

## CROP PRODUCTION 2015-16

<b>1</b>	<b>Project No.</b>	<b>1. AS 42 :Agronomic Evaluation</b>
<b>2</b>	<b>Title</b>	Agronomic evaluation of promising sugarcane genotypes - Plant Cane II (Early Group)
<b>3</b>	<b>Objectives</b>	To work out agronomy of sugarcane genotypes of advanced varietal trial
<b>4</b>	<b>Details of the treatment</b>	A) Sugarcane Genotypes: V <sub>1</sub> -- Co 09004 V <sub>2</sub> – Co 09007 V <sub>3</sub> – CoN 09072 <b>V<sub>4</sub> – CoC 671 (Standard Check)</b> B) Fertilizer levels : F <sub>1</sub> : 75 % NPK (187.50:86.25:86.25kg ha <sup>-1</sup> ) F <sub>2</sub> : 100 % NPK (250:115:115 kg ha <sup>-1</sup> ) F <sub>3</sub> : 125 % NPK (312.50:143.75: 143.75 kg ha <sup>-1</sup> )
<b>5</b>	<b>Design</b>	Factorial Randomised Block Design
<b>6</b>	<b>Replications</b>	Three
<b>7</b>	<b>Plot size</b>	8 r × 6m x 1.2 m
<b>8</b>	<b>Date of planting, harvesting</b>	05/02/2015 24/01/2016
<b>9</b>	<b>Climatic parameters (rainfall, Temperature-maximum &amp; minimum, RH, etc.)</b>	The total rainfall of 724.90 mm in 58 rainy days. The average maximum temperature 34.75°C and average minimum temperature 19.10°C. Average morning humidity 81.85 % and average evening humidity 31.42 %.
<b>10</b>	<b>Initial soil health status</b>	pH 7.2, EC (dSm <sup>-1</sup> ) 0.87, OC 0.9%, Available N 222 kg ha <sup>-1</sup> , Available P 13.8 kg ha <sup>-1</sup> , Available K 312 kg ha <sup>-1</sup>

## **11. Results**

### **11.1 Growth Parameters**

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

#### **A. Genotype (Variety)**

Among the genotypes, Co 09004 recorded significantly highest number of tillers (100530 ha<sup>-1</sup>), number of canes (100280 ha<sup>-1</sup>), millable height (270 cm) and single cane weight (1.22kg). However, it was at par with Co 09007 regarding number of tillers (95090 ha<sup>-1</sup>), millable height (260 cm) and single cane weight ( 1.17 kg).

#### **B. Fertilizer levels**

An application of chemical fertilizer level @ 125% RD recorded significantly highest number of tillers ( 98320 ha<sup>-1</sup>), NMC (95550 ha<sup>-1</sup>), diameter (3.30cm), number of internodes cane<sup>-1</sup> (21.25) , single cane weight (1.21 kg).

#### **C. Interaction effect**

The interaction effect between genotypes and fertilizer levels was found to be non significant.

## 11.2 Cane and CCS yield

The data pertaining to cane and CCS yield is presented in Table 3.

### A. Genotypes (Variety)

Among the genotype Co 09004 was significantly recorded highest cane yield ( $102.55 \text{ t ha}^{-1}$ ), CCS yield ( $14.62 \text{ t ha}^{-1}$ ) and which was at par with the Co 09007 for cane yield ( $100.03 \text{ t ha}^{-1}$ ).

### B. Fertilizer levels

The cane and CCS yield were influenced significantly due to different fertilizer levels. An application of chemical fertilizer level @ 125% RD recorded significantly highest cane yield ( $101.78 \text{ t ha}^{-1}$ ) and CCS yield ( $14.34 \text{ t ha}^{-1}$ ).

### C. Interaction effect

The data on genotype and fertilizer interaction effect are presented in Table 4 and 5. The interaction effect between genotypes and fertilizer levels was found significant in respect of cane and CCS yield. The genotype Co 09004 was significantly responded to an application of 125% RD and recorded highest cane ( $105.58 \text{ t ha}^{-1}$ ) and CCS ( $15.79 \text{ t ha}^{-1}$ ) yield. However, it was at par with Co 09007.

## 11.3 Quality parameters

The data on sugarcane juice quality parameters of viz., brix, sucrose, purity and CCS percentage are presented in Table 6.

### A. Genotypes

The juicer quality parameters were significantly influenced by different genotypes except purity %. The genotype Co 09004 recorded significantly higher brix<sup>o</sup>, sucrose and CCS percentage ( $21.83^{\circ}$ ,  $20.54\%$ , and  $14.62\%$ , respectively) however it was at par with rest of the genotypes.

### B. Fertilizer levels

An application of 125 % RD chemical fertilizer recorded significantly highest brix  $21.48^{\circ}$  and purity  $93.96\%$ .

### C. Interaction effect

The interaction effect between genotypes and fertilizer levels was found non significant.

**Table 1: Mean data on growth parameters as influenced by various treatments.**

Sr .No.	Treatments Details	Growth parameters		
		Germination at 45 DAP (%)	No. of tillers (000' ha <sup>-1</sup> )	NMC (000'ha <sup>-1</sup> )
<b>A.</b>	<b>Sugarcane Genotype,* Standard Check</b>			
	V <sub>1</sub> : Co 09004	50.09	100.53	100.28
	V <sub>2</sub> : Co 09007	41.65	95.09	92.06
	V <sub>3</sub> : CoN 09072	38.04	97.19	93.34
	*V <sub>4</sub> : CoC 671	39.87	76.20	73.21
	S.E.±	3.19	2.16	2.09
	C.D. 0.05	NS	6.33	6.13
<b>B</b>	<b>Fertilizer levels</b>			
	N <sub>1</sub> : 75 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	39.83	86.37	84.27
	N <sub>2</sub> : 100 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	42.71	92.08	89.35
	N <sub>3</sub> :125 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	44.70	98.32	95.55
	S.E. ±	2.76	1.87	1.81
	C.D. 0.05	N.S.	5.49	5.31
<b>C</b>	<b>Interaction (A x B)</b>			
	S.E.±	5.51	3.74	3.62
	C.D. 0.05	N.S.	N.S.	N.S.
	G.M.	42.41	92.25	89.72

