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

**ANNUAL REPORT
(2014-15)**

**COMPILED
BY**

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**CENTRAL SUGARCANE RESEARCH STATION,
PADEGAON – 415 521, TAL. PHALTAN,
DIST. SATARA (MAHARASHTRA STATE)**

Central Sugarcane Research Station

Padegaon- 415 521

Tal- Phaltan, Dist- Satara

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INTRODUCTION

Sugarcane plays an important role in the socioeconomic development of India and specially Maharashtra. Maharashtra sugar industry has been growing for the last 60 years without any impediments. The area and sugarcane production has been continuously increasing for the last 6 decades. India ranks second in area and sugarcane production, with about 50.6 Lakh ha area and 3361.5 lakh tonnes sugarcane production, next to Brazil, however the average productivity hovers around 60 to 70 t/ha pushing India ranks to 10th in the world. About 45 million farm families and a large number of dependant labourers directly and indirectly engaged in sugarcane cultivation and in sugar industry.

Sugarcane is a major commercial cash crop of Maharashtra. During 2014-15, the area under sugarcane is about 10.55 lakh ha which is next to Uttar Pradesh and sugarcane production was 929 million tonnes. In spite of favourable climatic conditions, for last 4-5 decades the average sugarcane productivity of Maharashtra moving around 75 to 85 t/ha. Maharashtra ranking 1st place in sugarcane recovery. At present in Maharashtra about 179 co-operative and private sugar factories generating employment, electricity, ethanol production, bio-compost and number of other chemicals. Hence, sugarcane and sugar industry is the backbone for economic development in Maharashtra.

This year Maharashtra reached to the peak for area under sugarcane and there is very little or no more scope to increase the area. The productivity is stagnating around 85 t/ha i.e. 35 t/acre. The number and crushing capacity of sugar factories was increasing year by year. In such situation, we have the only option to increase the sugarcane productivity by means of generating the improved technologies and varietal development considering the global warming and the climate change.

A number of outreach programmes were organized to transfer various technologies developed by the CSRS, Padegaon to the farmers and extension agencies through “Rashtriya Krishi Vikas Yojana ” and “ Tribal Sub Plan ” project sponsored by Govt. of India for increasing sugarcane productivity of farmers.

Table 1. The area, production, productivity, sugar production and sugarcane recovery in Maharashtra from 2000-01 to 2014-15.

Year	Area (‘000’ ha)	Sugarcane production (Lakh ton)	Sugarcane productivity (t /ha)	Sugar production (Lakh ton)	Sugar recovery (%)
2000-01	595	495.89	83.3	67.05	11.64
2001-02	578	451.4	78.1	56.13	11.6
2002-03	599	370.15	61.8	65.19	11.66
2003-04	443	256.68	57.9	30.39	10.91
2004-05	324	204.75	63.2	22.62	11.45
2005-06	501	388.53	77.6	51.98	11.68
2006-07	1049	785.68	74.9	90.95	11.4
2007-08	1093	884.37	80.9	87.63	11.91
2008-09	768	606.48	79.0	46	11.46
2009-10	756	641.59	84.9	70.66	11.54
2010-11	964	788.38	81.8	90.52	11.31
2011-12	1022	834.16	81.6	78.03	11.55
2012-13	800	700	87.5	79.5	11.40
2013-14	1054	886.37	82.00	77.20	11.41
2014-15* (Tentative)	1055	929.00	88.00	104.26	11.27

Seed is the most important basic input in crop production. Quality seed increases crop productivity by 10-15 per cent. Therefore, along with research, this research station is producing the healthy and quality breeder seed of released sugarcane varieties. In the year 2014-15, **77.42 ha** area was under seed production of different varieties and **84.82 Lakhs** of **two-eye budded setts** as well as **6.24 Lakhs** of **single eye bud polybag seedlings** were distributed to the Sugar Factories, State Department of Agriculture, farmers and other research organizations.

CENTRAL SUGARCANE RESEARCH STATION, PADEGAON.

SEASON & CLIMATE

(2013-15)

The Central Sugarcane Research Station, Padegaon is located in tropical zone, geographically at an elevation of 556 m above mean sea level on 18°-12"N latitude and 74°-10"E longitude.

The total rainfall received during July, 2013 to March, 2015 (21 months) was 1206.5 mm in 67 rainy days as against the normal rainfall of 1110.4 mm (21 months) indicating that the rainfall received during the season was 8.6 % more than the normal. The data on climatic parameters during the crop season (July, 2013 to March, 2015) along with averages based on last 81 years (1932-33 to 2014-15) recorded at the meteorological observatory located at this research station are presented in Table 2 and graphically shown in Fig.1. The effect of the season on sugarcane at various growth phases has been elucidated below.

1) Germination phase for Adsali crop (July. to Sept., 2013)

The rainfall received during germination phase was 369.6 mm in 22 rainy days as against the normal of 301.0 mm. The average maximum temperature during this period was 28.8°C and minimum temperature was 21.3°C. The maximum and minimum temperature was slightly less than average. The average relative humidity (morning) during this phase was 96.0 % which was 8.9 % more than the normal.

Evenly distributed rainfall, optimum temperature and high humidity resulted in good germination of Adsali crop of sugarcane.

2) Tillering phase (Oct-Dec., 2013) for *Adsali* and Germination phase for Preseason crop:

Total rainfall received during tillering phase was 37.5 mm which was 69.5 % less than the normal of last 81 years. The average maximum and minimum temperatures during this phase were 30.0 °C and 15.9 °C, respectively. The morning relative humidity was 96.3 % as against the normal 86.1 %. High humidity and low rainfall was not favorable for the tillering of *Adsali* sugarcane hence the productivity of *Adsali* sugarcane crushed during 2014-15 was slightly decreased. However, high humidity was also favorable for good germination of preseason sugarcane.

3) Early growth (*Adsali*)/Tillering (Preseason) and Germination phase (*Suru*) (Jan-Mar.2014)

During this phase the average maximum temperature was 31.6°C and average minimum temperature was 14.9°C, which was more than the normal i.e 12.6 °C. These temperatures were favourable for *Adsali* crop growth. Due to higher humidity (91.3 %) than

the average (78.2 %), tillering of preseasonal sugarcane and germination/tillering of *Suru* sugarcane was also satisfactory.

4) Desiccation phase (April to May, 2014)

The mean maximum temperature was lower (38.0°C) than the normal (39.8°C) while the mean minimum temperature (22.0°C) was more than the normal (21.2°C). The rainfall of 3 mm was received during this phase. All these meteorological parameters were favorable for crop growth and sugar recovery.

5) Grand growth (*Adsali*)/Early growth phase (Preseason and *Suru*) (June to Sept., 2014)

During this phase, the average maximum and minimum temperatures were 31.1°C and 22.4°C, respectively and slightly higher than normal i.e. optimum for crop growth. The total rainfall received during this phase was 448.9 mm in 26 rainy days as against the normal rainfall of 365.9 mm. The grand growth of *Adsali*, preseasonal and *Suru* sugarcane was good due to 22.7 % more rainfall than the normal during this growth phase.

6) Flowering and Maturity (*Adsali* and Preseason) Grand growth phase (*Suru*) (Oct Dec., 2014)

During this phase, the mean maximum and minimum temperatures were 29.9°C and 16.1 °C, respectively. Total rainfall received during this phase was 184.1 mm in 9 rainy days as against 163 mm average of last 81 years. The high humidity and optimum temperatures favored early and profuse flowering for all season planted crop. The 12.9 % more rainfall was received than the normal.

