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

**ANNUAL REPORT
CROP PRODUCTION
2012-13**

**Submitted by
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Miss.K.B.Patil**

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

STAFF POSITION:

Sr. No.	Name of the Sanctioned Posts	No. of posts sanctioned	Name of the incumbent	Date of Joining	Date of Relieving	Remarks
1.	Plant Breeder	1	Vacant	-	-	Vacant
3.	Plant Pathologist	1	Prof. D.M. Veer	1- 4 -1996	-	-
4.	Technical Assistant	2	1.Kum.K.B.Patil 2. Vacant	31- 1- 2009 -----	- -	Vacant from 17-11-2009
5.	Lab. Assistant	1	1.Mrs.M.R.Pandav	24-9-2012	-	
6.	Fieldman	1	Vacant	-	-	Vacant since Xth five year plan

Staff Associated with Present Investigation:

1. Dr. S.M.More, Associate Director of Research
2. Dr. B. G. Gaikawad, Agronomist

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(i)

Weather Condition during the year 2012-13

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 December, 2011 to February, 2013 are presented in Table 1 and 2.

The planting of seasonal sugarcane was completed in second fortnight of December 2011 to January 2012. During germination phase of sugarcane the maximum and minimum temperature were 30.6 °C and 14.6°C, respectively with average humidity of 79.0 %. This was favorable condition for good germination. The tillering phase was completed in the month of February 2012 to April 2012. The maximum temperature 34.9°C and minimum 17.8 °C with highest humidity 78.5 % which was solicited for tillering phase.

There was even distribution of rains during the monsoon season. During early growth and grand growth of crop the total rainfall received was 122.5 and 581.7 mm respectively. There was no flood situation in this year.

There was summer showers (26.2 mm) in the month of April (14 to 18 MW) which was favoured for the growth of tillers. The rainfall received during the month of May and June, 2012 (122.5 mm in 9 rainy days) was less 55.81% as compared to average rainfall of last five years (277.22 mm). However, the intermittent rainy showers during July to September favoured luxuriant growth of crop. Besides this, the crop was irrigated for obtaining desirable crop growth particularly in May, 2012.

The lowest average bright sunshine hrs. (1.7) was recorded in 27 to 31 MW particularly during grand growth period, but, the crop growth was not much affected. Overall, during crop life span, the total bright sunshine hours were not much less as compared to previous last five years. This situation was favoured to increase the yield to some extent in the zone.

The maturity phase of crop was started from 45 MW of 2012 to 05 MW of 2013. The average maximum temperature 31.3⁰ C and minimum temperature 16.9⁰ C with 82.0 % humidity were observed.

(ii)

During the maturity period of sugarcane even distribution of rains during monsoon, no late showers (post monsoon) and longer period of winter season with cool temperature reflected on late flowering and high recovery in the zone as compared to last year.

The incidence of early shoot borer was observed in late planted crop (after 15th February) and late ratoon, hence, required to undertake plant protection measures for control of early shoot borer during tillering phase of sugarcane. In grand growth period, the incidence of White Wooly Aphid was noticed more in some part of submontane zone (Chandgad, Gadhinglaj and Ajara), whereas, white fly was noticed less as compared to previous years. The incidence of white grub (*Leucopholis* and *Holotricha spp.*) is increasing day by day in the region.

The incidence of Pokkah boeng was noticed in May, 2012 after receiving summer showers (pre monsoon). Rust and Ring spot, these fungal diseases have been occurred every year with high intensity during monsoon period. Besides this, the outbreak of brown spot with high intensity in the region since last year is a threaten to sugarcane crop particularly CoM 0265 variety. Another viral disease yellow leaf is increased from grand growth period on Co 86032. Therefore it is necessary to procure and multiply pure seed material by following thermotherapy method.

The total rainfall of 843.9 mm in 64 rainy days was received during the year 2012, which was less than normal rainfall (1011.00 mm).

(iii)

Table 1: Weather conditions during the year December 2011 to February 2013

Growth Stages	Month	Met. Week	Temperature (°C)		Wind Speed (kmp h)	BSS (hrs)	Humidity (%)		Rainfall (mm)	Rainy Days (Nos.)
			Maxi.	Mini.			Morn	Even.		
Germination	Dec.,11	49-52	30.5	15.2	-	7.9	78.3	37.3	0.0	-
	Jan. 12	1-5	30.7	14.0	2.5	8.8	79.8	37.4	0.0	0.0
	Average	-	30.6	14.6	2.5	8.3	79.0	37.3	0.0	0.0
Tillering	Feb. 12	6-9	30.6	14.6	2.5	8.3	79.0	37.3	0.0	0.0
	Mar.12	10-13	36.8	18.1	2.8	8.4	71.5	24.5	0.0	0.0
	Apr-12	14-18	37.1	20.8	3.0	7.7	85.0	32.4	26.2	2.0
	Average	--	34.9	17.8	2.8	8.1	78.5	31.4	26.2	2.0
Early Growth	May.12	19-22	36.7	21.6	3.6	9.7	86.5	35.8	11.8	1.0
	June,12	23-26	31.0	21.1	3.3	4.7	93.8	67.5	110.7	8.0
	Average	--	33.8	21.3	3.5	7.2	90.1	51.6	122.5	9.0
Grand Growth	Jul-12	27-31	27.1	21.2	3.6	1.7	97.2	88.0	333.4	22.0
	Aug.12	32-35	27.5	20.8	2.4	2.4	98.0	84.0	146.2	13.0
	Sept.12	36-39	28.3	19.9	0.6	3.8	96.3	77.0	102.1	10.0
	Average	--	27.6	20.6	2.2	2.6	97.2	83.0	581.7	45.0
Flowering & maturity	Oct.12	40-44	29.8	19.9	0.0	5.6	89.8	65.8	90.6	6.0
	Nov.12	45-48	30.6	18.1	0.0	6.6	75.8	42.8	22.9	2.0
	Dec.12	49-52	31.1	15.5	0.0	8.1	83.0	38.5	0.0	0.0
	Jan.13	01-05	31.8	14.8	-	7.3	83.4	32.4	0.0	0.0
	Feb.13	06-09	33.2	16.5	2.0	8.5	78.3	29.8	0.8	0.0
	Average		31.3	16.9	0.5	7.2	82.0	41.8	114.3	8.0
	Total rainfall (mm)								843.9	64
	Average rainfall (mm)								1011.0	67

*Total

(iv)

Table 2 : Week wise weather data recorded for the year 2011-12-13.

MW No.	Period	Rain mm.	Rainy Day	Mean Temp °C		Wind Speed kmph	BSS hrs	Mean Relative humidity		Evap. mm.
				Max.	Min.			M.	E.	
Dec 2011										
49	03/12 – 09/12	00.0	-	31.1	16.3	Faulty	08.0	84	42	07.8
50	10/12 – 16/12	00.0	-	30.7	16.5	Faulty	08.2	79	44	06.4
51	17/12 – 23/11	00.0	-	29.3	13.8	Faulty	07.7	78	35	04.2
52	24/12 – 31/12	00.0	-	30.9	14.0	Faulty	07.6	72	28	04.0
January 12										
01.	01/01-07/01	00.0	0	32.8	17.8	2.3	7.5	88	39	3.8
02.	08/01-14/01	00.0	0	28.9	12.1	2.0	8.4	67	39	4.2
03.	15/01-21/01	00.0	0	30.7	11.1	2.8	10	80	37	3.7
04.	22/01-28/01	00.0	0	30.7	14.2	2.5	8.8	88	37	3.9
05.	29/01-04/02	00.0	0	30.5	14.9	2.7	9.1	76	35	4.3
February 12										
06.	05/02-11/02	00.0	0	32.7	14.7	1.9	9.3	86	40	5.1
07.	12/02-18/02	00.0	0	33.4	15.2	1.9	9.9	69	27	5.3
08.	19/02-25/02	00.0	0	35.1	17.7	2.3	9.6	70	23	6.1
09.	26/02-04/03	00.0	0	35.6	14.9	2.3	11.3	70	17	6.3
March, 12										
10.	05/03 – 11/03	00.0	0	34.9	14.3	2.5	9.4	74	31	6.6
11.	12/03 – 18/03	00.0	0	36.5	18.4	2.7	8.8	57	22	7.3
12.	19/03 – 25/03	00.0	0	38.4	19.3	3.2	8.2	71	23	6.6
13.	26/03 – 01/04	00.0	0	37.5	20.3	2.8	7.3	84	22	5.9
April, 12										
14.	02/04 – 08/04	14.8	1	37	20.1	2.8	7.8	89	39	5.7
15.	09/04 – 15/04	00.0	0	36.6	21.2	3.0	7.0	84	33	6.7
16.	16/04 – 22/04	00.0	0	37.6	22.0	3.1	6.8	82	31	7.4
17.	23/04 – 29/04	11.4	1	37.3	20.5	2.8	6.9	79	28	7.1
18.	30/04 – 06/05	00.0	0	37.2	20.1	3.5	9.8	91	31	6.8
May, 12										
19.	07/05 – 13/05	11.8	1	36.5	21.1	3.0	08.5	88	36	06.3
20.	14/05 – 20/05	00.0	0	37.9	21.4	2.9	10.2	84	28	06.4
21.	21/05 – 27/05	00.0	0	36.1	22.1	4.2	10.3	88	40	06.6
22.	28/05 – 03/06	00.0	0	36.1	21.8	4.2	09.9	86	39	05.2
June 12										
23.	04/06 – 10/06	14.9	2	32.2	21.6	2.8	06.9	94	69	04.6
24.	11/06 – 17/06	05.7	1	31.5	21.4	3.7	05.6	92	60	06.1
25.	18/06 – 24/06	26.1	1	30.4	20.9	4.2	04.2	93	60	04.1
26.	25/06 – 01/07	64.0	4	29.8	20.3	2.6	02.2	96	81	02.8
July 12										
27.	02/07 – 08/07	036.3	3	27.5	20.4	3.3	01.3	95	89	02.0