**Table 2: Mean data on growth parameters as influenced by various treatments.**

Sr. No.	Treatments Details	Growth parameters			
		Millable height (cm)	Diameter (cm)	No.of internodes cane <sup>-1</sup>	Single cane weight (kg)
<b>A.</b>	<b>Sugarcane Genotype,* Standard Check</b>				
	V <sub>1</sub> : Co 09004	270.00	3.00	20.58	1.22
	V <sub>2</sub> : Co 09007	260.00	3.13	21.07	1.17
	V <sub>3</sub> : CoN 09072	233.33	2.83	19.04	1.03
	*V <sub>4</sub> : CoC 671	242.22	3.29	19.92	1.19
	S.E. ±	7.88	0.07	0.29	0.0
	C.D. 0.05	23.12	0.21	0.87	0.06
<b>B</b>	<b>Fertilizer levels</b>				
	F <sub>1</sub> : 75 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	239.17	2.86	19.01	1.10
	F <sub>2</sub> : 100 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	252.08	3.02	20.2	1.15
	F <sub>3</sub> : 125 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	262.92	3.30	21.25	1.21
	S.E. ±	6.82	0.06	0.25	0.02
	C.D. 0.05	N.S.	0.18	0.76	0.05
<b>C</b>	<b>Interaction (A x B)</b>				
	S.E. ±	13.65	0.12	0.51	0.03
	C.D. 0.05	N.S.	N.S.	N.S.	N.S.
	<b>G.M.</b>	<b>251.39</b>	<b>3.06</b>	<b>20.15</b>	<b>1.15</b>

**Table 3: Mean data on cane and CCS yield (t ha<sup>-1</sup>) as influenced by various treatments.**

Sr.No.	Treatment	Yield (t ha <sup>-1</sup> )	
		Cane	CCS
<b>A.</b>	<b>Sugarcane Genotype,* Standard Check</b>		
	V <sub>1</sub> : Co 09004	102.55	14.62
	V <sub>2</sub> : Co 09007	100.03	13.21
	V <sub>3</sub> : CoN 09072	97.24	14.49
	<b>*V<sub>4</sub>: CoC 671</b>	90.42	14.46
	S.E. ± C.D. 0.05	1.16 3.42	0.79 0.57
<b>B</b>	<b>Fertilizer levels</b>		
	F <sub>1</sub> : 75 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	92.36	14.19
	F <sub>2</sub> : 100 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	98.55	14.05
	F <sub>3</sub> : 125 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	101.78	14.34
	S.E. ± C.D. 0.05	1.02 2.96	0.16 0.48
<b>C</b>	<b>Interaction (A x B)</b>	2.02	0.34
		5.92	0.98
	<b>G.M.</b>	<b>97.56</b>	<b>14.20</b>

**Table 4: Interaction effect between sugarcane genotypes and fertilizer levels on cane yield (t ha<sup>-1</sup>).**

Fertilizer levels /Genotypes (Variety)	Fertilizer levels			Mean
	F <sub>1</sub> :75 % RD NPK	F <sub>2</sub> : 100 % RD NPK	F <sub>3</sub> : 125 % RD NPK	
V <sub>1</sub> : Co 09004	100.15	101.92	105.58	<b>102.55</b>
V <sub>2</sub> : Co 09007	94.56	100.98	104.55	<b>100.03</b>
V <sub>3</sub> : CoN 09072	94.25	99.03	98.45	<b>97.24</b>
<b>*V<sub>4</sub>: CoC 671</b>	80.46	92.26	98.54	<b>90.42</b>
<b>Genotypes (Variety)</b>	<b>Fertilizer levels</b>	<b>V x F</b>		
S.E. ±	1.165	1.009	2.018	
C.D. 0.05	3.42	2.96	5.92	

**Table 5: Interaction effect between sugarcane genotypes and fertilizer levels on CCS yield (t ha<sup>-1</sup>).**

Fertilizer levels /Genotypes (Variety)	Fertilizer levels			Mean
	F <sub>1</sub> :75 % RD NPK	F <sub>2</sub> : 100 % RD NPK	F <sub>3</sub> : 125 % RD NPK	
V <sub>1</sub> : Co 09004	14.68	14.53	15.79	<b>15.00</b>
V <sub>2</sub> : Co 09007	12.44	13.39	13.81	<b>13.21</b>
V <sub>3</sub> : CoN 09072	13.86	14.14	14.26	<b>14.08</b>
<b>*V<sub>4</sub>: CoC 671</b>	11.45	13.30	14.53	<b>13.09</b>
<b>Genotypes (Variety)</b>	<b>Fertilizer levels</b>	<b>V x F</b>		
S.E. ±	0.193	0.167	0.334	
C.D. 0.05	0.57	0.49	0.98	

**Table 6: Mean data on sugarcane juice quality parameters as influenced by various treatments.**

Sr. No.	Treatments Details	Quality parameters			
		Brix°	Sucrose %	CCS %	Purity %
<b>A</b>	<b>Sugarcane Genotype,* Standard Check</b>				
	V <sub>1</sub> : Co 09004	21.83	20.54	14.62	93.40
	V <sub>2</sub> : Co 09007	19.77	18.57	13.21	93.94
	V <sub>3</sub> : CoN 09072	21.60	20.35	14.49	93.66
	*V <sub>4</sub> : CoC 671	21.33	20.24	14.46	93.14
	S.E. ±	0.15	0.14	0.12	0.29
	C.D. 0.05	0.44	0.43	0.37	N.S.
<b>B</b>	<b>Fertilizer levels</b>				
	F <sub>1</sub> : 75 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	20.90	19.86	14.19	92.9
	F <sub>2</sub> : 100 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	21.02	19.76	14.05	93.75
	F <sub>3</sub> : 125 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	21.48	20.17	14.34	93.96
	S.E. ±	0.13	0.12	0.11	0.23
	C.D. 0.05	0.38	N.S.	N.S.	0.68
<b>C</b>	<b>Interaction (A x B)</b>				
	S.E. ±	0.26	0.25	0.22	0.50
	C.D. 0.05	N.S.	N.S.	N.S.	N.S.
	<b>G.M.</b>	<b>21.13</b>	<b>19.93</b>	<b>14.20</b>	<b>93.53</b>

