

From:  
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To  
The Associate Director of Research,  
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Anakapalle

Sir,

Sub: Reports and returns – Annual technical Report of AICRP on Sugarcane for the year 2010-2011 of Entomology Discipline-Submission–regarding.

Ref: F.No. 17-33/2012- PCS dt 07-5-2012 of the Project Coordinator (Sugarcane), AICRP on sugarcane, IISR, Lucknow.

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I submit to enclose herewith in triplicate the Annual report of AICRP on Sugarcane of Entomology Discipline, RARS, Anakapalle for the year 2011-2012 for kind perusal and further necessary action.

Yours faithfully,

(B.BHAVANI)

**Encl:**

1. Annual technical report of AICRP on Sugarcane of Entomology discipline for 2011-12 along with soft copy.

**ANNUAL TECHNICAL REPORT OF ENTOMOLOGY DISCIPLINE FOR  
THE YEAR 2011-2012 OF AICRP ON SUGARCANE,  
REGIONAL AGRICULTURAL RESEARCH STATION, ANAKAPALLE, A.P**

**SUMMARY**

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

**In Initial varietal trial (mid-late)**, four entries along with four standards were tested. Cumulative incidence of early shoot borer upto 120 days was ranged from 6.04 per cent in Co C 06 030 to 27.52 per cent in 93 A 145. All the test entries showed least susceptible reaction against early shoot borer. All the test entries recorded < 5% incidence of internode borer. The intensity of internode borer was ranging from 0.24% in Co C 06 030 to 2.96 % in the standard check, 93 A 145. The intensity of scale insect was below 5 % in all test entries. Among the test entries, Co C 06 030 (6.04%) was found to be promising against early shoot borer whereas Co A 2007 – 322 (0%) showed promising reaction against scale insect.

**In Advanced varietal trial (early)**, five entries along with four standards were screened. Cumulative incidence of early shoot borer up to 120 days varied from 5.66 per cent in Co V 2009-356 to 10.42 per cent in 93 A 145. All the test entries showed least susceptible reaction against early shoot borer. Less incidence of internode borer (0.29 % in Co 6907 to 4.11 5 in Co C 01-061 ) and scale insect ( 0% in Co A 2008-321, 323 to 5.04 5 in Co V 2009-356) were recorded in all the test entries due to scattered rainfall received during grand growth stage (June to September). Among the test entries, Co V 2009-356(5.66%) found to be promising against early shoot borer whereas the genotypes Co A 2008-321 (0%), Co A 2008-323 (0%) showed promising reaction against scale insect by recording lowest incidences as compared to susceptible check (93 A 145).

**E.27: Mass multiplication of potential bio-agents of sugarcane insect pests (*Trichogramma chilonis* against early shoot borer on sugarcane).**

Mass multiplication of *Trichogramma chilonis* and its host insect has been taken up at IPM laboratory, RARS, Anakapalle since 2003. So far 430 million parasitoids were multiplied in the form of 21,500 trichocards and supplied to farmers through different agencies like sugar factories, Department of Agriculture, DAATT Centres and KVKs. An amount of Rs. 5.00 lakh was received on account of sale of parasitoids. The work is under progress in IPM laboratory. During 2010-11 season, 26 million *T.chilonis* parasitoids were produced in the form of 1200 Trichocards. When the maize feed was mixed with ground nut meal @100g/2.5kg enhanced the moth emergence as well as fecundity of *Corcyra cephalonica*.

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

Surveys on insect pest incidence in sugarcane fields both plant and ratoon crops in adjoining areas of Regional Agricultural Research Station, Anakapalle, North Coastal zone and Krishna Godavari zone of Andhra Pradesh were conducted at fortnightly

intervals. The pest problems are identified in sugarcane plant and ratoon crops and remedial measures are suggested to the farming community. Sugarcane crop was infested by early shoot borer (*Chilo infuscatellus*) in the early stage, as internode borer after cane formation (87 A 298, 93 A 145, 83 V 15, 2001 A 63, Co 6907 and Co A 7602), pink mealybug, scale insect, leaf mealy bug and red mite in many pockets of sugarcane growing areas in A.P. A new species, a Grass Derbid *Proutista moesta* was observed along with *Pyrilla perpusilla* population was observed in sugarcane fields in operational areas of Samalkot sugar factory during the months of August and Spetember,2011.

