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**ALL INDIA CO-ORDINATED RESEARCH
PROJECT**

ON

SUGARCANE

ANNUAL REPORT

(2011-12)

**COMPILED
BY**

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**CENTRAL SUGARCANE RESEARCH STATION,
PADEGAON - 415 521, TAL. PHALTAN,
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Central SugarCane reSearCh Station
Padegaon – 415 521
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INTRODUCTION

INTRODUCTION

Sugarcane is the most important cash crop in the state of Maharashtra. Sugar industry plays a pivotal role in the socio-economic and educational development in the rural areas of the state. In general, since last 3 years the rainfall situation in Maharashtra was satisfactory which resulted in the increase in area under sugarcane. Therefore, during 2010-11, the area of sugarcane is at the highest peak level in the state i.e. 10.22 lakh hectares with 802.15 lakh ton Sugarcane production and 78.48 t/ha average productivity and 11.31 % average sugar recovery. The sugar industry is facing the problem of crushing excess cane during 2010-11. Therefore, it is the need of hour to increase the production and decrease the area and cost of production.

The sugarcane productivity has declined from 83.3 t /ha during 2000-01 to 74.10 t /ha during 2008-09. However, it increases during the year 2009-10 (83.0 t/ha) and again slightly decreases during the year 2010-11 (78.48 t/ha). For higher returns from the sugarcane crop, the productivity as well as quality of the sugarcane needs to be improved with adoption of the advanced technologies *viz.*, use of high yielding and high sugar varieties, improved planting methods, better water management, trash recycling, INM and IPM, use of improved management techniques and use of quality seed.

For providing the high yielding and high sugar varieties and new techniques for increasing yield, the Central Sugarcane Research Station, Padegaon is conducting research on varietal improvement along with development of new techniques especially planting systems, paired row planting, intercropping, ratoon management, IPM and INM, water management, drought and salinity management, sugarcane based farming system and cropping system. The need based future research strategies are development of extra early sugarcane varieties maturing at 10 –11 months, development of sugarcane varieties for better juice quality, identification of varieties for specific characteristics i.e. flood tolerance / drought and salt tolerance, woolly aphid tolerance/resistance, higher production of fiber for co-generation, higher percentage of brix in early age of crop for higher ethanol production. The efforts are also being made to develop non-flowering/ sparse flowering varieties with higher cane yield, CCS yield and sugar recovery. Similarly, the attention will be given for development of anti-inversion varieties to withstand the delayed crushing. Special emphasis will be given for varietal development considering the global warming and the climate change.

Table. 1.) In Maharashtra State, there are five major sub-ecological zones for sugarcane viz.

Sr.No.	Sub-ecological zone	Particulars/Remarks
1.	South Western Maharashtra State	Adequate resources-high recovery zone
2.	Central Western Maharashtra State	Adequate resources-medium recovery zone
3.	North Western Maharashtra State	Insufficient irrigation and other resources. low recovery zone
4.	East middle Maharashtra State	
5.	East Maharashtra State	

Table.2) : The area, production, productivity, sugar production and sugarcane recovery in Maharashtra from 2001 to 2012.

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	451.40	78.1	56.13	11.60
2002-03	599	370.15	61.8	65.19	11.66
2003-04	548	290.66	51.0	30.39	10.91
2004-05	320	204.00	63.0	22.62	11.45
2005-06	415	388.14	68.22	51.98	11.68
2006-07	840	626.00	76.00	90.95	11.40
2007-08	1046	735.69	70.33	87.63	11.91
2008-09	770	410	74.10	46.00	11.46
2009-10	756	641.59	83.00	70.66	11.54
2010-11	1022	802.15	78.48	90.52	11.31
2011-12*	1008	77.87	78.03	89.50	11.55

* : Estimated.

Season and climate

Central Sugarcane Research Station, Padegaon.