During Jan 2015 to March 2015, the mean maximum and minimum temperatures were 29.9 °C and 16.1 °C, respectively. The optimum maximum and minimum temperatures and dry season favored maturity and sugar recovery of sugarcane crop.

At tillering and early grand growth phase for *Adsali* sugarcane, the low rainfall (37.5 mm) was not favorable for the tillering of *Adsali* season. At maturity of *Adsali*, preseasonal and *Suru* sugarcane, the minimum temperature was (16.1 °C) which was as good as the average minimum temperature (15.5 °C) hence sugarcane maturity and accumulation of sugar resulted in almost same sugar recovery. The overall crop growth during this year was satisfactory.

Table 2. Average weather parameters at CSRS, Padegaon during June 2013 to March 2015.

Sr. No.	Temperature (°C)		Humidity (%)		Sunshine Hrs.	Rainfall (mm)	Rainy days
	Max.	Min.	Mor.	Eve.			
June 13	30.9	22.0	93	68	4.0	154.4	10
1. Germination phase for <i>Adsali</i> crop (Jul. to Sept., 2013)							
July 13	27.4	21.4	95	81	1.9	67.1	8
Aug 13	28.7	21.6	96	82	4.0	49.9	4
Sept 13	30.3	20.9	97	83	5.3	252.6	10
Average	28.8	21.3	96.0	82.0	3.7	123.2	7.3
Last 81 yrs avg	29.2	21.8	88.1	64.2	4.9	296.1	
2. Tillering phase (Oct-Dec., 2013) for <i>Adsali</i>/Germination phase for Preseason crop							
Oct 13	31.1	20.9	97	82	7.3	37.0	2
Nov 13	30.0	15.3	97	74	8.1	00.0	-
Dec 13	29.0	11.6	95	65	7.9	0.05	-
Average	30.0	15.9	96.3	73.7	7.8	12.4	2.0
Last 81 yrs avg	31.6	15.5	86.1	40.4	9.6	148.4	
3. Early growth (<i>Adsali</i>)/Tillering (Preseason) and Germination phase (<i>Suru</i>) (Jan-Mar.2014)							
Jan 14	29.4	12.7	96	48	7.1	-	-
Feb 14	31.1	12.5	88	48	8.5	4.3	1
Mar 14	34.3	19.4	90	54	7.8	10.9	2
Average	31.6	14.9	91.3	50.0	7.8	7.6	1.5
Last 81 yrs avg	32.4	12.6	78.2	46.0	11.5	68.2	
4. Desiccation phase (April to May, 2014)							
April 14	38.5	20.8	79	35	8.1	1.8	-
May 14	37.5	23.1	84	52	7.6	104.2	3
Average	38.0	22.0	81.5	43.5	7.9	53.0	3.0
Last 81 yrs avg	39.8	21.2	69.2	55.8	11.5	68.8	
5. Grand growth (<i>Adsali</i>)/Early growth phase (Preseason and <i>Suru</i>) (June to Sept., 2014)							
June 14	34.6	23.7	84	60	7.6	32.6	2
July 14	29.8	22.3	85	60	2.9	79.8	6
Aug 14	29.6	21.7	95	75	3.9	310.6	14
Sept 14	30.3	21.7	92	68	5.6	25.9	4
Average	31.1	22.4	89.0	65.8	5.0	112.2	6.5
Last 81 yrs avg	30.8	21.9	87.0	61.3	5.2	365.9	
6. Flowering and Maturity (<i>Adsali</i> and Preseason)/Grand growth phase (<i>Suru</i>) (Oct-March, 2015)							
Oct 14	31.2	20.0	93	60	6.9	65.8	5
Nov 14	30.3	16.7	93	49	7.6	86.7	3
Dec 14	28.1	11.7	95	48	7.5	31.6	1
Average	29.9	16.1	93.7	52.3	7.3	61.4	3.0
Last 81 yrs avg	31.6	15.5	86.1	40.1	9.6	163.0	
Jan 15	28.2	11.0	94	47	7.2	-	-
Feb 15	32.6	12.7	90	47	8.7	-	-
Mar 15	33.8	16.9	88	53	7.9	45.6	2
Average	31.5	13.5	90.7	49.0	7.9	45.6	2.0
Last 81 yrs avg	32.4	12.6	78.2	28.3	10.0	13.1	

The incidence of pests and diseases, in general, was as under.

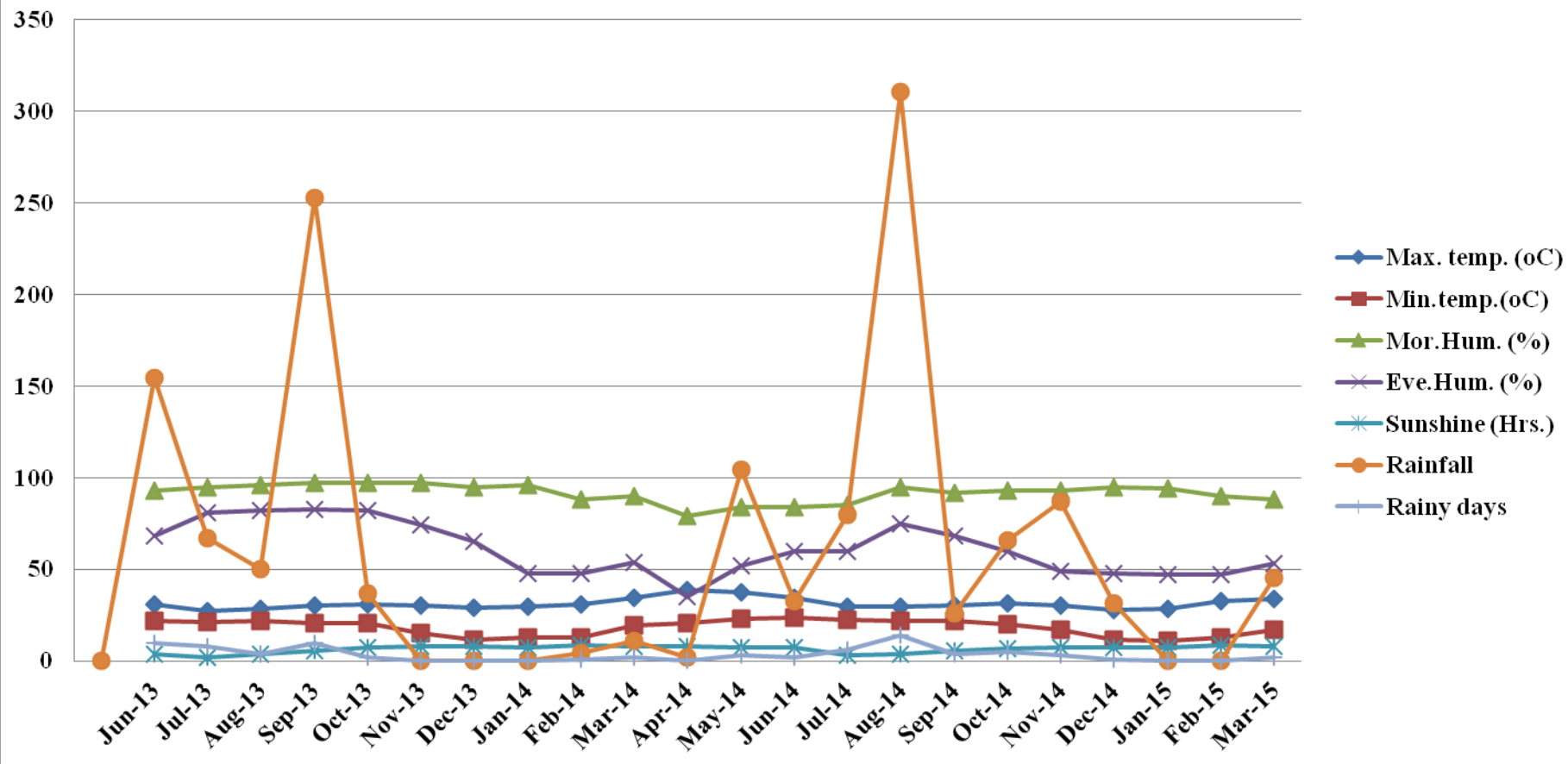
Table 3. Incidence of insect pests on sugarcane during 2014-15