### **E. 30: Monitoring of insect pests and bioagents in Sugarcane agro-ecosystem**

In monitoring of insect pests and natural occurring bio-agents, the infestation of early shoot borer (0.52%) was noticed on 14 MW (i.e. 1<sup>st</sup> week of April). The maximum incidence (38.77%) was noticed in 18 MW (i.e. 1<sup>st</sup> week of May). Incidence of internode borer was noticed at 26<sup>th</sup> MW. The maximum incidence of internode borer was noticed in 29<sup>th</sup> MW (16%) 3<sup>rd</sup> week of July. Incidence of internode borer was noticed at 26<sup>th</sup> MW. The maximum incidence of internode borer was noticed in 29<sup>th</sup> MW (16%) 3<sup>rd</sup> week of July.

The bio-agents viz., *Euborellia annulipes*, an earwig (Ord. Dermaptera) was predatory on eggs and early instar larvae of early shoot borer. *Coccinella septempunctata* and *Cheilomenes sexmaculata* were found to be predating on mealybugs of sugarcane. Certain natural collections of *T.chilonis* was also found in the ecosystem. Along with these regular parasites, *Encarsia* sps was observed on sugarcane woolly aphid.

### **E.31: Management of whitefly (*Aleurolobus barodensis*) in sugarcane agro-ecosystem**

Among different treatments tested, removal of infested leaves + application of imidacloprid at 0.005% (T4) along with 2% urea registered highest per cent reduction of whitefly (91.95%) and cane yield (82.20t/ha) followed by removal of infested leaves + application of neem based pesticide (78.93%; 82.20t/ha) over control.

### **E.32: Population dynamics of sugarcane borers (early soot borer, top borer, internode borer and stalk borer) through pheromone traps.**

The moth catches were started from 13<sup>th</sup> MW, and the highest number of moth catches (34.4 number per trap/trap) were recorded when the maximum, minimum temperature was 36.0C and 22.4C and at 88% RH, respectively there after the moth catch was reduced gradually due to scattered rainfall received from last week of May to October, 2011. Studied on the ESB moth catch in relation to weather parameters revealed that the maximum( r: 0.69) and minimum (r : 0.57) temperatures showed positive correlation whereas morning relative humidity showed negative correlation (-0.56) with ESB moth catch in pheromone traps.

## DETAILED REPORT

### **I. E.4.1**

1. Title : Evaluation of entries/genotypes of **Initial Varietal trial (mid late)** for resistance to early shoot borer, inter node borer and scale insect.
2. Year of start : 1990
3. Duration : Recurring study
4. Location : Regional Agricultural Research Station, Anakapalle.
5. Objective : To study the reaction of genotypes to early shoot borer, inter node borer and scale insect.
6. Treatments : Varieties included in Initial varietal trial (mid-late)
7. Varieties (4+3) : Co A 2007 – 322, Co C 06-031, Co C 06 030, Co C 08 –339 and standards Co V 92102 (83 V 15), Co 7219 and Co 86249

### **8. Results of the previous year:**

Four entries along with three standards were tested. Cumulative incidence of early shoot borer was ranging from 20.08% in Co A 08 321 to 34.05 % in Co C 08-339. Intensity of internode borer was below 1% in all the entries and in the range of 0.29 % in Co V 06 31 to 0.84 % in Co C 08-339. All the test entries have shown less intensity of scale insect i.e., below 6.0% whereas the standards, Co7219 and Co 86249 recorded 9.61% and 14.22% respectively The entry Co C 08-339 registered significantly more yield (103.61 t/ha), NMC (104560/ha) and sucrose (19.37%) than other entries under test.

### **9. Results of the current year with tables, clearly indicating the details regarding name of the pest, insecticidal sprays etc.,**

In Initial varietal trial (mid-late), four entries along with four standards were tested. Cumulative incidence of early shoot borer upto 120 days was ranged from 6.04 per cent in Co C 06 030 to 27.52 per cent in 93 A 145. All the test entries showed least susceptible reaction against early shoot borer. All the test entries recorded < 5% incidence of internode borer. The intensity of internode borer was ranging from 0.24% in Co C 06 030 to 2.96 % in the standard check, 93 A 145. The intensity of scale insect was below 5 % in all test entries. Among the test entries, Co C 06 030 was found to be promising against early shoot borer (6.04%) and internode borer (0.24%) whereas Co A 2007 – 322 (0%) showed promising reaction against scale insect (Table1).