(v)

28.	09/07 - 15/07	008.4	1	28.6	21.0	2.4	03.4	96	77	02.8
29.	16/07 - 22/07	077.1	5	26.6	21.9	4.6	00.7	99	95	02.0
30.	23/07 - 29/07	091.8	7	26.6	21.5	3.7	01.3	97	88	01.5
31.	30/07 - 05/08	119.8	6	26.3	21.0	4.0	01.7	99	91	01.8
	August 2012									
32.	06/08 - 12/08	076.1	7	26.5	21.3	3.1	00.8	99	94	01.9
33.	13/08 - 19/08	013.1	2	28.0	20.5	2.4	04.5	98	83	03.6
34.	20/08 - 26/08	003.6	0	29.2	20.7	1.9	03.1	96	77	02.6
35.	27/08 - 02/09	053.4	4	26.1	20.7	2.2	01.3	99	82	01.8
	Sept 2012									
36.	03/09 - 09/09	075.6	6	25.8	20.6	2.3	00.9	98	94	01.5
37.	10/09 - 16/09	017.9	3	28.1	20.4	0.0	04.5	98	75	03.1
38.	17/09 - 23/09	002.8	0	30.3	19.1	0.0	04.4	94	66	03.3
39.	24/09- 30/09	005.8	1	28.9	19.5	0.0	05.2	95	73	04.8
	Oct 2012									
40.	01/10 - 07/10	068.6	4	26.3	20.7	0.0	02.1	98	87	02.7
41.	08/10 - 14/10	017.6	1	31.5	20.6	0.0	05.0	96	70	03.5
42.	15/10 - 21/10	000.0	0	30.7	18.1	0.0	08.7	78	49	04.8
43.	22/10 - 28/10	004.4	1	30.6	20.0	0.0	06.6	87	57	03.6
	Nov 2012									
44.	29/10 - 04/11	022.9	2	29.3	18.9	0.0	03.4	73	46	03.7
45.	05/11 - 11/11	000.0	0	31.8	20.4	0.0	07.6	90	48	03.3
46.	12/11 - 18/11	000.0	0	30.2	16.3	0.0	08.6	69	34	03.8
47.	19/11 - 25/11	000.0	0	31.0	16.4	0.0	06.9	66	43	03.9
48.	26/11 - 2/12	000.0	0	30.8	18.4	0.0	06.6	81	43	03.4
	Dec 2012									
49.	3/12 - 9/12	000.0	0	31.3	18.5	0.0	07.5	82	46	03.4
50.	10/12 - 16/12	000.0	0	31.8	14.8	0.0	08.9	93	35	03.6
51.	17/12- 23/12	000.0	0	30.7	15.2	0.0	08.5	80	35	04.0
52.	24/12-31/12	000.0	0	30.5	13.5	0.0	07.6	77	38	04.0
	January 13									
01.	01/01-07/01	00.0	0	31.6	15.9	NA	6.5	88	41	4.5
02.	08/01-14/01	00.0	0	31.0	14.5	NA	7.2	79	31	4.2
03.	15/01-21/01	00.0	0	32.0	13.7	NA	8.5	84	29	4.3
4.	22/01-28/01	00.0	0	32.4	14.5	NA	7.2	86	29	4.1
05.	29/01-04/02	00.0	0	31.9	15.3	NA	7.3	80	32	4.2
	February 13									
06.	05/02-11/02	00.0	0	32.5	15.2	1.4	7.7	88	34	4.2
07.	12/02-18/02	00.8	0	32.1	17.4	2.3	8.0	78	34	3.9
08.	19/02-25/02	00.0	0	33.7	15.8	1.4	9.3	78	27	4.2
09.	26/02-04/03	00.0	0	34.3	17.6	2.7	9.1	69	24	5.6

NB : - * Data on wind speed were not recorded (41-52 MW) due to instrumental error.

RESEARCH HIGHLIGHTS

Highlights of research work conducted under **AICRP on Sugarcane scheme** at **Regional Sugarcane and Jaggery Research Station, Kolhapur during 2012-13** are as below.

1	Title	:-	AS: 42 (A) Agronomic evaluation of promising sugarcane genotypes Plant Cane II (Early Group)
	Results	:-	Amongst the genotypes, Co 05002 found superior in respect of cane yield , whereas CoSnk 05101 is recorded slightly more CCS yield than Co 05002.
2	Title	:-	AS: 42 (A) Agronomic evaluation of promising sugarcane genotypes Ratoon (Early Group).
	Results	:-	Amongst the tested genotypes, in ratoon crop Co 05002 found superior in respect of cane and CCS yield .The highest cane yield was recorded at 125 % RD N:P ₂ O ₅ :K ₂ O.
3	Title	:-	AS: 42 (B) Agronomic evaluation of promising sugarcane genotypes Plant Cane II (Midlate Group).
	Results	:-	1.Amongst the genotypes, CoSnk 05104 found superior in respect of cane and CCS yield followed by Co 05007. 2. The highest cane yield was recorded at 125 % RD N:P ₂ O ₅ :K ₂ O.
4	Title	:-	.AS: 42 (B) Agronomic evaluation of promising sugarcane genotypes Ratoon (Midlate Group).
	Results	:-	1.Amongst the genotypes, CoSnk 05104 found superior in respect of cane and CCS yield followed by Co 05007. 2. The highest cane yield was recorded at 125 % RD N:P ₂ O ₅ :K ₂ O.
5	Title	:-	AS-64 Response of sugarcane crop to different plant nutrients in varied agro-ecological situations
	Results	:-	Application of recommended dose of N:P ₂ O ₅ :K ₂ O along with S + ZnSO ₄ + FeSO ₄ + MnSO ₄ found superior in respect of cane and CCS yield, which was on par with application of recommended dose of fertilizer as per soil test.
6	Title	:-	Plant geometry in relation to mechanization in sugarcane
			Among the varieties CoM 0265 and Co 86032 are suitable for obtaining higher yield at plant geometry 75:150 cm.

AICRP – Kop- 1

- 1. Title of the Project** **1.AS 42 :Agronomic Evaluation**
- 2. Name of the Scientists** Prof.D.M.Veer, Plant Pathologist
Miss. K.B.Patil , Jr.Res.Asstt
- 3. Name of Experiment** 42 (A) Agronomic evaluation of promising sugarcane genotypes Plant Cane II (Early Group)
- 4. Objectives of the Experiment** To work out management of package of practices for sugarcane genotypes.
- 5. Experimental details** Regional Sugarcane and Jaggery Research Station,
Kolhapur, FRBD, 3, 6 X8.0 m,
24/01/2012,22/02/2013 irrigated, medium soil, pH
6.7, E.C. (dSm⁻¹) 1.5, organic carbon (%) 1.55,
Avail.N 216.36 kg ha⁻¹, Avail. P 15.2 kg ha⁻¹, Avail K
281.55 kg ha⁻¹
- 6. Treatment details** A) Sugarcane varieties :

V1 - CoSnK 05103
V2 – Co 05002
V3 – CoSnk 05101
V4 – CoC 671
B) Fertilizer levels : (N:P₂O₅ :K₂O kg ha⁻¹)

F1 : 75 % (187.50:86.25:86.25kg ha⁻¹)
F2 : 100 % (250:115:115 kg ha⁻¹)
F3 :125 % (312.50:143.75:143.75 kg ha⁻¹)

AICRP – Kop- 2

7. Results:

7.1 Growth parameters:

The data on growth parameters are presented in table 1 and 2.

Genotypes:

The growth parameters *viz.*, Germination, number of tillers ha⁻¹ and NMC ha⁻¹ were affected significantly due to different genotypes.

The sugarcane genotype CoSnK 05101 was significantly recorded (38.62 %) germination, number of tillers (1, 21,690 ha⁻¹) and NMC (87,660 ha⁻¹) over rest of the genotypes followed by Co05002 (38.34%). The CoSnK 05103 was significantly recorded highest millable height (251.78 cm) over rest of the genotypes. However, the check variety CoC 671 significantly recorded cane girth 10.40 cm and number of internodes (21.66 per cane) by Co 05002. Among the genotypes Co 05002 was recorded more cane weight 1.43 kg than other genotypes.

Fertilizer levels:

All the growth parameters except cane girth (9.63cm) at fertilizer level 125 % RD N:P₂O₅:K₂O were not affected significantly due to fertilizer levels. Among the fertilizer level, third levels i.e., 125 % RD N:P₂O₅:K₂O was recorded more germination (40.14 %), number of tillers (1,16,820 ha⁻¹), NMC (86,360 ha⁻¹), millable height (225.08 cm), cane weight (1.28 kg) and number of internodes (20.39 per cane) than other fertilizer levels.