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<b>2</b>	<b>Title</b>	Agronomic evaluation of promising sugarcane genotypes - Ratoon crop (Early Group)
<b>3</b>	<b>Objectives</b>	To work out management of package of practices for sugarcane genotypes.
<b>4</b>	<b>Details of the treatment</b>	A) Sugarcane Genotypes, V <sub>1</sub> -- Co 09004 V <sub>2</sub> – Co 09007 V <sub>3</sub> – CoN 09072 <b>V<sub>4</sub> – CoC 671 (Standard Check)</b> B) Fertilizer levels : F <sub>1</sub> : 75 % NPK (187.50:86.25:86.25kg ha <sup>-1</sup> ) F <sub>2</sub> : 100 % NPK (250:115:115 kg ha <sup>-1</sup> ) F <sub>3</sub> : 125 % NPK (312.50:143.75: 143.75 kg ha <sup>-1</sup> )
<b>5</b>	<b>Design</b>	Factorial Randomised Block Design
<b>6</b>	<b>Replications</b>	Three
<b>7</b>	<b>Plot size</b>	7 r × 7m x 1.2 m
<b>8</b>	<b>Date of Ratooning, harvesting</b>	02/02/2015 25/01/2016
<b>9</b>	<b>Climatic parameters (rainfall, Temperature-maximum &amp; minimum, RH, etc.)</b>	The total rainfall of 724.90 mm in 58 rainy days. The average maximum temperature 34.75°C and average minimum temperature 19.10°C. Average morning humidity 81.85 % and average evening humidity 31.42 %.
<b>10</b>	<b>Initial soil health status</b>	pH 7.3, EC (dSm <sup>-1</sup> ) 0.81, OC 0.59%, Available N 217 kg ha <sup>-1</sup> , Available P 11.8 kg ha <sup>-1</sup> , Available K 298 kg ha <sup>-1</sup>

## 11. Results

### 11.1 Growth Parameters

The data regarding growth parameters in ratoon crop are presented in Table 7 and 8.

#### A. Genotype

The sugarcane genotype Co 09004 was significantly recorded number of tillers (96510 ha<sup>-1</sup>), NMC (94600 ha<sup>-1</sup>), millable height (273.33cm) and single cane weight (1.05 kg). The Co 09007 genotype found at par with Co 09004 for the growth parameter like NMC (90140 ha<sup>-1</sup>), millable height (265.56cm).

#### B. Fertilizer levels

The growth parameters were influenced significantly due to fertilizer levels except number of internodes. Among the fertilizer levels, an application of chemical fertilizer @ 125 % RD recorded significantly highest number of tillers (94390 ha<sup>-1</sup>), NMC (92230 ha<sup>-1</sup>), millable height 264.17 cm, diameter (3.1 cm) and single cane weight (1.06 kg) over other fertilizer levels.

### **C. Interaction effect**

The interaction effect between genotypes and fertilizer levels was found to be non significant.

## **11.2 Cane yield and CCS yield**

The data pertaining to cane and CCS yield of ratoon crop is presented in Table 9.

### **A. Genotypes**

The cane yield was influenced significantly due to different genotypes. Among the genotypes Co 09004 was significantly recorded highest cane yield (98.95 t ha<sup>-1</sup>) which was at par with the genotype Co 09007 (95.30 t ha<sup>-1</sup>) CoN 09072 (95.21 t ha<sup>-1</sup>). The genotype Co 09004 also recorded significantly highest CCS yield (14.7 t ha<sup>-1</sup>).

### **B. Fertilizer levels**

The cane and CCS yield were influenced significantly due to different fertilizer levels. The application of chemical fertilizer @ 125% RD found significant cane yield (98.52 t ha<sup>-1</sup>) and CCS yield (14.45 t ha<sup>-1</sup>) which was at par with the application of fertilizer @ 100% RD which recorded cane yield (95 t ha<sup>-1</sup>) and CCS yield (13.84 t ha<sup>-1</sup>).

### **C. Interaction effect**

The interaction effect between genotypes and fertilizer levels was found to be non significant.

## **11.3 Quality parameters**

The data on juice quality parameters of sugarcane in ratoon crop *viz.*, brix, sucrose, purity and CCS percentage are presented in Table 10.

### **A. Genotypes**

The quality parameters were significantly influenced by different genotypes except purity. The genotype Co 09004 recorded significantly highest brix<sup>o</sup> (22.18<sup>o</sup>), sucrose (20.86%) and CCS (14.84%) over check variety CoC 671.

### **B. Fertilizer levels**

Application of chemical fertilizer @125 % RD chemical fertilizer level found significant in respect of brix<sup>o</sup> (21.78<sup>o</sup>), sucrose (20.57%), CCS (14.67 %).

### **C. Interaction effect**

The interaction effect between genotypes and fertilizer levels was found non significant.

**Table 7: Mean data on growth parameters as influenced by various treatments in ratoon crop .**

Sr . No.	Treatments Details	Growth parameters	
		No. of tillers at 90 (000' ha <sup>-1</sup> )	NMC ( 000'ha <sup>-1</sup> )
<b>A.</b>	<b>Sugarcane Genotype,* Standard Check</b>		
	V <sub>1</sub> : Co 09004	96.51	94.60
	V <sub>2</sub> : Co 09007	91.83	90.14
	V <sub>3</sub> : CoN 09072	91.44	89.91
	<b>*V<sub>4</sub>: CoC 671</b>	77.78	75.45
	S.E.±	1.47	1.62
	C.D. 0.05	4.31	4.76
<b>B</b>	<b>Fertilizer levels</b>		
	F <sub>1</sub> : 75 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	83.11	80.77
	F <sub>2</sub> : 100 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	90.67	89.58
	F <sub>3</sub> :125 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	94.39	92.23
	S.E. ±	1.27	1.40
	C.D. 0.05	3.73	4.12
<b>C</b>	<b>Interaction (A x B)</b>		
	S.E.±	2.54	2.81
	C.D. 0.05	N.S.	N.S.
	<b>G.M.</b>	<b>89.39</b>	<b>87.52</b>

