarcane woolly aphid was observed in farmers field. The predators viz., *Dipha aphidivora*, Syrphid and Lady bird beetle observed very rare on sugarcane woolly aphid colonies. However, the predators, *Micromus igorotus* as well as the parasitoid, *Encarsia flavoscutellum* observed more than the other predator/parasites. The rare activity of the predator viz., *Ankylopteryx sp.* (Neuroptera : Chrysopidae) recorded in the farmers field.

The incidence of mealy bug ranged from 10 to 40.00 per cent. However, during this year the intensity of mealy bug was ranged with 2.33 to 5.67 per cent. The incidence of scale insect ranged from 0 to 40 per cent. In ratoon crop, the incidence of scale insect and mealy bug was more. However, the new scale, *Aclerda sp. nr. takahashii* belongs to family Aclerdidae recorded on ratoon crop of sugarcane at Central Sugarcane Research Station, Padegaon, which was identified from, “ National Bureau of Agricultural Important Insect, Bangalore, during previous year.”

Conclusion:

Early shoot borer is key pest of this area and per cent insect infestation was highest in *suru* planting than *adsali* and *preseasonal*. The incidence of early shoot borer ranged from 08.33 to 20.67 per cent. The incidence of internode borer was also observed up to 50.00 per cent. During this year (2013-14), the incidence of mealy bug was recorded up to 40.00 %. However, the intensity of mealy bug ranged between 2.33 to 5.67 per cent.

The incidence of top shoot borer, sugarcane woolly aphid, white fly, pyrilla were in traces to low and most fields observed less susceptible reaction to these pests. However, the little incidence of the new scale, *Aclerda sp. nr. takahashii* belongs to family Aclerdidae recorded on ratoon crop of sugarcane at Central Sugarcane Research Station, Padegaon.

Experiment No.3 : **Project E 30**

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

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

Experimental Details :

- | | | |
|---|---------------|--------------|
| 1 | Year of start | : 2006-07 |
| 2 | Duration | : Long term. |
| 3 | Season | : Suru |

Observations :

1. Observations on incidence of borers were recorded by examining 100 canes at five places (four corners and in the middle), sucking pests by examining 20 canes.
2. Meteorological data (Weekly average) was recorded on temperature (maximum and minimum), relative humidity and total rainfall.

Results :

The data regarding percent cumulative infestation and average number of woolly aphid per 2.5 cm² leaf area and meteorological data are presented in table – 7.

Early shoot borer:

The infestation of early shoot borer (0.62%) was noticed in 09 MW (i.e. 26 February to 04 March). The maximum incidence (14.00%) was noticed in 20 MW (i.e. 3rd week of May), when the maximum and minimum temperature were 37.4 and 24.8^oC, respectively. Afterwards, it was decreased gradually up to 22 MW.

Sugarcane woolly aphid:

The first incidence of woolly aphid was noticed in 30th MW (2.89 woolly aphid / 2.5 cm² / 3 leaves). The maximum average number of woolly aphid was recorded (18.30) in 41 MW (2nd week October of 2013). Afterwards, incidence shown declined trend which may be due to high temperature in succeeding meteorological weeks as well as predator/parasite activity.

The activity of predators viz., Syrphid, *Dipha aphidivora* and Lady bird beetle were in traces to low during July to October. The *Micromus igorotus* was observed @ 7-11 per leaf in 38th MW. The parasitoid *Encarsia flavoscutellum* observed @ 4-20 per stool in August-September, which is comparatively lower than that of November, 2013. *Encarsia flavoscutellum* recorded its peak activity in 46-50 MW (3rd week of November to 2nd week of December 2013) @ 08 to 25 numbers per leaf sugarcane having woolly aphid infestation. Due to heavy parasitism of *Encarsia flavoscutellum*, the woolly aphid again disappeared after 50 MW.

The parasitoid, *Encarsia flavoscutellum* played a pivotal role in suppressing the woolly aphid infestation, particularly in November- December months of 2013 followed by *Micromus igorotus* and *Dipha aphidivora* at Central Sugarcane Research Station, Padegaon. The activity of Syrphid as well as *Dipha aphidivora* was higher in 48 to 52 MW (i.e. 4th week of November to last week of December 2013).