Sr. No.	Name of pest	Extent of incidence (%)
1	Early shoot borer	15-24
2	Internodes borer	18-22
3	Top shoot borer	In trace to low
4	Mealy bugs	20-30
5	Wooly aphids	In traces to high
6	Scale insect	In trace to low
7	White fly	In traces
8.	Sugarcane Pyrilla	In traces

Table 4. Incidence of diseases on sugarcane during 2014-15

Sr.No.	Name of disease	Extent of incidence (%)
1	Rust	2-20%
2	G.S.D	1-3%
3	Smut	1-10%
4	Brown spot	10-60%
5	Pokka Boeing	2-15%
6	Ring Spot	20 %

Central Sugarcane Research Station, Padegaon
 Fig. 1. Weather parameter 2013-15



**ALL INDIA CO-ORDINATED RESEARCH PROJECT ON SUGARCANE
CENTRAL SUGARCANE RESEARCH STATION, PADEGAON**

**Dr. Suresh M. Pawar
Sugarcane Specialist**

Staff Position: 2014-15

A) AICRP(S) Scheme

Sr. No.	Name	Designation
Sugarcane Breeder		
1	Dr. D.E.Kadam	Sugarcane Breeder
Sugarcane Agronomist		
2.	Dr. P.M. Chaudhari	Junior Agronomist
Assistant Entomologist		
3	Dr. M.P. Badgujar	Assistant Entomologist
Assistant Pathologist		
4	Dr. D. R. Murumkar	Assistant Pathologist
Technical Assistant (04)		
1	Shri. S. U. Deshmukh	Technical Assistant
2	Shri. K. C. Ombase	---,,---
3	Shri. S.K.Ghodke	---,,---
4	Smt.M.M.Keskar	---,,---
Lab. Assistant (02)		
1	Shri. A. M. Dubal	Lab. Assistant
2	Shri. L. P. Sawant	---,,---

B) STATE SCHEME

1	Shri. D. S. Thorave	Junior Research Assistant and additional charge of Senior Research Assistant
2	Shri. A.B.Bhosale	Agril. Assistant
3	Shri. M M. Bhuse	Agril. Assistant

Table: 5. Year wise sanctioned grants and expenditure of last 5 years of AICRP (S)

Sr. No.	Year	Sanctioned grants (Rs. Lakhs)				Expenditure Rs. (lakhs)			
		Recurring with T.A.	Non recurring	Pay and Allowances	Total	Recurring with T.A.	Non recurring	Pay and Allowances	Total
1	2010-11	4.60	--	25.52	30.12	3.81	--	30.79	34.60
2	2011-12	4.60	--	25.52	30.12	3.35	25.31	59.23	62.83
3	2012-13	8.00	--	118.69	126.79	7.17	--	52.46	59.63
4	2013-14	8.00	--	72.72	80.72	7.00	--	61.25	68.25
5	2014-15	8.00	--	56.56	64.56	6.23	--	57.18	63.41

Central Sugarcane Research Station, Padegaon

Decision and Action Taken Report 2014-15

30th Meeting Biennial workshop of AICRP on Sugarcane held at Indian Institute on Sugarcane Research, Lucknow, Uttarpradesh. Minutes of Technical session on varietal improvement held on 1st – 2nd November, 2014.

Sr.No.	Decision	Action taken
1	All the zonal standards must be included when new proposals are presented for inclusion in ZVT for better comparison. Red rot rating of both plug and nodal method should be provided.	Care was taken while proposing new proposals.
2	The centres may send the data on details of the parents in the National Hybridization Garden. Any new parents sent for inclusion in the NHG must be provided with the passport data in the format provided by the ICAR- SBI, Coimbatore.	Care was taken for inclusion of new parents as per the format provided by the ICAR- SBI, Coimbatore and 99 crosses were implemented during 2014-15.
3	Enough care may be taken by the centres to raise 5,000 to 10,000 seedlings for initiating an effective selection programme.	Care was taken while raising seedlings 7528 seedlings was raised during 2014-15.
4.	Diverse parents may be selected for making biparental crosses to generate more genetic variability.	Care was taken while doing sugarcane hybridization programme and 99 crosses were implemented during 2014-15.

RESEARCH HIGHLIGHTS (2014-15)

A) SUGARCANE BREEDING:

1) Name of Trial: Initial Varietal Trial – (Early)

The cane yield and CCS yield differences, CCS% and Sucrose % differences due to different cultures were found to be statistically significant. However, the culture CoM 11082 (125.92 t/ha) was recorded significantly the highest cane yield over all the cultures and checks except Co 11001 (120.32 t/ha), Co 11016 (117.90 t/ha), Co 11017 (114.19 t/ha), Co 11018 (116.20 t/ha), CoM 11081(113.83 t/ha), CoN 11071 (119.58 t/ha), CoN 11072 (121.04 t/ha), and check CoC 671 (115.04 t/ha) which were at par with it. The same culture CoM 10082 (20.69 t/ha) out yielded in case of CCS yield over all other cultures and checks except Co 11016 (18.44 t/ha), CoN 11071 (18.46 t/ha) and check CoC 671 (18.97 t/ha) which were at par with it.

As far as quality is concerned the check CoC 671 was recorded significantly highest CCS % (16.49 %) was recorded significantly the highest CCS % over all the cultures except CoM 11082(16.43 %) and check Co 85004 (16.15 %) which were at par with it. The check CoC 671 was recorded significantly the highest Sucrose % (22.71 %) over all the cultures and checks except CoM 11082 (22.61 %) which was at par with it.

2) Advanced Varietal Trial (Early) –I Plant :

The differences due to various genotypes in respect of cane yield and CCS yield, CCS % and sucrose % were found to be statistically significant. The culture Co 09004 was reported significantly superior cane yield (131.85 t/ha) over all the cultures and checks except the culture Co 09007(124.77 t/ha) which was at par with it. The same culture Co 09004 was reported significantly superior CSS yield (19.99 t/ha) over all the cultures and checks.

As far as quality is concerned the culture Co 09004 was reported significantly superior CCS % (15.18 %) over all the cultures and checks except the culture CoN 09072 (14.66 %) and checks CoC 671 (14.79 %) and Co 85004 (14.66 %) which were at par with it. and also the same culture Co 09004 was reported significantly superior Sucrose % (21.26 %) over all the cultures and checks except the check CoC 671 (20.76 %) which was at par with it.

3) Initial Varietal Trial – (Midlate) :

The yield differences due to various genotypes in respect of cane yield, CCS yield, CCS % and sucrose % were found to be statistically significant. The genotype CoN 11073 was recorded significantly the highest cane yield (150.95 t/ha) than all other genotypes and checks.