**Table 8: Mean data on growth parameters as influenced by various treatments in ratoon crop .**

Sr. No.	Treatments Details	Growth parameters			
		Millable height (cm)	Diameter (cm)	No. of internodes Cane <sup>-1</sup>	Single cane weight (kg)
<b>A.</b>	<b>Sugarcane Genotype,* Standard Check</b>				
	V <sub>1</sub> : Co 09004	273.33	2.99	19.32	1.05
	V <sub>2</sub> : Co 09007	265.56	3.02	19.58	0.95
	V <sub>3</sub> : CoN 09072	230.00	2.93	18.54	1.02
	<b>*V<sub>4</sub>: CoC 671</b>	248.89	3.07	19.23	1.05
	S.E. ±	5.55	0.02	0.35	0.01
	C.D. 0.05	16.29	0.08	N.S.	0.05
<b>B</b>	<b>Fertilizer levels</b>				
	F <sub>1</sub> : 75 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	242.50	2.96	18.70	0.95
	F <sub>2</sub> : 100 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	256.67	2.96	19.10	1.03
	F <sub>3</sub> : 125 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	264.17	3.1	19.71	1.06
	S.E. ±	4.81	0.02	0.30	0.01
	C.D. 0.05	14.11	0.07	N.S.	0.05
<b>C</b>	<b>Interaction (A x B)</b>				
	S.E. ±	9.61	0.04	0.61	0.03
	C.D. 0.05	N.S.	N.S.	N.S.	N.S.
	<b>G.M.</b>	<b>254.44</b>	<b>3.01</b>	<b>19.17</b>	<b>1.01</b>



**Table 9: Mean cane and CCS yield (t ha<sup>-1</sup>) as influenced by various treatments in ratoon crop .**

Sr.No	Treatment	Yield (t ha <sup>-1</sup> )		
		Cane	CCS	
<b>A.</b>	<b>Sugarcane Genotype,* Standard Check</b>			
	V <sub>1</sub> : Co 09004	98.95	14.70	
	V <sub>2</sub> : Co 09007	95.30	12.84	
	V <sub>3</sub> : CoN 09072	95.21	13.92	
	*V <sub>4</sub> : CoC 671	88.97	13.29	
	S.E. ± C.D. 0.05	2.22 6.53	0.25 0.74	
<b>B</b>	<b>Fertilizer levels</b>			
	F <sub>1</sub> : 75 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	90.31	12.78	
	F <sub>2</sub> : 100 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	95.0	13.84	
	F <sub>3</sub> : 125 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	98.52	14.45	
	S.E. ± C.D. 0.05	1.92 5.56	0.21 0.64	
	<b>C</b>	<b>Interaction (A x B)</b>		
S.E. ± C.D. 0.05		3.85 N.S.	0.44 N.S.	
<b>G.M.</b>		<b>94.61</b>	<b>13.69</b>	

**Table 10: Mean data on quality parameters as influenced by various treatments in ratoon crop .**

Sr. No.	Treatments Details	Quality parameters			
		Brix <sup>o</sup>	Sucrose %	CCS %	Purity %
<b>A</b>	<b>Sugarcane Genotype,* Standard Check</b>				
	V <sub>1</sub> : Co 09004	22.18	20.86	14.84	94.05
	V <sub>2</sub> : Co 09007	20.02	18.90	13.48	94.43
	V <sub>3</sub> : CoN 09072	21.68	20.47	14.59	94.41
	*V <sub>4</sub> : CoC 671	21.74	20.59	14.69	94.72
	S.E. ± C.D. 0.05	0.16 0.49	0.18 0.52	0.14 0.41	0.44 N.S.
<b>B</b>	<b>Fertilizer levels</b>				
	F <sub>1</sub> : 75 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	21.12	19.87	14.14	94.10
	F <sub>2</sub> : 100 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	21.32	20.18	14.40	94.63
	F <sub>3</sub> : 125 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	21.78	20.57	14.67	94.48
	S.E. ± C.D. 0.05	0.15 0.45	0.15 0.45	0.12 0.36	0.38 N.S.
	<b>C</b>	<b>Interaction (A x B)</b>			
S.E. ± C.D. 0.05		0.29 N.S.	0.30 N.S.	0.24 N.S.	0.76 N.S.
<b>G.M.</b>		<b>21.41</b>	<b>20.21</b>	<b>14.40</b>	<b>94.40</b>

<b>1</b>	<b>Project No.</b>	<b>3. AS 42 :Agronomic Evaluation</b>
<b>2</b>	<b>Title</b>	Agronomic evaluation of promising sugarcane genotypes – Plant Cane II (Midlate Group).
<b>3</b>	<b>Objectives</b>	To work out management of package of practices for sugarcane genotypes.
<b>4</b>	<b>Details of the treatment</b>	A) Sugarcane genotypes : V <sub>1</sub> – Co 08009 V <sub>2</sub> – Co 08016 V <sub>3</sub> – Co 09009 <b>V<sub>4</sub> – Co 99004 (Standard Check)</b> B) Fertilizer levels : F <sub>1</sub> : 75 % NPK (187.50:86.25:86.25kg ha <sup>-1</sup> ) F <sub>2</sub> : 100 % NPK (250:115:115 kg ha <sup>-1</sup> ) F <sub>3</sub> : 125 % NPK (312.50:143.75: 143.75 kg ha <sup>-1</sup> )
<b>5</b>	<b>Design</b>	Factorial Randomised Block Design
<b>6</b>	<b>Replications</b>	Three
<b>7</b>	<b>Plot size</b>	8 r × 6m x 1.2 m
<b>8</b>	<b>Date of planting, harvesting</b>	15/02/2015 26/01/2016
<b>9</b>	<b>Climatic parameters (rainfall, Temperature- maximum &amp; minimum, RH, etc.)</b>	The total rainfall of 724.90 mm in 58 rainy days. The average maximum temperature 34.75°C and average minimum temperature 19.10°C. Average morning humidity 81.85 % and average evening humidity 31.42 %.
<b>10</b>	<b>Initial soil health status</b>	pH 7.00, EC (dSm <sup>-1</sup> ) 0.72 dSm <sup>-1</sup> , OC 0.62%, Available N 214 kg ha <sup>-1</sup> , Available P 12.4 kg ha <sup>-1</sup> , Available K 293 kg ha <sup>-1</sup>

## 11. Results

### 11.1 Growth Parameters

The data regarding growth parameters are presented in Table 11 and 12.