Interaction effect:

The Interaction effect between genotypes and fertilizer levels were found to be non-significant.

AICRP – Kop- 3

7.2 Cane and CCS yield:

The data on Cane and CCS yield are presented in Table 3.

Genotypes:

The cane yield was influenced significantly due to different genotypes. Among the tested sugarcane genotypes Co 05002 was significantly recorded the highest cane yield (112.78 t ha^{-1}) followed by CoSnk 05101 (109.98 t ha^{-1}). The CCS yield was significantly recorded by CoSnk 05101 (15.52 t ha^{-1}) and which was on par with Co 05002 (15.05 t ha^{-1}).

Fertilizer levels:

The cane and CCS yield was influenced significantly due to different fertilizer levels. The fertilizer dose 125 % RD N:P₂O₅:K₂O showed significantly more cane yield (107 t ha^{-1}) and CCS yield (15.35 t ha^{-1}) which was on par with the application of 100 % RD N:P₂O₅:K₂O cane yield (101.49 t ha^{-1}) and CCS yield (14.59 t ha^{-1}).

Interaction effect:

The interaction effects between genotypes and fertilizer levels were found to be non-significant.

7.3 Quality parameters;

The data on quality parameters *viz.* Brix, sucrose, purity and CCS are presented in Table 4.

Genotypes:

The quality parameters were significantly influenced by different genotypes except purity. The check variety CoC 671 recorded significantly higher Brix, Sucrose and CCS (22.04%, 21.16 % and 15.19 %, respectively) over rest of the genotypes.

Fertilizer levels and Interaction effect:

The quality parameters were found to be non-significant due to fertilizer levels as well as interaction effect.

Conclusions:

1. Amongst the genotypes, Co 05002 found superior in respect of cane yield, whereas CoSnk 05101 is recorded slightly more CCS yield than Co 05002.

AICRP – Kop- 4

Table 1 : Mean data on growth parameters as affected by various treatments (2012-13 Season II)

Sr. No.	Treatments Details	Growth parameters		
		Germination at 45 DAP (%)	No. of tillers (000' ha ⁻¹)	NMC (000'ha ⁻¹)
A.	Varieties			
	V1: CoSnK 05103	35.17	117.15	79.73
	V2: Co 05002	38.34	117.87	82.02
	V3 : CoSnk 05101	38.62	121.69	87.66
	V4: CoC 671	33.63	99.74	81.05
	S.E.±	1.193	1.89	1.656
	C.D. 0.05	3.50	5.53	4.86
B	Fertilizer levels			
	F ₁ : 75 % RD N:P ₂ O ₅ :K ₂ O	31.81	110.33	78.42
	F ₂ : 100 % RD N:P ₂ O ₅ :K ₂ O	37.37	115.19	83.07
	F ₃ : 125 % RD N:P ₂ O ₅ :K ₂ O	40.14	116.82	86.36
	S.E.±	1.033	1.63	1.434
	C.D. 0.05	3.03	4.79	4.21
	Interaction (A x B)			
	S.E.±	2.066	3.27	6.012
	C.D. 0.05	N.S.	N.S.	N.S.
	C.V. %	9.819	4.961	6.012

AICRP – Kop-5

Table2: Mean data on growth parameters as affected by various treatments (2012-13 Season II)

Sr. No.	Treatments Details	Growth parameters			
		Millable height (cm)	Girth (cm)	No. of internodes Per cane	Single cane weight (kg)
A.	Varieties				
	V1: CoSnK 05103	251.78	7.68	19.39	1.01
	V2: Co 05002	216.44	9.69	21.66	1.43
	V3 : CoSnk 05101	213.22	9.47	19.24	1.21
	V4: CoC 671	215.67	10.40	20.00	1.24
	S.E. _±	6.364	0.097	0.402	0.079
	C.D. 0.05	18.66	0.29	1.18	N.S.
B	Fertilizer levels				
	F ₁ : 75 % RD N:P ₂ O ₅ :K ₂ O	223.50	9.06	19.65	1.13
	F ₂ : 100 % RD N:P ₂ O ₅ :K ₂ O	224.25	9.23	20.18	1.28
	F ₃ : 125 % RD N:P ₂ O ₅ :K ₂ O	225.08	9.63	20.39	1.25
	S.E. _±	5.511	0.084	0.348	0.069
	C.D. 0.05	N.S.	0.25	N.S.	N.S.
	Interaction (A x B)				
	S.E. _±	11.022	0.169	0.696	0.137
	C.D. 0.05	N.S.	N.S.	N.S.	N.S.
	C.V. %	8.512	3.142	6.008	19.417

AICRP – Kop-6

**Table – 3: Mean cane and CCS yield (t ha⁻¹) as affected by various treatments.
(2012-13 season II).**

Treatment	Yield (t ha ⁻¹)	
	Cane	CCS
Varieties		
V1 - CoSnK 05103	87.16	12.25
V2 – Co 05002	112.78	15.50
V3 – CoSnk 05101	109.98	15.52
V4 – CoC 671	93.31	14.18
S.E. ±	3.077	0.428
C.D. at 0.05	9.03	1.25
Fertilizer levels		
F ₁ : 75 % RD N:P ₂ O ₅ :K ₂ O	93.95	13.15
F ₂ : 100 % RD N:P ₂ O ₅ :K ₂ O	101.49	14.59
F ₃ : 125 % RD N:P ₂ O ₅ :K ₂ O	107.00	15.35
S.E. ±	2.665	0.370
C.D. at 0.05	7.82	1.09
Interaction		
S.E. ±	5.330	0.741
C.D. at 0.05	N.S.	N.S.
C.V. %	9.158	8.937

AICRP – Kop-7

Table 4 : Mean data on quality parameters as affected by various treatments (2012-13 Season I I)

Sr. No.	Treatments Details	Quality parameters			
		Brix %	Sucrose %	Purity %	CCS %
I.	A) Genotypes				
	V1: CoSnK 05103	20.20	19.52	96.60	14.05
	V2: Co 05002	19.70	19.05	96.73	13.72
	V3 : CoSnk 05101	20.65	19.72	95.49	14.12
	V4: CoC 671	22.04	21.16	95.99	15.19
	SE \pm	0.153	0.181	0.536	0.152
	CD 0.05	0.45	0.53	N.S.	0.44
II.	B) Fertilizer levels				
	F ₁ : 75 % RD N:P ₂ O ₅ :K ₂ O	20.26	19.51	96.33	14.02
	F ₂ : 100 % RD N:P ₂ O ₅ :K ₂ O	20.89	20.06	96.06	14.40
	F ₃ : 125 % RD N:P ₂ O ₅ :K ₂ O	20.80	20.02	96.22	14.39
	SE \pm	0.133	0.157	0.464	0.131
	CD 0.05	0.39	0.46	N.S.	N.S.
III.	Varieties X Fertilizer levels				
	SE \pm	0.266	0.314	0.929	0.263
	CD 0.05	N.S.	N.S.	N.S.	N.S.
	C.V. %	2.228	2.739	1.672	3.189

AICRP – Kop- 8

1. **Title of the Project** **2.AS 42 (B):Agronomic Evaluation**
2. **Name of the Scientists** Prof.D.M.Veer, Plant Pathologist
Miss. K.B.Patil , Jr.Res.Asstt
3. **Name of Experiment** AS: 42 (B) Agronomic evaluation of promising sugarcane genotypes -Ratoon (Early Group).
4. **Objectives of the Experiment** To work out management of package of practices for sugarcane genotypes.
5. **Experimental details** Regional Sugarcane and Jaggery Research Station, Kolhapur, FRBD, 3, 6.5 X6.0 m, 25-01-2012, 2/02/2013,irrigated, medium soil, pH 6.7, E.C. (dSm⁻¹) 1.5, organic carbon (%) 1.55, Avail.N 216.36 kg ha⁻¹, Avail. P 15.2 kg ha⁻¹, Avail K 281.55 kg ha⁻¹
6. **Treatment details** A) Sugarcane varieties :
V1 - CoSnK 05103
V2 – Co 05002
V3 – CoSnk 05101
V4 – CoC 671
B) Fertilizer levels : (N:P₂O₅:K₂O kg ha⁻¹)
F1 : 75 % (187.50:86.25:86.25kg ha⁻¹)
F2 : 100 % (250:115:115 kg ha⁻¹)
F3 :125 % (312.50:143.75:143.75 kg ha⁻¹)

AICRP – Kop- 9

7. Results:

7.1 Growth parameters:

The data on growth parameters are presented in Table 1 and 2.

Genotypes:

No. of tillers, NMC, Milleable height, girth and number of internodes were found significant. The tillering count ($74,420 \text{ ha}^{-1}$) was recorded by Co 05002, whereas, NMC ($76,610 \text{ ha}^{-1}$) was recorded by CoSnk 05101. The milleable height (229.11 cm) was significantly recorded by CoSnk 05103 over rest of the genotypes. Among the tested genotypes, Co 05002 was recorded more girth (9.46 cm), number of internodes (22.30 per cane) and single cane weight (1.21 kg) than rest of the genotypes.