Conclusion:

The effect of meteorological parameters was studied against early shoot borer and sugarcane woolly aphid. Maximum incidence of early shoot borer was recorded in 20th MW (3rd week of May) (14%), when the maximum and minimum temperature was 37.4⁰ C and 24.8⁰ C, respectively. In case of sugarcane woolly aphid, the maximum incidence (18.30 woolly aphid/2.5 m²/3leaf) was recorded in 41st MW of 2013, when the maximum and minimum temperatures were 30.7 and 21.0⁰C, respectively.

Table 7: Incidence of different pests and their natural enemies during 2013-14 at CSRS Padegaon.

Name of the Pest	Infestation (%)	Reaction	Natural Enemies Recorded (Per Leaf)
Early shoot borer	17-21	MS	--
Internode borer	20-22	LS	--
Top shoot borer	In traces- low	LS	--
Mealy bug	20-30	MS	--
Scale insect	In traces to low	LS	--
Pyrilla	In traces	LS	<i>Epiricanea melanoleuca</i>
White fly	In traces	LS	<i>Ablerus chionaspidis</i> , <i>Encarsia</i> sp. (both Aphelinidae) and <i>Amitus</i> sp. (Platygastridae)
Sugarcane woolly aphid	In traces to high (on very few stools in field)	LS	<i>Micromus igorotus</i> 35 to 51 MW)(1-5 per leaf) peak 38 MW (7-11/leaf) ; <i>D. aphidivora</i> (1-4 per leaf in 38 to 48 MW); Syrphid (0-2 per leaf in 40-48 MW) and <i>E. flavoscutellum</i> 4-20 per stool in August-September and peak activity @ 08-25 per leaf in 46-50 MW ; Lady bird beetle (rare); <i>Ankylopteryx</i> sp. (rare).

Data in Table – 7 indicated that the occurrence of pests *viz.*, top shoot borer, Pyrilla, White fly, Scale insect and Sugarcane woolly aphid were recorded at low levels which may be due to presence of natural enemies. The internode borer, recorded less susceptible to moderately susceptible reaction (20-22%), but moderate incidence of mealy bug up to 30 per cent was observed.

Table 8: Incidence of climatic factors on the incidence of early shoot borer and woolly aphid.

Meteorological Week	Temp		RH %		Rainfall (mm)	ESB % infestation	Average Woolly Aphid/ 2.5 c m ² /3 Leaf
	Max	Min	RH1	RH2			
1	32.2	14.4	96	46	000.0	-	-
2	29.4	10.5	96	45	000.0	-	-
3	31.4	11.7	98	35	000.0	-	-
4	30.9	12.5	97	38	000.0	-	-
5	31.6	14.4	96	42	000.0	-	-
6	31.4	15.3	95	45	000.0	-	-
7	32.0	14.9	94	48	000.0	0.00	-
8	33.1	13.5	91	37	000.0	0.00	-
9	33.8	12.7	89	36	000.0	0.62	-
10	35.3	14.4	88	40	000.0	2.22	-
11	35.4	17.9	92	48	000.0	4.33	-
12	36.2	17.8	91	53	000.0	5.73	-
13	37.1	19.4	89	41	000.0	8.07	-
14	37.4	17.8	86	49	000.0	13.12	-
15	39.0	21.3	85	50	000.0	11.54	-
16	36.2	20.0	93	57	000.0	7.29	-
17	38.4	24.4	90	51	000.0	10.27	-
18	39.9	23.1	85	48	000.0	9.99	-
19	39.0	24.1	91	46	000.0	7.03	-
20	37.4	24.8	89	56	000.0	14.00	-
21	38.0	25.3	89	48	000.0	11.84	-
22	38.2	24.1	82	45	044.0	-	-
23	33.0	20.9	93	59	039.8	-	-
24	28.5	22.0	96	80	050.2	-	-
25	30.1	22.4	94	69	010.3	-	-
26	28.7	21.9	90	74	011.7	-	-
27	29.0	21.7	93	70	010.2	-	-
28	27.1	21.0	94	82	014.3	-	-
29	26.1	21.3	98	89	020.8	-	-
30	26.7	21.8	97	87	020.2	-	2.89
31	27.2	21.1	94	82	022.1	-	4.75
32	28.6	21.2	96	79	000.0	-	6.61

