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ANNUAL RESEARCH REPORT

ALL INDIA COORDINATED RESEARCH

PROJECT ON SUGARCANE

(AGRONOMY)

(2011 - 2012)



**RESEARCH SCIENTIST (SUGARCANE)
REGIONAL SUGARCANE RESEARCH STATION
NAVSARI AGRICULTURAL UNIVERSITY
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1. SEASONAL FEATURE AND CROP CONDITION

YEAR: 2011-12

RAINFALL:-

The monsoon commenced from 4th week of May (22nd std week) at Navsari. The total rainfall received during the season was 1597.2 mm. in 65 days. The monsoon withdrawn during the third week of September-2011. The total rainfall received was slightly higher than average (1400.mm.)

TEMPERATURE:-

The highest maximum temperature was recorded during the month of March 2011 (37.6 °c) and the lowest minimum temperature was recorded in the month of January 2012 (11.5 °c) at Navsari.

CROP CONDITION:-

In general weather parameters *viz.* Temperature (Maxi. and mini.), and relative humidity, remained comparatively favorable for normal growth of sugarcane crop. However, due to higher rainfall water logging was observed in lowland plots. Hence early flowering was observed in many varieties as such crop yield remained some what low than the non flowering crops.

The mean weekly meteorological data recorded during the reporting year (2011-12) at Navsari are given in Table: A.

Table: A The meteorological data recorded at Regional Sugarcane Research Station, N.A.U., Navsari for the year 2011-2012.

Std. Week No.	Meteorological weeks	Temperature C ⁰		Rain-Fall (mm)	No. of rainy days	Relative Humidity %	
		Maximum	Minimum			Morning	Evening
1	2	3	4	5	6	8	9
January 2011							
1	1-7	28.0	13.5	0.0	0	57	29
2	8-14	30.2	10.6	0.0	0	70	20
3	15-21	29.9	10.6	0.0	0	82	25
4	22-28	32.2	13.1	0.0	0	80	53
5	29-4	32.0	14.0	0.0	0	73	33
February 2011							
6	5-11	32.5	13.8	0.0	0	82	29
7	12-18	31.2	15.1	0.0	0	86	34
8	19-25	31.4	13.7	0.0	0	75	43
9	26-4	34.3	16.0	0.0	0	69	32
March 2011							
10	5-11	34.3	16.0	0.0	0	69	32
11	12-18	34.4	15.6	0.0	0	76	24
12	19-25	37.6	15.9	0.0	0	57	11
13	26-1	34.0	19.8	0.0	0	88	37
April -2011							
14	2-8	34.3	20.4	0.0	0	83	53
15	9-15	35.8	23.1	0.0	0	84	68
16	16-22	35.6	23.8	0.0	0	83	54
17	23-29	36.2	23.4	0.0	0	86	42
18	30-06	35.5	25.4	0.0	0	79	50
May-2011							
19	07-13	33.4	25.6	0.0	0	78	57
20	14-20	34.3	26.3	0.0	0	84	61
21	21-27	33.8	27.8	0.0	1	80	67
22	28-03	35.4	27.7	5.2	0	78	59
June-2011							
23	4-10	35.4	26.6	29.0	1	88	65
24	11-17	33.2	26.1	19.0	3	92	76
25	18-24	33.0	28.0	4.7	3	93	75
26	25-01	32.8	27.7	17.4	3	87	78
July-2011							
27	2-8	31.4	25.5	72.0	5	92	78
28	9-15	29.5	24.9	203.0	5	95	87
29	16-22	30.0	25.7	161.0	3	94	86

1	2	3	4	5	6	8	9
30	23-29	30.2	25.4	36.0	4	94	84
31	30-05	29.6	25.5	103.0	5	95	91
August-2011							
32	6-12	29.5	26.2	39.0	5	91	88
33	13-19	29.7	25.2	98.0	5	94	86
34	20-26	29.0	25.0	227.0	5	97	91
35	27-2	29.1	24.9	258.0	4	95	86
September-2011							
36	3-9	30.4	25.4	116.0	6	91	87
37	10-16	29.2	25.0	143.7	4	95	83
38	17-23	30.0	23.7	61.0	3	95	72
39	24-30	31.7	23.2	3.0	0	93	63
October-2011							
40	1-7	33.8	23.4	1.0	0	87	54
41	8-14	36.6	24.1	0.0	0	85	41
42	15-21	36.2	23.7	0.0	0	87	47
43	22-28	35.9	23.7	0.2	0	86	46
44	29-4	36.0	21.1	0.0	0	78	46
November-2011							
45	5-11	35.5	18.1	0.0	0	73	27
46	12-18	34.4	17.3	0.0	0	78	31
47	19-25	34.6	20.5	0.0	0	81	33
48	26-2	34.6	20.5	0.0	0	71	36
December-2011							
49	3-9	33.9	17.2	0.0	0	82	33
50	10-16	32.1	14.3	0.0	0	75	19
51	17-23	32.6	15.2	0.0	0	76	30
52	24-31	30.4	11.5	0.0	0	85	28
January-2012							
1	1-7	29.2	12.2	0.0	0	83	40
2	8-14	28.0	11.9	0.0	0	73	51
3	15-21	28.1	11.6	0.0	0	86	64
4	22-28	29.7	13.0	0.0	0	83	75
5	29-4	30.6	14.5	0.0	0	72	32
Total				1597.2	65	--	--

FORM – B

Name of the Coordinated Project: All India Coordinated Research Project on Sugarcane

Discipline : Agronomy **State** : Gujarat **Location** : Navsari

Year : 2011-2012 **Zone** : Peninsular

Trial series : AS-61 Optimizing irrigation schedule in sugarcane under different planting methods (For tropical region)

General Information about the experiment:

1. **Design of the experiment** : R.B.D. (Factorial)

2. **Number of treatments** : 9

Treatment:

For Tropical region:

i. **Planting method (P)** : 3

P₁- Conventional planting (at 90 cm row spacing)

P₂- Paired row planting (at 30:150 cm row spacing)

P₃ - Paired cum trench planting (at 30:150 cm row spacing)

ii. **Irrigation schedule (IW/CPE ratio):** 3 **IW=80 mm**

I₁- 0.6

I₂- 0.9

I₃- 1.2

3. **Number of replications** : 3

Variety grown : CoN 05071

4. **Plot size:**

Distance between rows (cms) : As per treatments

a) Length of rows in gross plot : 10 m

b) No. of rows in gross plot : 8

c) Gross plot size : 10.00 m x 7.20 m

d) Length of rows in net plot : 8m

e) No. of rows in net plot : 8

f) Net plot size : 8.00 m x 5.40 m

5. **Date of planting** : 12-01-2011

6. **Date of Transplanting** : Not applicable

7. **Date of harvesting** : 25-01-2012

8. **Previous Crop grown** : T.P. paddy

9. **Soil type** : Heavy black soil

10. **pH value** : 7.75
11. **Initial Soil Status at the time of planting**
- | 1. Nutrient | Values | Status |
|---|--------|--------|
| Available N (kg/ha) | 253.2 | Medium |
| Available P ₂ O ₅ (kg/ha) | 52.8 | Medium |
| Available K ₂ O (kg/ha) | 287.0 | High |
2. Soil texture : Clayey
3. B. D. : 1.45 Mg m⁻³
4. Infiltration rate : 0.27 cm hr⁻¹
5. FC : 35.3 %
6. PWP : 16.6 %
12. **Fertilizer applied:**
- | Nutrient | Basal | Top dressing |
|----------|-------|-------------------|
| N | 15 % | 85% (in 3 splits) |
| P | 100% | - |
| K | 100% | - |
13. **No. of irrigations given** : As per treatment & as per table 1
14. **Date of Irrigation** : Irrigation given as per daily and cumulative pan evaporation data as per annexure I
15. **Number of weedings given** : 2 times
16. **Other cultural operation measures adopted**
- | | |
|------------------------|-----------|
| Interculturing: | 145 DAP |
| Ridging | : 150 DAP |
17. **Plant protection measures adopted** : Not applied
18. **Damage to the crop due to pest and diseases** : No significant damage was observed due to various pests and diseases.
19. **Is the experiment reliable** : Yes
20. **Name of the Co-operators** : Ms. Darpana Patel
21. **Signature of Scientist of In charge of the experiment** :
22. **Name and Designation** : Mr. H.C. Patel
Asst. Research Scientist

Table: 1 Treatment wise number of irrigations with field water use efficiency (kg ha/mm)

No. of irrigations	Date of irrigation		
	I ₁	I ₂	I ₃
1- common irrigation	12.01.11	12.01.11	12.01.11
2- common irrigation	31.12.11	31.12.11	31.12.11
3	13.02.11	03.02.11	28.01.11
4	14.03.11	23.02.11	13.02.11
5	05.04.11	14.03.11	01.03.11
6	26.04.11	30.03.11	14.03.11
7	16.05.11	13.04.11	26.03.11
8	05.11.11	27.04.11	06.04.11
9	03.12.11	09.05.11	16.04.11
10	02.01.12	25.05.11	27.04.11
11		24.10.11	06.05.11
12		04.12.11	16.05.11
13		21.12.11	18.10.11
14		16.01.12	05.11.11
15			21.11.11
16			05.12.11
17			16.12.11
18			03.01.12
19			22.01.12
No. of irrigations	10	14	19
Depth of irrigation water (mm)	80	80	80
Total quantity of irrigation water (mm)	800	1120	1520
Yield kg/ha	123790	133640	134800
Field Water Use Efficiency (kg /ha.mm)	154.74	119.32	88.68

FORM –C

Name of the Coordinated Project : All India Coordinated Research Project on
Sugarcane

Discipline : Agronomy **State :** Gujarat **Location :** Navsari

Year : 2011-12 **Zone :** Peninsular

Title: AS 61 Optimizing irrigation schedule in sugarcane under different planting methods (For tropical region)

Table 2 Mean data of Germination percentage (at 30 and 45 DAP) and tillers (at 90 DAP)

Treatment	Germination (%) at 30 days after planting	Germination (%) at 45 days after planting	Tillers/net plot at 90 days after planting
P ₁ I ₁	67.55	71.34	272.48
P ₁ I ₂	74.96	81.16	274.27
P ₁ I ₃	63.87	71.84	269.84
P ₂ I ₁	62.35	69.42	265.97
P ₂ I ₂	76.29	82.33	269.69
P ₂ I ₃	59.83	65.56	267.57
P ₃ I ₁	61.80	72.26	262.18
P ₃ I ₂	66.54	72.68	264.64
P ₃ I ₃	65.91	76.84	267.72

Results :-

Cane yield (t/ha) :-

The Results are given in Table 3a.

Planting method:-

There was no significant difference observed due o various planting methods. However, highest and lowest cane yield recorded with planting method P₃ and P₁.

Irrigation schedule (IW/CPE ratio):-

Significantly highest cane yield (134.08 t/ha) was observed with irrigation schedule I₃ but remained at par with I₂. Significantly lowest cane yield was recorded with I₁.

Interaction:-

Interaction effect of planting method and irrigation schedule was found significant. Almost all the treatment combinations remained at par with each other except P₁I₁and P₂I₁

Number of millable canes per hectare: (NMC/ha)

The results are presented in Table 4a.

Planting method:-

Significantly the highest NMC/ha (123534 /ha) was noticed under the planting method P₃ while lowest number of millable canes was recorded with P₁.

Irrigation schedule (IW/CPE ratio):-

The data shown that, significantly the highest NMC/ha (12968 /ha) was noticed under the Irrigation level I₂ but remained at par with the level I₃.

Interaction:-

Interaction effect of planting method and irrigation schedule did not show any significant results.

C.C.S. t/ha:-

The results are given in Table 5a.

Planting method:-

Significantly the highest c.c.s. (19.02 t/ha) was recorded with planting method P₃ and remained at par with planting method P₂.

Irrigation schedule (IW/CPE ratio):-

Irrigation level I₃ recorded significantly highest c.c.s. (18.78 t/ha) and at par with I₂. Significantly lowest c.c.s. was observed under irrigation level I₁.

Interaction:-

Interaction effect of planting method and irrigation schedule show significant results in increasing CCS t/ha. The highest CCS t/ha recorded in P₃I₁ and remained at par with almost all the treatment combination except P₁I₁ and P₂I₁.

Quality parameters:-

The results are given in table 11.

Planting method:-

There was no significant difference due to various planting methods. However, planting methods P₃ and P₂ improved quality parameters compared to planting methods P₁.