Fertilizer levels:

There was not found significant effect of fertilizer levels on growth parameters in ratoon crop

Interaction effect:

The Interaction effect between genotypes and fertilizer levels were found non-significant.

7.2 Cane and CCS yield:

The data on Cane and CCS yield are presented in Table 3.

Genotypes:

The cane yield was influenced significantly due to different genotypes. Significantly highest cane yield (101.91 t ha^{-1}) and CCS yield (13.91 tha^{-1}) was recorded by genotype Co 05002 which was on par with CoSnk 05101.

Fertilizer levels:

The cane and CCS yield was influenced significantly due to different fertilizer levels. The fertilizer dose 125 % RD N:P₂O₅:K₂O showed significantly highest cane yield (98.95 t ha^{-1}) and CCS yield (14.06 t ha^{-1}) which was on par with fertilizer dose 100 % RD N:P₂O₅:K₂O .

Interaction effect:

The interaction effects between genotypes and fertilizer levels were found non-significant.

7.3 Quality parameters;

The data on quality parameters *viz.* Brix , sucrose , purity and CCS are presented in Table 4.

AICRP – Kop- 10

Genotypes:

The quality parameters were significantly influenced by different genotypes except purity. The check variety CoC 671 recorded significantly highest Brix, sucrose and CCS (21.54, 20.51 % and 14.65 % ,respectively) than rest of the genotypes.

Fertilizer levels and Interaction effect:

The quality parameters were found non-significant due to fertilizer levels as well as interaction effect.

Conclusions:

Amongst the tested genotypes, in ratoon crop Co 05002 found superior in respect of cane and CCS yield .The highest cane yield was recorded at 125 % RD N:P₂O₅:K₂O.

AICRP – Kop- 11

Table 1: Mean data on growth parameters as affected by various treatments (2012-13 Ratoon)

Sr. No.	Treatments Details	Growth parameters	
		No. of tillering count (000'ha ⁻¹)	NMC (000'ha ⁻¹)
A.	Varieties		
	V1: CoSnK 05103	71.40	76.23
	V2: Co 05002	74.42	76.43
	V3 : CoSnk 05101	74.42	77.61
	V4: CoC 671	61.72	67.04
	S.E.±	1.625	1.782
	C.D. 0.05	4.77	5.23
B	Fertilizer levels		
	F ₁ : 75 % RD N:P ₂ O ₅ :K ₂ O	67.43	69.24
	F ₂ : 100 % RD N:P ₂ O ₅ :K ₂ O	71.09	75.96
	F ₃ : 125 % RD N:P ₂ O ₅ :K ₂ O	72.95	77.78
	S.E.±	1.408	1.543
	C.D. 0.05	4.13	4.53
	Interaction (A x B)		
	S.E.±	2.815	3.087
	C.D. 0.05	N.S.	N.S.
	C.V. %	6.918	7.193

AICRP – Kop-12

Table 2 : Mean data on growth parameters as affected by various treatments (2012-13 Ratoon)

Sr. No.	Treatments Details	Growth parameters			
		Millable height (cm)	Girth (cm)	No. of internodes Per cane	Single cane weight (kg)
A.	Varieties				
	V1: CoSnK 05103	229.11	8.31	18.77	0.98
	V2: Co 05002	225.00	9.46	22.30	1.21
	V3 : CoSnk 05101	202.67	8.36	19.38	0.92
	V4: CoC 671	208.56	9.37	19.78	1.10
	S.E. _±	7.234	0.230	0.399	0.051
	C.D. 0.05	21.22	0.68	1.17	0.15
B	Fertilizer levels				
	F ₁ : 75 % RD N:P ₂ O ₅ :K ₂ O	209.83	8.67	19.85	1.00
	F ₂ : 100 % RD N:P ₂ O ₅ :K ₂ O	215.75	8.76	19.58	1.03
	F ₃ : 125 % RD N:P ₂ O ₅ :K ₂ O	223.42	9.19	20.74	1.12
	S.E. _±	6.265	0.199	0.346	0.044
	C.D. 0.05	N.S.	N.S.	N.S.	N.S.
	Interaction (A x B)				
	S.E. _±	12.53	0.399	0.692	0.088
	C.D. 0.05	N.S.	N.S.	N.S.	N.S.
	C.V. %	10.03	7.79	5.974	14.536

AICRP – Kop-13

Table–3: Mean cane and CCS yield (t ha⁻¹) as affected by various treatments. (2011-12 Ratoon).

Treatment	Yield (t ha ⁻¹)	
	Cane	CCS
Varieties		
V1: CoSnK 05103	85.49	11.96
V2: Co 05002	101.91	13.91
V3 : CoSnk 05101	93.86	13.49
V4: CoC 671	76.65	11.26
S.E. ±	3.292	0.493
C.D. at 0.05	2.851	0.427
Fertilizer levels		
F ₁ : 75 % RD N:P ₂ O ₅ :K ₂ O	78.39	10.95
F ₂ : 100 % RD N:P ₂ O ₅ :K ₂ O	91.10	12.95
F ₃ : 125 % RD N:P ₂ O ₅ :K ₂ O	98.95	14.06
S.E. ±	9.66	1.45
C.D. at 0.05	8.36	1.25
Interaction		
S.E. ±	5.702	0.853
C.D. at 0.05	N.S.	N.S.
C.V. %	11.037	11.681

AICRP – Kop-14

Table 4 : Mean data on quality parameters as affected by various (2011-12 I Ratoon).

Sr. No.	Treatments Details	Quality parameters			
		Brix %	Sucrose %	Purity %	CCS %
I.	A) Genotypes				
	V1: CoSnK 05103	20.59	19.56	95.01	13.98
	V2: Co 05002	19.82	19.02	96.04	13.65
	V3 : CoSnk 05101	21.09	20.08	95.20	14.36
	V4: CoC 671	21.54	20.51	94.97	14.65
	SE \pm	0.156	0.169	0.566	0.142
	CD 0.05	0.46	0.49	N.S.	0.42
II.	B) Fertilizer levels				
	F ₁ : 75 % RD N:P ₂ O ₅ :K ₂ O	20.59	19.59	95.19	14.01
	F ₂ : 100 % RD N:P ₂ O ₅ :K ₂ O	20.68	19.87	95.91	14.26
	F ₃ : 125 % RD N:P ₂ O ₅ :K ₂ O	21.01	19.92	94.82	14.22
	SE \pm	0.135	0.146	0.490	0.123
	CD 0.05	N.S.	N.S.	N.S.	N.S.
III.	Varieties X Fertilizer levels				
	SE \pm	0.270	0.292	0.980	0.245
	CD 0.05	N.S.	N.S.	N.S.	N.S.
	C.V. %	2.256	2.558	1.782	3.000

AICRP – Kop- 15

1. **Title of the Project** 3.AS 42 (B):Agronomic Evaluation
2. **Name of the Scientists** Prof.D.M.Veer, Plant Pathologist
Miss. K.B.Patil , Jr.Res.Asstt
3. **Name of Experiment** AS: 42 (B) Agronomic evaluation of promising sugarcane genotypes Plant Cane II (Midlate Group).
4. **Objectives of the Experiment** To work out management of package of practices for sugarcane genotypes.
5. **Experimental details** Regional Sugarcane and Jaggery Research Station, Kolhapur, FRBD, 3, 6.5 X6.0 m, 25/01/2012,16/02/2013, irrigated, medium soil, pH 6.7, E.C. (dSm^{-1}) 1.5, organic carbon (%) 1.55, Avail.N $216.36 \text{ kg ha}^{-1}$, Avail. P 15.2 kg ha^{-1} , Avail K $281.55 \text{ kg ha}^{-1}$
6. **Treatment details** A) Sugarcane varieties :

V1 - CoVSI 05122
V2 – Co 05007
V3 – CoSnk 05104
V4 - Co 99004

B) Fertilizer levels : (N:P₂O₅:K₂O kg ha^{-1})

F1 : 75 % (187.50:86.25:86.25 kg ha^{-1})
F2 : 100 % (250:115:115 kg ha^{-1})
F3 :125 % (312.50:143.75:143.75 kg ha^{-1})

AICRP – Kop- 16

7. Results:

7.1 Growth parameters:

The data on growth parameters are presented in table 1 and 2.

Genotypes:

The genotype Co 05007 showed significantly highest germination (37.47 %) and number of tillers (1,27,620 ha⁻¹) over rest of the genotypes. The genotype CoSnk 05104 was significantly recorded more NMC (1,15,960 ha⁻¹), milleable height (267.33 cm) ,cane girth (9.32 cm) ,number of internodes per cane(22.16 and single cane weight 1.64 kg) which was at par with Co 05007 in respect of milleable height, number of internodes and single cane weight.

Fertilizer levels:

All the growth parameters except girth and number of internodes were observed non significant. Significantly highest germination (37.56 %) ,number of tillers (1,19,760 ha⁻¹) , NMC (1,20,670 ha⁻¹), milleable height (254.67 cm) and single cane weight (1.66 kg) were recorded by application of 125 % RD N:P₂O₅ :K₂O which was followed by application of 100 % RD N:P₂O₅ :K₂O.