Meteorological Week	Temp		RH %		Rainfall (mm)	ESB % infestation	Average Woolly Aphid/ 2.5 c m ² <small>/3 Leaf</small>
	Max	Min	RH1	RH2			
33	29.4	22.4	97	84	026.8	-	3.18
34	28.6	21.9	94	82	000.5	-	4.69
35	30.7	21.1	96	76	000.5	-	6.59
36	31.5	21.1	97	71	022.6	-	4.53
37	30.2	21.5	98	88	137.1	-	5.31
38	29.5	20.2	97	80	080.5	-	7.63
39	29.1	20.9	98	89	012.4	-	11.65
40	30.6	20.5	97	87	006.7	-	11.38
41	30.7	21.0	98	81	005.2	-	18.30
42	31.7	21.2	98	79	000.0	-	14.65
43	31.5	21.5	98	83	025.1	-	9.41
44	30.9	18.4	98	74	000.0	-	6.88
45	29.8	15.5	97	75	000.0	-	4.05
46	29.0	13.1	98	75	000.0	-	2.27
47	30.9	14.5	97	72	000.0	-	2.59
48	29.8	13.3	96	80	000.0	-	2.44
49	29.1	13.9	96	78	000.5	-	2.21
50	29.1	08.3	94	68	000.0	-	1.65
51	29.5	08.6	94	64	000.0	-	1.47
52	28.6	12.8	95	45	000.0	-	1.21
1	28.6	12.0	96	46	000.0	-	1.09
2	30.1	12.3	97	45	000.0	-	1.06
3	30.2	13.6	94	46	000.0	-	0.65
4	29.0	13.8	95	53	000.0	-	0.44
5	28.9	11.2	96	42	000.0	-	0.00
6	32.5	11.7	96	41	000.0	-	0.00

PTO

Experiment No.4 : **Project E. 33**
Title : **Bio-efficacy of insecticides against mealy bugs in sugarcane**

Objective : To evaluate efficacy of insecticides against mealy bugs in sugarcane.

Experimental Details :

- 1 Year of start : 2011-12
- 2 Design : RBD
- 3 Replications : Three
- 4 Plot size : 6.0 x 5.4 m
- 5 Planting date : 19.01.2013
- 6 Variety : Most susceptible variety of respective centre
- 7 No. of treatments : 9

Tr No. **Name of the treatment**

- 1 : Sett treatment of Imidacloprid 70 WG / SP 25 g a.i./ha + spraying of Imidacloprid 17.8 SL 0.005%
- 2 : Sett treatment of Imidacloprid 70 % WG / SP 25 g a.i./ha + spraying of Thiamethoxam 25WG 0.004%
- 3 : Sett treatment of Imidacloprid 70 % WG / SP 25 g a.i./ha + spraying of Clothianidin 50 WSG 0.004%
- 4 : Sett treatment of Imidacloprid 70 % WG / SP 25 g a.i./ha + spraying of Acetamaprid 20 SP 0.004%
- 5 : Sett treatment of Thiamethoxam 70 WG / SP 10 g a.i./ha + spraying of Imidacloprid 17.8 SL 0.005%
- 6 : Sett treatment of Thiamethoxam 70 WG / SP 10 g a.i./ha + spraying of Thiamethoxam 25 WG 0.004%
- 7 : Sett treatment of Thiamethoxam 70 WG / SP 10 g a.i./ha + spraying of Clothianidin 50 WSG 0.004%
- 8 : Sett treatment of Thiamethoxam 70 WG / SP 10 g a.i./ha + spraying of Acetamaprid 20 SP 0.004%
- 9 : Untreated Control

Method of Application : Dose of a.i. is based on 35000 three eye bud setts. Spraying was done at the time of cane formation (i.e. 4-5 months after planting).

