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**MAHATMA PHULE KRISHI VIDYAPEETH, RAHURI
DIST. AHMEDNAGAR (MAHARASHTRA)**

ANNUAL REPORT

CROP IMPROVEMENT

2016-17

Submitted by

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All India Coordinated Research Project on Sugarcane

**REGIONAL SUGARCANE AND JAGGERY RESEARCH
STATION, KOLHAPUR- 416 005**

CONTENTS

Sr. No.	Particulars	Page No.
1	General Information	i
2	Staff position	ii
3	Weather Condition during the crop period	iii
4	Experiments Reported	
	Crop Improvement	
1	Initial Varietal Trial (Early)	1
2	Advanced Varietal Trial (Early- I Plant)	5
3	Advanced Varietal Trial (Early- II Plant)	8
4	Advanced Varietal Trial (Early- Ratoon)	12
5	Initial Varietal Trial (Midlate)	15
6	Advanced Varietal Trial (Midlate- I Plant)	19
7	Advanced Varietal Trial (Midlate-II Plant)	21
8	Advanced Varietal Trial (Midlate-Ratoon)	25
9	Evaluation and identification of climate resilient ISH and IGH genetic stocks (Water logging condition)(I plant)	28
5	Technical programme 2017-2018	39

(i)

GENERAL INFORMATION

- 1) Title of the project : All India Coordinated Research Project on Sugarcane
- 2) ICAR sanction No. and date : No. 39-12/70 Fin II/CPH-II, dated 9/11/1971
- 3) Date of Commencement : 13/12/1971
- 4) Likely date of completion : The project is to be continued during XII Plan
- 5) Reporting period : 2016-17
- 6) Report No. : XXXXVI
- 7) Location : Regional Sugarcane and Jaggery Research Station, Opp. Shahu Market Yard, Kolhapur-416005(Maharashtra)
- 8) Objectives:
 - 1) To carry out effective sugarcane improvement programme through co-ordination of multidiscipline research by a team of scientists including Agronomist, Plant breeder, Soil scientist and Agril. Chemist, Entomologist, Plant pathologist.
 - 2) To facilitate free exchange of information and the seedlings for the purpose and to conduct varietal trials on zonal and national level.
 - 3) Evaluation of high yielding, early maturing, non flowering varieties with high brix and sucrose.
 - 4) To control the disease and pests (including scale insects and borers) by development of objectives fungicidal and insecticidal schedules.
 - 5) To organize a training programme for the scientists and technical persons engaged in the sugarcane improvement project.
 - 6) To maintain disease free nucleus seed material for distribution to the co-operative organizations.

(ii)

PRESENT STAFF POSITION

Sr. No.	Name of the Posts	No. of posts	Name of the incumbent	Date of Joining	Date of Relieving	Remarks
1.	Breeder	1	Dr.M.S.Kamble	01-11-2015	21-07-16	Vacant since 22-07-16
3.	Plant Pathologist	1	Prof. D.M. Veer	1- 4 -1996	-	will retire on 30/06/17
4.	Technical Assistant	2	1. Kum.K.B.Patil 2. Mr.N.B.Ghodake	31- 1- 2009 31- 8- 2013	- -	1 post restored from 22/07/2016
5.	Lab. Assistant	1	1.Mrs.M.R.Pandav	24-9-2012	-	Agril Assistant is working instead of Lab. Assistant
6.	Fieldman	1	Vacant	-	-	Vacant since X th five year plan and not filled till today

Staff associated with present investigation

- 1) Associate Director of Research,
NARP, Sub montane zone
Dr.N.Y.Patil
- 2) Agronomist,
Regional Sugarcane and Jaggery
Research Station, Kolhapur
Dr.S.M.More

Weather Condition during Crop Period (January, 2016 to December, 2016)

The Regional Sugarcane and Jaggery Research Station, Kolhapur is geographically situated at an elevation of 574 meter above the sea level on 16°.43' North latitude and 74°.13' East longitude. It comes under the Sub-Montane Zone of Maharashtra. The weather parameters during the seasonal crop growth period from January, 2016 to December, 2016 are presented in Table 1 and 2.