Interaction effect:

The Interaction effect between genotypes and fertilizer levels were found non-significant.

AICRP – Kop- 17

7.2 Cane and CCS yield:

The data on Cane and CCS yield are presented in Table 3.

Genotypes:

The cane yield was influenced significantly due to different genotypes. The CoSnk 05104 recorded significantly highest cane yield (110.94 t ha⁻¹) and CCS yield (15.40 t ha⁻¹) over rest of the genotypes which was at par with Co 05007 and CoVSI 05122 in respect of cane and CCS yield , respectively.

Fertilizer levels:

The cane yield was influenced significantly due to different fertilizer levels. The fertilizer dose 125 % RD N:P₂O₅:K₂O showed significantly highest cane yield (106.95 t ha⁻¹) and CCS yield (15.37 t ha⁻¹) over the rest of fertilizer levels.

Interaction effect:

The interaction effects between genotypes and fertilizer levels were found non-significant.

7.3 Quality parameters;

The data on quality parameters viz. Brix, sucrose , purity and CCS are presented in Table 4.

Genotypes:

The quality parameters were significantly influenced by different genotypes except purity. The check variety Co 99004 recorded significantly highest Brix, sucrose and CCS (22.15%, 20.75 % and 14.74 %, respectively) over rest of the genotypes.

Fertilizer levels and Interaction effect:

The quality parameters were found non-significant due to fertilizer levels as well as interaction effect.

Conclusions:

1. Amongst the genotypes, CoSnk 05104 found superior in respect of cane and CCS yield followed by Co 05007.
2. The highest cane yield was recorded at 125 % RD N:P₂O₅:K₂O.

AICRP – Kop- 18

Table 1: Mean data on growth parameters as affected by various treatments (2012-13 Plant Cane II)

Sr. No.	Treatments Details	Growth parameters		
		Germination at 45 DAP (%)	No. of tillers 000/ha	NMC (000'ha ⁻¹)
A.	Varieties			
	V1 - CoVSI 05122	37.33	127.45	115.78
	V2 – Co 05007	37.47	127.62	113.78
	V3 – CoSnk 05104	32.69	119.17	115.96
	V4 - Co 99004	29.11	65.72	95.52
	S.E.±	1.326	3.849	3.902
	C.D. 0.05	3.89	11.29	11.44
B	Fertilizer levels			
	F ₁ : 75 % RD N:P ₂ O ₅ :K ₂ O	30.75	105.60	100.22
	F ₂ : 100 % RD N:P ₂ O ₅ :K ₂ O	34.15	104.61	109.89
	F ₃ : 125 % RD N:P ₂ O ₅ :K ₂ O	37.56	119.76	120.67
	S.E.±	1.149	3.333	3.379
	C.D. 0.05	3.37	9.78	9.91
	Interaction (A x B)			
	S.E.±	2.298	6.666	6.759
	C.D. 0.05	N.S.	N.S.	N.S.
	C.V. %	11.65	10.497	10.617

AICRP – Kop-19

Table 2 : Mean data on growth parameters as affected by various treatments (2012-13 Plant Cane II)

Sr. No.	Treatments Details	Growth parameters			
		Millable height (cm)	Girth (cm)	No. of internodes Per cane	Single cane weight (kg)
A.	Varieties				
	V1 - CoVSI 05122	235.11	8.87	21.11	1.59
	V2 – Co 05007	253.33	8.47	22.08	1.63
	V3 – CoSnk 05104	267.33	9.32	22.16	1.64
	V4 - Co 99004	233.11	9.01	20.98	1.36
	S.E.±	3.625	0.157	0.353	0.056
	C.D. 0.05	3.140	0.46	1.04	0.16
B	Fertilizer levels				
	F ₁ : 75 % RD N:P ₂ O ₅ :K ₂ O	238.25	8.83	21.17	1.49
	F ₂ : 100 % RD N:P ₂ O ₅ :K ₂ O	248.75	8.83	21.57	1.52
	F ₃ : 125 % RD N:P ₂ O ₅ :K ₂ O	254.67	9.09	22.00	1.66
	S.E.±	10.63	0.136	0.306	0.049
	C.D. 0.05	9.21	N.S.	N.S.	0.14
	Interaction (A x B)				
	S.E.±	6.279	0.272	0.612	0.097
	C.D. 0.05	N.S.	N.S.	N.S.	N.S.
	C.V. %	4.399	5.289	4.908	10.817

AICRP – Kop-20

**Table 3: Mean cane and CCS yield (t ha⁻¹) as affected by various treatments.
(2012-13 Plant Cane II)**

Treatment	Yield (t ha ⁻¹)	
	Cane	CCS
Varieties		
V1 - CoVSI 05122	101.71	14.60
V2 – Co 05007	104.63	14.44
V3 – CoSnk 05104	110.94	15.40
V4 - Co 99004	75.96	11.20
S.E. ±	4.457	0.697
C.D. at 0.05	13.07	2.04
Fertilizer levels		
F ₁ : 75 % RD N:P ₂ O ₅ :K ₂ O	90.93	12.69
F ₂ : 100 % RD N:P ₂ O ₅ :K ₂ O	97.05	13.66
F ₃ : 125 % RD N:P ₂ O ₅ :K ₂ O	106.95	15.37
S.E. ±	3.860	0.603
C.D. at 0.05	11.32	1.77
Interaction		
S.E. ±	7.719	1.207
C.D. at 0.05	N.S.	N.S.
C.V. %	13.600	15.025

AICRP – Kop-21

Table 4 : Mean data on quality parameters as affected by various treatments.(2012-13 Plant Cane II)

Sr. No.	Treatments Details	Quality parameters			
		Brix %	Sucrose %	Purity %	CCS %
I.	A) Genotypes				
	V1 - CoVSI 05122	21.93	20.28	92.53	14.33
	V2 – Co 05007	20.59	19.36	94.04	13.77
	V3 – CoSnk 05104	20.70	19.46	93.98	13.84
	V4 - Co 99004	22.15	20.75	93.70	14.74
	SE \pm	0.170	0.200	0.668	0.173
	CD 0.05	0.50	0.59	N.S.	0.51
II.	B) Fertilizer levels				
	F ₁ : 75 % RD N:P ₂ O ₅ :K ₂ O	21.05	19.68	93.51	13.97
	F ₂ : 100 % RD N:P ₂ O ₅ :K ₂ O	21.43	19.95	93.14	14.13
	F ₃ : 125 % RD N:P ₂ O ₅ :K ₂ O	21.55	20.26	94.04	14.41
	SE \pm	0.147	0.173	0.579	0.150
	CD 0.05	N.S.	N.S.	N.S.	N.S.
III.	Varieties X Fertilizer levels				
	SE \pm	0.294	0.346	1.157	0.300
	CD 0.05	N.S.	N.S.	N.S.	N.S.
	C.V. %	2.387	3.004	2.142	3.66

AICRP – Kop- 22

- 1. Title of the Project** **4.AS 42 (B):Agronomic Evaluation**
- 2. Name of the Scientists** Prof.D.M.Veer, Plant Pathologist
Miss. K.B.Patil , Jr.Res.Asstt
- 3. Name of Experiment** AS: 42 (B) Agronomic evaluation of
promising sugarcane genotypes
Ratoon (Midlate Group).
- 4. Objectives of the Experiment** To work out management of package of
practices for sugarcane genotypes.
- 5. Experimental details** Regional Sugarcane and Jaggery Research

Station, Kolhapur, FRBD, 3, 6.5 X6.0 m, 25/1/2012,
20/02/2013, irrigated, medium soil, pH 6.7, E.C. (dSm⁻¹)
1.5, organic carbon (%) 1.55, Avail.N 216.36 kg ha⁻¹, Avail.
P 15.2 kg ha⁻¹, Avail K 281.55 kg ha⁻¹
- 6. Treatment details** A) Sugarcane varieties :

V1 - CoVSI 05122
V2 – Co 05007
V3 – CoSnk 05104
V4 - Co 99004

B) Fertilizer levels : (N:P₂O₅ :K₂O kg ha⁻¹)

F1 : 75 % (187.50:86.25:86.25kg ha⁻¹)

F2 : 100 % (250:115:115 kg ha⁻¹)

F3 :125 % (312.50:143.75:143.75 kg ha⁻¹)

7. Results:

7.1 Growth parameters:

The data on growth parameters are presented in table 1 and 2.

Genotypes:

All the growth parameters except single cane weight were found significant. The genotype Co 05007 gave significantly highest tillers ($77,010 \text{ ha}^{-1}$), NMC ($96, 230 \text{ ha}^{-1}$) and cane girth (8.32cm) followed by CoVSI 05122. The millable height (231 cm) was significantly recorded by CoVSI 05122.

Fertilizer levels:

All the growth parameters except NMC and cane girth were found non significant. The NMC ($94,700 \text{ ha}^{-1}$) and girth (8.29 cm) were significantly influenced by application 125 % RD N:P₂O₅ :K₂O.

Interaction effect:

The Interaction effect between genotypes and fertilizer levels were found to be non-significant.

AICRP – Kop- 24

7.2 Cane and CCS yield:

The data on Cane and CCS yield are presented in Table 3.