Method of observation : Germination percentage at 30 and 45 DAP
Randomly select 10 canes from 3 meter row length and count number of infested internodes out of total number of internodes.
➤ Before spraying and 7, 15 and 30 DAS and harvest.
➤ Yield and quality parameters.

Results : The experiment was planted on 19.01.2013. The initial treatments as per technical programme have been done. However, the incidence of mealy bug was negligible and hence the trial is vitiated.

Expt No.5 : **Project E.34**
Title : **Standardization of simple, cost effective techniques for mass multiplication of sugarcane bioagents.**

Objective : To develop simple and cost effective mass multiplication techniques of promising bio- agents of the area.

Experimental Details :

- 1 Location : Padegaon
- 2 Duration : Three years
- 3 Year of Start : 2012-13
- 4 Bio-agent to : ➤ *Chrysoperla carnae*
be multiplied

Methodology : Simple and cost effective host insect/media for multiplication of parasitoid/predator and insect pathogen/parasite.

- Note: For mass multiplication of entomopathogenic fungi Plant Pathologist at the center may be requested to jointly work.

Results : The experiment was planted on 20.03.2013. The incidence of woolly aphid has been developed profusely on Co 86032.

Sufficient urea was applied to make leaves succulent. The white woolly aphid was inoculated on 22/08/2013 (34MW) from farmer's field and it was developed more than 50 per cent. The predator, *Micromus igorotus* was observed since 36 MW in 1-2 numbers of infested leaves. But, the population of *Micromus igorotus* was also present in farmers field, while collecting the infested leaves. The activity of *Micromus igorotus* was highest in 41 MW (i.e. 2nd week of October) up to 4-15 numbers/leaf. It was continued up to 52 MW (0-1 per leaf). The activity of *Dipha aphidivora* was recorded from 40 MW (i.e. 1st week of October) to 02 MW of 2014 (i.e. second week of January, 2014) and it was up to 1-4 numbers/leaf. The activity of syrphid was less up to first fortnight of November and increased up to 2 numbers/leaf since 46 to 50 MW. The parasite, *Encarsia flavoscutellum* was observed up to maximum 4-20 numbers per leaf during November-December 2013.

The bio-agents, particularly *Micromus igorotus* and *Encarsia flavoscutellum* played a pivotal role in suppressing the woolly aphid population.

The bio agent *Chrysoperla carnea* was also released in 36 MW. However, it was developed in traces in the experimental field up to 52 MW.

- Expt No.6** : **Project E 36 (New Project):**
Title : **Management of borer complex of sugarcane through lures.**
- Objective** : To manage sugarcane borers (early shoot borer, top borer, internode borer and stalk borer) through pheromone traps.
- Experimental Details** :
- 1 Year of start : 2012-13
 - 2 Plot size : 1 acre
 - 3 Variety : Recommended variety of the location (Co 86032 / CoM 0265)
 - 4 Planting Date :
- Treatment details** : Pheromone lures of sugarcane early shoot borer, internode borer and top shoot borer.
- Plot Size** : Two blocks, each of minimum half acre. In first block, all traps were installed and the second plot was kept as such (control). In between both blocks, one acre sugarcane crop was taken to avoid the pheromone effect.
- Methodology** : ➤ In *Peninsular* and *East Coast Zone*, the test insect-pests will be *early shoot borer, top borer and internode borer*, while in *North West* and *north central zones*, *early shoot borer, top borer and stalk borer*.
➤ Three pheromone traps for each pest was installed in the second fortnight of February till harvest of crop in half acre of sugarcane crop.
➤ The pheromone lure was changed after 1.5 to 2 months.
- Observation to be recorded** : ➤ Observations on number of moths trapped was recorded at weekly interval.
➤ The mean number of moth capture was worked out.
➤ The correlation and regression of moth captures were worked out with weekly meteorological parameters.
➤ Infestation of each borer was recorded in both blocks.

Table – 9 The average pheromone trap catches of pests as per meteorological weeks.