#### A. Genotype

The sugarcane genotype Co 08016 was significantly recorded highest germination percentage at 45 DAP (52.59 %) and number of tillers (10760 ha<sup>-1</sup>) over standard check Co 99004 however it was at par with Co 09009. The genotype Co 09009 recorded significantly highest NMC (101900 ha<sup>-1</sup>) which was at par with Co 08016. The genotype Co 99004 recorded significantly highest millable height (261.78 cm), number of internode (21.56 cane<sup>-1</sup>) and single cane weight (1.12 kg).

#### B. Fertilizer levels

Among the fertilizer levels, application of chemical fertilizer @ 125% RD was found significant in terms of germination percentage at 45 DAP (56.26%), number of tillers (109500 ha<sup>-1</sup>), NMC(105280 ha<sup>-1</sup>), millable height (246 cm), number of internode cane<sup>-1</sup> (21.04) and single cane weight (1.13 kg) and it was at par with the application of chemical fertilizer @ 100% RD.

#### C. Interaction effect

The interaction effect between genotypes and fertilizer levels was found to be non significant.

## 11.2 Cane yield and CCS yield

The data pertaining to cane and CCS yield is presented in Table 13.

### A. Genotypes

The sugarcane genotype Co 09009 was significantly highest cane (110.31 t ha<sup>-1</sup>) and CCS (16.10 t ha<sup>-1</sup>) yield over standard check Co 09004 and was at par with genotype Co 08016 (105.47 t ha<sup>-1</sup> and CCS 16 t ha<sup>-1</sup> yield).

### B. Fertilizer levels

The cane and CCS yield were significantly influenced due to fertilizer levels. The application of 125% RD showed significantly higher cane (106.87 t ha<sup>-1</sup>) and CCS (16.08 t ha<sup>-1</sup>) yield over other fertilizer levels.

### C. Interaction effect

The interaction effect between genotypes and fertilizer levels was found non significant.

## 11.3 Quality parameters

The data pertaining to quality parameters of sugarcane juice *viz.*, brix, sucrose, purity and CCS percentage are presented in Table 14.

### A. Genotypes

The quality parameters were significantly influenced by different genotypes. The standard genotype Co 99004 recorded significantly highest brix<sup>o</sup> (23.02<sup>o</sup>), sucrose (21.64%), CCS (15.39%) and purity (94.01%) which was at par with genotype Co 08016 ( brix<sup>o</sup> 22.85, sucrose 21.34%, CCS 15.14% and purity 93.37%, respectively).

### B. Fertilizer levels

An application of chemical fertilizer @125 % RD responded significantly to juice quality parameters *viz.*; brix<sup>o</sup> (22.46<sup>o</sup>), sucrose (21.08%), CCS (14.99%) and purity (93.82%).

### C. Interaction effect

The interaction effect between genotypes and fertilizer levels found non significant.

**Table 11: Mean data on growth parameters as influenced by various treatments**

Sr. No.	Treatments Details	Growth parameters		
		Germination at 45 DAP (%)	No. of tillers (000' ha <sup>-1</sup> )	NMC (000' ha <sup>-1</sup> )
<b>A.</b>	<b>Sugarcane Genotype,* Standard Check</b>			
	V <sub>1</sub> : Co08009	48.33	99.29	96.93
	V <sub>2</sub> : Co 08016	52.59	107.61	100.51
	V <sub>3</sub> : Co 09009	50.53	104.21	101.90
	*V <sub>4</sub> : Co 99004	43.77	90.96	87.71
	S.E. ± C.D. 0.05	1.78 5.21	2.57 7.54	2.36 6.91
<b>B</b>	<b>Fertilizer levels</b>			
	F <sub>1</sub> : 75 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	42.4	91.63	88.60
	F <sub>2</sub> : 100 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	47.75	100.43	96.41
	F <sub>3</sub> : 125 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	56.26	109.50	105.28
	S.E. ± C.D. 0.05	1.54 4.51	2.23 6.53	2.04 5.98
<b>C</b>	<b>Interaction (A x B)</b>			
	S.E. ± C.D. 0.05	3.07 N.S.	4.46 N.S.	4.66 N.S.
	<b>G.M.</b>	<b>48.80</b>	<b>100.52</b>	<b>96.76</b>

**Table 12: Mean data on growth parameters as influenced by various treatments.**

Sr. No.	Treatments Details	Growth parameters			
		Millable height (cm)	Diameter (cm)	No. of internodes cane <sup>-1</sup>	Single cane weight (kg)
<b>A.</b>	<b>Sugarcane Genotype,* Standard Check</b>				
	V <sub>1</sub> : Co 08009	218.11	2.91	19.17	0.98
	V <sub>2</sub> : Co 08016	236.56	2.93	19.33	1.00
	V <sub>3</sub> : Co 09009	238.22	2.96	20.98	0.99
	* V <sub>4</sub> : Co 99004	261.78	2.83	21.56	1.12
	S.E. ± C.D. 0.05	3.52 10.32	0.06 N.S.	0.4 1.17	0.02 0.7
<b>B</b>	<b>Fertilizer levels</b>				
	F <sub>1</sub> : 75 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	228.75	2.85	19.26	0.93
	F <sub>2</sub> : 100 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	241.25	2.87	20.48	1.01
	F <sub>3</sub> : 125 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	246.00	3.00	21.04	1.13
	S.E. ± C.D. 0.05	3.05 8.99	0.05 N.S.	0.35 1.01	0.02 0.6
<b>C</b>	<b>Interaction (A x B)</b>				
	S.E. ± C.D. 0.05	6.1 N.S.	0.1 N.S.	0.69 N.S.	0.04 N.S.
	<b>G.M.</b>	<b>238.67</b>	<b>2.91</b>	<b>20.26</b>	<b>1.02</b>