Irrigation schedule (IW/CPE ratio):-

Irrigation levels did not show any significant results on quality parameters .While significantly lowest fibre % (14.65) recorded with irrigation schedule I₃ and at par with I₁.

Interaction:-

Interaction effect of planting method and irrigation schedule showed significant result on pol % juice.

In pol % juice, interaction effects of planting method (P) x irrigation schedule (I), was found to be significant. The highest pol % juice (20.84) noticed in P₃I₁ but at par with P₁I₃ and P₂I₃.

Field Water Use Efficiency:

Maximum FWUE was noted in the treatment I₁ (154.74 kg /ha.mm) followed by I₂ (119.32 kg /ha.mm) and I₃ (88.68 kg /ha.mm).

FORM D

Name of the Coordinated Project: All India Coordinated Research Project on Sugarcane

Discipline : Agronomy **State** : Gujarat **Location** : Navsari

Year : 2011-2012 **Zone** : Peninsular

Title : AS 61 : Optimizing irrigation schedule in sugarcane under different planting methods (For tropical region)

Table : 3 characters : Cane yield (kg/Net plot and t/ha) Net plot size 8.00 m x 5.4m

Sr. No.	Treatment	Replication			Total	Mean	t/ha
		I	II	III			
1	P ₁ I ₁	495	525	542	1562	520.67	120.52
2	P ₁ I ₂	565	585	573	1723	574.33	132.95
3	P ₁ I ₃	515	562	590	1667	555.67	128.63
4	P ₂ I ₁	489	512	500	1501	500.33	115.82
5	P ₂ I ₂	620	615	550	1785	595.00	137.73
6	P ₂ I ₃	580	590	590	1760	586.67	135.80
7	P ₃ I ₁	590	560	600	1750	583.33	135.03
8	P ₃ I ₂	586	562	540	1688	562.67	130.25
9	P ₃ I ₃	550	582	682	1814	604.67	139.97
Total		4990	5093	5167	15250	-	-

Table:3 a Cane yield

Treatment	Cane yield (t/ha)
Planting method	
P ₁	127.37
P ₂	129.78
P ₃	135.08
S.Em. ±	2.53
C. D. at 5 %	NS
Irrigation schedule (IW/CPE ratio)	
I ₁	123.79
I ₂	133.64
I ₃	134.80
S.Em. ±	2.53
C. D. at 5 %	7.59
C. V. %	5.81
Interaction	Sig.

Table 3b cane yield as affected by interaction

Treatment	I ₁	I ₂	I ₃
P ₁	120.52	132.95	128.63
P ₂	115.82	137.73	135.80
P ₃	135.03	130.25	139.97
S.Em. \pm	4.39		
C. D. at 5 %	13.15		

Table 4 : Number of millable canes / net plot and per ha

Sr. No.	Treatment	Replication			Total	Mean	NMC \ha
		I	II	III			
1	P ₁ I ₁	468	418	515	1401	467.00	108101.85
2	P ₁ I ₂	495	490	555	1540	513.33	118827.16
3	P ₁ I ₃	420	528	514	1462	487.33	112808.64
4	P ₂ I ₁	417	481	423	1321	440.33	101929.01
5	P ₂ I ₂	534	520	525	1579	526.33	121836.42
6	P ₂ I ₃	540	553	469	1562	520.67	120524.69
7	P ₃ I ₁	450	485	470	1405	468.33	108410.49
8	P ₃ I ₂	520	542	600	1662	554.00	128240.74
9	P ₃ I ₃	551	610	575	1736	578.67	133950.62
Total	-	4395	4627	4646	13668	-	-

Table: 4a NMC /ha

Treatment	NMC /ha
Planting method	
P ₁	113246
P ₂	114763
P ₃	123534
S.Em. \pm	2884.66
C. D. at 5 %	8648.12
Irrigation schedule (IW/CPE ratio)	
I ₁	106147
I ₂	122968
I ₃	122428
S.Em. \pm	2884.66
C. D. at 5 %	8648.12
C. V. %	7.38
Interaction	NS

Table : 5 C.C.S. kg/net plot and t/ha

Sr. No.	Treatment	Replication			Total	Mean	t/ha
		I	II	III			
1	P ₁ I ₁	65.69	72.76	76.75	215.20	71.73	16.60
2	P ₁ I ₂	77.12	78.86	80.56	236.54	78.85	18.25
3	P ₁ I ₃	72.10	75.31	85.67	233.08	77.69	17.98
4	P ₂ I ₁	70.32	71.78	71.30	213.40	71.13	16.47
5	P ₂ I ₂	83.95	88.01	79.09	251.04	83.68	19.37
6	P ₂ I ₃	81.72	81.07	84.49	247.28	82.42	19.08
7	P ₃ I ₁	85.73	82.26	85.92	253.91	84.64	19.59
8	P ₃ I ₂	80.46	80.53	74.68	235.67	78.56	18.18
9	P ₃ I ₃	77.27	81.13	91.59	249.99	83.33	19.29
Total	-	694.36	711.71	730.05	2136.12	-	-

Table : 5 a C.C.S. t/ha

Treatment	C.C.S. t/ha
Planting method	
P ₁	17.61
P ₂	18.30
P ₃	19.02
S.Em. ±	0.33
C. D. at 5 %	0.98
Irrigation schedule (IW/CPE ratio)	
I ₁	17.55
I ₂	18.60
I ₃	18.78
S.Em. ±	0.33
C. D. at 5 %	0.98
C. V. %	5.35
Interaction	Sig.

Table 5b CCS t/ha as affected by interaction

Treatment	I ₁	I ₂	I ₃
P ₁	16.60	18.25	17.98
P ₂	16.47	19.37	19.08
P ₃	19.59	18.18	19.29
S.Em. ±	0.57		
C. D. at 5 %	1.70		

Table : 6 C.C.S. %

Sr. No.	Treatment	Replication			Total	Mean
		I	II	III		
1	P ₁ I ₁	13.27	13.86	14.16	41.29	13.76
2	P ₁ I ₂	13.65	13.48	14.06	41.19	13.73
3	P ₁ I ₃	14.00	13.40	14.52	41.92	13.97
4	P ₂ I ₁	14.38	14.02	14.26	42.66	14.22
5	P ₂ I ₂	13.54	14.31	14.38	42.23	14.08
6	P ₂ I ₃	14.09	13.74	14.32	42.15	14.05
7	P ₃ I ₁	14.53	14.69	14.32	43.54	14.51
8	P ₃ I ₂	13.73	14.33	13.83	41.89	13.96
9	P ₃ I ₃	14.05	13.94	13.43	41.42	13.81
Total	-	125.24	125.77	127.28	378.29	-

Table : 6a C.C.S. %

Treatment	C.C.S. %
Planting method	
P ₁	13.82
P ₂	14.12
P ₃	14.09
S.Em. \pm	0.12
C. D. at 5 %	NS
Irrigation schedule (IW/CPE ratio)	
I ₁	14.16
I ₂	13.92
I ₃	13.94
S.Em. \pm	0.12
C. D. at 5 %	NS
C. V. %	2.60
Interaction	NS

Table : 7 Pol % juice

Sr.No.	Treatment	Replication			Total	Mean
		I	II	III		
1	P ₁ I ₁	18.98	19.84	19.85	58.67	19.56
2	P ₁ I ₂	19.64	19.83	19.90	59.37	19.79
3	P ₁ I ₃	19.84	19.39	20.49	59.72	19.91
4	P ₂ I ₁	20.35	20.00	20.24	60.59	20.20
5	P ₂ I ₂	19.39	20.14	19.62	59.15	19.72
6	P ₂ I ₃	19.93	19.73	20.21	59.87	19.96
7	P ₃ I ₁	20.50	20.66	20.29	61.45	20.48
8	P ₃ I ₂	19.57	20.16	19.81	59.54	19.85
9	P ₃ I ₃	19.89	19.92	19.28	59.09	19.70
Total	-	178.09	179.67	179.69	537.45	-

Table : 7a Pol % juice

Treatment	Pol % juice
Planting method	
P ₁	19.75
P ₂	19.96
P ₃	20.09
S.Em. ±	0.12
C. D. at 5 %	NS
Irrigation schedule (IW/CPE ratio)	
I ₁	20.08
I ₂	19.78
I ₃	19.85
S.Em. ±	0.12
C. D. at 5 %	NS
C. V. %	1.75
Interaction	Sig.

Table 7 b Pol % juice as affected by interaction

Treatment	I ₁	I ₂	I ₃
P ₁	19.56	19.79	19.91
P ₂	20.20	19.72	19.96
P ₃	20.48	19.85	19.70
S.Em. ±	0.20		
C. D. at 5 %	0.60		

Table : 8 Purity %

Sr.No.	Treatment	Replication			Total	Mean
		I	II	III		
1	P ₁ I ₁	90.38	90.18	94.52	275.08	91.69
2	P ₁ I ₂	89.27	89.91	92.56	271.74	90.58
3	P ₁ I ₃	92.28	88.11	93.14	273.53	91.18
4	P ₂ I ₁	92.57	90.91	92.00	275.48	91.83
5	P ₂ I ₂	90.19	93.67	93.43	277.29	92.43
6	P ₂ I ₃	92.70	89.68	94.00	276.38	92.13
7	P ₃ I ₁	93.18	93.91	92.23	279.32	93.11
8	P ₃ I ₂	91.03	93.77	90.05	274.85	91.62
9	P ₃ I ₃	92.51	90.55	89.67	272.73	90.91
Total	-	824.11	820.69	831.60	2476.40	-

Table : 8a Purity %

Treatment	Purity %
Planting method	
P ₁	91.15
P ₂	92.13
P ₃	91.88
S.Em. \pm	0.63
C. D. at 5 %	NS
Irrigation schedule (IW/CPE ratio)	
I ₁	92.21
I ₂	91.54
I ₃	91.40
S.Em. \pm	0.63
C. D. at 5 %	NS
C. V. %	2.07
Interaction	NS

Table : 9 Fibre %

Sr.No.	Treatment	Replication			Total	Mean
		I	II	III		
1	P ₁ I ₁	14.88	14.74	14.99	44.61	14.87
2	P ₁ I ₂	15.3	14.99	15.43	45.72	15.24
3	P ₁ I ₃	15.1	14.39	14.72	44.21	14.74
4	P ₂ I ₁	14.92	14.19	14.51	43.62	14.54
5	P ₂ I ₂	14.48	15.36	15.04	44.88	14.96
6	P ₂ I ₃	14.66	14.71	14.96	44.33	14.78
7	P ₃ I ₁	14.88	15.08	15.19	45.15	15.05
8	P ₃ I ₂	15.63	14.57	14.57	44.77	14.92
9	P ₃ I ₃	14.14	14.46	14.75	43.35	14.45
Total	-	133.99	132.49	134.16	400.64	-

Table : 9a Fibre %

Treatment	Fibre %
Planting method	
P ₁	14.95
P ₂	14.76
P ₃	14.81
S.Em. ±	0.12
C. D. at 5 %	NS
Irrigation schedule (IW/CPE ratio)	
I ₁	14.82
I ₂	15.04
I ₃	14.65
S. Em. ±	0.12
C. D. at 5 %	0.34
C. V. %	2.32
Interaction	NS

Table 9b Fibre % as affected by interaction

Treatment	I ₁	I ₂	I ₃
P ₁	14.87	15.24	14.74
P ₂	14.54	14.96	14.78
P ₃	15.05	14.92	14.45
S.Em. ±	0.20		
C. D. at 5 %	0.60		

Table : 10 Pol % cane

Sr.No.	Treatment	Replication			Total	Mean
		I	II	III		
1	P ₁ I ₁	14.26	14.93	14.89	44.08	14.69
2	P ₁ I ₂	14.67	14.5	14.84	44.01	14.67
3	P ₁ I ₃	14.86	14.66	15.43	44.95	14.98
4	P ₂ I ₁	15.28	14.16	15.28	44.72	14.91
5	P ₂ I ₂	14.64	15.03	15.15	44.82	14.94
6	P ₂ I ₃	15.02	14.86	15.22	45.10	15.03
7	P ₃ I ₁	15.40	15.48	15.18	46.06	15.35
8	P ₃ I ₂	14.55	15.21	14.94	44.70	14.90
9	P ₃ I ₃	15.09	15.03	14.51	44.63	14.88
Total	-	133.77	133.86	135.44	403.07	-