**Table 1. Incidence of early shoot borer, internode borer and scale insect in test entries of Initial Varietal Trial (mid-late)**

<b>Sl. No</b>	<b>Genotype</b>	<b>Cumulative incidence of ESB (%DH)</b>	<b>incidence of Internode borer (%)</b>	<b>incidence of Scale insect (%)</b>
1.	Co A 2007 – 322	7.28	2.47	0
2.	Co C 06-031	9.03	1.14	0.90
3.	Co C 06 030	6.04	0.24	4.72
4.	Co C 08 –339	11.42	1.01	3.29
5.	Co V 92102 ©	9.51	0.50	0.27
6.	Co 7219 ©	19.31	0.94	4.60
7.	Co 86249 ©	20.63	1.60	0
8.	Check 93 A 145	27.52	2.96	0.83
	<b>C.D (p=0.05)</b>	<b>9.60</b>	<b>1.1925</b>	<b>1.7641</b>
	<b>C.V (%)</b>	<b>23.20</b>	<b>24.44</b>	<b>24.73</b>

## **II. E.4.1**

1. Title : Evaluation of entries/genotypes of **Advanced varietal trial (early)** for resistance to early shoot borer, inter node borer and scale insect.
2. Year of start : 1990
3. Duration : Recurring study
4. Location : Regional Agricultural Research Station, Anakapalle.
5. Objective : To study the reaction of genotypes to early shoot borer, inter node borer and scale insect.
6. Treatments : Varieties included in Advanced varietal trial (early)
7. Varieties (4+3) : Co A 2008-321 Co A 2008-323, Co C 2008-336, Co V 2009-356 , Co V 2009-356 and four standards Co 6907, Co C 01 061, Co A 92081 (87 A 298) and 93 A 145.

### **8. Results of the previous year:**

Four entries were screened against early shoot borer, internode borer and scale insect in comparison with three standards Co 6907, Co C 01-061 and Co A 92 081 (87 A 298). Cumulative incidence of early shoot borer varied from 15.36% in Genotype Co V 2006-356 to 24.73 per cent in Co C 01-061. Intensity of internode borer was low i.e., below 5.0% in all the entries except Co C 01-061(8.70%). Intensity of scale insect was below 5.0 % in all entries. Similarly all entries registered less weight of scale incrustation (79mg/cane). But the differences were not significant.

### **9. Results of the current year with tables, clearly indicating the details regarding name of the pest, insecticidal sprays etc.,**

In Advanced varietal trial (early), five entries along with four standards were screened. Cumulative incidence of early shoot borer up to 120 days varied from 5.66 per cent in Co V 2009-356 to 10.42 per cent in 93 A 145. All the test entries showed least susceptible reaction against early shoot borer. Less incidence of internode borer (0.29 % in Co 6907 to 4.11 5 in Co C 01-061 ) and scale insect (0% in Co A 2008-321, 323 to 5.04 5 in Co V 2009-356) were recorded in all the test entries due to scattered rainfall received during grand growth stage (June to September). Among the test entries, Co V 2009-356 (5.66%) found to be promising against early shoot borer whereas the genotypes Co A 2008-321 (0%), Co A 2008-323 (0%) showed promising reaction against scale insect by recording lowest incidences as compared to susceptible check (93 A 145) (Table 2).

**Table 2. Incidence of early shoot borer, internode borer and scale insect in test entries of Advanced varietal Trial (early)**

Sl. No	Genotype	Cumulative incidence of ESB (%DH)	incidence of internode borer (%)	of incidence of scale insect (%)
1.	Co A 2008-321	6.28	1.64	0
2.	Co A 2008-323	6.42	2.44	0
3.	Co C 2008-336	8.08	0.67	0.66
4.	Co C 2009-336	7.79	0.52	2.02
5.	Co V 2009-356	5.66	0.46	5.04
6.	Co 6907©	4.49	0.29	0.59
7.	Co C 01-061©	3.65	4.11	0
8.	Co A 92081 (87 A 298) ©	6.30	0.45	7.48
9.	93 A 145©	10.42	4.46	2.36
CD(p=0.05)		2.2232	2.2481	1.5250
C.V.(%)		17.89	25.29	9.36

### III. E.27

**1.Title** Mass multiplication of potential bio-agents of sugarcane insect pests (*Trichogramma chilonis* against early shoot borer on sugarcane).

2.Year of start 2009

3.Duration Recurring study

4.Location Regional Agricultural Research Station, Anakapalle and farmers' fields

5.Objective To mass multiply the *Trichogramma chilonis* egg parasitoid for the control of early shoot borer on sugarcane and also to develop economical mass multiplication techniques of promising bio-agents of the area.