Season & Climate

(2010-2011)

The Central Sugarcane Research Station, Padegaon is located in sub 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, 2010 to March, 2012 (21 months) was 1002.4 mm in 69 rainy days as against the normal rainfall of 1087.0 mm (21 months) indicating that the rainfall received during the season was 7.8 % less than normal. The data on climatic parameters during the crop season (July, 2010 to March, 2012) along with averages based on last 79 years (1932-33 to 2010-11) recorded at the meteorological observatory located at this research station are presented in Table 1 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 (Jul. to Sept., 2010)

The rainfall received during germination phase was 320.6 mm in 24 rainy days as against the normal of 301.6 mm. The average maximum temperature during this period was 29.5 oC and minimum temperature was 21.7 oC. The average relative humidity (morning) during this phase was 98 % which was 11 % more than the normal.

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

2) Tillering phase (Oct-Dec., 2010) for *Adsali* and Germination phase for Preseason crop:

Total rainfall received during tillering phase was 240.1 mm which was 58 % more than the normal of last 79 years. The average maximum and minimum temperatures during this phase were 29.2 °C and 17.7 °C respectively. The morning humidity was 98 % as against the normal 86 %. High humidity and high rainfall was favourable for the tillering of *Adsali* sugarcane. High humidity was also favourable for good germination of preseasonal sugarcane.

3) Early growth for (Adsali) and Tillering phase for Preseason and Germination phase for Suru (Jan-Mar.2011)

During this phase the average maximum temperature was 31.5 °C which was slightly less than the normal i.e 32.4 °C .The average minimum temperature was 13.0 °C, which was more than the normal i.e 12.6 °C. These temperatures were favourable for Adsali crop growth. Due to higher humidity (97 %) than the average (78 %), tillering of preseasonal sugarcane and germination/tillering of Suru sugarcane was also satisfactory.

4) Desiccation phase (April to May, 2011)

The mean maximum temperature was lower (37.0 °C) than the normal (39.9°C) while the mean minimum temperature (22.0 °C) was more than the normal (21.2°C). The total rainfall received during this phase was 28.5 mm in 2 rainy days.

5) Grand growth for *Adsali* and Early growth phase for (Preseason and *Suru*) (June to Sept., 2011)

During this phase, the average maximum and minimum temperatures were 29.9 °C and 22.9 °C respectively i.e. optimum for crop growth. The total rainfall received during this phase was 362.4 mm in 28 rainy days as against the normal rainfall of 371.9 mm. The grand growth of *Adsali*, preseasonal and *Suru* sugarcane was satisfactory due to good rains coupled with high humidity.

6) Flowering and Maturity for *Adsali* and Preseason /Grand growth phase for *Suru* (Oct -Dec., 2011)

During this phase, the mean maximum and minimum temperatures were 31.5 °C and 16.3 °C respectively. Total rainfall received during this phase was 50.8 mm in 2 rainy days as against 165.5 mm average of last 79 years. The high humidity and optimum temperatures favoured early and profuse flowering for all season planted crop.

During Jan 2012 to March 2012, the mean maximum and minimum temperatures were 32.4 oC and 13.1 oC respectively. The high humidity and optimum temperatures favoured maturity of sugarcane crop.

At maturity of *Adsali*, preseasonal and *Suru* sugarcane, the minimum temperature was more (16.3 °C) than average (15.5 °C) which affected sugarcane productivity . The overall crop growth during this year was satisfactory due to favourable climate. However, due to temperature fluctuations there was effect on

cane yield. However, due to more number of cooler days, the sugar recovery was satisfactory.