Table : 10 a Pol % cane

Treatment	Pol % cane
Planting method	
P ₁	14.78
P ₂	14.96
P ₃	15.04
S.Em. \pm	0.12
C. D. at 5 %	NS
Irrigation schedule (IW/CPE ratio)	
I ₁	14.98
I ₂	14.84
I ₃	14.96
S.Em. \pm	0.12
C. D. at 5 %	NS
C. V. %	2.35
Interaction	NS

Table 11 Mean of Quality characters of plant crop

Treatment	Pol (%) juice	Purity (%)	Fibre (%)	Pol (%) cane	C.C.S. (%)
Planting method					
P ₁	19.75	91.15	14.95	14.78	13.82
P ₂	19.96	92.13	14.76	14.96	14.12
P ₃	20.09	91.88	14.81	15.04	14.09
S.Em.±	0.12	0.63	0.12	0.12	0.12
C.D. at 5%	NS	NS	NS	NS	NS
Irrigation Schedule (IW/CPE ratio)					
I ₁	20.08	92.21	14.82	14.98	14.16
I ₂	19.78	91.54	15.04	14.84	13.92
I ₃	19.85	91.40	14.65	14.96	13.94
S.Em.±	0.12	0.63	0.12	0.12	0.12
C.D. at 5%	NS	NS	0.34	NS	NS
C.V. %	1.75	2.07	2.32	14.98	2.60
Interaction	Sig.	NS	NS	NS	NS

Annexure I: Daily and cumulative pan evaporation data

Date	PE	CPE	Treatment
12.01.2011	3.5	-	
13. 01.2011	3.7	7.2	
14. 01.2011	3.5	10.7	
15. 01.2011	3.5	14.2	
16. 01.2011	3.6	17.8	
17. 01.2011	3.7	21.5	
18. 01.2011	3.6	25.1	
19. 01.2011	3.7	28.8	
20. 01.2011	3.5	32.3	
21. 01.2011	3.8	36.1	
22. 01.2011	3.9	40	
23. 01.2011	3.8	43.8	
24. 01.2011	3.9	47.7	
25. 01.2011	4.3	52	
26. 01.2011	4.3	56.3	
27. 01.2011	4.4	60.7	
28. 01.2011	4.3	65	I ₃₋₃
29. 01.2011	4.2	69.2	
30. 01.2011	4.0	73.2	
31. 01.2011	3.5	76.7	
01. 02.2011	4.3	81	
02. 02.2011	4.3	85.3	
03. 02.2011	4.7	90	I ₂₋₃
04. 02.2011	4.7	94.7	
05. 02.2011	4.4	99.1	
06. 02.2011	4.5	103.6	
07. 02.2011	4.5	108.1	
08. 02.2011	4.6	112.7	
09. 02.2011	4.3	117	
10. 02.2011	4.1	121.1	
11. 02.2011	4.0	125.1	
12. 02.2011	4.5	129.6	
13. 02.2011	4.5	134.1	I ₁₋₃ , I ₃₋₄
14. 02.2011	4.3	138.4	
15. 02.2011	4.3	142.7	
16. 02.2011	4.4	147.1	
17. 02.2011	4.4	151.5	
18. 02.2011	4.2	155.7	
19. 02.2011	3.9	159.6	
20. 02.2011	3.8	163.4	

21.02.2011	4.1	167.5	
22.02.2011	4.2	171.7	
23.02.2011	4.3	176.0	I ₂ -4
24.02.2011	4.3	180.3	
25.02.2011	4.3	184.6	
26.02.2011	4.2	188.8	
27.02.2011	4.2	193.0	
28.02.2011	4.4	197.4	
01.03.2011	5.0	202.4	I ₃ -5
02.03.2011	5.0	207.4	
03.03.2011	4.9	212.3	
04.03.2011	4.7	217	
05.03.2011	5.0	222	
06.03.2011	4.7	226.7	
07.03.2011	5.0	231.7	
08.03.2011	5.2	236.9	
09.03.2011	5.0	241.9	
10.03.2011	5.0	246.9	
11.03.2011	5.0	251.9	
12.03.2011	4.6	256.5	
13.03.2011	5.2	261.7	
14.03.2011	5.0	266.7	I ₁ -4, I ₂ -5
15.03.2011	5.3	272	
16.03.2011	5.5	277.5	
17.03.2011	5.5	283	
18.03.2011	5.8	288.8	
19.03.2011	5.5	294.3	
20.03.2011	5.5	299.8	
21.03.2011	5.5	305.3	
22.03.2011	5.5	310.8	
23.03.2011	5.5	316.3	
24.03.2011	5.6	321.9	
25.03.2011	5.8	327.7	
26.03.2011	5.7	333.4	I ₃ -7
27.03.2011	5.6	339	
28.03.2011	5.8	344.8	
29.03.2011	6.5	351.3	
30.03.2011	6.5	357.8	I ₂ -6
31.03.2011	6.5	364.3	
01.04.2011	6.3	370.6	
02.04.2011	6.2	376.8	
03.04.2011	6.3	383.1	
04.04.2011	6.2	389.3	
05.04.2011	6.2	395.5	I ₁ -5

06.04.2011	6.7	402.2	I ₃ -8
07.04.2011	6.8	409	
08.04.2011	6.4	415.4	
09.04.2011	6.2	421.6	
10.04.2011	6.3	427.9	
11.04.2011	6.1	434	
12.04.2011	5.9	439.9	
13.04.2011	6.1	446	I ₂ -7
14.04.2011	6.5	452.5	
15.04.2011	6.4	458.9	
16.04.2011	6.3	465.2	I ₃ -9
17.04.2011	6.2	471.4	
18.04.2011	6.5	477.9	
19.04.2011	6.5	484.4	
20.04.2011	6.6	491	
21.04.2011	6.5	497.5	
22.04.2011	6.4	503.9	
23.04.2011	6.3	510.2	
24.04.2011	6.4	516.6	
25.04.2011	6.3	522.9	
26.04.2011	6.3	529.2	I ₁ -6
27.04.2011	6.6	535.8	I ₂ -8, I ₃ -10
28.04.2011	6.5	542.3	
29.04.2011	6.5	548.8	
30.04.2011	7.2	556	
01.05.2011	7.5	563.5	
02.05.2011	7.7	571.2	
03.05.2011	7.6	578.8	
04.05.2011	7.5	586.3	
05.05.2011	7.5	593.8	
06.05.2011	7.3	601.1	I ₃ -11
07.05.2011	6.5	607.6	
08.05.2011	6.7	614.3	
09.05.2011	6.8	621.1	I ₂ -9
10.05.2011	6.7	627.8	
11.05.2011	6.6	634.4	
12.05.2011	6.7	641.1	
13.05.2011	6.7	647.8	
14.05.2011	6.6	654.4	
15.05.2011	6.5	660.9	
16.05.2011	6.3	667.2	I ₁ -7, I ₃ -12
17.05.2011	6.6	673.8	
18.05.2011	6.5	680.3	
19.05.2011	6.7	687	

20.05.2011	7.0	694	
21.05.2011	7.0	701	
22.05.2011	6.7	707.7	I ₂ -10
01.10.2011	3.4	3.4	
02.10.2011	3.5	6.9	
03.10.2011	3.5	10.4	
04.10.2011	3.4	13.8	
05.10.2011	3.6	17.4	
06.10.2011	3.7	21.1	
07.10.2011	4.0	25.1	
08.10.2011	3.8	28.9	
09.10.2011	3.7	32.6	
10.10.2011	3.8	36.4	
11.10.2011	3.8	40.2	
12.10.2011	3.8	44	
13.10.2011	3.7	47.7	
14.10.2011	3.8	51.5	
15.10.2011	3.8	55.3	
16.10.2011	3.8	59.1	
17.10.2011	3.7	62.8	
18.10.2011	3.9	66.7	I ₃ -13
19.10.2011	3.7	70.4	
20.10.2011	3.8	74.2	
21.10.2011	4.0	78.2	
22.10.2011	3.7	81.9	
23.10.2011	3.7	85.6	
24.10.2011	3.8	89.4	I ₂ -11
25.10.2011	3.8	93.2	
26.10.2011	3.8	97	
27.10.2011	3.8	100.8	
28.10.2011	3.8	104.6	
29.10.2011	3.8	108.4	
30.10.2011	3.8	112.2	
31.10.2011	3.8	116	
01.11.2011	3.7	119.7	I ₁ -8, I ₃ -14
02.11.2011	3.8	123.5	
03.11.2011	3.9	127.4	
04.11.2011	4	131.4	
05.11.2011	3.8	135.2	
06.11.2011	3.7	138.9	
07.11.2011	3.7	142.6	
08.11.2011	4	146.6	
09.11.2011	3.8	150.4	
10.11.2011	3.8	154.2	

11.11.2011	3.9	158.1	
12.11.2011	3.9	162	
13.11.2011	4.0	166	
14.11.2011	3.9	169.9	
15.11.2011	3.8	173.7	
16.11.2011	3.8	177.5	I ₂ -12
17.11.2011	3.8	181.3	
18.11.2011	3.8	185.1	
19.11.2011	3.8	188.9	
20.11.2011	4.3	193.2	
21.11.2011	4.5	197.7	I ₃ -15
22.11.2011	5.5	203.2	
23.11.2011	6.0	209.2	
24.11.2011	6.0	215.2	
25.11.2011	5.8	221	
26.11.2011	6.0	227	
27.11.2011	5.5	232.5	
28.11.2011	6.0	238.5	
29.11.2011	5.2	243.7	
30.11.2011	6.0	249.7	
01.12.2011	5.5	255.2	
02.12.2011	5.5	260.7	
03.12.2011	5.7	266.4	I ₁ -9, I ₂ -13, I ₆ -16
04.12.2011	5.8	272.2	
05.12.2011	5.5	277.7	
06.12.2011	5.0	282.7	
07.12.2011	5.0	287.7	
08.12.2011	4.9	292.6	
09.12.2011	5.0	297.6	
10.12.2011	5.0	302.6	
11.12.2011	4.8	307.4	
12.12.2011	4.6	312	
13.12.2011	4.8	316.8	
14.12.2011	5.0	321.8	
15.12.2011	4.8	326.6	
16.12.2011	4.6	331.2	I ₃ -17
17.12.2011	4.6	335.8	
18.12.2011	4.4	340.2	
19.12.2011	4.3	344.5	
20.12.2011	4.4	348.9	
21.12.2011	4.3	353.2	I ₂ -14
22.12.2011	4.4	357.6	
23.12.2011	4.0	361.6	
24.12.2011	3.8	365.4	

25.12.2011	3.8	369.2	
26.12.2011	4.4	373.6	
27.12.2011	4.5	378.1	
28.12.2011	4.0	382.1	
29.12.2011	4.0	386.1	
30.12.2011	3.8	389.9	
31.12.2011	3.8	393.7	
01.01.2012	3.6	397.3	
02.01.2012	3.0	400.3	I ₁ -10, I ₃ -18
03.01.2012	3.3	403.6	
04.01.2012	3.7	407.3	
05.01.2012	3.0	410.3	
06.01.2012	3.2	413.5	
07.01.2012	2.7	416.2	
08.01.2012	2.5	418.7	
09.01.2012	2.7	421.4	
10.01.2012	2.7	424.1	
11.01.2012	3.0	427.1	
12.01.2012	2.8	429.9	
13.01.2012	3.5	433.4	
14.01.2012	3.9	437.3	
15.01.2012	3.6	440.9	
16.01.2012	3.7	444.6	I ₂ -15
17.01.2012	3.7	448.3	
18.01.2012	3.9	452.2	
19.01.2012	3.9	456.1	
20.01.2012	3.5	459.6	
21.01.2012	3.7	463.3	
22.01.2012	3.9	467.2	I ₃ -19
23.01.2012	4.0	471.2	
24.01.2012	3.9	475.1	

FORM – B

Name of the Coordinated Project: All India Coordinated Research Project on
Sugarcane

Discipline : Agronomy **State** : Gujarat **Location** : Navsari

Year : 2011-2012 **Zone** : Peninsular

Trial series: AS 63: Plant geometry in relation to mechanization in sugarcane

General Information about the Trial:

1. **Design of the experiment** : Split plot
2. **Number of treatment** : 12
 - A. Plant geometry**
 - P₁ – 120 cm
 - P₂ – 150 cm
 - P₃ – 30:150 cm
 - B. Variety**
 - V₁ – CoN 05071
 - V₂ – CoN 04131
 - V₃ – Co 86032
 - V₄ – Co 99004
3. **No. of replications:** 3
4. **Plot size** :
 - (a) Distance between rows : As per treatment
 - (b) Length of rows in gross plot : 8m
 - (c) No. of rows in gross plot : P₁:5, P₂:4, P₃:4 twin row
 - (d) Gross plot size : 8.00 m x 6.0 m for P₁, P₂, P₃
 - (e) Length of rows in net plot : 7m
 - (f) No. of rows in net plot : P₁:3, P₂:2, P₃:2 twin row
 - (g) Net plot size : 7.0m x 3.6 m – P₁
7.0m x 3.0 m – P₂& P₃
5. **Date of Planting** : 11-12-2010
6. **Date of transplanting** : Not applicable
Seed rate : 50000 two eye bud sett/ha
7. **Date of harvesting** : 05-01-2012
8. **Crop grown in previous year** : T. P. Paddy
9. **Soil type** : Heavy black soil
10. **pH value** : 7.72

11. **Soil fertility status at the time of planting** :

Nutrient	Value	Status
Avail. N (kg/ha)	250.4	Medium
Avail. P ₂ O ₅ (kg/ha)	50.5	Medium
Avail. K ₂ O (kg/ha)	289	High

12. **Fertilizer applied** :

Nutrient	Basal	Top dressing
N	15 %	85% (in 3 splits)
P	100%	-
K	100%	-

13. **No. of irrigation given** : Irrigations were given at an interval of 3 weeks interval in winter and 2 weeks interval in summer

14. **No. of weedings given** : 2

15. **Other cultural operations measures adopted**

Interculturing	:	01-03-2011 and 10-04-2011
Ridging	:	15-05-2011

16. **Plant protection measures adopted:**

Pesticides / Fungicides	Dose	Date
1. Endosulphan	21 ml/10 lit water	20-02-2011

17. **Damage to the crop due to pest disease** : No significant damage caused due to various pests and diseases.