**Table 13: Mean cane and CCS yield (t ha<sup>-1</sup>) as influenced by various treatments**

Sr. No.	Treatment	Yield (t ha <sup>-1</sup> )	
		Cane	CCS
<b>A.</b>	<b>Sugarcane Genotype,* Standard Check</b>		
	V <sub>1</sub> : Co 08009	91.87	12.90
	V <sub>2</sub> : Co 08016	105.47	16.00
	V <sub>3</sub> : Co 09009	110.31	16.10
	*V <sub>4</sub> : Co 99004	91.31	14.07
	S.E. ± C.D. 0.05	2.42 7.10	0.34 0.99
<b>B</b>	<b>Fertilizer levels</b>		
	F <sub>1</sub> : 75 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	93.28	13.50
	F <sub>2</sub> : 100 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	99.08	14.72
	F <sub>3</sub> : 125 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	106.87	16.08
	S.E. ± C.D. 0.05	2.0 6.15	0.29 0.86
<b>C</b>	<b>Interaction (A x B)</b>		
	S.E. ± C.D. 0.05	4.20 N.S.	0.58 N.S.
	<b>G.M.</b>	<b>99.74</b>	<b>14.77</b>

**Table 14: Mean data on quality parameters as influenced by various treatments.**

Sr. No.	Treatments Details	Quality parameters			
		Brix <sup>o</sup>	Sucrose (%)	CCS (%)	Purity (%)
<b>A</b>	<b>Sugarcane Genotype,* Standard Check</b>				
	V <sub>1</sub> : Co08009	20.85	19.17	13.50	91.95
	V <sub>2</sub> : Co 08016	22.85	21.34	15.14	93.37
	V <sub>3</sub> : Co 09009	21.85	20.52	14.59	93.90
	* V <sub>4</sub> : Co 99004	23.02	21.64	15.39	94.01
	S.E. ± C.D. 0.05	0.12 0.36	0.11 0.32	0.09 0.27	0.4 1.1
<b>B</b>	<b>Fertilizer levels</b>				
	F <sub>1</sub> : 75 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	21.88	20.24	14.30	92.51
	F <sub>2</sub> : 100 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	22.09	20.67	14.68	93.59
	F <sub>3</sub> : 125 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	22.46	21.08	14.99	93.82
	S.E. ± C.D. 0.05	0.11 0.33	0.1 0.2	0.08 0.27	0.35 1.03
<b>C</b>	<b>Interaction (A x B)</b>				
	S.E. ± C.D. 0.05	0.21 N.S.	0.19 N.S.	0.15 N.S.	0.70 N.S.
	<b>G.M.</b>	<b>22.14</b>	<b>20.66</b>	<b>14.65</b>	<b>93.31</b>

<b>1</b>	<b>Project No.</b>	<b>4. AS 42 :Agronomic Evaluation</b>
<b>2</b>	<b>Title</b>	Agronomic evaluation of promising sugarcane genotypes – Plant CaneII (Midlate Group).
<b>3</b>	<b>Objectives</b>	Agronomic evaluation of promising sugarcane genotypes – Ratoon crop (Midlate Group).
<b>4</b>	<b>Details of the treatment</b>	A) Sugarcane genotypes : V <sub>1</sub> – Co 08009 V <sub>2</sub> – Co 08016 V <sub>3</sub> – Co 09009 <b>V<sub>4</sub> – Co 99004 (Standard Check)</b> B) Fertilizer levels : F <sub>1</sub> : 75 % NPK (187.50:86.25:86.25kg ha <sup>-1</sup> ) F <sub>2</sub> : 100 % NPK (250:115:115 kg ha <sup>-1</sup> ) F <sub>3</sub> : 125 % NPK (312.50:143.75: 143.75 kg ha <sup>-1</sup> )
<b>5</b>	<b>Design</b>	Factorial Randomised Block Design
<b>6</b>	<b>Replications</b>	Three
<b>7</b>	<b>Plot size</b>	8 r × 6m x 1.2 m
<b>8</b>	<b>Date of rationing, harvesting</b>	02/02/2015 27/01/2016
<b>9</b>	<b>Climatic parameters (rainfall, Temperature- maximum &amp; minimum, RH, etc.)</b>	The total rainfall of 724.90 mm in 58 rainy days. The average maximum temperature 34.75°C and average minimum temperature 19.10°C. Average morning humidity 81.85 % and average evening humidity 31.42 %.
<b>10</b>	<b>Initial soil health status</b>	pH 6.9, EC (dSm <sup>-1</sup> ) 0.7 dSm <sup>-1</sup> , OC 0.6%, Available N 204 kg ha <sup>-1</sup> , Available P 11.1 kg ha <sup>-1</sup> , Available K 300 kg ha <sup>-1</sup>

## 11. Results

### 11.1 Growth Parameters

The data regarding growth parameters in ratoon cane are presented in Table 15 and 16.

#### A. Genotype

The sugarcane genotype Co 09009 recorded significantly highest number of tillers (10266 ha<sup>-1</sup>), NMC (98870 ha<sup>-1</sup>) over standard check Co 99004 but it was at par with genotype Co 08016 in terms of number of tillers (10056 ha<sup>-1</sup>), NMC (96780 ha<sup>-1</sup>).

#### B. Fertilizer levels

Among the fertilizer levels, an application of chemical fertilizer @125% RD was found significantly superior in terms of number of tillers (104830 ha<sup>-1</sup>), NMC (100080 ha<sup>-1</sup>), millable height (244.50 cm), number of internodes (20.01 cane<sup>-1</sup>) and single cane weight (1.09 kg).

#### C. Interaction effect

The interaction effect between genotypes and fertilizer levels was found non significant.

## 11.2 Cane yield and CCS yield

The data pertaining to cane and CCS yield in ratoon crop is presented in Table 17.

### A. Genotypes

The cane and CCS yield found significant due to different genotypes. The sugarcane genotype Co 09009 significantly recorded highest cane yield ( $103.23 \text{ t ha}^{-1}$ ) which was at par with Co 08016 ( $101.67 \text{ t ha}^{-1}$ ). However, CCS yield of Co 08016 found significantly more ( $15.70 \text{ t ha}^{-1}$ ) than Co 09009 ( $15.02 \text{ t ha}^{-1}$ ).

### B. Fertilizer levels

The cane and CCS yield were significantly influenced due to fertilizer levels. Among the fertilizer levels application of chemical fertilizer @125% RD recorded highest cane yield ( $101.47 \text{ t ha}^{-1}$ ) and CCS yield ( $15.25 \text{ t ha}^{-1}$ ) which was at par with application of chemical fertilizer @100 % RD.

### C. Interaction effect

The interaction effect between genotypes and fertilizer levels was found no significant.