The culture Co 11021 (18.12 t/ha) out yielded in case of CCS yield over all other cultures and checks except the cultures Co 11005 (18.03 t/ha), Co 11020 (16.31 t/ha), Co 11021 (18.12 t/ha), CoM 11086 (17.00 t/ha), CoM 11087 (16.90 t/ha), CoN 11073 (16.15 t/ha), and check Co 86032 (17.72 t/ha) which were at par with it.

As far as quality is concerned the highest CCS % (15.25%) was significantly recorded by the culture Co 11005 over genotypes Co 11019 (12.90 %), Co 11022 (12.62 %), CoM 11085 (13.61 %) CoN 11073 (12.84 %) and remaining genotypes and checks were at par with it. The same culture Co 11005 was reported significantly superior sucrose % (21.28 %) over genotypes Co 11019 (18.26 %), Co 11022 (18.00 %), CoM 11085 (19.18 %), CoN 11073 (18.14 %) and remaining genotypes and checks were at par with it.

B) SUGARCANE AGRONOMY:

A) Ongoing experiment

Title 1: AS-42 Agronomic evaluation of promising new sugarcane genotypes (Spring Early)

The genotype Co 06002 was found significantly superior for cane and CCS yields than the other genotypes followed by PI 06032. The application of 125 % recommended dose of nitrogen produced significantly higher CCS yields which was found at par with 100% recommended dose of nitrogen. While cane yield was not affected by different nitrogen levels.

Title 2: AS-42 Agronomic evaluation of promising new sugarcane genotypes (Spring Midlate)

The sugarcane variety Co 86032 recorded significantly higher cane and CCS yields than the other genotypes and it was followed by Co-06015. The application of 125 percent recommended dose of nitrogen produced significantly higher cane yield and found at par with 100 % recommended dose of nitrogen.

Title 4: AS-66 Priming of cane node for accelerating germination.

The priming cane node with cattle dung plus cattle urine and water in 1:2:5 ratio (T₄) recorded significantly the highest cane and CCS yield (138.81 and 20.18 t ha⁻¹). However, it was at par with treating cane node in hot water in 50°C and urea solution (3%) for 2 hours (T₃) (133.13 and 19.41 t ha⁻¹), than the rest of the treatment.

Title 5: AS-65 Enhancing sugarcane productivity and profitability under Wheat-Sugarcane Cropping System.

The autumn planted sugarcane produced significantly higher cane yield and CCS yield (145.21 t ha⁻¹ and 20.61 t ha⁻¹, respectively). Under intercropping system, autumn planted sugarcane + wheat (1:2) produced significantly higher cane yield and CCS yield (135.62 t ha⁻¹ and 18.54 t ha⁻¹, respectively). The intercropping of autumn planted sugarcane + wheat (1:2) was found to be more remunerative.

Title: AS-64 Impact of integrated application of organics and inorganics in improving soil health and sugarcane productivity.

The application of recommended dose fertilizers as per soil test along with 20 t ha⁻¹ FYM for preseasonal sugarcane was found beneficial in terms of yield, quality and soil health.

A) Completed experiment

Title 1: AS-42 Agronomic evaluation of promising new sugarcane genotypes (Spring Early)

The genotype Co 06002 was found significantly superior for cane and CCS yields than the other genotypes followed by PI 06032. The application of 125 % recommended dose of nitrogen produced significantly higher cane and CCS yields followed by 100 % recommended dose of nitrogen.

Title 2 : AS-42 Agronomic evaluation of promising new sugarcane genotypes (Spring Midlate)

The sugarcane variety Co 86032 recorded significantly higher cane yield than the other genotypes and it was followed by Co06015. The application of different levels of nitrogen shown non significant results with respect to cane and CCS yields.

Title 4: AS-66 Priming of cane node for accelerating germination.

The priming cane node with cattle dung plus cattle urine and water in 1:2:5 ratio (T₄) recorded significantly the highest cane and CCS yield (135.43 and 17.82 t ha⁻¹) and the cane yield was at par with treating cane node in hot water in 50°C and urea solution (3%) for 2 hours (T₃) (131.63 t ha⁻¹), CCS yield was found at par with treatment T₃, T₂ and T₅. The lowest cane and CCS yield was observed in unprimed cane node.

B) SUGARCANE ENTOMOLOGY:

- In **IVT (Early)** trial, none of the entries recorded less susceptible reaction to mealy bug where as highly susceptible reaction to scale insect. The two test genotypes each recorded less susceptible reaction to early shoot borer as well as internode borer. The entry Co 11017 recorded highest incidence to internode borer (60%), whereas showed least incidence to mealy bug (70%) and scale insect (no incidence). The entry CoN 11071 recorded least incidence to internode borer (20%) and scale insect (no incidence), where as highest incidence to mealy bug (cent per cent). The genotypes CoN 11072 observed least incidence to early shoot borer (13.76%), where whereas per cent incidence to mealy bug. The variety Co 85004 recorded highest incidence to early shoot borer (35.88%) as well as mealy bug (cent per cent), where as lowest incidence to internode borer (20%). The cumulative per cent infestation of early shoot borer ranged from 13.76 to 35.88 per cent. Regarding internode borer, the incidence ranged from 20 to 60 per cent. The incidence of mealy bug, ranged from 70 to cent per cent. In case of scale insect the incidence ranged from 0 to 23.33 per cent.
- In **IVT ML** trial, The test genotype Co 11023 showed highest incidence of early shoot borer (47.69%) as well as internode borer (73.33%). The entries CoM 11086 and the check, Co 86032 recorded least incidence of internode borer (26.67%), where as highest incidence to mealy bug (cent per cent). Among total test genotypes, none of the entry observed less susceptible reaction to internode borer as well as mealy bug. All test genotypes showed less susceptible reaction to top shoot borer, where as highly susceptible reaction to mealy bugs. The cumulative per cent infestation of early shoot borer ranged from 13.17 to 47.69 per cent. The incidence of internode borer ranged from 26.67 to 73.33 per cent. Regarding mealy bug, the incidence ranged from 66.67 to cent per cent. In case of scale insect, the incidence ranged from 0 to 13.33 %.
- In **AVT (Early I PL) trial**, The entry Co 09004 showed no incidence to scale insect and least incidence to early shoot borer (10.78%), where as highest incidence of internode borer (73.33%). The entry Co 09007 recorded least incidence of mealy bug (86.67%), where as highest incidence of scale insect (23.33%) among the tested genotypes. The check variety, Co 85004 showed least incidence of internode borer (20%), where as highest incidence of early shoot borer (31.39%) as well as mealy bug (93.33%). Among 6 genotypes tested, 2 genotypes showed less susceptible early shoot borer, one genotype less susceptible to internode borer and four genotypes for scale insect. All test genotypes observed less susceptible reaction to top shoot borer, where as highly susceptible reaction to mealy bug. The cumulative per cent infestation of early shoot borer ranged from 10.78 to 31.39 per cent. In case of internode borer, the infestation ranged from 20 to 73.33 per cent. Regarding mealy bug, the incidence ranged from 86.67 to 93.33 per cent. The incidence of scale insect ranged from 0 to 23.33 per cent.
- In case of “ **Survey and surveillance of sugarcane insect pests,**” 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 10.00 to 24.33 per cent. The incidence of internode borer was also observed up to 50.00 per cent. During this year (2014-15), the incidence of mealy bug was recorded up to 50.00 %. However, the intensity of mealy bug ranged between 2.67 to 6.33 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 scale, *Aclerda* sp. nr. *takahashii* belongs to family *Aclerdidae* recorded on ratoon crop of sugarcane at Central Sugarcane Research Station, Padegaon.