6.Treatments --

7. Variety --

#### 8.Results of the previous year :

Mass multiplication of *Trichogramma chilonis* and its host insect has been taken up at IPM laboratory, RARS, Anakapalle since 2003. So far 430 million parasitoids were multiplied in the form of 22,000 trichocards and supplied to farmers. During 2010-11, 1300 Trihocards were produced and supplied to the Sugarcane farmers through sugar factories, dept. of Agriculture and KVKs and DAATTCs etc.

#### 9.Results of the current year with tables, clearly indicating the details regarding name of the pest, insecticidal sprays etc.,

During 2010-11 season, 26 million *T.chilonis* parasitoids were produced in the form of 1200 Trichocards (Table 3). When the maize feed was mixed with ground nut meal @100g/2.5kg enhanced the moth emergence as well as fecundity of *Corcyra cephalonica* .

**Table No. 3 : MASS MULTIPLICATION OF *Trichogramma chilonis* during 2011-12 season**

S.No	Date	Particulars	No. of Trichocards sold	Amount (Rs)
1	1-4-2011	ADA, Parvathipuram	158	5530
	Apr, 2011 to May, 2011	Farmers, ADAs, Research stations	77	2695
2	21-5-2011	BC lab, Visakhapatnam	20	700
3	2-6-2011	BC lab, Visakhapatnam	30	1050
4	7-6-2011	BC lab, Visakhapatnam	32	1120
5	Jun, 2011 to Jul,2011	Farmers, PRDIS and Research stations	55	1925
6	28-7-2011	M/s Sarvaraya Sugars Ltd., Chelluru, East Godavari	400	14000
7	Aug, 2011	Farmers, ADA, Cheepurupalle, VZM, BC lab, VSP	26	910
8	13-9-2011	M/s Sri sarvaraya Sugars, Chelluru, East Godavari dist	160	5600
9	14-9-11& 22-9-11	ADA, BC lab, Visakhapatnam	53	1750
10	14-9-2011	AO, Butchaiyya peta	2	70
11	22-9-2011	ADA, BC lab, Visakhapatnam	50	1750
12	11-10-11	AO, Gajapathinagara m	42	1470
13	20-3-12	ADA, BC lab, VZM	45	1575
14	21-3-2012	ADA, BC, lab, VZM	46	1610
		Total	1196	41755



#### IV. E.28

1.Title	<b>Survey and surveillance of sugarcane insect pests.</b>
2.Year of start	2003
3.Duration	Recurring study
4.Location	Regional Agricultural Research Station, Anakapalle and farmers' fields
5.Objective	To identify key insect pests of sugarcane in the area.
6.Treatments	--
7. Variety	--

#### **8.Results of the previous year :**

Surveys on insect pest incidence in sugarcane fields both plant and ratoon crops in adjoining areas of Regional Agricultural Research Station, Anakapalle, North Coastal zone and Krishna Godavari zone of Andhra Pradesh were conducted at fortnightly intervals. The pest problems identified in sugarcane plant and ratoon crops during the period under report and suitable remedial measures suggested to the farming community.

In survey and surveillance of sugarcane insect pests in Andhra Pradesh, sugarcane crop was infested by early shoot borer, internode borer, pink mealybug, leaf mealy bug, yellow mite and red mite in many pockets of sugarcane growing areas in A.P. Sugarcane wooly aphid, *Ceratovacuna lanigera* Zehntner was found infesting sugarcane in Nizamabad, Medak, Khammam, Visakhapatnam West and East Godavari Districts. Incidence of mealy bug, *Saccharicoccus sacchari* Cockrell was observed in West Godavari, East Godavari and Khammam Districts of Andhra Pradesh. Severe incidence of whitefly was observed on plant and ratoon crop of sugarcane in Anakapalle, yellamanchili mandals of Visakhapatnam. Severe incidence of whitefly was observed on plant and ratoon crop of sugarcane in Anakapalle, Yellamanchili mandals of Visakhapatnam.

#### **9.Results of the current year with tables, clearly indicating the details regarding name of the pest, insecticidal sprays etc.,**

In survey and surveillance of sugarcane insect pests in Andhra Pradesh, Sugarcane crop was infested by early shoot borer in the early stage, as internode borer after cane formation (87 A 298, 93 A 145, 83 V 15, 2001 A 63, Co A 7602), pink mealybug, scale insect, leaf mealy bug and red mite in many pockets of sugarcane growing areas in A.P. A new species, a Grass Derbid *Proutista moesta* along with *Pyrilla perpusilla* population on the underside of the sugarcane leaves were observed on sugarcane in operational areas of Samalkot sugar factory during the months of August and Spetember, 2011. White grub incidence was observed in Bobbili sugar factory area, Vizianagram (Table 4).