## 11.3 Quality parameters

The data pertaining to juice quality parameters of ratoon viz., brix, sucrose, purity and CCS percentage are presented in Table 18.

### A. Genotypes

The juice quality parameters were found significantly influenced by different genotypes. The standard check Co 99004 recorded significantly highest brix<sup>o</sup> ( $23.09^{\circ}$ ); sucrose (21.71%), CCS (15.44%) and it was at par with the genotype Co 08016.

### B. Fertilizer levels

Among the fertilizer levels, an application of chemical fertilizer @125% RD an application of 125% RD was found significantly superior as regards to brix<sup>o</sup> ( $22.52^{\circ}$ ), sucrose (21.14 %) and CCS (15.03 %).

### C. Interaction effect

The interaction effect between genotypes and fertilizer levels in respect of quality parameters found to be non significant.

**Table 15: Mean data on growth parameters as influenced by various treatments in ratoon crop.**

Sr. No.	Treatments Details	Growth parameters	
		No. of tillers at 90 (000' ha <sup>-1</sup> )	NMC (000'ha <sup>-1</sup> )
<b>A.</b>	<b>Sugarcane Genotype,* Standard Check</b>		
	V <sub>1</sub> : Co08009	93.16	90.20
	V <sub>2</sub> : Co 08016	100.56	96.78
	V <sub>3</sub> : Co 09009	102.66	98.87
	*V <sub>4</sub> : Co 99004	87.20	84.04
	S.E.±	2.38	2.57
	C.D. 0.05	6.96	7.37
<b>B</b>	<b>Fertilizer levels</b>		
	F <sub>1</sub> : 75 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	88.61	86.10
	F <sub>2</sub> : 100 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	94.25	91.22
	F <sub>3</sub> : 125 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	104.83	100.08
	S.E. ±	2.06	2.18
	C.D. 0.05	6.03	6.38
	<b>Interaction (A x B)</b>		
	S.E.±	4.11	4.35
	C.D. 0.05	N.S.	N.S.
	<b>G.M.</b>	<b>95.89</b>	<b>92.47</b>

**Table 16: Mean data on growth parameters as influenced by various treatments in ratoon crop.**

Sr. No.	Treatments Details	Growth parameters			
		Millable height (cm)	Diameter (cm)	No. of internodes cane <sup>-1</sup>	Single cane weight (kg)
<b>A.</b>	<b>Sugarcane Genotype,* Standard Check</b>				
	V <sub>1</sub> : Co08009	219.11	2.76	18.41	0.91
	V <sub>2</sub> : Co 08016	233.33	2.88	18.69	1.07
	V <sub>3</sub> : Co 09009	236.22	2.89	19.82	1.04
	*V <sub>4</sub> : Co 99004	254.56	2.67	19.99	1.10
	S.E. ±	2.82	0.07	0.38	0.02
	C.D. 0.05	8.27	N.S.	1.12	0.08
<b>B</b>	<b>Fertilizer levels</b>				
	F <sub>1</sub> : 75 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	226.58	2.77	18.42	0.97
	F <sub>2</sub> : 100 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	236.33	2.80	19.26	1.03
	F <sub>3</sub> : 125 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	244.50	2.83	20.01	1.09
	S.E. ±	2.44	0.06	0.33	0.02
	C.D. 0.05	7.16	N.S.	0.97	0.07
	<b>Interaction (A x B)</b>				
	S.E. ±	4.89	0.11	0.66	0.04
	C.D. 0.05	N.S.	N.S.	N.S.	N.S.
	<b>G.M.</b>	<b>238.39</b>	<b>2.80</b>	<b>19.23</b>	<b>1.03</b>



**Table 17: Mean cane and CCS yield (t ha<sup>-1</sup>) as influenced by various treatments in ratoon crop .**

Sr.No	Treatment	Yield (t ha <sup>-1</sup> )	
		Cane	CCS
<b>A.</b>	<b>Sugarcane Genotype,* Standard Check</b>		
	V <sub>1</sub> : Co 08009	89.48	12.13
	V <sub>2</sub> : Co 08016	101.67	15.70
	V <sub>3</sub> : Co 09009	103.23	15.02
	*V <sub>4</sub> : Co 99004	86.93	13.43
	S.E. ±	2.44	0.38
	C.D. 0.05	7.14	1.10
<b>B.</b>	<b>Fertilizer levels</b>		
	F <sub>1</sub> : 75 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	88.96	12.82
	F <sub>2</sub> : 100 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	95.56	14.14
	F <sub>3</sub> : 125 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	101.47	15.25
	S.E. ±	2.11	0.33
	C.D. 0.05	6.19	0.95
<b>C.</b>	<b>Interaction (A x B)</b>		
	S.E. ±	4.22	0.65
	C.D. 0.05	N.S.	N.S.
	<b>G.M.</b>	<b>95.33</b>	<b>14.01</b>

**Table 18: Mean data on quality parameters as influenced by various treatments in ratoon crop .**

Sr. No.	Treatments Details	Quality parameters			
		Brix <sup>o</sup>	Sucrose (%)	CCS (%)	Purity (%)
<b>A</b>	<b>Sugarcane Genotype,* Standard Check</b>				
	V <sub>1</sub> : Co08009	20.92	19.23	13.54	91.90
	V <sub>2</sub> : Co 08016	22.98	21.67	15.44	94.29
	V <sub>3</sub> : Co 09009	21.81	20.43	14.51	93.66
	* V <sub>4</sub> : Co 99004	23.09	21.71	15.44	94.01
	S.E. ±	0.13	0.12	0.09	0.33
	C.D. 0.05	0.39	0.34	0.26	0.95
<b>B</b>	<b>Fertilizer levels</b>				
	F <sub>1</sub> : 75 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	21.98	20.36	14.38	92.59
	F <sub>2</sub> : 100 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	22.11	20.78	14.78	93.98
	F <sub>3</sub> : 125 % RD N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O	22.52	21.14	15.03	93.83
	S.E. ±	0.12	0.1	0.08	0.28
	C.D. 0.05	0.34	0.2	0.27	0.83
<b>C</b>	<b>Interaction (A x B)</b>				
	S.E. ±	0.23	0.20	0.15	0.56
	C.D. 0.05	N.S.	N.S.	N.S.	N.S.
	<b>G.M.</b>	<b>22.20</b>	<b>20.76</b>	<b>14.73</b>	<b>93.46</b>