Genotypes:

The cane and CCS yield were influenced significantly due to different genotypes. The significantly highest cane yield 104.42 t ha⁻¹ and CSS yield 13.71 t ha⁻¹ were recorded more by CoSnK 05104 than rest of the genotypes.

Fertilizer levels:

The cane yield was not influenced due to different fertilizer levels, whereas, CCS yield 13.78 t ha⁻¹ was found significant by application of fertilizer dose 125 % RD N:P₂O₅:K₂O .

Interaction effect:

The interaction effects between genotypes and fertilizer levels were found non-significant.

7.3 Quality parameters;

The data on quality parameters viz. Brix, sucrose , purity and CCS are presented in Table 4.

Genotypes:

The quality parameters were significantly influenced by different genotypes except purity. The check variety Co 99004 recorded significantly highest Brix, sucrose and CCS (22.82, 21.33 % and 15.13 % , respectively) over rest of the genotypes.

Fertilizer levels and Interaction effect:

The quality parameters were found non-significant due to fertilizer levels as well as interaction effect.

Conclusions:

1. Amongst the genotypes, CoSnk 05104 found superior in respect of cane and CCS yield followed by Co 05007.
2. The highest cane and CCS yield was recorded at 125 % RD N:P₂O₅:K₂O fertilizer level.

AICRP – Kop- 25

Table 1: Mean data on growth parameters as affected by various treatments (2012-13 Ratoon)

Sr. No.	Treatments Details	Growth parameters	
		No. tillers T.R.	NMC (000'ha ⁻¹)
A.	Varieties		
	V1 - CoVSI 05122	69.16	87.86
	V2 – Co 05007	77.01	96.23
	V3 – CoSnk 05104	65.95	97.07
	V4 - Co 99004	58.66	71.15
	S.E.±	2.414	2.736
	C.D. 0.05	7.08	8.02
B	Fertilizer levels		
	F ₁ : 75 % RD N:P ₂ O ₅ :K ₂ O	65.46	83.12
	F ₂ : 100 % RD N:P ₂ O ₅ :K ₂ O	66.35	86.41
	F ₃ : 125 % RD N:P ₂ O ₅ :K ₂ O	71.28	94.70
	S.E.±	2.090	2.369
	C.D. 0.05	N.S.	6.95
	Interaction (A x B)		
	S.E.±	4.181	4.738
	C.D. 0.05	N.S.	N.S.
	C.V. %	10.697	9.318

AICRP – Kop-26

Table 2 : Mean data on growth parameters as affected by various treatments (2012-13 Ratoon)

Sr. No.	Treatments Details	Growth parameters			
		Millable height (cm)	Girth (cm)	No. of internodes Per cane	Single cane weight (kg)
A.	Varieties				
	V1 - CoVSI 05122	231.00	8.23	18.50	1.29
	V2 – Co 05007	217.11	8.32	18.36	1.38
	V3 – CoSnk 05104	192.00	8.10	17.23	1.36
	V4 - Co 99004	210.11	8.02	19.27	1.27
	S.E.±	4.890	0.071	0.360	0.057
	C.D.0.05	14.34	0.21	1.06	N.S.
B	Fertilizer levels				
	F ₁ : 75 % RD N:P ₂ O ₅ :K ₂ O	210.50	8.02	18.28	1.28
	F ₂ : 100 % RD N:P ₂ O ₅ :K ₂ O	209.83	8.20	18.18	1.30
	F ₃ : 125 % RD N:P ₂ O ₅ :K ₂ O	217.33	8.29	18.56	1.39
	S.E.±	4.235	0.062	0.312	0.049
	C.D.0.05	N.S.	0.18	N.S.	N.S.
	Interaction (A x B)				
	S.E.±	8.470	0.124	0.624	0.098
	C.D.0.05	N.S.	N.S.	N.S.	N.S.
	C.V. %	6.902	2.622	5.890	12.813

AICRP – Kop-27

**Table – 3: Mean cane and CCS yield (t ha⁻¹) as affected by various treatments.
(2012-13 Ratoon)**

Treatment	Yield (t ha ⁻¹)	
	Cane	CCS
Varieties		
V1 - CoVSI 05122	96.01	13.26
V2 – Co 05007	97.15	12.89
V3 – CoSnk 05104	104.42	13.71
V4 - Co 99004	79.11	11.93
S.E. ±	3.959	0.420
C.D. at 0.05	11.61	1.23
Fertilizer levels		
F ₁ : 75 % RD N:P ₂ O ₅ :K ₂ O	89.29	12.26
F ₂ : 100 % RD N:P ₂ O ₅ :K ₂ O	94.34	12.81
F ₃ : 125 % RD N:P ₂ O ₅ :K ₂ O	98.89	13.78
S.E. ±	3.428	0.364
C.D. at 0.05	N.S.	1.07
Interaction		
S.E. ±	6.857	0.728
C.D. at 0.05	N.S.	N.S.
C.V. %	12.611	9.742

AICRP – Kop-28

Table 4: Mean data on quality parameters as affected by various treatments. (2012-13 Ratoon)

Sr. No.	Treatments Details	Quality parameters			
		Brix %	Sucrose %	Purity %	CCS %
I.	A) Genotypes				
	V1 - CoVSI 05122	20.98	19.53	93.09	13.84
	V2 – Co 05007	21.70	20.16	92.87	14.26
	V3 – CoSnk 05104	21.15	19.77	93.47	14.03
	V4 - Co 99004	22.82	21.33	93.46	15.13
	SE \pm	0.132	0.163	0.449	0.138
	CD 0.05	0.39	0.48	N.S.	0.40
II.	B) Fertilizer levels				
	F ₁ : 75 % RD N:P ₂ O ₅ :K ₂ O	21.51	20.05	93.20	14.21
	F ₂ : 100 % RD N:P ₂ O ₅ :K ₂ O	21.80	20.32	93.20	14.40
	F ₃ : 125 % RD N:P ₂ O ₅ :K ₂ O	21.68	20.22	93.27	14.34
	SE \pm	0.114	0.141	0.389	0.119
	CD 0.05	N.S.	N.S.	N.S.	N.S.
II.	Varieties X Fertilizer levels				
	SE \pm	0.229	0.283	0.777	0.239
	CD 0.05	N.S.	N.S.	N.S.	N.S.
	C.V. %	1.828	2.427	1.444	2.890

AICRP – Kop-29

Title of the Project	5.Plant nutrition
2. Name of the Scientists	Prof.D.M.Veer, Plant Pathologist Miss. K.B.Patil , Jr.Res.Asstt
3. Name of Experiment	AS-64 Response of sugarcane crop to different plant nutrients in varied agro-ecological situations Plant Cane II
4. Objectives of the Experiment	To study differential response of sugarcane crop to different nutrients.
5. Experimental details	Regional Sugarcane and Jaggery Research Station, Kolhapur, RBD, 6m x 6.5m, Net – 9m x 6.5 m, 27/1/2012, 12/02/2013 , irrigated, medium soil, pH 7.6, E.C. (dSm ⁻¹) 0.75, organic carbon (%) 0.76, Avail.N 215 kg ha ⁻¹ , Avail. P 15.2 kg ha ⁻¹ , Avail K 273.4 kg ha ⁻¹
6. Treatment details	Sr.No. Treatment 1. Control 2. N 3. N + P ₂ O ₅ 3. N:P ₂ O ₅ :K ₂ O 4. N:P ₂ O ₅ :K ₂ O + S 6. N:P ₂ O ₅ :K ₂ O +Zn 7. N:P ₂ O ₅ :K ₂ O +Fe 8. N:P ₂ O ₅ :K ₂ O + Mn 9. N:P ₂ O ₅ :K ₂ O +S+ Zn 10. N:P ₂ O ₅ :K ₂ O +S+Zn+Fe 11. N:P ₂ O ₅ :K ₂ O +S+Zn+Fe+Mn 12. Soil test based fertilizer application 13. FYM @ 20 t/ha S : 60 kg/ha –elemental sulphur Zn: 50 kg ZnSO ₄ /ha Fe: 20 kg FeSO ₄ /ha Mn : 10 kg MnSO ₄ /ha N, P, K as per recommendations

AICRP – Kop- 30

Results:

7.1 Growth parameters:

The data on growth parameters are presented in Table 1 and 2. The growth parameters *viz*; germination, milleable height and cane girth were found non significant due to various treatment whereas number of tillers ,NMC, number of internodes and single cane weight were found significant. Among the treatments T₁₁ (N:P₂O₅:K₂O+S+Zn+Fe+Mn) recorded more number of tillers (1,03,890 ha⁻¹ , NMC 1,06,070 ha⁻¹), number of internodes (19.73 per cane)and single cane weight (1.41 kg) than rest of the treatments .

Cane and CCS yield:

The data on cane and CCS yield are presented in Table 3. The cane and CCS yield observed significant due to various treatments. The treatment T₁₁ (N:P₂O₅:K₂O+S+Zn+Fe+Mn) gave significantly highest cane yield (120.95 t ha⁻¹ and CCS yield 16.04 t ha⁻¹) followed by treatment T₁₂ as per soil test (115.36 and 16.04 t ha⁻¹).

Quality parameters:

The data on quality parameters *viz*: Brix, sucrose, purity and CCS percent are presented in Table 4.