18. **Is the experiment reliable** : Yes

19. **Name of Co-operators** : Ms. Darpana Patel

20. **Signature of the Scientist in charge of the experiment** :

21. **Name and designation** : Prof. H.C. Patel
Asst. Research Scientist

FORM C

Name of the Coordinated Project: All India Coordinated Research Project on
Sugarcane

Discipline: Agronomy **State :** Gujarat **Location:** Navsari

Year : 2011-12 **Zone** : Peninsular

Title: AS 63 Plant geometry in relation to mechanization in sugarcane

Table 1 - Mean data of Germination percentage (at 30 and 45 DAP)

Treatment	Germination (%) at 30 days after planting	Germination (%) at 45 days after planting
P ₁ V ₁	69.45	73.25
P ₁ V ₂	78.67	82.64
P ₁ V ₃	65.22	73.20
P ₁ V ₄	66.69	70.36
P ₂ V ₁	75.90	80.69
P ₂ V ₂	61.60	66.64
P ₂ V ₃	63.56	73.47
P ₂ V ₄	68.77	74.26
P ₃ V ₁	69.58	77.40
P ₃ V ₂	70.48	74.55
P ₃ V ₃	75.61	79.40
P ₃ V ₄	62.50	73.75

Results :-**1. Number of tiller at 90 days after planting (DAP) :-**

The Results are given in Table 1a.

Plant geometry:-

Various plant geometry treatments did not show any significant effect on number of tillers at 90 days after planting. However, highest number of tillers were recorded in plant geometry P₃.

Variety:-

Higher number of tillers (190145/ha) were recorded with the variety Co 86032 (V₃) being remained at par with CoN 04131 (V₂) and CoN 05071 (V₁).

Interaction:-

Interaction effect between plant geometry and varieties was failed to get the level of significance.

2. Number of tillers at 120 DAP

The results are presented in Table 2a.

Plant geometry:-

Plant geometry failed to get level of significance however highest and lowest number of tillers were recorded with P₂ and P₁ respectively.

Variety:-

Higher number of tillers were recorded with variety Co 86032 (V₃) and being at par with variety CoN 04131 (V₂).

Interaction:-

Interaction effects were found to be non significant.

3. Number of tillers at 180 DAP:-

The results are given in Table 3a.

Plant geometry:-

Various plant geometry treatments failed to get the level of significance. However, highest and lowest number of tillers was found in plant geometry P₁ and P₂ respectively.

Variety:-

Different varieties failed to show significant increased in number of tillers at 180 DAP.

Interaction:-

Interaction effects between plant geometry and varieties were found non-significant.

4. Plant height at 120 DAP

The Results are given in Table 4 a.

Plant geometry:-

Significantly highest and lowest plant height recorded with plant geometry P₁ and P₂, respectively.

Variety:-

Higher plant height (438.58 cm) was recorded with the variety Co 86032 (V₃) being remained at par with CoN 04131 (V₂) and CoN 05071 (V₁).

Interaction:-

Interaction effect between plant geometry and varieties was failed to get the level of significance.

5. Plant height at 180 DAP

The Results are given in Table 5a.

Plant geometry:-

Significantly highest plant height (451.56 cm) noticed with plant geometry P₁ (120 cm) over P₂ and P₃.

Variety:-

Variety (V₃) Co 86032 recorded higher plant height and being remained at par with CoN 04131 (V₂) and CoN 05071 (V₁).

Interaction:-

Interaction effect between plant geometry and varieties was not showing any significant increase in plant height.

6. Number of millable canes/ha

The Results are given in Table 6a.

Plant geometry:-

Significantly higher number of millable canes (114732.14/ha) were recorded with plant geometry P₁ which remained at par with plant geometry P₂.

Variety:-

Higher number of millable canes was recorded with variety (V₃) Co 86032 and remained at par with variety CoN 04131 (V₂) and Co 99004 (V₄).

Interaction:-

Interaction effect between plant geometry and varieties failed to get level of significance.

7. Plant length at harvest

The Results are given in Table 7a.

Plant geometry:-

Significantly higher and lower plant length recorded with plant geometry P₁ and P₂ respectively.

Variety:-

Higher plant length was recorded with variety CoN 05071 (V₁) and remained at par with variety Co 99004 (V₄).

Interaction:-

Interaction effect between plant geometry and varieties was found non significant in increasing plant length.

8. Plant girth at harvest

The Results are given in Table 8a.

Plant geometry:-

Higher plant girth was recorded with plant geometry P₁ (2.49) but remained at par with plant geometry P₂.

Variety:-

Significantly higher and lower plant girth was recorded with variety CoN 05071 (V₁) and CoN 04131 (V₂).

Interaction:-

Interaction effect between plant geometry and varieties was fail to get the level of significance for plant girth.

9. Cane yield**Plant geometry:-**

Higher cane yield (124.18 t/ha) was recorded with plant geometry P₁ (120 cm) and remained at par with plant geometry P₃ (30:150 cm) than P₂ (Table 9a).

Variety:-

Higher cane yield was recorded with variety CoN 05071 (131.14 t/ha) being at par with variety Co 99004 (V₄).

Interaction:-

Interaction effect between plant geometry and varieties did not show any significant improvement in cane yield /ha.

10. CCS t/ha

Plant geometry:-

Significantly highest and lowest CCS (16.92 and 16.07 t/ha) was recorded with plant geometry P₁ and P₂ respectively (Table 10a).

Variety:-

Higher CCS yield was recorded with variety CoN 05071 (18.54 t/ha) being at par with variety Co 99004 (V₄) and variety Co 86032 (V₃).

Interaction:-

Interaction effect between plant geometry and varieties fail to get level of significance.

11. Quality parameters

Plant geometry:-

There was no significant difference observed due to various plant geometry on quality parameters (Table 11-15).

Variety :-

Various quality parameters were significantly influenced due to different varieties. Higher CCS %, pol % juice and pol % cane recorded with variety CoN 05071 (V₁) and remained at par with variety Co 99004 (V₄) while purity % recorded higher with variety Co 80032 and remained at par with varieties CoN 05071 (V₁) and Co 99004 (V₄).

Interaction:-

Interaction effects of plant geometry and variety was failed to show the level of significance.

FORM D

Name of the Coordinated Project : All India Coordinated Research Project on Sugarcane

Discipline : Agronomy **State** : Gujarat **Location:** Navsari
Year : 2011-2012 **Zone** : Peninsular

Title : AS 63 Plant geometry in relation to mechanization in sugarcane

Table: 1 characters : Number of tillers at 90 days

Sr. No.	Treat-ment	Replication				Total	Mean	tillers/ha
		I	II	III	IV			
1	P ₁ V ₁	472	444	523	405	1844	461.00	182936.51
2	P ₁ V ₂	548	455	413	476	1892	473.00	187698.41
3	P ₁ V ₃	426	523	557	440	1946	486.50	193055.56
4	P ₁ V ₄	400	366	395	452	1613	403.25	160019.84
5	P ₂ V ₁	362	352	400	385	1499	374.75	178452.38
6	P ₂ V ₂	360	442	328	412	1542	385.50	183571.43
7	P ₂ V ₃	350	400	408	426	1584	396.00	188571.43
8	P ₂ V ₄	348	369	358	260	1335	333.75	158928.57
9	P ₃ V ₁	369	359	356	458	1542	385.50	183571.43
10	P ₃ V ₂	437	410	320	385	1552	388.00	184761.90
11	P ₃ V ₃	452	396	367	352	1567	391.75	186547.62
12	P ₃ V ₄	343	296	362	345	1346	336.50	160238.09
Total	-	4867	4812	4787	4796	19262	-	-

Table : 1a. Mean Table of number of tillers/ha

Treatment	Number of tiller/ha
Plant geometry	
P ₁	180927.58
P ₂	177380.95
P ₃	178779.76
S.Em.±	4686.84
C.D. at 5%	NS
C.V. %	10.47
Variety	
V ₁	181653.44
V ₂	185343.91
V ₃	189391.53
V ₄	159728.84
S.Em. ±	6261.33
C.D. at 5%	18168.49
C.V. %	12.11
Interaction	NS

Table 2 : Number of tillers at 120 days /net plot and per hectare

Sr. No.	Treatment	Replication				Total	Mean	tillers/ha
		I	II	III	IV			
1	P ₁ V ₁	522	437	466	462	1887	471.75	187202.38
2	P ₁ V ₂	540	562	532	570	2204	551.00	218650.79
3	P ₁ V ₃	486	529	495	496	2006	501.50	199007.94
4	P ₁ V ₄	496	429	447	472	1844	461.00	182936.51
5	P ₂ V ₁	376	415	352	419	1562	390.50	185952.38
6	P ₂ V ₂	447	429	320	348	1544	386.00	183809.52
7	P ₂ V ₃	370	450	398	475	1693	423.25	201547.62
8	P ₂ V ₄	401	369	375	382	1527	381.75	181785.71
9	P ₃ V ₁	417	430	430	382	1659	414.75	197500.00
10	P ₃ V ₂	435	370	467	300	1572	393.00	187142.86
11	P ₃ V ₃	447	466	451	440	1804	451.00	214761.90
12	P ₃ V ₄	350	296	370	345	1361	340.25	162023.81
Total	-	5287	5182	5103	5091	20663	-	187202.38

Table : 2a. Mean Table of Number of tillers at 120 days /ha

Treatment	Number of tiller/ha
Plant geometry	
P ₁	196949.40
P ₂	188273.81
P ₃	190357.14
S.Em. _±	5948.64
C.D. at 5%	NS
C.V. %	12.40
Variety	
V ₁	190218.25
V ₂	196534.39
V ₃	205105.82
V ₄	175582.01
S.Em. ±	4752.71
C.D. at 5%	13790.94
C.V. %	8.58
Interaction	NS

Table : 3 Number of tillers at 180 days /net plot and per hectare

Sr. No.	Treatment	Replication				Total	Mean	tillers/ha
		I	II	III	IV			
1	P ₁ V ₁	431	382	420	396	1629	407.25	161607.14
2	P ₁ V ₂	448	388	370	440	1646	411.5	163293.65
3	P ₁ V ₃	380	490	480	430	1780	445	176587.30
4	P ₁ V ₄	326	386	423	350	1485	371.25	147321.43
5	P ₂ V ₁	320	366	336	312	1334	333.5	158809.52
6	P ₂ V ₂	280	379	302	382	1343	335.75	159880.95
7	P ₂ V ₃	334	400	322	386	1442	360.5	171666.67
8	P ₂ V ₄	351	286	307	258	1202	300.5	143095.24
9	P ₃ V ₁	303	280	356	410	1349	337.25	160595.24
10	P ₃ V ₂	350	385	326	285	1346	336.5	160238.09
11	P ₃ V ₃	462	300	365	334	1461	365.25	173928.57
12	P ₃ V ₄	292	280	346	302	1220	305	145238.09
Total	-	4277	4322	4353	4285	17237	-	-