Met. Week	Temp		RH %		Rainfall (mm)	ESB	IB	TSB
	Max	Min	RH1	RH2				
01	32.2	14.4	96	46	000.0	-	-	-
02	29.4	10.5	96	45	000.0	-	-	-
03	31.4	11.7	98	35	000.0	-	-	-
04	30.9	12.5	97	38	000.0	-	-	-
05	31.6	14.4	96	42	000.0	-	-	-
06	31.4	15.3	95	45	000.0	-	-	-
07	32.0	14.9	94	48	000.0	-	-	-
08	33.1	13.5	91	37	000.0	-	-	-
09	33.8	12.7	89	36	000.0	1	0	0
10	35.3	14.4	88	40	000.0	4	0	0
11	35.4	17.9	92	48	000.0	5	0	0
12	36.2	17.8	91	53	000.0	0	0	0
13	37.1	19.4	89	41	000.0	0	0	0
14	37.4	17.8	86	49	000.0	0	0	0
15	39.0	21.3	85	50	000.0	3	0	0
16	36.2	20.0	93	57	000.0	3	0	1
17	38.4	24.4	90	51	000.0	2	1	0
18	39.9	23.1	85	48	000.0	1	0	0
19	39.0	24.1	91	46	000.0	2	2	1
20	37.4	24.8	89	56	000.0	0	0	0
21	38.0	25.3	89	48	000.0	1	0	2
22	38.2	24.1	82	45	044.0	0	0	1
23	33.0	20.9	93	59	039.8	0	0	0
24	28.5	22.0	96	80	050.2	0	0	0
25	30.1	22.4	94	69	010.3	0	1	0
26	28.7	21.9	90	74	011.7	0	0	0
27	29.0	21.7	93	70	010.2	0	0	0
28	27.1	21.0	94	82	014.3	0	0	0
29	26.1	21.3	98	89	020.8	0	0	0
30	26.7	21.8	97	87	020.2	0	0	0
31	27.2	21.1	94	82	022.1	0	0	0
32	28.6	21.2	96	79	000.0	0	0	0
33	29.4	22.4	97	84	026.8	0	1	0
34	28.6	21.9	94	82	000.5	0	0	0

Met. Week	Temp		RH %		Rainfall (mm)	ESB	IB	TSB
	Max	Min	RH1	RH2				
35	30.7	21.1	96	76	000.5	0	0	0
36	31.5	21.1	97	71	022.6	0	0	0
37	30.2	21.5	98	88	137.1	0	0	0
38	29.5	20.2	97	80	080.5	0	0	0
39	29.1	20.9	98	89	012.4	0	0	0
40	30.6	20.5	97	87	006.7	0	0	0
41	30.7	21.0	98	81	005.2	1	0	0
42	31.7	21.2	98	79	000.0	0	0	0
43	31.5	21.5	98	83	025.1	0	0	0
44	30.9	18.4	98	74	000.0	0	0	0
45	29.8	15.5	97	75	000.0	0	0	0
46	29.0	13.1	98	75	000.0	0	0	0
47	30.9	14.5	97	72	000.0	0	0	0
48	29.8	13.3	96	80	000.0	0	0	0
49	29.1	13.9	96	78	000.5	0	0	0
50	29.1	08.3	94	68	000.0	0	0	0
51	29.5	08.6	94	64	000.0	0	0	0
52	28.6	12.8	95	45	000.0	0	0	0
01	28.6	12.0	96	46	000.0	0	0	0
02	30.1	12.3	97	45	000.0	0	0	0
03	30.2	13.6	94	46	000.0	0	0	0
04	29.0	13.8	95	53	000.0	0	0	0
05	28.9	11.2	96	42	000.0	0	0	0
06	32.5	11.7	96	41	000.0	0	0	0

Results : The data regarding meteorological week wise weather parameters with moth catches of early shoot borer, internode borer and top shoot borer are presented in table-9. During last year, the observations on trap catches of earlier installed traps did not show any moth catches since 01st to 08th MW. This is due to the traps were in old matured cane field.

However, the new pheromone traps were installed in new planted Sugarcane crop. In that field, the highest number of moth catches in case

: of early shoot borer were trapped in 11 MW (5 numbers/ trap), when the maximum and minimum temperature was 35.4 and 17.9⁰ C, respectively.