- In the experiment, **“Monitoring of insect pests and bio-agents in Sugarcane agro-ecosystem”**, 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) (10.28%), when the maximum and minimum temperature was 37.10 C and 23.40 C, respectively. In case of sugarcane woolly aphid, the maximum incidence (28.41 woolly aphid/2.5 m²/3leaf) was recorded in 51 MW of 2014, when the maximum and minimum temperatures were 26.0 and 9.40C, respectively. The peak activity of *Encarsia flavoscutellum* was observed in 52 MW (last week of December 2014) @ 07 to 28 numbers per leaf sugarcane having woolly aphid infestation.
- The studies on, **“Standardization of simple, cost effective techniques for mass multiplication of Sugarcane bio-agents,”** revealed that 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 38 and 48 MW. However, it was developed in traces in the experimental field up to 52 MW.
- The studies on, **“Management of borer complex of sugarcane through lures. ,”** revealed that the highest number of moth catches in case of early shoot borer were trapped in 18 MW (5 numbers/ trap), when the maximum and minimum temperature was 39.0 and 22.80 C, respectively. The maximum average pheromone trap catches of internode borer was recorded in 20 MW (4 number per trap), when the maximum and minimum temperature was 37.1 and 23.40 C, respectively. In case of top shoot borer, the highest number of moth catches were observed in 19 MW (3 number per trap), when the maximum and minimum temperature was 35.8 and 21.90 C, respectively.
- The studies on, **“Bioefficacy of new insecticides for the control of sugarcane early shoot borer,”** revealed that the treatment 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, having least cumulative incidence of early shoot borer (14.08 per cent) and recorded highest cane yield (105.56 t / ha).

D) SUGARCANE PATHOLOGY:

Completed Experiment:

Recommendation: Three sprays of Mancozeb 75 WP @ 30 g in 10 litre water at 15 days interval after disease appearance are recommended for effective and economical control of sugarcane rust.

Ongoing Experiments:

1. In the "Evaluation of zonal varieties/genotypes for resistance to smut under artificial conditions, one genotype i.e. CoM 11081 from IVT Early, 02 genotypes viz., Co 09004 and Co 09007 from AVT–Early (I Plant) and 11 genotypes viz., Co 11005, Co 11012, Co 11021, Co 11022, Co 11023, Co 11024, CoM 11085, CoM 11086, CoM 11087, CoN 11073 and CoN 11074 from IVT-Midlate showed resistant reaction to smut disease.
2. Out of 43 genotypes, from AICRP trials, **38** genotypes showed **resistant** reaction to YLD disease while **04** genotypes exhibited **moderately resistant** and **one** genotype recorded **moderately susceptible**, reaction to YLD disease under natural conditions in the field.
3. During the year 2014-2015, the incidence of diseases like smut, grassy shoot, Pokka bong, rust, YLD and brown spot was observed in different areas. Smut incidence was noticed upto 40% on CoM 261. The incidence of yellow leaf disease (YLD) was noticed from Karveer tahsil of Kolhapur district on CoM 86032. The grassy shoot disease (GSD) was noticed in Chopda and Yaval tahsil of Jalgaon districts on the sugarcane variety Siddhagiri-1243 and CoM 265 (ratoon). Pokka boeng was observed on Co 98071, CoVSI 3102 and CoVSI 9805 in Jalgaon and Kolhapur district. The incidence of rust disease was noticed upto 25% in Faizpur-Nhavi area from Yaval tahsil of Jalgaon district on the sugarcane variety Siddhagiri-1243. Moreover, 10-15% rust incidence was noticed on Co 92005 and CoM 265 from Karveer tahsil of Kolhapur district and Kannad tahsil of Aurangabad district. Brown spot was a major problem observed predominantly in Satara, Sangli and Kolhapur districts because of frequent rains and high humidity during rainy season. The incidence of ring spot disease was noticed upto 30% in Karveer, Gargoti and Aajra tahsil of Kolhapur district on the sugarcane variety Co 92005, whereas trace incidence was noticed on Co 86032 and Co 7527.
4. In the chemical management of rust of sugarcane, Mancozeb 75 WP @ 0.3 % was found to be the most effective fungicide which recorded the least disease intensity and the highest cane yield coupled with superior juice quality parameters.
5. In the experiment on standardization of inoculation method for screening sugarcane genotypes for resistance to brown rust, the leaf whorl inoculation with urediniospores suspension recorded higher average no. of rust pustules (21.86 per sq. inch) and higher no. of leaves bearing rust pustules (11.6) as compared to the clip inoculation method (19.76 per sq. inch and 10.6 respectively) as per ICAR programme. This indicates that the leaf whorl inoculation method is better for screening than the clip inoculation method.

SUGARCANE BREEDING

I) State Programme: SB –I

A) Germplasm:

* Maintenance of sugarcane germplasm resources for hybridization at Padegaon.

Total **550** different sugarcane genotypes including following sugarcane species are maintained in germplasm block at CSRS, Padegaon.

Sr. No.	Species	Variety
1	<i>Saccharum officinarum</i>	1. Gungera
		2. IJ 76-564
2	<i>Saccharum robustum</i>	1. NG 77-57
		2. IJ 79-436
3	<i>Saccharum sinense</i>	1. Kalkya
		2. Uba seedlings
4	<i>Saccharum barberi</i>	1. Khari
		2. Mungo 237
5	<i>Saccharum spontaneum</i>	1. SES 72
		2. SES 113B
		3. SES 114
		4. SES 147B

* Maintenance of sugarcane germplasm resources for hybridization at ARS, Radhanagari.

Total **98** different sugarcane genotypes are maintained at Agricultural Research Station, Radhanagari and also used for hybridization work.

B) Sugarcane Hybridization Programme made at SBI, Coimbatore during 2014 – 15

Station crosses			
Sr. No.	Cross		
1	Co 1158	X	Co 62198
2	CoN 05071	X	Co 62198
3	CoN 05071	X	NCo 310
4	Co 740	X	Co 62198
5	Co 1158	X	CP 62-23
6	Co 86002	X	Co 7915
7	Co 0240	X	Co 99006
8	CoSnk 05-103	X	Co 775
9	CoSnk 03-044	X	Co 62198
10	Co 0240	X	Co 62198
11	ISH 100	X	Co 89029
12	Co 8213	X	CoSnk 03-044
13	C 79180	X	Co 1307
14	CoM 92220	X	Bo 96
15	Co 8213	X	ISH 176
16	CoM 9220	X	Co 775
17	Co 419	X	CoA 7602
18	Co 62198	X	Co 775
19	LG 05460	X	Co 87268

20	Co 99006	X	Co 94008
21	Co 8371	X	CoC 671
22	Co 94012	X	CoT 8201
23	85 R 186	X	Co 94008
24	85 R 186	X	CoSe 92423
25	Co 94012	X	Co 11004
26	Co 0118	X	85 R 186
27	Co 94012	X	CoH 106
28	Co 87044	X	Co 86249

Zonal crosses			
Sr. No.	Cross		
1	Co 86002	X	Co 1148
2	Co 0312	X	Co 0209
3	Co 8371	X	Co 99006
4	Co 8371	X	Co 86011
5	Co 8213	X	Co 86011
6	ISH 41	X	Co 94008
7	Co 94012	X	Co 94008
8	CoV 94101	X	Co 97015
9	CoC 671	X	CoT 8201
10	CoC 671	X	Co 94008
11	Co 86032	X	Co 94005
12	Co 86032	X	Co 86250
13	CoM 0265	X	CoC 671
14	CoM 0265	X	Co 99006