**Table 4 : Survey and surveillance of insect pests of sugarcane**

Month/year	Location	Insect pest	Incidence (%)	Varieties affected	Any other information
May,2011	Anakapalle, Kasimkota and Thimmaraju pet	Early shoot borer	20- 46%	87 A 298, 93 A 145, 83 V 15, 2001 A 63, Co A 7602	Plant and Ratoon crop
	Chodavaram sugar factory area	Red mite	10-22%	Co7219, Co6907, 97 A 85	Plant crop
	Samalkot sugar factory area	<i>Chilo infuscatellus</i> damage on internodes	5-9%	83 V 15, 87 A 298, 86 V 96, 97 A 85, 93 A 145, 83 V 15	Plant crop
June, 11	Samalkot and Chelluru sugar factory areas	Pink mealy bug	7-9%	Co6907, 87 A 298, 81 V48, 93 A 145, 86 V 96, 83 V15	Plant crop
	Munagapaka, Kasimkota Anakapalle mandals	Early shoot borer (Rainfed)	10-23%	93 A 145, 87 A 298, Co7219, 93 A 145, 81 V 48	Plant & ratoon crop
August, 11	Jaggannapeta, East Godavari district	Red mite <i>Chilo infuscatellus</i> damage on internodes <i>Pyrilla perpusilla</i> Grass Derbid	5-10% 6-9% 2-3A&N/leaf 3-5A/leaf	86 V 96, 83 V15, 87 A 298,	Plant crop
September,11	Jaggannapeta, East Godavari district	Whitefly Scale insect Leaf mealy bug <i>Pyrilla perpusilla</i> Grass Derbid	6-10% 4-7% 1-2 nymphs/leaf 2-3A&N/leaf 4-5adults/leaf	87 A 298, 86 V 96, 83 V15	Plant crop
October, 11	Bobbili sugar factory area, Vizianagaram district	White grub Whitefly	2-3 grubs/m <sup>2</sup> 10-13%	87 A 298 86 V 96, 83 V15	Plant crop

	Samalkot sugar factory area, East Godavari district	Scale insect	6-7%		
December, 11	Bobbili sugar factory area, Vizianagaram district	White grub (5 to 15%) Whitefly (10-20%)	3-4 grubs/m <sup>2</sup> 6-7%	87 A 298 86 V 96, 83 V15	Plant crop
January, 2012	Samalkot sugar factory area	Whitefly Scale insect	4-5% 8-11%	in early varieties	

## V. E.30

1. Title Monitoring of insect pests and bio-agents in sugarcane agro – ecosystem.
2. Year of start 2006-07
3. Duration Long term
4. Location Regional Agricultural Research Station, Anakapalle and farmers' fields.
5. Objective To monitor the key insect pests and natural enemies in the area.
6. Treatments --
7. Variety --

### 8. Results of the previous year

Natural occurring bio-agents, *Chrysoperla carnea* (neuropteran) and *Pharoscymus hor* coccinellid predator was noticed in the leaf sheaths infested with pink mealy bug, *Saccharica sacchari*. *Euborellia annulipes*, an earwig (Ord. Dermaptera) was predatory on eggs and early larvae of early shoot borer. *Coccinella septempunctata* and *Cheilomenes sexmaculata* were found to be preying on aphids and mealybugs of sugarcane. Certain natural collections of *T. chilonis* was found in the ecosystem. *Ascarsonia*, an infectious fungus was observed on under side of the lamina infested with whitefly.

**9.Results of the current year with tables, clearly indicating the details regarding name of the pest, insecticidal sprays etc.**

During 2011-12, early shoot borer infestation (0.52%) was noticed on 14 MW (i.e. 1<sup>st</sup> week of April). The maximum incidence (38.77%) was noticed in 18 MW (i.e. 1st week of May). Incidence of internode borer was noticed at 26<sup>th</sup> MW. The maximum incidence of internode borer was noticed in 29<sup>th</sup> MW (5.8%) 3<sup>rd</sup> week of July. Incidence of scale insect was noticed at 44<sup>th</sup> MW due to scattered rainfall during August and September and maximum incidence was noticed at 50<sup>th</sup> MW(10.8%) .