Table : 3 a. Mean Table of Number of tillers at 180 days /ha

Treatment	Number of tiller/ha
Plant geometry	
P ₁	162202.38
P ₂	158363.09
P ₃	160000
S.Em.±	4626.03
C.D. at 5%	NS
C.V. %	11.55
Variety	
V ₁	160337.30
V ₂	161137.57
V ₃	174060.85
V ₄	145218.25
S.Em. ±	6225.90
C.D. at 5%	NS
C.V. %	13.46
Interaction	NS

Table. 4 : Plant height at 120 days after planting

Sr. No.	Treatment	Replication				Total	Mean
		I	II	III	IV		
1	P ₁ V ₁	472	486	523	441	1922	480.50
2	P ₁ V ₂	554	456	496	482	1988	497.00
3	P ₁ V ₃	478	560	568	462	2068	517.00
4	P ₁ V ₄	400	366	395	452	1613	403.25
5	P ₂ V ₁	370	362	400	385	1517	379.25
6	P ₂ V ₂	360	439	333	422	1554	388.50
7	P ₂ V ₃	350	400	422	426	1598	399.50
8	P ₂ V ₄	351	373	362	260	1346	336.50
9	P ₃ V ₁	369	359	356	458	1542	385.50
10	P ₃ V ₂	452	400	320	385	1557	389.25
11	P ₃ V ₃	480	396	367	354	1597	399.25
12	P ₃ V ₄	343	296	362	345	1346	336.50
Total	-	4979	4893	4904	4872	19648	-

Table : 4 a. Mean Table of Plant height at 120 days after planting

Treatment	Plant height (cm)
Plant geometry	
P ₁	474.44
P ₂	375.94
P ₃	377.62
S.Em.±	11.81
C.D. at 5%	40.86
C.V. %	11.54
Variety	
V ₁	415.08
V ₂	424.92
V ₃	438.58
V ₄	358.75
S.Em. ±	13.10
C.D. at 5%	38.03
C.V. %	11.09
Interaction	NS

Table : 5. Plant height at 180 days after planting

Sr. No.	Treatment	Replication				Total	Mean
		I	II	III	IV		
1	P ₁ V ₁	472	439	523	396	1830	457.50
2	P ₁ V ₂	548	440	402	476	1866	466.50
3	P ₁ V ₃	396	523	557	440	1916	479.00
4	P ₁ V ₄	400	366	395	452	1613	403.25
5	P ₂ V ₁	370	362	400	385	1517	379.25
6	P ₂ V ₂	360	439	333	422	1554	388.50
7	P ₂ V ₃	350	400	422	426	1598	399.50
8	P ₂ V ₄	351	373	362	260	1346	336.50
9	P ₃ V ₁	369	359	356	458	1542	385.50
10	P ₃ V ₂	452	400	320	385	1557	389.25
11	P ₃ V ₃	480	396	367	354	1597	399.25
12	P ₃ V ₄	343	296	362	345	1346	336.50
Total	-	4891	4793	4799	4799	19282	-

Table : 5 a. Mean Table Plant height at 180 days after planting

Treatment	Plant height (cm)
Plant geometry	
P ₁	451.56
P ₂	375.94
P ₃	377.62
S.Em.±	13.99
C.D. at 5%	48.43
C.V. %	13.93
Variety	
V ₁	407.42
V ₂	414.75
V ₃	425.92
V ₄	358.75
S.Em. ±	15.27
C.D. at 5%	44.30
C.V. %	13.16
Interaction	NS

Table 6. Number of millable canes/ha at harvest

Sr. No.	Treatment	Replication				Total	Mean	NMC/ha
		I	II	III	IV			
1	P ₁ V ₁	296	310	333	299	1238	309.5	122817.46
2	P ₁ V ₂	255	283	275	390	1203	300.75	119345.22
3	P ₁ V ₃	322	329	344	315	1310	327.5	129960.32
4	P ₁ V ₄	220	203	242	210	875	218.75	86805.56
5	P ₂ V ₁	262	245	196	202	905	226.25	107738.09
6	P ₂ V ₂	230	210	234	246	920	230.00	109523.81
7	P ₂ V ₃	253	284	285	202	1024	256.00	121904.76
8	P ₂ V ₄	160	174	202	197	733	183.25	87261.90
9	P ₃ V ₁	210	227	182	296	915	228.75	108928.57
10	P ₃ V ₂	214	185	247	230	876	219.00	104285.71
11	P ₃ V ₃	233	221	237	214	905	226.25	107738.09
12	P ₃ V ₄	220	204	205	200	829	207.25	98690.48
Total	-	2875	2875	2982	3001	11733	-	-

Table : 6 a. Mean Table Number of millable canes/ha at harvest

Treatment	NMC/ha
Plant geometry	
P ₁	114732.14
P ₂	106607.14
P ₃	104910.71
S.Em. ±	2671.06
C.D. at 5%	9243.01
C.V. %	9.82
Variety	
V ₁	113161.38
V ₂	111051.59
V ₃	119867.72
V ₄	90919.31
S.Em. ±	4143.96
C.D. at 5%	12024.52
C.V. %	13.20
Interaction	NS

Table : 7. Millable cane length (cm) at harvest

Sr. No.	Treatment	Replication				Total	Mean
		I	II	III	IV		
1	P ₁ V ₁	285	281	300	302	1168	292.00
2	P ₁ V ₂	260	270	242	279	1051	262.75
3	P ₁ V ₃	240	252	266	239	997	249.25
4	P ₁ V ₄	293	285	298	315	1191	297.75
5	P ₂ V ₁	272	275	274	289	1110	277.50
6	P ₂ V ₂	285	237	224	244	990	247.50
7	P ₂ V ₃	246	244	225	237	952	238.00
8	P ₂ V ₄	257	272	295	257	1081	270.25
9	P ₃ V ₁	272	284	285	276	1117	279.25
10	P ₃ V ₂	249	254	243	283	1029	257.25
11	P ₃ V ₃	243	210	281	241	975	243.75
12	P ₃ V ₄	258	294	265	284	1101	275.25
Total	-	3160	3158	3198	3246	12762	-

Table : 7 a. Mean Table Millable cane length at harvest

Treatment	Millable cane length (cm)
Plant geometry	
P ₁	275.44
P ₂	258.31
P ₃	263.87
S.Em.±	3.08
C.D. at 5%	10.66
C.V. %	4.63
Variety	
V ₁	282.92
V ₂	255.83
V ₃	243.67
V ₄	281.08
S.Em. ±	5.16
C.D. at 5%	14.98
C.V. %	6.72
Interaction	NS

Table. 8 : Millable cane girth at harvest

Sr. No.	Treatment	Replication				Total	Mean
		I	II	III	IV		
1	P ₁ V ₁	2.50	2.45	2.65	2.69	10.29	2.57
2	P ₁ V ₂	2.41	2.42	2.43	2.39	9.65	2.41
3	P ₁ V ₃	2.53	2.52	2.40	2.48	9.93	2.48
4	P ₁ V ₄	2.51	2.56	2.49	2.47	10.03	2.51
5	P ₂ V ₁	2.45	2.60	2.52	2.57	10.14	2.53
6	P ₂ V ₂	2.37	2.36	2.42	2.38	9.53	2.38
7	P ₂ V ₃	2.43	2.48	2.46	2.48	9.85	2.46
8	P ₂ V ₄	2.48	2.45	2.43	2.50	9.86	2.46
9	P ₃ V ₁	2.48	2.51	2.59	2.57	10.15	2.54
10	P ₃ V ₂	2.51	2.37	2.30	2.36	9.54	2.38
11	P ₃ V ₃	2.40	2.50	2.40	2.41	9.71	2.43
12	P ₃ V ₄	2.45	2.49	2.50	2.39	9.83	2.46
Total	-	29.52	29.71	29.59	29.69	118.51	-

Table : 8 a. Mean Table of Millable cane girth at harvest

Treatment	Plant girth (mm)
Plant geometry	
P ₁	2.49
P ₂	2.46
P ₃	2.45
S.Em.±	0.009
C.D. at 5%	0.03
C.V. %	1.44
Variety	
V ₁	2.55
V ₂	2.39
V ₃	2.46
V ₄	2.48
S.Em. ±	0.018
C.D. at 5%	0.05
C.V. %	2.61
Interaction	NS

Table : 9 Millable Cane yield (t/ha)

Sr. No.	Treatment	Replication				Total	Mean	t/ha
		I	II	III	IV			
1	P ₁ V ₁	316	295	375	396	1382	345.5	137.10
2	P ₁ V ₂	276	291	305	279	1151	287.75	114.19
3	P ₁ V ₃	318	323	345	258	1244	311.00	123.41
4	P ₁ V ₄	340	290	283	317	1230	307.50	122.02
5	P ₂ V ₁	275	237	272	282	1066	266.50	126.90
6	P ₂ V ₂	225	240	210	245	920	230.00	109.55
7	P ₂ V ₃	247	215	271	252	985	246.25	117.26
8	P ₂ V ₄	251	273	260	215	999	249.75	118.93
9	P ₃ V ₁	274	261	267	285	1087	271.75	129.40
10	P ₃ V ₂	203	236	230	270	939	234.75	111.78
11	P ₃ V ₃	216	278	262	247	1003	250.75	119.40
12	P ₃ V ₄	299	230	290	250	1069	267.25	127.26
Total	-	3240	3169	3370	3296	13075	-	-

Table : 9 a. Mean Table of Millable Cane yield (t/ha.)

Treatment	Cane yield (t/ha)
Plant geometry	
P ₁	124.18
P ₂	118.15
P ₃	121.96
S.Em.±	1.10
C.D. at 5%	3.80
C.V. %	3.62
Variety	
V ₁	131.14
V ₂	111.83
V ₃	120.02
V ₄	122.74
S.Em. ±	3.81
C.D. at 5%	11.05
C.V. %	10.86
Interaction	NS

Table 10 CCS t/ha

Sr. No.	Treatment	Replication				Total	Mean	t/ha
		I	II	III	IV			
1	P ₁ V ₁	44.37	42.57	51.11	57.14	195.19	48.80	19.36
2	P ₁ V ₂	35.41	34.22	35.90	33.93	139.46	34.86	13.83
3	P ₁ V ₃	43.02	45.35	46.09	35.16	169.63	42.41	16.82
4	P ₁ V ₄	50.83	41.18	40.61	45.49	178.11	44.53	17.67
5	P ₂ V ₁	39.43	34.01	38.19	40.47	152.10	38.02	18.11
6	P ₂ V ₂	27.99	30.24	26.78	29.45	114.45	28.61	13.62
7	P ₂ V ₃	35.32	30.40	34.17	35.63	135.53	33.88	16.13
8	P ₂ V ₄	35.47	38.87	33.85	29.58	137.78	34.44	16.40
9	P ₃ V ₁	40.96	35.03	38.29	38.25	152.52	38.13	18.16
10	P ₃ V ₂	26.86	30.02	31.12	32.51	120.50	30.12	14.34
11	P ₃ V ₃	32.18	38.86	32.83	34.53	138.41	34.60	16.48
12	P ₃ V ₄	41.77	32.04	39.38	34.17	147.37	36.84	17.54
Total	-	453.62	432.79	448.32	446.32	1781.05	-	-

Table : 10 a. Mean Table of CCS (t/ha)

Treatment	CCS (t/ha)
Plant geometry	
P ₁	16.92
P ₂	16.07
P ₃	16.63
S.Em.±	0.12
C.D. at 5%	0.41
C.V. %	2.90
Variety	
V ₁	18.54
V ₂	13.93
V ₃	16.48
V ₄	17.20
S.Em. ±	0.52
C.D. at 5%	1.51
C.V. %	10.90
Interaction	NS