Polycrosses	
Sr.No.	Female
1	Co 94012
2	CP 52-68
3	CoC 90063
4	CoV 89101
5	Co 7201
6	CoA 7602
7	Co 2000-10
8	ISH 100
9	86 V 46
10	CoC 671
11	CoM 0265
12	Co 85002
13	Co 8371

General Collection	
Sr.No.	Female
1	ISH 100
2	Co 7219

3	CoT 8201
4	85R186
5	Co 8213
6	Co 86032
7	Co 92008
8	CoC 671
9	CoC 90063
10	Co 8371
11	Co 740
12	MS 68/47
13	Co 92020

Hybridization programme at ARC, Agali during 2014 – 15			
Sr. No.	Cross		
1	MS 68/47	X	CoC 671
2	CoM 0265	X	CoC 671
3	CoH 104	X	C 81615
4	Co 7219	X	CoH 56
5	CoC 8201	X	CoV 92102

Hybridization programme at Padegaon during 2014 – 15

Sr. No.	Cross		
1	MS 6847	X	MS 10001
2	MS 6847	X	Co 94008
3	Co 62175	X	MS 0602
4	Co 8371	X	Co 775
5	CoC 671	X	Co 85004
6	CoC 671	X	Co 94008
7	CoC 671	X	CoM 0265
8	CoM 0417	X	CoC 671
9	Co 9318	X	Co 94008
10	CoG 93079	X	CoC 671

Hybridization programme at ARS, Radhanagari during 2014 – 15

S. N.	Cross		
1	Co 94012	X	CoVSI 05131
2	MS 0602	X	Co 61298
3	Co 62174	X	CoPDN 13002
4	CoM 09069	X	Co 775
5	CoM 09810	X	CoPDN13002
6	CoM 10047	X	Co 775
7	CoM 09064	X	CoSNK 03044
8	Co 62174	X	Co 92005
9	MS 6847	X	85R186
10	Co 62175	X	CoM 9084

11	CoM 0238	X	CoM 7617
12	Co 8371	X	MS 0602
General Collection			
1	MS 6847		
2	Co 94012		
3	Co 8371		
4	CoPDN 13002		

C) Ground Nursery:

Total **7528** seedlings were transplanted in ground nursery on 08/01/2015

Seedlings raised from different crosses during 2014 -15				
Station crosses - SBI, Coimbatore				
S. N.	Cross			Seedling transplanted in the field
1	Co 8747	X	Co 775	80
2	Co 8371	X	Co 775	960
3	Co 8371	X	Co 94008	07
4	MS 6847	X	Co 94008	100
5	ISH 100	X	Co A 7602	15
6	Q 63	X	Co 775	00
7	CoA 7602	X	Co 88025	42
8	CoH 70	X	Co775	2080
9	Co 94012	X	Co 1148	55
10	Co 94012	X	Co 8371	42
11	Co 98010	X	Co 94012	00
12	85 R 186	X	Co 775	120
13	CoA 90081	X	Co 88025	00
14	CoC 671	X	Co 97015	08
15	Co 2000-10	X	CoC 671	40
16	CoM 0265	X	CoC 671	02
17	Co 2000-10	X	Co 88025	04
18	CoA 99081	X	CoC 671	06
19	CoOr 03152	X	Co 94008	40
20	Co 86010	X	Co 92008	40
21	MS6847	X	Co 92008	400
22	CoC 671	X	SP 80-185	02
23	Co 2000-10	X	Co 8340	40
24	CoC 671	X	85 R 186	06
25	Co 7219	X	CoV 92102	00
26	Co 0239	X	Co 88013	00
27	Co 94007	X	ISH 139	02
28	ISH 307	X	Co 94005	200
29	Co 8208	X	98R278	40
30	ISH 110	X	CoT 8201	00
31	Co 86032	X	Co 94008	80
32	Co 92007	X	ISH 2	120

33	CoA 7602	X	ISH 139	00
	Total			4531

Zonal crosses				
S.N.	Cross			Seedling transplanted in the field
1	Co 86002	X	Co 1148	160
2	Co 85002	X	Co 62174	80
3	Co 8213	X	Co 86011	00
4	Co 8213	X	CoT 8201	08
5	CoV 94101	X	Co 97015	06
6	Co 8371	X	CoT 8201	200
7	CoC 671	X	CoT 8201	02
8	CoC 671	X	Co 94008	00
9	Co 740	X	Co 775	80
10	CoM 0265	X	Co 99006	02
11	Co 86032	X	Co 86250	01
12	Co 8371	X	Co 86011	320
13	CoM 0265	X	Co 775	100
	Total			959

Polycrosses		
S.N.	Female	Seedling transplanted in the field
1	CoM 0265	02
2	ISH 100	12
3	Co 94012	40
4	Co 85002	560
5	CoA 7602	22
6	86V46	06
7	CoC 671	00
8	CP 52-68	00
9	Co 2000-10	12
10	CoC 90063	00
11	Co 7201	10
12	Co 8371	80
	Total	744
General Collection		
S.N.	Clone	Seedling transplanted in the field
1	Co 7424	04
2	Co 87271	01
3	CoM 6806	00
4	Co 87267	01
5	CoA 7602	04
6	CoM 9220	800
7	CoN 05071	21
8	Co 99006	280

9	CoM 9206	00
10	CoTl 85118	120
	Total	1231

Padegaon crosses				
S. N.	Cross			Seedling transplanted in the field
1	MS 6847	X	MS 0602	40
2	MS 6847	X	Co 94008	18
3	CoM 0265	X	MS 0602	00
4	Co 94012	X	CoM 0265	00
5	CoM 0265	X	CoC671	01
6	CoC 671	X	MS 6847	00
7	CoM 0261	X	Co 94012	00
8	CoM 0261	X	CoC671	00
	Total			59

ARS, Radhanagari crosses				
S. N.	Cross			Seedling transplanted in the field
1	MS 10001	X	CoM 0238	00
2	CoM 94012	X	Co 8371	00
3	Co 62175	X	CoM 0254	00
4	CoM 91010	X	CoC 671	3
5	MS 9601	X	Co7219	00
6	MS 9601	X	CoM 94012	00
7	C M 11001	X	TC 434	00
8	85 R186	X	CoC 671	00
9	MS 0219	X	Co 91010	1
10	CoM 11001	X	MS 0602	00
11	MS 10001	X	CoM 11001	00
12	CoM 0272	X	MS 9601	00
13	CoM 0272 PC	X		00
14	CoM 0265 GC			00
15	CoC 671 GC			00
	Total			04
	Grand Total			7528

Programme SB- (AICRP on Sugarcane) 2014-15

1) Name of Trial: Initial Varietal Trial – (Early)

Details	Padegaon
Design	RBD
Replications	2
Treatments	13 + 3 = 16
Plot Size:	
Gross	6 M X 6 R
Net	5 M x 4 R
Planting date	15.01.2014
Harvesting date	18.01.2015
Table No.	6

Results: Table: - 6

The cane yield and CCS yield differences, CCS% and Sucrose % differences due to different cultures were found to be statistically significant. However, the culture CoM 11082 (125.92 t/ha) was recorded significantly the highest cane yield over all the cultures and checks except Co 11001 (120.32 t/ha), Co 11016 (117.90 t/ha), Co 11017 (114.19 t/ha), Co 11018 (116.20 t/ha), CoM 11081(113.83 t/ha), CoN 11071 (119.58 t/ha), CoN 11072 (121.04 t/ha), and check CoC 671 (115.04 t/ha) which were at par with it. The same culture CoM 10082 (20.69 t/ha) out yielded in case of CCS yield over all other cultures and checks except Co 11016 (18.44 t/ha), CoN 11071 (18.46 t/ha) and check CoC 671 (18.97 t/ha) which were at par with it.