The bioagents viz., *Micromus igorotus* @ 2-3 per leaf observed during Dec-January, *Syrphid* population was observed in traces whereas *Encasia flavoscutellum* @ 3-4 per stool were observed during December and 1-3 per leaf during January and Lady bird beetles were noticed 2-5/ leaf during August along with other natural enemies viz., *Chrysoperla carnea*, *Pharoscymus horni*, *Euborellia annulipes* and *Coccinella septempunctata* and *Cheilomenes sexmaculata*.

**Table 5 : Natural enemies of major insect pests of sugarcane (Plant and ratoon)**

S. No.	Insect pest	Prevalence period	Maximum incidence	Natural enemy	Prevalence period	Maximum parasitisation/ population
1	Early shoot borer	March-June	Moderate to severe (0.52-38.77%)	<i>Trichogramma chilonis</i> <i>Euborellia annulipes</i> <i>Cheilomenes sexmaculata</i> .	March-June  -do-	15%  2-3/clump
2	Red mite	May-June	Moderate to severe			
3	Mealy bug	May -June	traces	<i>Chrysoperla carnea</i> (neuropteran) and Coccinellids  <i>Coccinella septempunctata</i>  <i>Pharoscymus horni</i> , <i>Menochilus sexmaculatus</i>	March- December	2-5A/ clump
4	<i>Chilo infuscatellus</i> damage on internodes	June - September	Low (5.80%)			
5	White fly	August - September	Moderate (9.33/cm <sup>2</sup> /leaf)	<i>Ascharsonia</i>	Sep	Traces

6	Pyrilla	August - November	1-2 egg masses/ clump 2-3 A & N/ clump	<i>Epiricania melanoleuca</i>	September- November	2-4/clump
7	Grass Derbid	August - September	3-4A/ clump			
8	Grasshopper	July - August	2-3 A / Clump			
9	White grub	September -November	2-3 grubs/m <sup>2</sup>			
10	Scale insect	November- March	10.8%	<i>Chilocorus nigritus</i>	Nov- March	3-6 A/stool
11	Termite		10.33%			
12	Yellow mite		3-4%			
13	White woolly aphid	June-July  December- January	2-4/cm <sup>2</sup> / leaf  5.67/cm <sup>2</sup> / leaf	Syrphids  <i>Encasia flavoscutellum</i>  <i>Micromus igorotus</i>	June- July  Dec-January	4-6/leaf  3-4 per stool  2-3 per leaf

## VI. E.31

### 1.Title

Management of whitefly (*Aleurolobus barodensis*) in sugarcane agro-ecosystem

### 2.Year of start

2009-10

### 3.Duration

Three years

### 4.Location

Regional Agricultural Research Station, Anakapalle and farmers' fields

### 5.Objective

To find out effective strategy for the management of Whitefly, *Aleurolobus barodensis* on Sugarcane and to compare the effectiveness of individual technology evaluated for the management of whitefly

### 6.Treatments

1. Destruction of puparia by removing infested leaves

2. Removal of infested leaves + installation of cages @ 15 /ha

3. Removal of infested leaves + application of imidacloprid at 0.005% along with 2% urea

4. Removal of infested leaves + application of neem based pesticide (Azadirachtin 4 g a.i./ha i.e., 0.0004%)

5. Untreated control

7. Variety 93 A 145

**8.Results of the previous year :**

Among different treatments tested, removal of infested leaves + application of imidacloprid at 0.005% along with 2% urea registered highest per cent reduction of whitefly (97.75%) followed by Removal of infested leaves + application of neem based pesticide (Azadirachtin 4 g a.i./ha i.e., 0.0004 %) (72.98%) over control.

**9.Results of the current year with tables, clearly indicating the details regarding name of the pest, insecticidal sprays etc.,**

Among different treatments tested, removal of infested leaves + application of imidacloprid at 0.005% (T4) along with 2% urea registered highest per cent reduction of whitefly (91.95%) and cane yield (82.20t/ha) followed by removal of infested leaves + application of neem based pesticide (78.93%; 80/ha) over control.