The highest CCS (14.76 %) was significantly recorded by the treatment T₁₁ (N:P₂O₅:K₂O + S + Zn + Fe + Mn) .The other quality parameter were found non significant

Conclusion:

Application of recommended dose of N: P₂O₅:K₂O along with S + ZnSO₄ + FeSO₄ + MnSO₄ found superior in respect of cane and CCS yield, which was on par with application of recommended dose of fertilizer as per soil test.

AICRP – Kop- 31

Table 1: Mean data on growth parameters as affected by various treatments Plant Cane II (2012-13)

Tr. No	Treatments Details	Growth parameters		
		Germination (%) at 45 DAP	No. of Tillers (000'ha ⁻¹)	NMC (000'ha ⁻¹)
1	Control	41.13	63.58	68.76
2	N	46.56	78.02	78.09
3	N + P ₂ O ₅	51.86	86.42	84.88
4	N + P ₂ O ₅ + K ₂ O	55.75	88.21	94.96
5	N:P ₂ O ₅ :K ₂ O +S	57.72	91.23	95.47
6	N:P ₂ O ₅ :K ₂ O +Zn	56.36	90.49	93.40
7	N:P ₂ O ₅ :K ₂ O +Fe	59.94	88.64	95.45
8	N:P ₂ O ₅ :K ₂ O +Mn	56.24	85.12	92.58
9	N:P ₂ O ₅ :K ₂ O +S+Zn	57.91	92.22	99.04
10	N:P ₂ O ₅ :K ₂ O +S+Zn+Fe	60.06	99.26	103.62
11	N:P ₂ O ₅ :K ₂ O +S+Zn+Fe+Mn	59.82	103.89	106.07
12	Soil test based fertilizer application	60.00	102.90	102.78
13	FYM @ 20 t/ha	45.63	74.87	77.42
	SE _±	4.53	5.77	7.63
	CD 0.05	N.S.	17.45	23.09
	CV %	14.40	11.34	14.41

AICRP – Kop- 32

Table 2: Mean data on growth parameters as affected by various treatments Plant Cane II (2012-13)

Tr. No	Treatments Details	Growth parameters			
		Millable height (cm)	Girth (cm)	No. of internodes per cane	Single cane weight (kg)
1	Control	167.00	7.37	11.67	0.79
2	N	192.33	8.57	18.17	0.89
3	N + P ₂ O ₅	199.33	8.67	18.37	1.00
4	N:P ₂ O ₅ :K ₂ O	190.33	8.47	18.47	1.12
5	N:P ₂ O ₅ :K ₂ O +S	194.00	8.67	18.67	1.18
6	N:P ₂ O ₅ :K ₂ O +Zn	166.00	8.50	17.77	1.07
7	N:P ₂ O ₅ :K ₂ O +Fe	199.67	8.70	19.30	1.20
8	N:P ₂ O ₅ :K ₂ O + Mn	199.33	8.60	19.71	1.04
9	N:P ₂ O ₅ :K ₂ O + S+ Zn	194.33	8.83	19.57	1.27
10	N:P ₂ O ₅ :K ₂ O +S+Zn+Fe	201.33	9.03	19.14	1.38
11	N:P ₂ O ₅ :K ₂ O +S+Zn+Fe+Mn	207.33	8.93	19.73	1.41
12	Soil test based fertilizer application	201.00	9.13	19.25	1.31
13.	FYM @ 20 t/ha	199.67	8.47	18.07	0.88
	SE±	12.45	0.39	0.64	0.08
	CD 0.05	N.S.	N.S.	1.95	0.25
	CV %	11.16	7.85	6.10	12.95

AICRP – Kop- 33

**Table – 3: Mean cane and CCS yield (t ha⁻¹) as affected by various treatments.
Plant Cane II (2012-13)**

Tr. No	Treatments Details	Yield (t ha ⁻¹)	
		Cane	CCS
1	Control	69.33	9.18
2	N	75.55	10.51
3	N + P ₂ O ₅	87.03	12.19
4	N:P ₂ O ₅ :K ₂ O	91.61	13.05
5	N:P ₂ O ₅ :K ₂ O +S	106.30	14.89
6	N:P ₂ O ₅ :K ₂ O +Zn	102.13	13.94
7	N:P ₂ O ₅ :K ₂ O +Fe	103.17	14.61
8	N:P ₂ O ₅ :K ₂ O + Mn	100.05	14.23
9	N:P ₂ O ₅ :K ₂ O + S+ Zn	107.34	14.81
10	N:P ₂ O ₅ :K ₂ O +S+Zn+Fe	113.06	15.90
11	N:P ₂ O ₅ :K ₂ O +S+Zn+Fe+Mn	120.95	17.85
12	Soil test based fertilizer application	115.36	16.04
13	FYM @ 20 t/ha	74.81	10.42
	SE _±	5.69	0.84
	CD 0.05	17.23	2.55
	CV %	10.12	10.70

AICRP – Kop-34

Table 4 : Mean data on quality parameters as affected by various treatments (2011-12)

Tr. No	Treatments Details	Quality parameters			
		Brix %	Sucrose %	Purity %	CCS %
1	Control	20.32	18.74	92.22	13.22
2	N	20.99	19.63	93.60	13.94
3	N + P ₂ O ₅	20.82	19.63	94.30	13.99
4	N:P ₂ O ₅ :K ₂ O	20.99	19.93	94.97	14.24
5	N:P ₂ O ₅ :K ₂ O +S	20.65	19.60	94.92	14.00
6	N:P ₂ O ₅ :K ₂ O +Zn	20.65	19.26	93.29	13.65
7	N:P ₂ O ₅ :K ₂ O +Fe	20.99	19.86	94.66	14.17
8	N:P ₂ O ₅ :K ₂ O + Mn	21.15	19.97	94.45	14.23
9	N:P ₂ O ₅ :K ₂ O + S+ Zn	20.65	19.40	93.93	13.79
10	N:P ₂ O ₅ :K ₂ O +S+Zn+Fe	20.65	19.65	95.13	14.05
11	N:P ₂ O ₅ :K ₂ O +S+Zn+Fe+Mn	21.65	19.68	95.30	14.76
12	Soil test based fertilizer application	21.32	19.71	92.47	13.92
13	FYM @ 20 t/ha	21.15	20.63	93.00	13.93
	SE _±	0.38	0.30	0.98	0.23
	CD 0.05	N.S.	N.S.	N.S.	0.69
	CV %	3.16	2.67	1.81	2.81

AICRP – Kop-35

- 1. Title of the Project** Plant geometry in relation to mechanization in sugarcane
- 2. Name of the Scientists** Prof.D.M.Veer, Plant Pathologist
Miss. K.B.Patil , Jr.Res.Asstt
- 3. Objectives of the Experiment**
 1. To work out optimum plant geometry for use of farm machinery.
 2. To study varietal response to different planting geometry.
- 4. Experimental details** Sugarcane Regional and Jaggery Research Station, Kolhapur, Split plot, 3, 6m X6.0 m, 3/02/2012, 12/03/2013, irrigated, medium soil, pH 7.6, E.C. 0.925 (dSm⁻¹) , organic carbon 0.87 (%), Avail.N 211.36 kg ha⁻¹, Avail. P 11.2 kg ha⁻¹, Avail K 280.15 kg ha⁻¹
- 5. Year of Start** 2011-12
- 6. Year of completion** 2013-14
- 7 Treatment details**
 - A. Plant geometry
 - (i) 120 cm row distance
 - (ii)150 cm row distance
 - (iii)75:150 cm for tropical region(Paired)
 - B.Genotype:
(Four genotypes with distinct plant morphological traits)
 - i) Co 86032
 - ii) CoM 0265
 - iii) Co 92005
 - iv) Co 99010

8. Results

The data pertaining to germination percentage, number of tillers as influenced by planting geometry and genotypes are presented in table 1 and 2.

8.1 Growth parameters

8.1.1 Effect of plan geometry

The data presented in table 1 showed that the significantly maximum germination (49.77 %) at 45 DAP was observed in 150 cm row planting system whereas number of tillers 1,27,820 ha⁻¹ was significantly recorded in planting of sugarcane at 150 cm. The milleable height (233.58 cm) at harvest, girth (9.93 cm) and number of internodes (20.04 cane⁻¹) were significantly recorded in plant of sugarcane at 150 cm row distance and it was closely followed with planting geometry 120 cm row distance. In case of single cane weight the significantly highest single cane weight (1.63 kg) was recorded in planting spacing 75:150 and it was closely followed with plant geometry 120cm row distance.

8.1.2 Effect of varities/genotypes

Among the genotypes, significantly maximum germination was recorded by genotype Co 99010 at 45 DAP (43.43%). Number of tillers and number of milleable canes per hecter were recorded significantly by CoM 0265. The significantly highest milleable height (250.78cm), girth (10.29 cm), number of internodes (20.51cane⁻¹) and single cane weight (1.58kg) were recorded by variety CoM 0265.

8.1.3 Effect of Interaction

The interaction effect between planting geometry and genotypes/varieties in respect of growth parameters was found non significant.