The planting of experimental plots of sugarcane was carried out during January, 2016 to last fortnight of February, 2016. During germination phase of sugarcane the average maximum and average minimum temperature were 33.14°C and 17.03°C, respectively with average morning humidity of 67.50 per cent. The high temperature during germination phase and withdrawal of irrigation water due to scarcity, as per directives of the government hampered germination of the crop.

The tillering phase was started from March, 2016 to April, 2016. The average maximum temperature 38.60°C and average minimum temperature 21.94°C with average morning humidity 64.15 per cent and average evening humidity 25.45 per cent. The higher temperature during tillering phase and scarcity of irrigation water adversely affected tillering of sugarcane crop.

The rainfall (180.40 mm) was received during early growth period of sugarcane with average maximum temperature 35.22°C and average minimum temperature 21.76 °C. The distribution of rainfall was uneven during rainy season. However, during grand growth phase of sugarcane crop, 846.40 mm rainfall with 45 rainy days was received, which resulted in flood condition on two separate occasions. First, flood situation was created during the period 11/07/16 to 17/07/16 (7 days) and second flood situation occurred during 05/08/2017 to 10/08/2017 (6 days) at research farm of Regional Sugarcane and Jaggery Research Station, Kolhapur. The field remained partially to complete submerged during this period. Due to which, various yield attributing characters of sugarcane were adversely affected which ultimately resulted in lower cane yield.

The flowering and maturity stage started from 40th meteorological week. During this phase of the crop 40.80 mm rainfall was received with mean maximum temperature 31.09°C and mean minimum temperature 17.71°C. The total of 1067.6 mm rainfall was received during the crop season with 59 rainy days, but the distribution was uneven. The rainfall was slightly higher than average annual rainfall (1015.3 mm with 66 rainy days) of this location based on 40 years' data (1975-2015).

(iv)

The higher temperature during germination and tillering stage, resulted in incidence of early shoot borer on sugarcane crop planted after 15th February and in late ratoon, hence, farmers were suggested to undertake plant protection measures against early shoot borer during tillering phase. Flood situation due to high rainfall received during grand growth period resulted in sporadic incidence of Army worm in river basin area of the region. . The incidence of the white woolly aphids was reported from some parts of the region, particularly on Co 86032. In grand growth period, comparatively more incidence of whitefly was noticed, especially in water logged area and poorly managed ratoon crop in some part of zone. White grubs continues to be a menace to sugarcane cultivation in the region, especially, *Leucopholis* spp. is harboring in along the river basin area. The incidence of white grub is increasing in the region, hence, it is necessary to undertake effective management practices.

The fungal diseases *viz.*, rust and ring spot, have been observed during monsoon period particularly in high rainfall region of the zone however, intensity was more as compared to previous year. The brown spot disease was less on CoM 0265 variety. Another viral disease, yellow leaf (YLD) was observed during grand growth and maturity phase on Co 86032. This may be due to continuous use of same planting material year after year.

In general, the growing season was not favourable for sugarcane crop.

(v)

Table 1. Week wise weather data recorded at Zonal Agricultural Research Station, Shenda Park farm, Kolhapur for the year 2016.