Table 11 CCS %

Sr. No.	Treatment	Replication				Total	Mean
		I	II	III	IV		
1	P ₁ V ₁	14.04	14.43	13.63	14.43	56.53	14.13
2	P ₁ V ₂	12.83	11.76	11.77	12.16	48.52	12.13
3	P ₁ V ₃	13.53	14.04	13.36	13.63	54.56	13.64
4	P ₁ V ₄	14.95	14.2	14.35	14.35	57.85	14.46
5	P ₂ V ₁	14.34	14.35	14.04	14.35	57.08	14.27
6	P ₂ V ₂	12.44	12.6	12.75	12.02	49.81	12.45
7	P ₂ V ₃	14.3	14.14	12.61	14.14	55.19	13.80
8	P ₂ V ₄	14.13	14.24	13.02	13.76	55.15	13.79
9	P ₃ V ₁	14.95	13.42	14.34	13.42	56.13	14.03
10	P ₃ V ₂	13.23	12.72	13.53	12.04	51.52	12.88
11	P ₃ V ₃	14.9	13.98	12.53	13.98	55.39	13.85
12	P ₃ V ₄	13.97	13.93	13.58	13.67	55.15	13.79
Total	-	167.61	163.81	159.51	161.95	652.88	-

Table : 11 a Mean Table of CCS %

Treatment	CCS %
Plant geometry	
P ₁	13.59
P ₂	13.58
P ₃	13.64
S.Em.±	0.12
C.D. at 5%	NS
C.V. %	3.44
Variety	
V ₁	14.14
V ₂	12.49
V ₃	13.77
V ₄	14.01
S.Em. ±	0.14
C.D. at 5%	0.42
C.V. %	3.66
Interaction	NS

Table. 12 : Pol % juice

Sr. No.	Treatment	Replication				Total	Mean
		I	II	III	IV		
1	P ₁ V ₁	20.16	20.54	19.48	20.54	80.72	20.18
2	P ₁ V ₂	18.55	17.07	16.8	17.47	69.89	17.47
3	P ₁ V ₃	19.24	19.59	19.07	19.19	77.09	19.27
4	P ₁ V ₄	21.20	20.18	20.32	20.18	81.88	20.47
5	P ₂ V ₁	20.60	20.32	19.88	20.32	81.12	20.28
6	P ₂ V ₂	18.17	17.90	18.19	17.04	71.30	17.82
7	P ₂ V ₃	20.27	19.98	18.05	19.98	78.28	19.57
8	P ₂ V ₄	20.11	20.07	18.59	19.46	78.23	19.56
9	P ₃ V ₁	21.20	19.13	20.31	19.13	79.77	19.94
10	P ₃ V ₂	18.94	18.16	19.24	17.06	73.40	18.35
11	P ₃ V ₃	21.15	19.82	17.97	19.82	78.76	19.69
12	P ₃ V ₄	20.24	19.77	19.28	19.37	78.66	19.66
Total	-	239.83	232.53	227.18	229.56	929.1	-

Table : 12 a. Mean Table of pol % juice

Treatment	Pol % juice
Plant geometry	
P ₁	19.35
P ₂	19.31
P ₃	19.41
S.Em.±	0.15
C.D. at 5%	NS
C.V. %	3.11
Variety	
V ₁	20.13
V ₂	17.88
V ₃	19.51
V ₄	19.90
S.Em. ±	0.18
C.D. at 5%	0.54
C.V. %	3.30
Interaction	NS

Table. 13 Purity %

Sr. No.	Treatment	Replication				Total	Mean
		I	II	III	IV		
1	P ₁ V ₁	89.60	91.29	90.60	91.29	362.78	90.69
2	P ₁ V ₂	88.33	87.54	90.81	89.59	356.27	89.07
3	P ₁ V ₃	91.62	95.56	90.81	93.61	371.60	92.90
4	P ₁ V ₄	92.17	91.73	92.36	93.86	370.12	92.53
5	P ₂ V ₁	89.57	92.36	92.47	92.36	366.76	91.69
6	P ₂ V ₂	86.52	91.79	90.95	92.11	361.37	90.34
7	P ₂ V ₃	92.14	92.30	90.25	92.93	367.62	91.90
8	P ₂ V ₄	91.41	93.35	90.68	92.67	368.11	92.03
9	P ₃ V ₁	92.17	91.10	92.32	91.10	366.69	91.67
10	P ₃ V ₂	90.19	90.80	91.62	93.61	366.22	91.55
11	P ₃ V ₃	91.96	92.19	89.85	92.19	366.19	91.55
12	P ₃ V ₄	88.00	91.95	91.81	92.24	364.00	91.00
Total	-	1083.68	1101.96	1094.53	1107.56	4387.73	-

Table : 13 a. Mean Table of purity %

Treatment	Purity %
Plant geometry	
P ₁	91.30
P ₂	91.49
P ₃	91.44
S.Em.±	0.19
C.D. at 5%	NS
C.V. %	0.84
Variety	
V ₁	91.35
V ₂	90.32
V ₃	92.12
V ₄	91.85
S.Em. ±	0.40
C.D. at 5%	1.17
C.V. %	1.53
Interaction	NS

Table. 14 Fibre %

Sr. No.	Treatment	Replication				Total	Mean
		I	II	III	IV		
1	P ₁ V ₁	14.01	13.60	14.40	14.64	56.65	14.16
2	P ₁ V ₂	14.80	15.20	15.08	14.40	59.48	14.87
3	P ₁ V ₃	15.22	14.82	15.4	14.43	59.87	14.97
4	P ₁ V ₄	14.04	14.00	14.02	14.35	56.41	14.10
5	P ₂ V ₁	15.21	14.64	13.60	15.08	58.53	14.63
6	P ₂ V ₂	14.82	14.40	13.24	15.68	58.14	14.53
7	P ₂ V ₃	14.42	14.43	14.01	14.42	57.28	14.32
8	P ₂ V ₄	14.40	14.42	14.00	14.00	56.82	14.20
9	P ₃ V ₁	15.22	15.08	14.42	13.24	57.96	14.49
10	P ₃ V ₂	15.22	15.60	15.20	14.01	60.03	15.07
11	P ₃ V ₃	14.00	14.42	15.21	13.62	57.25	14.31
12	P ₃ V ₄	14.16	14.00	14.42	14.81	57.39	14.35
Total	-	175.52	174.61	173	172.68	695.81	-

Table : 14 a. Mean Table of Fibre %

Treatment	Fibre %
Plant geometry	
P ₁	14.52
P ₂	14.42
P ₃	14.54
S.Em.±	0.22
C.D. at 5%	NS
Variety	6.17
V ₁	14.43
V ₂	14.80
V ₃	14.53
V ₄	14.22
S.Em. ±	0.15
C.D. at 5%	NS
C.V. %	3.52
Interaction	NS

Table. 15 Pol % cane

Sr. No.	Treatment	Replication				Total	Mean
		I	II	III	IV		
1	P ₁ V ₁	15.32	15.69	14.73	15.48	61.22	15.30
2	P ₁ V ₂	13.95	12.77	12.59	13.21	52.52	13.13
3	P ₁ V ₃	14.39	14.73	14.23	14.50	57.85	14.46
4	P ₁ V ₄	16.10	15.34	15.44	15.25	62.13	15.53
5	P ₂ V ₁	15.41	15.31	15.19	15.22	61.13	15.28
6	P ₂ V ₂	13.66	13.53	13.96	12.66	53.81	13.45
7	P ₂ V ₃	15.32	15.10	13.72	15.10	59.24	14.81
8	P ₂ V ₄	15.20	15.17	14.13	14.79	59.29	14.82
9	P ₃ V ₁	15.85	14.33	15.35	14.68	60.21	15.05
10	P ₃ V ₂	14.09	13.50	14.39	12.96	54.94	13.73
11	P ₃ V ₃	16.07	14.98	13.44	15.14	59.63	14.91
12	P ₃ V ₄	15.35	15.02	14.57	14.56	59.50	14.87
Total	-	180.71	175.47	171.74	173.55	701.47	-

Table : 15 a. Mean Table of pol % cane

Treatment	Pol % cane
Plant geometry	
P ₁	14.61
P ₂	14.59
P ₃	14.64
S.Em.±	0.10
C.D. at 5%	NS
C.V. %	2.67
Variety	
V ₁	15.21
V ₂	13.44
V ₃	14.73
V ₄	15.08
S.Em. ±	0.15
C.D. at 5%	0.44
C.V. %	3.59
Interaction	NS

FORM – B

Name of the Coordinated Project : All India Coordinated Research Project on sugarcane

Discipline : Agronomy **State :** Gujarat **Location:** Navsari

Year : 2011-2012 **Zone :** Peninsular

Trial series: AS-64 Response of sugarcane to different plant nutrients in varied agro ecological situations

General Information about the Trial

1. **Design of the experiment** : R.B.D.
2. **No. of treatments** : 12
 - T₁ Control (No fertilizer)
 - T₂ N
 - T₃ NP
 - T₄ NPK
 - T₅ NPK + S
 - T₆ NPK + Zn
 - T₇ NPK + Fe
 - T₈ NPK + Mn
 - T₉ NPK + S + Zn
 - T₁₀ NPK + S + Zn + Fe
 - T₁₁ NPK + S + Zn + Fe + Mn
 - T₁₂ Soil test based fertilizer application
3. **No. of replications** : 3
Variety grown : CoN 5071
4. **Plot size :**
 - a) Distance between rows (cm) : 90 cm
 - b) Length of rows in gross plot : 8 m
 - c) No. of rows in gross plot : 5
 - d) Gross plot size : 8.00 m x 5.40 m
 - e) Length of rows in net plot : 4 m.
 - f) No. of rows in net plot : 3
 - g) Net plot size : 6.00 m x 2.7 m
5. **Date of planting** : 05-03-2011

6. **Date of Transplanting** : Not applicable
7. **Date of harvesting** : 27-03-2012
8. **Previous Crop grown** : Sugarcane
9. **Soil type** : Heavy black soil
10. **pH value** : 7.75
11. **Fertilizer applied:**
- | Nutrient | Basal | Top dressing |
|----------|-------|-------------------|
| N | 15 % | 85% (in 3 splits) |
| P | 100% | - |
| K | 100% | - |
12. **No. of irrigations given** : 14 each of 8 cm depth
13. **Date of Irrigation** : Irrigation were given at an interval of 3 weeks in winter and 2 weeks in summer season.
14. **No. of weedings given** : 2 times
15. **Other cultural operation measures adopted** :
Interculturing : 25.05.2011
16. **Plant protection measures adopted:**
- | Pesticides / fungicides | Dose | Date |
|-------------------------|--------------------|------------|
| 1. Endosulfan | 21 ml/10 lit water | 16.05.2011 |
17. **Damage to the crop due to pest and diseases:**
 No significant damage was observed due to various pest and disease.
18. **Is the experiment reliable** : Yes
19. **Name of the Co-operators** : Ms. Darpana Patel
20. **Signature of Scientist of In charge of the experiment** :
21. **Name and Designation** : Mr. H. C. Patel
 Asstt. Research Scientist (Agro.)

Soil Analysis:

Parameter	Soil value
pH (1:2.5)	7.75
EC (1:2.5) dsm ⁻¹	0.34
Organic carbon (%)	0.45
Available N (kg/ha)	301
Available P ₂ O ₅ (kg/ha)	109
Available K ₂ O (kg/ha)	336
Available S (kg/ha)	37.44
Fe (ppm)	3.36
Mn (ppm)	27.42
Zn (ppm)	0.94

Application of Soil test based fertilizer:

1. N - Recommended dose (RD) of nitrogen only i.e 250 kg N/ha
2. P - Decrease RD by 50 % i.e 187.5 kg P₂O₅/ha
3. K - Decrease RD by 50 % i.e. 62.5 kg K₂O/ha
4. S - 83.86 kg/ha
5. Fe - 50 kg/ha
6. Mn - No Mn application
7. Zn - 8 kg/ha

Result:-

The data pertaining to cane yield, no. of millable canes/ha, tiller population, plant length, girth, quality parameters and nutrient status after harvest of sugarcane are presented in Table 1 to 24.

Number of millable canes (NMC/ha):-

The data presented in (Table-1).

The higher no. of millable canes/ha (114815) was noticed under the treatment T₁₂ (soil test based fertilizer application). The lowest number of millable canes/ha (84156) was recorded in the control plot (T₁).

Plant height at 180 DAP:

The data presented in (Table-2).

Significantly highest plant height was recorded with treatment T₁₂ (soil test based fertilizer application) but it remained at par with treatment T₄, T₆, T₇, T₈ and T₁₀.

Tiller population:

The data presented in (Table-3-5).

There was no any significant difference observed due to various treatments in increasing tiller population at 90 and 120 days after planting (DAP). While at 180 DAP significantly higher tiller population was observed with treatment T₁₂ (soil test based fertilizer application) but it remained at par with treatment T₄, T₆, T₇, T₈ and T₁₀ and T₁₁.