The moth catches decreased gradually up to 22 MW. However, again the moth catches observed in 41 MW. Afterwards, there was no moth catches of early shoot borer.

The maximum average pheromone trap catches of internode borer was recorded in 19 MW (2 number per trap), when the maximum and minimum temperature was 39.0 and 24.1⁰ C, respectively. Afterwards, there were no moth catches up to 24th MW. However, there were only one moth catch in 25th and 33rd. In case of top shoot borer, the highest number of moth catches were observed in 21 MW (2 number per trap), when the maximum and minimum temperature was 38.0 and 25.3⁰ C, respectively. Since 23rd MW, there were no moth catches of top shoot borer.

Conclusion : The highest number of moth catches in case of early shoot borer were trapped in 11 MW (5 numbers/ trap), when the maximum and minimum temperature was 35.4 and 17.9⁰ C, respectively. The maximum average pheromone trap catches of internode borer was recorded in 19 MW (2 number per trap), when the maximum and minimum temperature was 39.0 and 24.1⁰ C, respectively. In case of top shoot borer, the highest number of moth catches were observed in 21 MW (2 number per trap), when the maximum and minimum temperature was 38.0 and 25.3⁰ C, respectively.

Expt No.6 : **Project E 37 (New Project):**
Title : **Bioefficacy of new insecticides for the control of sugarcane early shoot borer.**

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

Experimental Details :

- 1 Year of start : 2013-14
- 2 Design : RBD
- 3 Replications : Three
- 4 Plot size : 6.0 x 5.4 m Gross (Net : 6X3.6m)
- 5 Planting date : 26/03/2013
- 6 Variety : Co 86032
- 7 No. of : 8 treatments

Treatment details :

- | Tr No. | Name of the treatment |
|---------------|---|
| 1 | : Soil application of Fipronil 0.3 G @ 25 Kg/ha at the time of planting and 60 DAP |
| 2 | : Soil application of Chlorantraniliprole 0.4 G @ 22.5 kg / ha at the time of planting and 60 DAP |
| 3 | : Spraying of Chlorantraniliprole 18.5 SC @ 375 ml/ha at 30 & 60 DAP |
| 4 | : Spraying of Spinosad 45 SC @ 90 ml/ha at 30 & 60 DAP |
| 5 | : Spraying of Flubendiamide @ 250 ml/ha at 30 & 60 DAP |
| 6 | : Soil application of Phorate 10G @15 kg/ha at the time of planting and 60 DAP |
| 7 | : Soil application of Carbofuron 3G @ 33 kg/ha at the time of planting and 60 DAP |
| 8 | : Untreated Control |

Method of observation :

Early Shoot borer:

- ESB infestation was recorded by counting number of dead hearts easily pulled out and emitting offensive odour as well as the total number of shoots/plant in each net plot on 45, 60, 90 and 120 DAP.
- The per cent incidence of shoot borer was worked out by following formula:

$$\text{Per cent incidence} = \frac{\text{Number of dead hearts}}{\text{Total number of shoots}} \times 100$$

- The cumulative per cent infestation was worked out by taking progressive total of infested shoots in proportion to total shoot formed.

Yield, growth and quality parameters:

- (a) Germination (%)
- (b) Tillering per cent at 120 DAP
- (c) Number of millable cane
- (d) Cane yield (kg/ha)
- (e) Growth parameters (total cane height (cm), millable cane height (cm), number of internodes (10 canes/treatment/replication).
- (f) Quality parameters.

Results:

Data recorded on per cent incidence of early shoot borer (ESB), total number of millable canes (000 per ha) and yield (t/ha) are presented in table 10.

After 45 days of planting, the differences regarding incidence of early shoot borer were statistically significant. The soil application of fipronil 0.3 G as well as chlorantraniliprole 0.4 G showed no incidence of early shoot borer and they were significantly superior over rest of the treatments.

After 60 days of planting, Soil application of Chlorantraniliprole 0.4 G @ 22.5 kg / ha at the time of planting and 60 DAP (T₂) was significantly superior over rest of the treatments and observed 2.37 per cent ESB incidence. It was followed by Soil application of Fipronil 0.3 G @ 25 Kg/ha at the time of planting and 60 DAP, which recorded 6.57 per cent incidence of early shoot borer.