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

1) Table. 3. Incidence of insect pests on sugarcane during 2011-12

Sr.No.	Name of pest	Extent of incidence (%)
1	Early shoot borer	16 to 18
2	Internode borer	18 to 20
3	Top shoot borer	0 to 2
4	Mealy bugs	20 to 30
5	Wooly aphids	Traces to Low
6	Scale insect	0 to 2
7	White fly	1 to 2.5

2)Table. 4. Incidence of diseases on sugarcane during 2011-12

Sr.No.	Name of disease	Extent of incidence (%)
1	Rust	1.0 to 30.0
2	G.S.D	1.0 to 12.00
3	Smut	1.0 to 48.00
4	Ring spot	4.0 to 15.0
5	Pokka boeng	1.0 to 18.0
6	Eye spot	2.0

Table 5 . Average weather parameters at CSRS, Padegaon during June 10 to March 12

Sr. No.	Temperature (°C)		Humidity (%)		Sunshine Hrs.	Rainfall (mm)	Rainy days
	Max.	Min.	Mor.	Eve.			
June 10	32.5	22.8	97	75	06.1	222.3	8
1. Germination phase for <i>Adsali</i> crop (Jul. to Sept., 2010)							
July 10	28.8	22.2	98	89	02.9	093.9	9
Aug 10	29.6	21.7	98	90	03.6	077.0	8
Sept 10	30.1	21.3	98	88	05.3	149.7	7
Average	29.5	21.7	98	89	03.9	320.6	24
Last 79 yrs avg	29.2	21.8	88	64	4.9	301.6	--
2. Tillering phase (Oct-Dec., 2010) for <i>Adsali</i>/Germination phase for Preseason crop							
Oct 10	30.7	20.2	98	83	07.1	193.0	7
Nov 10	29.5	19.9	98	74	06.4	047.1	5
Dec 10	27.5	12.9	97	60	07.8	--	--
Average	29.2	17.7	98	72	07.1	240.1	12
Last 79 yrs avg	31.6	15.5	86	40	09.6	151.8	--
3. Early growth (<i>Adsali</i>)/Tillering (Preseason) and Germination phase (<i>Suru</i>) (Jan-Mar.2011)							
Jan 11	28.7	10.3	96	62	07.9	--	--
Feb 11	30.7	12.6	97	74	08.9	--	--
Mar 11	35.2	16.2	98	65	08.3	--	--
Average	31.5	13.0	97	67	08.4	--	--
Last 79 yrs avg	32.4	12.6	78	28	10.0	13.1	--
4. Desiccation phase (April to May, 2011)							
April 11	36.9	21.0	94	51	07.3	--	--
May 11	37.1	22.9	93	59	07.9	028.5	3
Average	37.0	22.0	94	55	07.6	28.5	3
Last 79 yrs avg	39.9	21.2	69	26	11.6	69.9	--
5. Grand growth (<i>Adsali</i>)/Early growth phase (Preseason and <i>Suru</i>) (June to Sept., 2011)							
June 11	30.6	24.2	95	85	07.5	106.6	7
July 11	29.6	23.4	97	89	03.3	098.3	8
Aug 11	29.3	22.8	97	80	03.0	040.2	7
Sept 11	30.0	21.0	98	77	05.2	117.3	6
Average	29.9	22.9	97	83	04.8	362.4	28
Last 79 yrs avg	30.9	22.0	87	61	05.3	371.9	--
6. Flowering and Maturity (<i>Adsali</i> and Preseason)/Grand growth phase (<i>Suru</i>) (Oct-Dec., 2011)							
Oct 11	31.1	20.9	98	72	06.3	050.8	2
Nov 11	30.3	15.8	98	74	08.0	--	--
Dec 11	33.0	12.1	98	75	08.1	--	--
Average	31.5	16.3	98	74	07.5	050.8	2
Last 79 yrs avg	31.6	15.5	86	40	09.6	165.5	--
Jan 12	29.1	11.1	97	85	08.5	--	--
Feb 12	32.5	12.9	97	51	08.6	--	--
Mar 12	35.6	15.2	93	51	07.4	--	--
Average	32.4	13.1	96	62	08.2	--	--
Last 80 yrs avg	32.4	12.6	78	28	10.0	12.9	--

Central Sugarcane Research Station, Padegaon.