As far as quality is concerned the check CoC 671 was recorded significantly highest CCS % (16.49 %) was recorded significantly the highest CCS % over all the cultures except CoM 11082(16.43 %) and check Co 85004 (16.15 %) which were at par with it. The check CoC 671 was recorded significantly the highest Sucrose % (22.71 %) over all the cultures and checks except CoM 11082 (22.61 %) which was at par with it.

2) Name of Trial: Advanced Varietal Trial (Early) –I Plant

Details	Padegaon
Design	RBD
Replications	4
Treatments	3 + 3 = 6
Plot Size:	
Gross	6 m x 8R
Net	5 m x 6R
Planting date	17.01.2014
Harvesting date	19.01.2015
Table. No.	7

Results: Table. : 7

The differences due to various genotypes in respect of cane yield and CCS yield, CCS % and sucrose % were found to be statistically significant. The culture Co 09004 was reported significantly superior cane yield (131.85 t/ha) over all the cultures and checks except the culture Co 09007(124.77 t/ha) which was at par with it. The same culture Co 09004 was reported significantly superior CSS yield (19.99 t/ha) over all the cultures and checks.

As far as quality is concerned the culture Co 09004 was reported significantly superior CCS % (15.18 %) over all the cultures and checks except the culture CoN 09072 (14.66 %) and checks CoC 671 (14.79 %) and Co 85004 (14.66 %) which were at par with it. and also the same culture Co 09004 was reported significantly superior Sucrose % (21.26 %) over all the cultures and checks except the check CoC 671 (20.76 %) which was at par with it.

3) Name of Trial: Initial Varietal Trial – (Midlate)

Details	Padegaon
Design	RBD
Replications	2
Treatments	14 + 2 = 16
Plot Size:	
Gross	6 M x 6 R
Net	5 M x 4 R
Planting date	07.01.2014
Harvesting date	12.01.2015
Table. No.	8

Results: Table: - 8

The yield differences due to various genotypes in respect of cane yield, CCS yield, CCS % and sucrose % were found to be statistically significant. The genotype CoN 11073 was recorded significantly the highest cane yield (150.95 t/ha) than all other genotypes and checks.

The culture Co 11021 (18.12 t/ha) out yielded in case of CCS yield over all other cultures and checks except the cultures Co 11005 (18.03 t/ha), Co 11020 (16.31 t/ha), Co 11021 (18.12 t/ha), CoM 11086 (17.00 t/ha), CoM 11087 (16.90 t/ha), CoN 11073 (16.15 t/ha), and check Co 86032 (17.72 t/ha) which were at par with it.

As far as quality is concerned the highest CCS % (15.25%) was significantly recorded by the culture Co 11005 over genotypes Co 11019 (12.90 %), Co 11022 (12.62 %), CoM 11085 (13.61 %) CoN 11073 (12.84 %) and remaining genotypes and checks were at par with it. The same culture Co 11005 was reported significantly superior sucrose % (21.28 %) over genotypes Co 11019 (18.26 %), Co 11022 (18.00 %), CoM 11085 (19.18 %), CoN 11073 (18.14 %) and remaining genotypes and checks were at par with it.

Technical Programme of AICRP on Sugarcane: (2015-16)

A) SUGARCANE BREEDING:

1. Initial Varietal Trial - Early

Entries (12)	:	Co 12001, Co 12003, Co 12006, Co 12007, Co 12008, CoM 12081, CoM 12082, CoM 12083, CoN 12071, CoN 12072, CoT 12366 and CoT 12367
Standards (3)	:	Co 85004, Co 94008 and CoC 671
Design	:	Randomized Block Design
Replications	:	Two
Plot size	:	Gross: 6m x 6r x 1.2 m Net : 5m x 4r x 1.2 m
Seed rate	:	12 buds per metre
Planting date	:	17.01.2015
Crop duration	:	10 months

2. Advanced Varietal Trial (Early) – I Plant

Entries (8)	:	Co 10004, Co 10005, Co 10006, Co 10024, Co 10026, Co 10027, CoT 10366 and CoT 10367
Standards (3)	:	Co 85004, Co 94008 and CoC 671
Design	:	Randomized Block Design
Replications	:	Three
Plot size	:	Gross: 6m x 8r x 1.2 m Net : 5m x 6r x 1.2 m
Seed rate	:	12 buds per metre
Planting date	:	15.01.2015
Crop duration	:	10 months

3. Advanced Varietal Trial (Early) – II Plant

Entries (3)	:	Co 09004, Co 09007 and CoN 09072
Standards (3)	:	Co 85004, Co 94008 and CoC 671
Design	:	Randomized Block Design
Replications	:	Four
Plot size	:	Gross: 6m x 8r x 1.2 m Net : 5m x 6r x 1.2 m
Seed rate	:	12 buds per metre
Planting date	:	4.2.2015
Crop duration	:	10 months

4. Advanced Varietal Trial (Early) – Ratoon

Entries (3)	:	Co 09004, Co 09007 and CoN 09072
Standards (3)	:	Co 85004, Co 94008 and CoC 671
Design	:	Randomized Block Design
Replications	:	Four
Plot size	:	Gross: 6m x 8r x 1.2 m Net : 5m x 6r x 1.2 m
Seed rate	:	12 buds per metre
Ratooning date	:	After harvest of AVT – I Plant
Crop duration	:	9 months

5. Initial Varietal Trial – Midlate

Midlate (15)	:	Co 12009, Co 12012, Co 12014, Co 12016, Co 12017, Co 12019, Co 12021, Co 12024, CoM 12084, CoM 12085, CoM 12086, CoN 12073, CoN 12074, CoT 12368 and VSI 12121.
Standards (2)	:	Co 86032 and Co 99004
Design	:	Randomized Block Design
Replications	:	Two
Plot size	:	Gross : 6m x 8r x 1.2 m Net : 5m x 6r x 1.2 m
Seed rate	:	12 buds per metre
Planting date	:	13.01.2015
Crop duration	:	12 months

6. Advanced Varietal Trial (Midlate) – I Plant

Entries (11)	:	Co 09009, Co 10015, Co 10017, Co 10031, Co 10033, CoM10083, CoT 10368, CoT 10369, CoVC 10061, PI 10131 and PI 10132.
Standards (2)	:	Co 86032 and Co 99004
Design	:	Randomized Block Design
Replications	:	Two
Plot size	:	Gross : 6m x 8r x 1.2 m Net : 5m x 6r x 1.2 m
Seed rate	:	12 buds per metre
Planting date	:	07.1.2015
Crop duration	:	12 months

7. Evaluation for drought tolerance (I Plant Crop):

Entries (15)	:	AS 04-245, MA 5/5, MA 5/37, GU 07-3774, CYM 07-986, GU 07-3849, GU 07-2276, AS 04-635, AS 04-1687, AS 04-2097, SA 04-472, AS 04-1689, BM 1022173, SA 04-496, SA 04-409
Standards (2)	:	Padegaon : CoM 88121 and CoM 0265
Design	:	Split plot (Main plot treatments I. Drought II. Control (Recommended practices) (Sub plot treatments – test clones)
Replications	:	Two
Plot Size	:	6m X 2r X 0.90 m
Seed rate	:	12 buds per meter
Planting date	:	20.01.2015
Crop Duration	:	12 months