After 90 days of planting, the treatment T₃ (Spraying of Chlorantraniliprole 18.5 SC @ 375 ml/ha at 30 & 60 DAP) was significantly superior over rest of treatments (3.21 % incidence of ESB). However, it was at par with T₂ (Soil application of Chlorantraniliprole 0.4 G @ 22.5 kg / ha at the time of planting and 60 DAP), which recorded 3.90 per cent incidence of early shoot borer.

After 120 days of planting, the treatment T₃ (Spraying of Chlorantraniliprole 18.5 SC @ 375 ml/ha at 30 & 60 DAP) showed least incidence of early shoot borer (3.62%). However, it was at par with the treatments T₂, T₁ and T₅.

The data on cumulative per cent incidence of early shoot borer revealed that, the treatment with Soil application of Chlorantraniliprole 0.4 G @ 22.5 kg / ha at the time of planting and 60 DAP (T₂) was significantly superior over rest of the treatments and recorded 8.77 per cent ESB incidence. It was followed by T₃ (Spraying of Chlorantraniliprole 18.5 SC @ 375 ml/ha at 30 & 60 DAP), which recorded 13.68 per cent early shoot borer incidence. However, it was at par with T₁ (Soil application of Fipronil 0.3 G @ 25 Kg/ha at the time of planting and 60 DAP), which recorded 14.90 per cent incidence of early shoot borer.

The treatment with Soil application of Chlorantraniliprole 0.4 G @ 22.5 kg / ha at the time of planting and 60 DAP (T₂) observed significantly superior millable canes (84.44 thousand / ha) , except treatment T₃ Spraying of Chlorantraniliprole 18.5 SC @ 375 ml/ha at 30 & 60 DAP (78.22 thousand / ha), which were at par with each other.

Regarding yield, the treatment with Soil application of Chlorantraniliprole 0.4 G @ 22.5 kg / ha at the time of planting and 60 DAP (T₂) observed significantly superior yield (98.55 t / ha) over rest of the treatments. It was followed by T₃ (Spraying of Chlorantraniliprole 18.5 SC @ 375 ml/ha at 30 & 60 DAP) (90.67 t / ha). However, it was at par with T₁ (Soil application of Fipronil 0.3 G @ 25 Kg/ha at the time of planting and 60 DAP) (86.67 t / ha).

Conclusion:

The treatment with Soil application of Chlorantraniliprole 0.4 G @ 22.5 kg / ha at the time of planting and 60 DAP (T₂) was found most effective against early shoot borer, *Chilo infuscatellus* on sugarcane, which observed least cumulative incidence of early shoot borer (8.78 per cent) and the highest yield (98.55 t / ha).

**TECHNICAL PROGRAMME (AICRP)
OF
SUGARCANE ENTOMOLOGY, PADEGAON (201415)**

Experiment No.1 (Project E 4.1) :		
Evaluation zonal varieties / genotypes for their reaction against major insect pests		
	Trials	Entries
1	Evaluation of Initial Varietals Trial – Early [(IVT) Early] genotypes for their reaction against major insect pests.	13+03=16
2	Evaluation of Advanced Varietals Trial – Early (I Plant) genotypes for their reaction against major insect pests.	03+03=06
3	Evaluation of Initial Varietal Trial – Midlate [IVT-ML] genotypes for their reaction against major insect pests.	14+02=16

Experiment No.2 (E 28)	Survey and surveillance of sugarcane insect pests.
Experiment No.3 (E 30)	Monitoring of insect pests and bio-agents in sugarcane agro-ecosystem.
Experiment No.4 (E 33)	Bio-efficacy of insecticides against mealy bugs in sugarcane.
Experiment No.5 (E 34)	Standardization of simple and cost effective techniques for mass multiplication of Sugarcane bio-agents.
Experiment No.6 (E 36)	Management of borer complex of sugarcane through pheromone lures.
Experiment No.7 (E 37)	Bio-efficacy of newer insecticide for the control of sugarcane early shoot borer.