M W	Period	Rain mm.	RD	Mean Temp °C		Wind Speed kmph	BSS Hrs	Relative Humidity		Evap. mm.
				Max.	Min.			M	E	
	January 2016									
01.	01/01-07/01	00	0	32.2	17.2	1.9	4.5	49	42	2.0
02.	08/01-14/01	00	0	30.6	15.7	1.5	4.1	60	30	2.2
03.	15/01-21/01	00	0	29.5	16.9	1.0	5.1	60	42	2.2
04.	22/01-28/01	00	0	30.9	15.9	1.6	4.5	67	36	2.2
05.	29/01-04/02	00	0	34.2	16.8	1.3	6.2	68	32	2.4
	February 16									
06.	05/02-11/02	00	0	34.1	15.9	1.6	4.9	80	41	3.1
07.	12/02-18/02	00	0	33.2	15.8	2.5	6.9	79	37	3.6
08.	19/02-25/02	00	0	35.9	19.0	2.1	5.8	69	34	3.4
09.	26/02-04/03	00	0	36.0	19.5	2.0	2.2	69	35	3.8
	March, 16									
10.	05/03 – 11/03	00	0	37.0	19.7	1.7	5.1	70	32	4.5
11.	12/03 – 18/03	00	0	36.5	19.3	2.0	5.3	83	23	4.9
12.	19/03 – 25/03	00	0	38.8	21.8	2.2	7.8	53	20	5.9
13.	26/03 – 01/04	00	0	38.6	22.6	2.1	6.5	73	28	6.2
	April, 16									
14.	02/04 – 08/04	00	0	38.9	22.6	2.3	7.2	66	24	6.0
15.	09/04 – 15/04	00	0	39.8	23.7	2.4	7.3	57	28	6.2
16.	16/04 – 22/04	00	0	40.1	22.7	2.7	6.3	54	25	6.0
17.	23/04 – 29/04	00	0	38.9	22.8	2.4	7.0	58	23	6.6
18.	30/04 – 06/05	00	0	39.6	23.3	2.3	8.4	58	26	6.4
	May, 16									
19.	07/05 – 13/05	00.5	0	39.0	23.0	2.4	9.6	61	27	7.0
20.	14/05 – 20/05	00	0	39.7	23.1	3.3	4.3	60	32	5.8
21.	21/05 – 27/05	00	0	37.5	23.7	3.6	8.7	58	37	6.0
22.	28/05 – 03/06	15.1	1	37.2	22.9	3.0	8.6	63	35	6.7
	June 16									
23.	04/06 – 10/06	103.2	3	34.6	21.0	1.8	4.7	64	37	3.6
24.	11/06 – 17/06	00	0	31.3	20.7	1.7	2.5	63	53	2.9
25.	18/06 – 24/06	3.1	1	33.1	20.5	1.9	2.6	78	60	2.8
26.	25/06 – 01/07	58.5	6	29.3	19.1	1.1	0.4	74	71	1.1

(vi)