Plant length and girth at harvest:

The data presented in (Table-6 to 7).

Significantly higher and lower plant length was recorded with treatment T₁₂ (soil test based fertilizer application) and T₁ (control).

Plant girth failed to get the level of significance.

Cane yield (t/ha):-

The data presented in table 8.

Cane yield (t/ha) was influenced significantly by various nutrient management treatments. Significantly higher cane yield (133.33 t/ha) was recorded with the treatment T₁₂ (soil test based fertilizer application) followed by the treatment T₆ (NPK +Zn) as compared to other treatments.

C.C.S. t/ha:-

The data presented in table 9.

C.C.S. (t/ha) was significantly influenced by various plant nutrients treatments. Soil test based fertilizer application (T₁₂) recorded higher CCS (18.38 t/ha) followed by treatment T₄ (NPK kg/ha). The lowest C.C.S. (t/ha) was recorded under control plot (T₁).

Quality parameters:-

The data presented in table 10-14.

Various quality parameters viz; c.c.s %, pol% juice, purity %, and pol % cane were not found significant due to various treatments of plant nutrients.

Soil nutrient status after harvest of crop:

The data presented in table 15-24.

Soil pH, Ec, O.C.% and nutrient status- available P₂O₅, K₂O, S, Fe, Mn and Zn was not significantly influenced due to various nutrients. However, available N recorded significantly higher with the treatments T₄ and remained at par with almost all the treatment except treatment T₁, T₇, T₉ and T₁₂.

Table No. 1 : Number of millable cane kg/plot and ha⁻¹

Treatment	Replication			Total	Mean	NMC ha ⁻¹
	I	II	III			
T ₁	144	115	150	409	136.33	84156.38
T ₂	149	152	135	436	145.33	89711.93
T ₃	152	160	171	483	161.00	99382.72
T ₄	165	158	167	490	163.33	100823.00
T ₅	160	152	164	476	158.67	97942.39
T ₆	163	148	153	464	154.67	95473.25
T ₇	160	147	180	487	162.33	100205.80
T ₈	166	130	176	472	157.33	97119.34
T ₉	164	172	154	490	163.33	100823.00
T ₁₀	145	155	170	470	156.67	96707.82
T ₁₁	170	164	154	488	162.67	100411.50
T ₁₂	200	188	170	558	186.00	114814.80
Total	1938	1841	1944	5723	-	
S.Em ±	-	-	-	-	-	4505.19
C.D.at 5%	-	-	-	-	-	13213.15
C.V.%	-	-	-	-	-	7.95

Table No. 2 :- Plant height (cm) at 180 DAP

Treatment	Replication			Total	Mean	Plant height (cm)
	I	II	III			
T ₁	120	100	132	352	117.3333	117.33
T ₂	116	110	150	376	125.3333	125.33
T ₃	135	126	132	393	131	131.00
T ₄	172	138	130	440	146.6667	146.67
T ₅	120	131	140	391	130.3333	130.33
T ₆	122	152	142	416	138.6667	138.67
T ₇	150	160	150	460	153.3333	153.33
T ₈	145	152	161	458	152.6667	152.67
T ₉	140	130	134	404	134.6667	134.67
T ₁₀	160	142	167	469	156.3333	156.33
T ₁₁	130	152	125	407	135.6667	135.67
T ₁₂	172	142	168	482	160.6667	160.67
Total	1682	1635	1731	5048	-	-
S.Em ±	-	-	-	-	-	8.07
C.D.at 5%	-	-	-	-	-	23.66
C.V.%	-	-	-	-	-	9.96

Table No: 3: Tiller population at 90 DAP

Treatment	Replication			Total	Mean	tillers ha ⁻¹
	I	II	III			
T₁	186	175	215	576	192	118518.52
T₂	200	175	250	625	208.33	128600.82
T₃	245	200	162	607	202.33	124897.12
T₄	260	250	205	715	238.33	147119.34
T₅	215	182	266	663	221.00	136419.75
T₆	185	250	200	635	211.67	130658.44
T₇	175	222	312	709	236.33	145884.77
T₈	166	216	276	658	219.33	135390.95
T₉	199	261	275	735	245.00	151234.57
T₁₀	150	226	252	628	209.33	129218.11
T₁₁	250	300	286	836	278.67	172016.46
T₁₂	296	312	275	883	294.33	181687.24
Total	2527	2769	2974	8270	-	-
S.Em ±	-	-	-	-	-	13837.06
C.D.at 5%	-	-	-	-	-	NS
C.V.%	-	-	-	-	-	16.90

Table No. 4. Tiller population at 120 DAP

Treatment	Replication			Total	Mean	tillers ha ⁻¹
	I	II	III			
T₁	195	175	196	566	175.00	116460.90
T₂	256	230	245	731	193.67	150411.52
T₃	250	259	275	784	207.33	161316.87
T₄	302	206	295	803	230.00	165226.34
T₅	256	241	255	752	197.67	154732.51
T₆	202	244	282	728	220.33	149794.24
T₇	223	285	266	774	221.67	159259.26
T₈	176	256	305	737	227.00	151646.09
T₉	277	185	279	741	209.67	152469.14
T₁₀	205	300	269	774	230.00	159259.26
T₁₁	282	245	270	797	237.00	163991.77
T₁₂	300	250	356	906	259.00	186419.75
Total	2924	2876	3293	9093	-	-
S.Em ±	-	-	-	-	-	12857.61
C.D.at 5%	-	-	-	-	-	NS
C.V.%	-	-	-	-	-	14.283

Table No. 5 Tiller population at 180 DAP

Treatment	Replication			Total	Mean	tillers ha ⁻¹
	I	II	III			
T₁	186	175	164	525	175	108024.69
T₂	205	180	196	581	193.67	119547.32
T₃	245	175	202	622	207.33	127983.54
T₄	235	210	245	690	230.00	141975.31
T₅	211	200	182	593	197.67	122016.46
T₆	190	230	241	661	220.33	136008.23
T₇	233	182	250	665	221.67	136831.28
T₈	250	196	235	681	227.00	140123.46
T₉	209	245	175	629	209.67	129423.87
T₁₀	230	225	235	690	230.00	141975.31
T₁₁	240	215	256	711	237.00	146296.30
T₁₂	303	204	270	777	259.00	159876.54
Total	2737	2437	2651	7825	-	-
S.Em ±	-	-	-	-	-	9019.99
C.D.at 5%	-	-	-	-	-	26454.48
C.V.%	-	-	-	-	-	11.64

Table No. 6 Millable cane length (cm) at harvest

Treatment	Replication			Total	Mean
	I	II	III		
T₁	186	175	232	593	197.67
T₂	179	256	244	679	226.33
T₃	240	218	263	721	240.33
T₄	220	256	230	706	235.33
T₅	256	198	241	695	231.67
T₆	250	230	212	692	230.67
T₇	230	240	260	730	243.33
T₈	185	285	248	718	239.33
T₉	240	240	236	716	238.67
T₁₀	227	196	275	698	232.67
T₁₁	244	240	270	754	251.33
T₁₂	249	322	363	934	311.3
Total	33.79	2856	3074	5963.79	-
S.Em ±	-	-	-	-	17.30
C.D.at 5%	-	-	-	-	50.74
C.V.%	-	-	-	-	12.49

Table - 7 Millable cane Girth (mm) at harvest

Treatment	Replication			Total	Mean
	I	II	III		
T₁	2.82	2.60	2.4	7.82	2.61
T₂	2.77	2.60	2.64	8.01	2.67
T₃	2.8.0	2.76	2.68	8.24	2.75
T₄	2.66	2.80	2.6	8.06	2.69
T₅	2.64	2.79	3.00	8.43	2.81
T₆	3.02	2.66	2.94	8.62	2.87
T₇	2.90	2.60	3.00	8.50	2.83
T₈	2.70	2.70	2.80	8.20	2.73
T₉	2.81	2.90	2.80	8.51	2.84
T₁₀	2.88	2.92	2.90	8.70	2.90
T₁₁	2.79	2.68	3.00	8.47	2.82
T₁₂	3.00	2.60	2.87	8.47	2.82
Total	33.79	32.61	33.63	100.03	-
S.Em ±	-	-	-	-	0.08
C.D.at 5%	-	-	-	-	NS
C.V.%	-	-	-	-	5.07

Table - 8 Millable Cane yield (t ha⁻¹)

Treatment	Replication			Total	Mean	t/ha
	I	II	III			
T₁	65	82	93	240	80.00	49.38
T₂	165	152	120	437	145.67	89.92
T₃	196	169	145	510	170.00	104.94
T₄	148	175	190	513	171.00	105.56
T₅	120	169	175	464	154.67	95.47
T₆	153	185	179	517	172.33	106.38
T₇	142	160	192	494	164.67	101.65
T₈	126	139	205	470	156.67	96.71
T₉	130	160	120	410	136.67	84.36
T₁₀	142	210	126	478	159.33	98.35
T₁₁	166	198	150	514	171.33	105.76
T₁₂	195	235	218	648	216.00	133.33
Total	1783	2106	1944	5833	-	-
S.Em ±	-	-	-	-	-	9.10
C.D.at 5%	-	-	-	-	-	26.70
C.V.%	-	-	-	-	-	16.50

Table - 9 CCS t/ha

Treatment	Replication			Total	Mean	t/ha
	I	II	III			
T₁	9.31	11.12	12.95	33.38	11.13	6.87
T₂	23.87	19.00	16.12	58.99	19.66	12.14
T₃	25.05	22.22	19.49	66.76	22.25	13.74
T₄	19.62	23.38	26.49	69.49	23.16	14.30
T₅	16.64	21.75	24.29	62.68	20.89	12.90
T₆	17.95	25.29	22.45	65.68	21.89	13.51
T₇	19.57	23.97	24.40	67.94	22.65	13.98
T₈	16.96	18.85	28.54	64.34	21.45	13.24
T₉	19.63	21.57	16.73	57.93	19.31	11.92
T₁₀	20.92	28.56	16.83	66.31	22.10	13.64
T₁₁	22.14	26.03	20.61	68.79	22.93	14.15
T₁₂	26.58	32.10	30.63	89.31	29.77	18.38
Total	243.27	283.61	263.83	790.70	-	-
S.Em ±	-	-	-	-	-	1.28
C.D.at 5%	-	-	-	-	-	3.77
C.V.%	-	-	-	-	-	16.85

Table - 10 CCS %

Treatment	Replication			Total	Mean
	I	II	III		
T₁	14.33	13.56	13.92	41.81	13.94
T₂	14.47	12.5	13.43	40.4	13.47
T₃	12.78	13.15	13.44	39.37	13.12
T₄	13.26	13.36	13.94	40.56	13.52
T₅	13.87	12.87	13.88	40.62	13.54
T₆	11.73	13.67	12.54	37.94	12.67
T₇	13.78	14.98	12.71	41.47	13.82
T₈	13.46	13.56	13.92	40.94	13.65
T₉	15.10	13.48	13.94	42.52	14.17
T₁₀	14.73	13.60	13.36	41.69	13.90
T₁₁	13.34	13.15	13.74	40.23	13.41
T₁₂	13.63	13.66	14.05	41.34	13.78
Total	164.48	161.54	162.87	488.89	-
S.Em ±	-	-	-	-	0.40
C.D.at 5%	-	-	-	-	NS
C.V.%	-	-	-	-	5.06

Table - 11 Pol % juice

Treatment	Replication			Total	Mean
	I	II	III		
T ₁	20.59	18.98	19.9	59.47	19.82
T ₂	20.30	18.23	19.14	57.67	19.22
T ₃	18.22	18.72	19.15	56.09	18.70
T ₄	18.97	18.93	19.78	57.68	19.23
T ₅	19.85	18.59	19.58	58.02	19.34
T ₆	17.19	19.66	17.98	54.83	18.28
T ₇	19.76	20.94	18.15	58.85	19.617
T ₈	19.17	19.41	19.76	58.34	19.45
T ₉	21.06	19.19	19.78	60.03	20.01
T ₁₀	20.98	19.45	19.07	59.50	19.83
T ₁₁	19.19	18.58	19.73	57.50	19.17
T ₁₂	19.48	19.65	20.03	59.16	19.72
Total	234.76	230.33	232.05	697.14	-
S.Em ±	-	-	-	-	0.50
C.D.at 5%	-	-	-	-	NS
C.V.%	-	-	-	-	4.45