8.2 Cane ,CCS yield and quality parameter

8.2.1 Effect of plant geometry

The data pertaining to cane CCS and quality parameters are presented in Table 2. Plant geometry not shown any significant difference in respect of quality parameters but numerically highest brix (21.46 %) ,sucrose (19.90%), CCS (14.09 %) recorded by planting of sugarcane at 150 cm. However, numerically highest purity percent was recorded in 120 cm row distance.

AICRP – Kop-37

8.2.2. Effect of plant varieties/genotype

The significantly highest cane yield (120.84 tha^{-1}) was recorded by CoM 0265 whereas the highest CCS yield (16.53 tha^{-1}) was recorded by Co 86032. The genotypes shown significant difference in case of quality parameters. Among two tested genotypes, Co 92005 was significantly found superior in respect of brix (22.07%), sucrose (20.83%), CCS (14.85 %) and purity (94.09%) were recorded by the variety Co 92005.

8.2.3 Effect of interaction

The interaction effect due to plant geometry and genotype in respect of cane ,CCS yield and quality parameters were found non significant.

Conclusion

Among the varieties CoM 0265 and Co 86032 are suitable for obtaining higher yield at plant geometry 75:150 cm.

AICRP – Kop-38

Table 1: Mean data on growth parameters as affected by various treatments. (2012-13 Plant Cane I)

Sr. No.	Treatments Details	Growth parameters		
		Germination at 45 DAP (%)	No. of tillers (000' ha ⁻¹)	NMC (000'ha ⁻¹)
A.	Plant geometry			
	120 cm row distance	35.31	98.67	86.87
	150 cm row distance	49.77	107.27	92.20
	75:150 cm	36.52	127.82	90.84
	S.E.±	2.02	2.34	1.42
	C.D. 0.05	7.94	9.19	N.S.
	C.V.	17.29	7.29	5.49
B	Genotype			
	Co 86032	42.83	118.99	90.26
	CoM 0265	38.43	124.34	95.85
	Co 99010	43.43	104.64	87.77
	Co 92005	37.44	97.04	85.99
	S.E.±	2.25	2.90	2.23
	C.D. 0.05	N.S.	8.63	6.62
	C.V.	16.66	7.83	7.43
	Interaction (A x B)			
	S.E.±	3.01	3.51	2.24
	C.D. 0.05	N.S.	N.S.	N.S.
	G.M.	42.83	111.25	89.97

AICRP – Kop-39

Table 2: Mean data on growth parameters as affected by various treatments (2012-13 Season II)

Sr. No.	Treatments Details	Growth parameters			
		Millable height (cm)	Girth (cm)	No. of internodes Per cane	Single cane weight (kg)
A.	Plant geometry				
	120 cm row distance	231.50	9.61	19.16	1.22
	150 cm row distance	233.58	9.93	20.04	1.35
	75:150 cm	227.42	9.19	18.75	1.63
	S.E.±	1.16	0.13	0.15	0.06
	C.D. 0.05	4.56	0.50	0.58	0.23
	C.V. %	1.74	4.57	2.66	14.40
B	Genotype				
	Co 86032	231.33	8.87	18.47	1.48
	CoM 0265	250.78	10.29	20.51	1.58
	Co 99010	213.67	9.78	19.29	1.30
	Co 92005	227.56	9.36	19.00	1.24
	S.E.±	1.57	0.13	0.16	0.05
	C.D. 0.05	4.67	0.38	0.47	0.16
	C.V. %	2.04	3.96	2.46	11.56
	Interaction (A x B)				
	S.E.±	3.41	0.191	0.414	0.13
	C.D. 0.05	N.S.	N.S.	N.S.	N.S.
	G.M.	230.83	9.58	19.32	1.40

AICRP – Kop-40

Table 3: Mean data on growth rameters as affected by various treatments (2012-13 Season II)

Sr. No.	Treatments Details	Yield (t ha ⁻¹)		Quality parameters			
		Cane	CCS	Brix %	Sucrose %	Purity %	CCS %
I.	Plant geometry						
1	120 cm row distance	112.57	15.85	21.25	19.86	93.43	14.09
2	150 cm row distance	108.46	15.23	21.46	19.90	92.69	14.07
3	75:150 cm	114.41	16.02	21.17	19.77	93.23	14.02
	S.E.±	2.34	0.38	0.19	0.16	0.52	0.12
	C.D. 0.05	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
	C.V.	7.24	9.84	3.07	2.84	1.94	3.07
B	Genotype						
1	Co 86032	116.24	16.53	21.63	20.10	93.03	14.22
2	CoM 0265	120.84	16.30	20.57	19.07	92.73	13.49
3	Co 99010	105.88	14.49	20.90	19.36	92.62	13.68
4	Co 92005	104.28	15.48	22.07	20.83	94.09	14.85
	SE±	2.54	0.30	0.14	0.14	0.47	0.12
	CD 0.05	7.54	0.89	0.40	0.43	N.S.	0.37
	C.V.	6.85	5.79	1.92	2.19	1.53	2.63
III.	Varieties X Fertilizer levels						
	SE+	2.34	0.70	0.11	0.12	0.32	0.16
	CD 0.05	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
	G.M.	111.81	15.7	21.29	19.84	93.12	14.05

4. List of Publications – 2012-13

A) Publications:

i) Research Articles:

Sr. No.	Title of research paper	Name of author (s)	Name of journal	Year, Vol. No. and page No of the Journals
2	Evaluation of promising clones (midlate group) of sugarcane for productivity, growth and quality parameters in Southern Maharashtra	K.B. Patil, D.M. Veer and V.Y. Kankal	71 st Annual Convention of STAI during 24 to 26 September 2012 organised by The Sugar Technologists' Association of India, New Delhi – 110 020.	Pp:203-207
1	Evaluation of promising sugarcane genotypes for cane yield, growth and quality parameters under <i>suru</i> season in southern Maharashtra	K.B. Patil, V.Y. Kankal, D.M. Veer, B.G. Gaikawad , M.M. Suryavanshi and S. M. More	59 th Annual Convention organized by the Deccan Sugar Technologists Association, (INDIA) Pune	2012 ,pp: A22-A25
2	Promising Sugarcane genotypes for quality jaggery	B.G. Gaikawad, G.S. Nevkar, U.S.Kudtarkar, K.B. Patil, D.M. Veer, and M.M. Suryavanshi	59 th Annual Convention organized by the Deccan Sugar Technologists Association, (INDIA) Pune	2012 ,pp: A26-A31
3	Effect of combined use of organic and chemical fertilizers on sugarcane productivity and jaggery quality in Southern Maharashtra	K.B. Patil, D.M. Veer, B.S.Kadam, G. S. Nevkar, U.S.Kudtarkar, B. G. Gaikwad and M. M. Suryavanshi	Proceedings International symposium on New Paradigms in sugarcane research 15 th to 18 th Oct. 2012 organized by “Society for Sugarcane Research and Development, Coimbatore and Sugarcane Breeding Institute, (ICAR) Coimbatore	2012, Pp: 88-89

AICRP – Kop-42

4	Effect of weed management practices on cane yield and weed intensity of ratoon sugarcane (Co 86032)	M. M. Suryavanshi, D.M. Veer , K. B. Patil , B.G. Gaikwad, and U. S. Kudtarkar	59 th Annual Convention organized by the Deccan Sugar Technologists Association, (INDIA) Pune	2012 , pp: A218-A225
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ii) Technical paper:

Sr. No.	Title of research paper	Name of author (s)	Name of journal	Year, Vol. No. and page No of the Journals
1	Effect of combined use of organic and chemical fertilizers on sugarcane productivity and jaggery quality in Southern maharashtra	K.B. Patil, D.M. Veer , B.S.Kadam, G. S. Nevkar, U.S.Kudtarkar, B. G. Gaikwad and M. M. Suryavanshi	Proceedings International symposium on New Paradigms in sugarcane research 15 th to 18 th Oct. 2012 organized by “Society for Sugarcane Research and Development, Coimbatore and Sugarcane Breeding Institute, (ICAR) Coimbatore	Pp: 88-89

iii) Publication of Marathi articles:

Sr. No.	Title	Name of author (s)	Name of journal	Year, Vol. No. and page No of the Journals
1	Use of fertilizers as per soil testing and yield targeting equations for sugarcane	K.B. Patil , V. Y. Kankal, Dr. B. G. Gaikwad	Agri-Magazine “Purva Krishidoot”, Nashik	January 2013, Vol. 4 (1),pp:95-97
2	Green manuring for sugarcane	K.B. Patil , Shri. U.S. Kudtrkar, M.M. Suryavanshi, Prof. D. M. Veer	Agri-Magazine “Purva Krishidoot”, Nashik	January 2013, Vol. 4 (1),pp:153-155

AICRP – Kop-43
PART II
TECHNICAL PROGRAMME
2013-2014

All-India Co-ordinated Research Project on Sugarcane, Kolhapur.

CROP PRODUCTION

D) ICAR Trials		
1.	AS 42	(A) Agronomic evaluation of promising sugarcane genotypes (Early Group)- Plant cane I.
2.	AS 42	(B) Agronomic evaluation of promising sugarcane Genotypes (Midlate Group) Plant cane I.
3.	AS-63	Plant geometry in relation to mechanization in sugarcane. Plant cane II
4	AS 64	Response of sugarcane crop to different plant nutrients in varied agro- ecological situations II.