**Table 9: Impact of different treatments on incidence of sugarcane whitefly**

No.	Treatments	Average number of nymphs & puparia per 10 sq.cm (No.)		Per cent reduction over control	Yield (t/ha)
		Pre treatment	After treatment		
T1	Destruction of puparia by removing infested leaves	13.2	8.11	48.55	75.40
T2	Removal of infested leaves + installation of cages @ 15 /ha	12.5	10.19	41.41	76.60
T3	Removal of infested leaves + application of imidacloprid at 0.005% along with 2% urea	10.15	1.14	91.95	82.20
T4	Removal of infested leaves + application of neem based pesticide (Azadirachtin 4 g a.i./ha i.e., 0.0004%)	11.6	2.83	78.93	80.00
T5	Untreated control	12.8	24.04		73.20
	C.D (p=0.05)	NS	0.50		5.06
	C.V (%)		6.09		26.25

**VII. E.32**

**1.Title Population dynamics of sugarcane borers (early soot borer, top borer, internode borer and stalk borer) through pheromone traps.**

- 2. Year of start 2009-10
- 3. Duration Three years
- 4. Location Regional Agricultural Research Station, Anakapalle
- 5. Objective
- 6. Treatments

7. Variety 93 A 145

**8.Results of the previous year :**

Data on moth catches were recorded daily and the results showed that Peak population of early shoot borer was observed during the month of May (308 adults) later the population was drastically reduced from September month onwards due to continuous rainfall received from August to December months. An average of 88.63 male moths per trap per month were recorded. The pheromone lure proved its efficacy for four weeks in attracting male moths.

**9.Results of the current year with tables, clearly indicating the details regarding name of the pest, insecticidal sprays etc.,**

In monitoring of early shoot borer through pheromone traps, the moth catches were started from 13<sup>th</sup> MW, and the highest number of moth catches (34.4 number per trap) were recorded when the maximum, minimum temperature was 36.0C and 22.4C and at 88% RH, respectively. The maximum( r: 0.69)and minimum (r : 0.57) temperatures showed positive correlation whereas morning relative humidity showed negative correlation (-0.56) with ESB moth catch in pheromone traps (Table 10).

**Table 10: Pheromone trap catches in relation to weather parameters.**

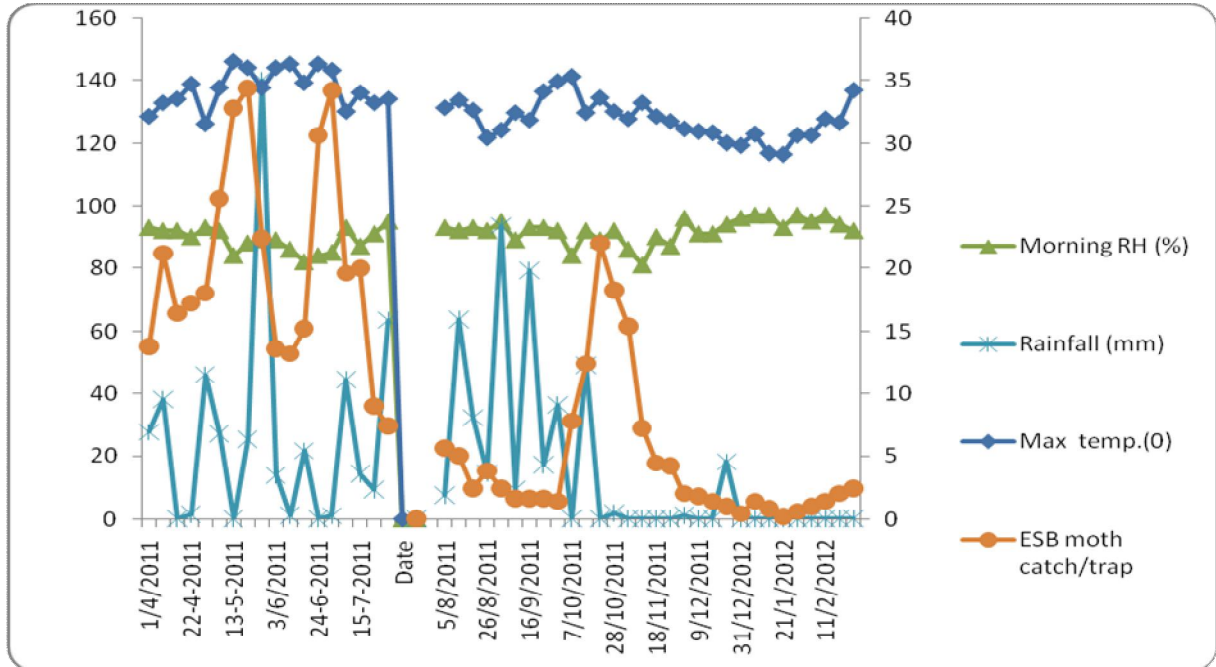
Standard week	Date	Temperature		Relative humidity		Rainfall (mm)	ESB moth catch/trap/ week
		Max temp.( <sup>o</sup> )	Min temp. ( <sup>o</sup> )	Morning RH (%)	Evening RH (%)		
13	1/4/2011	32.1	21.1	93	59	27.6	13.8
14	8/4/2011	33.2	21.6	92	57	38.0	21.2
15	15/4/2011	33.5	20.5	92	56	0	16.4
16	22/4/2011	34.7	21.5	90	60	1.4	17.2
17	29/4/2011	31.5	26.1	93	62	46.0	18.0
18	6/5/2011	34.4	19.9	92	65	27.0	25.6
19	13/5/2011	36.5	24.4	84	59	0	32.8
20	20/5/2011	36.0	22.4	88	69	25.2	34.4