Table - 12 Purity %

Treatment	Replication			Total	Mean
	I	II	III		
T ₁	89.52	94.90	90.45	274.87	91.62
T ₂	94.42	88.93	91.14	274.49	91.50
T ₃	91.1	89.14	91.19	271.43	90.48
T ₄	90.33	92.34	92.00	274.67	91.56
T ₅	90.23	88.52	93.24	271.99	90.66
T ₆	85.95	89.36	89.90	265.21	88.40
T ₇	89.82	95.18	90.75	275.75	91.92
T ₈	91.29	90.28	91.91	273.48	91.16
T ₉	95.73	91.38	92.00	279.11	93.04
T ₁₀	91.22	90.47	90.81	272.50	90.83
T ₁₁	89.26	92.90	89.68	271.84	90.61
T ₁₂	90.60	89.32	91.05	270.97	90.32
Total	1089.47	1092.72	1094.12	3276.31	-
S.Em ±	-	-	-	-	1.20
C.D.at 5%	-	-	-	-	NS
C.V.%	-	-	-	-	2.28

Table – 13 Pol % cane

Treatment	Replication			Total	Mean
	I	II	III		
T₁	15.59	14.32	15.04	44.95	14.98
T₂	15.23	13.65	14.42	43.3	14.43
T₃	13.67	13.67	14.45	41.79	13.93
T₄	14.07	14.38	15.03	43.48	14.49
T₅	14.85	13.91	14.52	43.28	14.43
T₆	13.00	14.75	13.81	41.56	13.85
T₇	14.92	15.73	13.72	44.37	14.79
T₈	14.26	14.75	14.94	43.95	14.65
T₉	15.85	14.42	14.9	45.17	15.06
T₁₀	15.65	14.78	14.49	44.92	14.97
T₁₁	14.38	14.1	14.75	43.23	14.41
T₁₂	14.63	14.75	14.94	44.32	14.77
Total	176.1	173.21	175.01	524.32	-
S.Em ±	-	-	-	-	0.37
C.D.at 5%	-	-	-	-	NS
C.V.%	-	-	-	-	4.37

Table – 14 Fibre %

Treatment	Replication			Total	Mean
	I	II	III		
T₁	14.27	14.54	14.43	43.24	14.41
T₂	15.00	14.14	14.64	43.78	14.59
T₃	14.99	15.39	14.56	44.94	14.98
T₄	15.84	14.01	14.02	43.87	14.62
T₅	15.17	15.16	15.82	46.15	15.38
T₆	14.35	14.99	13.22	42.56	14.19
T₇	14.15	14.89	14.43	43.47	14.49
T₈	15.61	14.03	14.40	44.04	14.68
T₉	14.76	14.85	14.68	44.29	14.76
T₁₀	15.42	14.02	14.02	43.46	14.49
T₁₁	15.08	14.12	15.23	44.43	14.81
T₁₂	14.89	14.95	15.44	45.28	15.09
Total	179.53	175.09	174.89	529.51	-
S.Em ±	-	-	-	-	0.34
C.D.at 5%	-	-	-	-	NS
C.V.%	-	-	-	-	3.99

Table – 15 pH

Treatment	Replication			Total	Mean
	I	II	III		
T ₁	7.59	7.49	7.48	22.56	7.52
T ₂	7.15	7.73	7.67	22.55	7.52
T ₃	7.64	7.47	7.95	23.06	7.69
T ₄	7.44	7.65	7.79	22.88	7.63
T ₅	7.58	7.67	7.62	22.87	7.62
T ₆	7.28	7.61	7.89	22.78	7.59
T ₇	7.44	7.63	7.65	22.72	7.57
T ₈	7.42	7.73	7.94	23.09	7.70
T ₉	7.73	7.47	7.56	22.76	7.59
T ₁₀	7.68	7.62	7.61	22.91	7.64
T ₁₁	7.44	7.46	7.76	22.66	7.55
T ₁₂	7.46	7.48	7.64	22.58	7.53
Total	89.85	91.01	92.56	273.42	-
S.Em ±	-	-	-	-	0.09
C.D.at 5%	-	-	-	-	NS
C.V.%	-	-	-	-	2.10

Table – 16 EC

Treatment	Replication			Total	Mean
	I	II	III		
T ₁	0.14	0.22	0.18	0.54	0.18
T ₂	0.22	0.24	0.31	0.77	0.26
T ₃	0.17	0.34	0.11	0.62	0.21
T ₄	0.23	0.3	0.15	0.68	0.23
T ₅	0.14	0.23	0.18	0.55	0.18
T ₆	0.21	0.48	0.13	0.82	0.27
T ₇	0.13	0.14	0.19	0.46	0.15
T ₈	0.15	0.10	0.12	0.37	0.12
T ₉	0.15	0.21	0.45	0.81	0.27
T ₁₀	0.18	0.13	0.20	0.51	0.17
T ₁₁	0.17	0.31	0.19	0.67	0.22
T ₁₂	0.18	0.14	0.13	0.45	0.15
Total	2.07	2.84	2.34	7.25	-
S.Em ±	-	-	-	-	0.34
C.D.at 5%	-	-	-	-	NS
C.V.%	-	-	-	-	3.99

Table – 17 OC %

Treatment	Replication			Total	Mean
	I	II	III		
T ₁	0.78	0.82	0.42	2.02	0.67
T ₂	0.24	0.61	0.58	1.43	0.48
T ₃	0.73	0.42	0.48	1.63	0.54
T ₄	0.31	0.76	0.52	1.59	0.53
T ₅	0.42	0.46	0.52	1.4	0.47
T ₆	0.66	0.57	0.52	1.75	0.58
T ₇	0.54	0.31	0.6	1.45	0.48
T ₈	0.55	0.93	0.48	1.96	0.65
T ₉	0.48	0.21	0.34	1.03	0.34
T ₁₀	0.45	0.55	0.51	1.51	0.50
T ₁₁	0.57	0.55	0.51	1.63	0.54
T ₁₂	0.48	0.45	0.48	1.41	0.47
Total	6.21	6.64	5.96	18.81	-
S.Em ±	-	-	-	-	0.09
C.D.at 5%	-	-	-	-	NS
C.V.%	-	-	-	-	29.90

Table – 18 Available N

Treatment	Replication			Total	Mean
	I	II	III		
T ₁	144	194	207	545	181.67
T ₂	220	251	251	722	240.67
T ₃	226	332	238	796	265.33
T ₄	301	270	282	853	284.33
T ₅	226	238	314	778	259.33
T ₆	257	288	257	802	267.33
T ₇	194	220	157	571	190.33
T ₈	220	276	220	716	238.67
T ₉	226	257	188	671	223.67
T ₁₀	213	232	301	746	248.67
T ₁₁	220	238	238	696	232.00
T ₁₂	220	251	194	665	221.67
Total	2667	3047	2847	8561	-
S.Em ±	-	-	-	-	18.20
C.D.at 5%	-	-	-	-	53.39
C.V.%	-	-	-	-	13.26

Table – 19 Available P

Treatment	Replication			Total	Mean
	I	II	III		
T₁	112	147	139	398	132.67
T₂	155	144	173	472	157.33
T₃	143	149	152	444	148.00
T₄	116	158	154	428	142.67
T₅	134	86	165	385	128.33
T₆	144	142	178	464	154.67
T₇	128	144	163	435	145.00
T₈	128	151	126	405	135.00
T₉	136	136	102	374	124.67
T₁₀	152	152	142	446	148.67
T₁₁	146	137	152	435	145.00
T₁₂	182	147	115	444	148.00
Total	1676	1693	1761	5130	-
S.Em ±	-	-	-	-	12.35
C.D.at 5%	-	-	-	-	NS
C.V.%	-	-	-	-	15.01

Table – 20 Available K

Treatment	Replication			Total	Mean
	I	II	III		
T₁	514	577	532	1623	541.00
T₂	564	566	639	1769	589.67
T₃	563	858	496	1917	639.00
T₄	697	532	416	1645	548.33
T₅	502	535	480	1517	505.67
T₆	569	530	518	1617	539.00
T₇	417	509	517	1443	481.00
T₈	712	536	533	1781	593.67
T₉	409	569	474	1452	484.00
T₁₀	493	518	868	1879	626.33
T₁₁	491	513	651	1655	551.67
T₁₂	906	503	492	1901	633.67
Total	6837	6746	6616	20199	-
S.Em ±	-	-	-	-	75.39
C.D.at 5%	-	-	-	-	NS
C.V.%	-	-	-	-	23.27

Table - 21 Available S

Treatment	Replication			Total	Mean
	I	II	III		
T₁	10.71	23.21	25.03	58.95	19.65
T₂	10.53	27.53	47.33	85.39	28.46
T₃	14.03	42.4	9.96	66.39	22.13
T₄	21.02	18.33	18.33	57.68	19.23
T₅	10.27	36.14	19.53	65.94	21.98
T₆	14.93	54.53	16.53	85.99	28.66
T₇	10.12	31.43	17.03	58.58	19.53
T₈	6.75	6.31	11.93	24.99	8.33
T₉	7.07	35.21	26.93	69.21	23.07
T₁₀	13.4	29.61	24.71	67.72	22.57
T₁₁	20.52	21.63	24.05	66.2	22.07
T₁₂	12.77	23.55	28.33	64.65	21.55
Total	152.12	349.88	269.69	771.69	-
S.Em ±	-	-	-	-	5.61
C.D.at 5%	-	-	-	-	NS
C.V.%	-	-	-	-	45.31

Table – 22 Available Fe

Treatment	Replication			Total	Mean
	I	II	III		
T₁	16.78	14.98	17.38	49.14	16.38
T₂	21.00	23.4	18.58	62.98	20.99
T₃	20.00	24.00	13.76	57.76	19.25
T₄	11.36	19.78	17.98	49.12	16.37
T₅	17.98	19.78	20.40	58.16	19.39
T₆	16.18	17.98	19.18	53.34	17.78
T₇	10.76	24.00	18.58	53.34	17.78
T₈	12.56	14.38	20.40	47.34	15.78
T₉	10.16	14.98	17.98	43.12	14.37
T₁₀	13.16	17.98	9.56	40.70	13.57
T₁₁	13.16	16.78	17.56	47.50	15.83
T₁₂	16.18	16.18	17.12	49.48	16.49
Total	179.28	224.22	208.48	611.98	-
S.Em ±	-	-	-	-	1.86
C.D.at 5%	-	-	-	-	NS
C.V.%	-	-	-	-	18.98

Table – 23 Available Mn

Treatment	Replication			Total	Mean
	I	II	III		
T₁	37.26	37.26	38.22	112.74	37.58
T₂	45.62	37.26	36.28	119.16	39.72
T₃	21.86	40.76	32.78	95.40	31.80
T₄	36.66	38.04	34.32	109.02	36.34
T₅	35.30	39.20	38.62	113.12	37.71
T₆	39.78	37.64	32.38	109.80	36.60
T₇	32.28	39.40	39.60	111.28	37.09
T₈	33.16	33.36	35.50	102.02	34.01
T₉	26.92	34.92	37.64	99.48	33.16
T₁₀	30.44	34.92	37.84	103.20	34.40
T₁₁	34.32	35.70	37.64	107.66	35.87
T₁₂	38.42	35.30	36.66	110.38	36.79
Total	412.02	443.76	437.48	1293.26	-
S.Em ±	-	-	-	-	2.37
C.D.at 5%	-	-	-	-	NS
C.V.%	-	-	-	-	11.41

Table – 24 Available Zn

Treatment	Replication			Total	Mean
	I	II	III		
T₁	0.71	0.82	0.98	2.51	0.84
T₂	0.83	0.73	0.87	2.42	0.81
T₃	0.68	1.21	0.60	2.50	0.83
T₄	1.11	0.77	0.66	2.54	0.85
T₅	0.63	0.72	0.76	2.11	0.70
T₆	0.96	1.33	0.92	3.21	1.07
T₇	0.54	0.83	0.70	2.07	0.69
T₈	0.69	0.63	0.53	1.85	0.61
T₉	0.55	1.14	0.51	2.21	0.74
T₁₀	0.98	0.71	1.11	2.80	0.93
T₁₁	0.73	0.67	1.11	2.50	0.83
T₁₂	0.92	0.74	0.91	2.57	0.86
Total	9.33	10.30	9.66	29.29	-
S.Em ±	-	-	-	-	0.12
C.D.at 5%	-	-	-	-	NS
C.V.%	-	-	-	-	25.80