SEED MULTIPLICATION

I. Multiplication of IVT (2014-15) entries at the centres: The seed of the following entries will be multiplied at the centres during 2015-16:

Early (13) : Co 11001, Co 11004, Co 11016, Co 11017, Co 11018, CoM 11081, CoM 11082, CoM 11083, CoM 11084, CoN 11071, CoN 11072, CoT 11366 and PI 11131

Midlate (14) : Co 11005, Co 11007, Co 11012, Co 11019, Co 11020, Co 11021, Co 11022, Co 11023, Co 11024, CoM 11085, CoM 11086, CoM 11087, CoN 11073 and CoN 11074

II. Multiplication of pre-zonal entries at the centres.

The following entries accepted in the Group Meeting of AICRP(S) held at the Andhra University Campus, Visakhapatnam / RARS, Anakapalle (A.P.) in 2013 are under multiplication during 2015-16:

Early (8) : Co 13002, Co 13003, Co 13004, CoN 13071, CoN 13072, CoSnk 13101, CoSnk 13102 and MS 13081

Midlate (20) : Co 13005, Co 13006, Co 13008, Co 13009, Co 13011, Co 13013, Co 13014, Co 13016, Co 13018, Co 13020, CoM 13082, CoN 13073, CoN 13074, CoSnk 13103, CoSnk 13104, CoSnk 13105, CoSnk 13106, CoT 13366, PI 13131 and PI 13132

III. Seed multiplication of new entries

The following entries were accepted in the Workshop of AICRP(S) held at the Indian Institute of Sugarcane Research, Lucknow in 2014 and are under during multiplication in 2015-16.

Early (12) : Co 14002, Co 14003, Co 14004, Co 14006, CoN 14071, CoN 14072, CoSnk 14101, CoSnk 14102, CoT 14366, CoT 14367, MS 14081 and MS 14082

Midlate (25) : Co 13021, Co 13022, Co 14008, Co 14009, Co 14012, Co 14016, Co 14022, Co 14023, Co 14025, Co 14026, Co 14027, Co 14030, Co14031, Co14032, CoN14073, CoN14074, CoSnk14103, CoT1 14111, CoT114112, CoVC14061, CoVC 14062, PI 14131, PI 14132, VSI 14121 and VSI 14122

ALL INDIA COORDINATED RESEARCH PROJECT ON SUGARCANE

Characters on which data to be recorded in Initial Varietal Trial (IVT) and Advance Varietal Trial (AVT)

Crop: Sugarcane (Early – Plant)

1. Germination % at 30 days for tropics and 45 days for sub-tropics
2. No. of tillers (thousand/ha) at 120 days
3. No. of shoots (thousand/ha) at 240 days
4. Cane yield (t/ha) after 10 months at harvest
5. Number of millable canes (thousand/ha) after 10 months at harvest
6. Stalk length (cm) after 10 months at harvest
7. Stalk diameter (cm) after 10 months at harvest
8. Single cane weight (kg) after 10 months at harvest
9. Brix % at 8 and 10 months
10. Sucrose % in juice at 8 and 10 months
11. Purity % at 8 and 10 months
12. CCS % at 8 and 10 months
13. CCS t/ha after 10 months at harvest
14. Extraction % after 10 months at harvest
15. Fibre % after 10 months at harvest
16. Pol % cane after 10 months at harvest
17. Jaggery quality after 10 months at harvest (if facility available)
18. Jaggery yield (t/ha) after 10 months at harvest (if facility available)

Morphological characters

1. Lodging : Erect, lodging, snapping, heavy lodging
2. Leaf sheath spines : Absent (A), present (P), medium (M), heavy (H)
3. Flowering : Absent (A), present (P)
4. Canopy structure and colour : Green, light green, yellowish green, dark green
5. Bud size : Big (B), small (S), medium (M)
6. Pithiness : Absent (A), present (P), less (L), heavy (H)
7. Internode splits : Absent (A), present (P), low (L), moderate (M), heavy (H)
8. Natural incidence of diseases and pests

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Characters on which data to be recorded in Initial Varietal Trial (IVT) and Advance Varietal Trial (AVT)

Crop : Sugarcane (Midlate – Plant)

1. Germination % at 30 days for tropics and 45 days for sub-tropics
2. No. of tillers (thousand/ha) at 120 days
3. No. of shoots (thousand/ha) at 240 days
4. Cane yield (t/ha) after 12 months at harvest
5. Number of millable canes (thousand/ha) after 12 months at harvest
6. Stalk length (cm) after 12 months at harvest
7. Stalk diameter (cm) after 12 months at harvest
8. Single cane weight (kg) after 12 months at harvest
9. Brix % at 10 and 12 months
10. Sucrose % in juice at 10 and 12 months
11. Purity % at 10 and 12 months
12. CCS % at 10 and 12 months
13. CCS t/ha after 12 months at harvest
14. Extraction % after 12 months at harvest
15. Fibre % after 12 months at harvest
16. Pol % cane after 12 months at harvest
17. Jaggery quality after 12 months at harvest (if facility available)
18. Jaggery yield (t/ha) after 12 months at harvest (if facility available)

Morphological characters

1. Lodging : Erect, lodging, snapping, heavy lodging
2. Leaf sheath spines : Absent (A), present (P), medium (M), heavy (H)
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8. Natural incidence of diseases and pests

B) SUGARCANE AGRONOMY:

- 1) AS 42: Agronomic evaluation of promising sugarcane genotypes (Spring Early).
- 2) AS42: Agronomic evaluation of promising sugarcane genotypes (Spring Midlate).
- 3) AS-68 Impact of integrated application of organics and inorganics in improving soil health and sugarcane productivity.
- 4) AS-69 Use of plant growth regulators (PGRs) for enhanced yield and quality of sugarcane.

C) SUGARCANE ENTOMOLOGY:

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+02=15
2	Evaluation of Advanced Varietals Trial – Early (I Plant) genotypes for their reaction against major insect pests.	09+02=11
3	Evaluation of Advanced Varietals Trial – Early (II Plant) genotypes for their reaction against major insect pests.	03+03=06
4	Evaluation of Advanced Varietals Trial – Early (Ratoon) genotypes for their reaction against major insect pests.	03+03=06
5	Evaluation of Initial Varietal Trial – Midlate [IVT- ML] genotypes for their reaction against major insect pests.	15+02=17
6	Evaluation of Advanced Varietals Trial – Midlate (I Plant) genotypes for their reaction against major insect pests.	11+02=13

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 34)	Standardization of simple and cost effective techniques for mass multiplication of Sugarcane bio-agents.
Experiment No.5 (E 36)	Management of borer complex of sugarcane through pheromone lures.
Experiment No.6 (E 37)	Bio-efficacy of newer insecticide for the control of sugarcane early shoot borer.

D) SUGARCANE PATHOLOGY:

- PP 17B:** Evaluation of Zonal varieties / genotypes for resistance to smut.
- PP 17D:** Evaluation of Zonal varieties / genotypes for resistance to YLD.
- PP 22:** Survey of sugarcane disease naturally occurring in the area on important sugarcane varieties.
- PP-28B:** Methodology for screening sugarcane genotypes for resistance to brown rust (*Puccinia melanocephala*)
- PP 28C:** Management of brown spot of sugarcane.