21	27/5/2011	34.4	21.4	89	65	140	22.4
22	3/6/2011	36.0	23.1	89	54	13.8	13.6
23	10/6/2011	36.3	23.9	86	61	1.2	13.2
24	17/6/2011	34.8	23.7	82	65	21.6	15.2
25	24/6/2011	36.3	24.9	84	60	0	30.6
26	1/7/2011	35.8	24.5	85	58	1	34.2
27	8/7/2011	32.5	22.5	93	80	44.4	19.6
28	15/7/2011	34.0	23.0	87	70	14.2	20.0
29	22/7/2011	33.2	23.6	91	68	9.4	9.0
30	29/7/2011	33.5	22.0	95	74	63.4	7.4
31	5/8/2011	32.8	22.7	93	60	7.6	5.6
32	12/8/2011	33.4	23.3	92	56	63.6	5.0
31	5/8/2011	32.8	22.7	93	60	7.6	5.6
32	12/8/2011	33.4	23.3	92	56	63.6	5.0
33	19/8/2011	32.6	22.0	93	58	32.2	2.4
34	26/8/2011	30.4	22.3	92	76	14.4	3.8
35	2/9/2011	31.0	22.3	95	78	93.6	2.4
36	9/9/2011	32.4	23.0	89	66	9.2	1.6
37	16/9/2011	31.8	22.0	93	74	79.2	1.6
38	23/9/2011	34.1	22.8	93	64	17.2	1.6
39	30/9/2011	34.9	21.9	92	57	36.2	1.4
40	7/10/2011	35.3	19.9	84	47	0	24.7
41	14/10/2011	32.4	21.3	92	73	49.0	12.4
42	21/10/2011	33.6	19.5	89	57	0	22.0
43	28/10/2011	32.5	20.2	92	64	1.8	18.2
44	4/11/2011	31.9	18.0	86	55	0	15.4
45	11/11/2011	33.2	15.5	81	38	0	7.2
46	18/11/2011	32.1	16.3	90	51	0	4.4
47	25/11/2011	31.7	15.0	87	51	0	4.2
48	2/12/2011	31.1	17.5	96	59	1.2	2.0
49	9/12/2011	30.9	15.8	91	53	0	1.8
50	16/12/2011	30.8	15.6	91	51	0	1.4
51	23/12/2011	30.0	12.2	94	43	18.0	1.0
52	31/12/2012	29.8	12.4	96	47	0	0.4
1	7/1/2012	30.7	17.6	97	62	0	1.4
2	14/1/2012	29.2	13.6	97	53	0	0.8
3	21/1/2012	29.1	10.4	93	46	0	0.2
4	28-1-2012	30.6	14.0	97	50	0	0.6
5	4/2/2012	30.6	14.2	95	48	0	1.0
6	11/2/2012	31.9	12.6	97	47	0	1.4
7	18/2/2012	31.6	15.3	94	50	0	2.0
8	25/2/2012	34.2	14.7	92	40	0	2.4

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## Pheromone trap catches in relation to weather parameters



### VIII. E.33

1. Title Bioefficacy of insecticides against mealy bugs in sugarcane.
2. Year of start 2010-11
3. Duration Three year
4. Location Regional Agricultural Research Station, Anakapalle
5. Objective To evaluate the efficacy new insecticides against pink mealy bug, *Saccharicoccus sacchari* (Cockerell) on Sugarcane.
6. Treatments : 9
  1. Sett treatment with imidacloprid 70% SP @ 25 g a.i./ha + spraying of imidacloprid 17.8SL @ 0.005%
  2. Sett treatment with imidacloprid 70% SP @ 25 g a.i./ ha + spraying of thiamethoxam 25 WG @ 0.004%
  3. Sett treatment with imidacloprid 70% SP @ 25 g a.i./ ha + spraying of clothianidin 50 WSG @ 0.004%
  4. Sett treatment with imidacloprid 70% SP @25 g a.i./ ha + spraying of acetamiprid 20 SP @ 0.004%