M W	Period	Rain mm.	RD	Mean Temp °C		Wind Speed kmph	BS S Hr s	Relative Humidity		Evap. mm.
				Max.	Min.			M	E	
	July 2016									
27.	02/07 – 08/07	88.0	7	29.0	19.1	2.1	0.4	73	68	0.6
28.	09/07 - 15/07	297.5	7	27.9	19.4	1.6	0.4	75	70	0.6
29.	16/07 – 22/07	20.9	3	28.9	20.1	1.2	1.2	76	83	1.0
30.	23/07 – 29/07	20.9	3	29.4	23.1	0.8	1.4	74	77	0.6
31.	30/07 – 05/08	174.4	6	27.4	19.8	0.8	0.1	76	68	0.7
	August 2016									
32.	06/08 – 12/08	141.2	6	27.8	20.1	1.8	2.0	71	79	0.7
33.	13/08 – 19/08	18.7	3	28.9	20.2	1.7	3.3	74	78	0.5
34.	20/08 – 26/08	17.7	2	28.7	20.7	1.0	2.3	76	77	0.7
35.	27/08 – 02/09	1.6	0	29.1	20.7	0.8	1.6	69	75	1.0
	Sept 2016									
36.	03/09 - 09/09	2.2	0	29.0	20.8	1.1	4.9	71	73	1.9
37.	10/09 - 16/09	7.0	1	30.7	21.4	1.3	1.5	70	70	3.2
38.	17/09 - 23/09	47.8	5	28.2	21.0	1.3	0.0	69	81	0.8
39.	24/09- 30/09	8.5	2	29.3	21.3	0.9	3.4	68	74	1.1
	Oct 2016									
40.	01/10 - 07/10	2.5	0	28.6	21.0	0.7	4.1	68	84	7.5
41.	08/10 – 14/10	15.3	2	30.3	21.5	1.3	5.6	69	72	2.7
42.	15/10 – 21/10	00	0	31.8	20.1	1.0	7.6	74	65	4.0
43.	22/10 – 28/10	00	0	32.3	19.1	1.3	7.5	77	62	3.7
	Nov 2016									
44.	29/10 – 04/11	00	0	32.9	19.0	1.8	8.7	71	43	4.4
45.	05/11 – 11/11	00	0	31.7	16.9	1.6	9.8	77	50	6.3
46.	12/11 – 18/11	23.0	1	31.0	18.0	1.9	6.1	72	39	2.4
47.	19/11 – 25/11	00	0	30.5	15.4	1.8	8.7	67	55	3.3
48.	26/11 – 2/12	00	0	30.9	15.4	1.7	9.6	82	34	4.8
	Dec 2016									
49.	3/12 – 9/12	00	0	30.8	21.2	2.8	6.1	73	38	3.1
50.	10/12 – 16/12	00	0	30.9	12.7	1.5	5.7	78	53	2.8
51.	17/12- 23/12	00	0	31.9	15.4	2.5	2.9	62	52	2.8
52.	24/12-31/12	00	0	30.9	13.7	2.2	4.3	63	36	2.7
	TOTAL	1067.6	59							
	Average	1067.6	59	32.79	19.66	1.79	4.92	68.65	49.25	3.30

(vii)

Table 2: Growth stage wise weather conditions during the year January, 2016 to December, 16.

Growth Stages	Month	Rainfall (mm)	RD	Mean Temp (°C)		Wind Speed (kmph)	BSS (Hrs)	Relative Humidity (%)		Evap. (mm)
				Max.	Min.			M	E	
Germination	Jan-16	0.00	0	31.48	16.50	1.46	4.88	60.80	36.40	2.20
	Feb-16	0.00	0	34.80	17.55	2.05	4.95	74.20	36.70	3.48
		0.00	0	33.14	17.03	1.76	4.92	67.50	36.55	2.84
Tillering	March-16	0.00	0	37.73	20.85	2.00	6.18	69.70	25.70	5.38
	April-16	0.00	0	39.46	23.02	2.42	7.24	58.60	25.20	6.24
		0.00	0	38.60	21.94	2.21	6.71	64.15	25.45	5.81
Early growth	May-16	15.60	1	38.35	23.18	3.08	7.80	60.50	32.70	6.38
	Jun-16	164.80	10	32.08	20.33	1.63	2.55	69.70	55.20	2.60
		180.40	11	35.22	21.76	2.36	5.18	65.10	43.95	4.49
Grand growth	Jul-16	601.70	26	28.52	20.30	1.30	0.70	74.80	73.20	0.70
	Aug-16	179.20	11	28.63	20.43	1.33	2.30	72.50	77.25	0.73
	Sep-16	65.50	8	29.30	21.13	1.15	2.45	69.50	74.50	1.75
		846.40	45	28.82	20.62	1.26	1.82	72.27	74.98	1.06
Flowering and maturity	Oct-16	17.80	2	30.75	20.43	1.08	6.20	72.00	70.75	4.48
	Nov-16	23.00	1	31.40	16.94	1.76	8.58	73.80	44.20	4.24
	Dec-16	0.00	0	31.13	15.75	2.25	4.75	69.00	44.75	2.85
		40.80	3	31.09	17.71	1.70	6.51	71.60	53.23	3.86

Total rainfall during crop season: 1067.60mm (59 Rainy days)