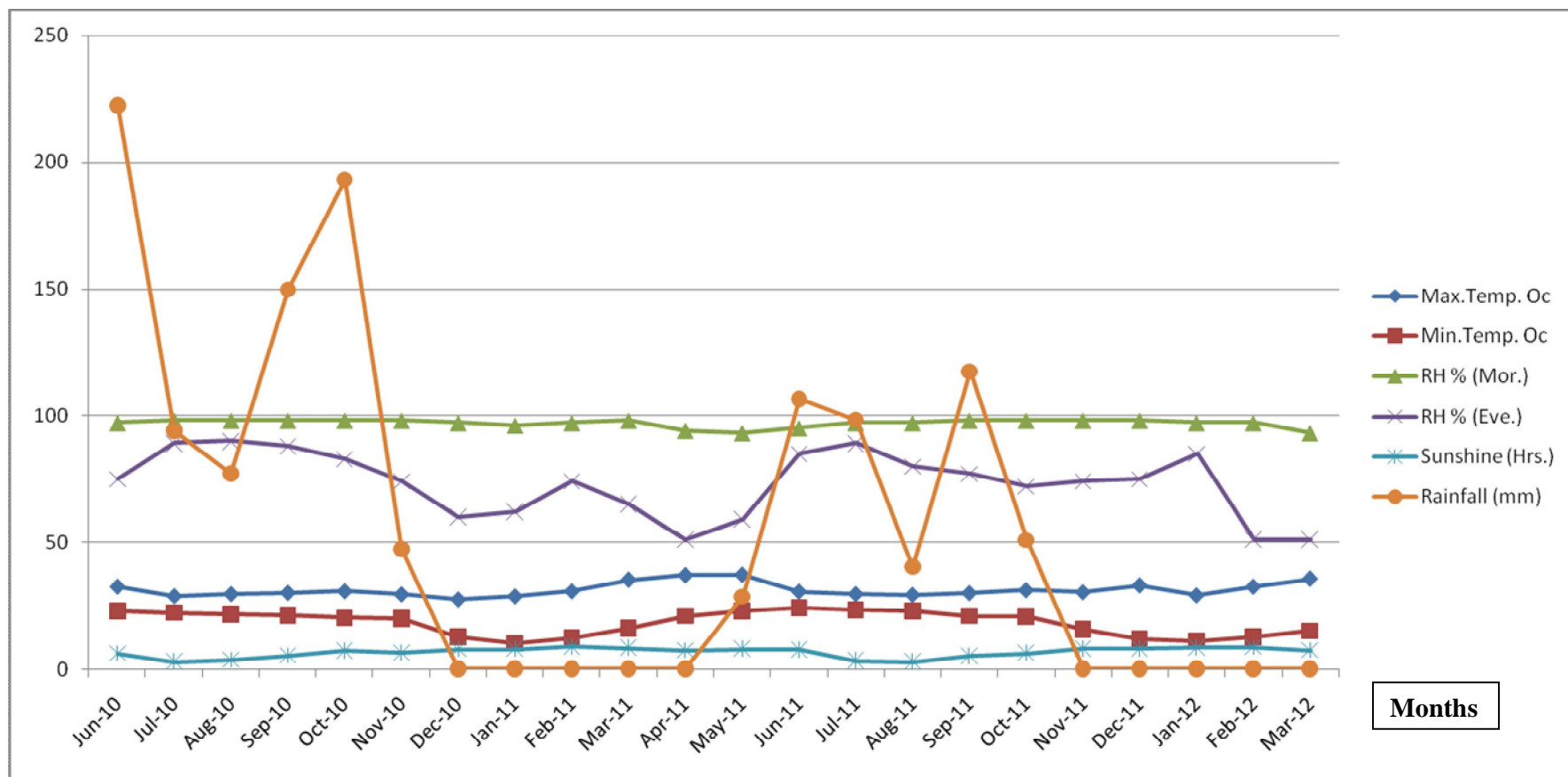


Figure 1: Weather parameters 2010 - 2012

Staff Position