<b>1</b>	<b>Project No.</b>	<b>5 .AS-68 Integrated application of organics and inorganics</b>
<b>2</b>	<b>Title</b>	Impact of integrated application of organics and inorganics in improving soil health and sugarcane productivity (Ratoon).
<b>3</b>	<b>Objectives</b>	To develop nutrient management strategy for sustaining soil health and sugarcane productivity
<b>4</b>	<b>Details of the treatment</b>	<p>T<sub>1</sub> Application of Trash @10 tonnes ha<sup>-1</sup> + 50% RDF</p> <p>T<sub>2</sub> Application of Trash @ 10 tonnes ha<sup>-1</sup> +100% RDF</p> <p>T<sub>3</sub> Application of Trash @10 tonnes ha<sup>-1</sup> + AST recommendation (NPK application)</p> <p>T<sub>4</sub> Application of FYM @20 tonnes ha<sup>-1</sup> +50% RDF (inorganic source)</p> <p>T<sub>5</sub> Application of FYM @20 tonnes ha<sup>-1</sup> +100% RDF (inorganic source)</p> <p>T<sub>6</sub> Application of FYM @20 tonnes ha<sup>-1</sup> +inorganic nutrient application based on soil test (NPK application)</p> <p>T<sub>7</sub> Application of FYM @10 tonnes ha<sup>-1</sup> +biofertilizer (<i>Azotobacter</i> /<i>Acetobacter</i> + PSB ) + 50% RDF</p> <p>T<sub>8</sub> Application of FYM @10 tonnes ha<sup>-1</sup> +biofertilizer (<i>Azotobacter</i>/ <i>Acetobacter</i> + PSB ) + 100% RDF</p> <p>T<sub>9</sub> Application of FYM @10 tonnes ha<sup>-1</sup> +biofertilizer (<i>Azotobacter</i> /<i>Acetobacte</i>) + PSB ) + soil test basis recommendation (NPK application)</p> <p>* RDF : 100 % NPK (250:115:115 kg ha<sup>-1</sup>)</p>
<b>5</b>	<b>Design</b>	Randomized Block Design
<b>6</b>	<b>Replications</b>	Three
<b>7</b>	<b>Plot size</b>	7m × 7r x 1.20m
<b>8</b>	<b>Date of rationing, harvesting</b>	13/02/2015 05/03/2016
<b>9</b>	<b>Climatic parameters (rainfall, Temperature- maximum &amp; minimum, RH, etc.)</b>	The total rainfall of 724.90 mm in 58 rainy days. The average maximum temperature 34.75°C and average minimum temperature 19.10°C.Average morning humidity 81.85 % and average evening humidity 31.42 %.
<b>10</b>	<b>Initial soil health status</b>	pH 6.7, EC (dSm <sup>-1</sup> ) 0.6, OC 0.88%, Available N 224 kg ha <sup>-1</sup> , Available P 11.3 kg ha <sup>-1</sup> , Available K 312 kg ha <sup>-1</sup>

## 11. Results

### 11.1 Growth Parameters

The data pertaining to growth parameters are presented in Table 19. All growth parameters were significantly influenced due to various treatments except millable height, diameter and number of internodes cane<sup>-1</sup>. Among the treatments T<sub>5</sub> (Application of 20 tonnes FYM ha<sup>-1</sup> and 100% RDF) recorded significantly highest number of tillers at 150 DAR (103740 ha<sup>-1</sup>), number of millable canes at harvest (101130 ha<sup>-1</sup>) and single cane weight(1.48 kg) at harvest which was at par with remaining treatments except T<sub>1</sub> (Application of Trash @10 tonnes ha<sup>-1</sup> + 50% RDF).

### 11.2 Cane yield and CCS yield

The data pertaining to cane and CCS yield is presented in Table 20. Different treatments significantly influenced the cane and CCS yield. The treatment T<sub>5</sub> (Application of FYM @20 tonnes ha<sup>-1</sup> +100% RDF) recorded significantly highest Cane and CCS yield (102.2 and 14.83 t ha<sup>-1</sup>, respectively) and which was at par with all remaining treatments except T<sub>1</sub> and T<sub>2</sub>.

### 11.3 Quality parameters

The data pertaining to quality parameters of sugarcane juice influenced by different treatments are presented in Table 20. It was revealed that, the quality parameters were influenced significantly due to various treatments except purity percentage. The treatment T<sub>8</sub> (Application of FYM @10 tonnes ha<sup>-1</sup> +biofertilizer (*Azotobacter/ Acetobacter* + PSB) + 100%RDF) and T<sub>9</sub> (Application of FYM @10 tonnes ha<sup>-1</sup> +biofertilizer (*Azotobacter/Acetobacter*)+ PSB ) + AST chemical fertilizer application) were recorded significantly highest brix<sup>0</sup>(21.59<sup>0</sup>), sucrose (20.35 and CCS% (14.49 %).

**Table 19: Mean data on sugarcane growth parameters as influenced by various treatments in ratoon cane.**

Tr. No	Treatment Details	Growth parameters					
		No. of Tillers 150 DAR ( 000'ha <sup>-1</sup> )	NMC ( 000'ha <sup>-1</sup> )	Millable height (cm)	Diameter (cm)	No. of internodes cane <sup>-1</sup>	Single cane weight (kg)
1	T <sub>1</sub>	67.80	68.59	2.69	2.51	2.69	0.88
2	T <sub>2</sub>	97.22	94.39	3.33	3.12	3.33	1.28
3	T <sub>3</sub>	97.05	95.13	3.31	3.41	3.31	1.17
4	T <sub>4</sub>	96.94	96.15	3.29	3.33	3.29	1.21
5	T <sub>5</sub>	103.74	101.13	3.43	3.43	3.43	1.48
6	T <sub>6</sub>	102.95	99.21	3.45	3.45	3.45	1.42
7	T <sub>7</sub>	98.98	95.75	3.38	3.26	3.38	1.38
8	T <sub>8</sub>	101.65	99.89	3.39	3.27	3.39	1.42
9	T <sub>9</sub>	99.89	95.41	3.41	3.41	3.41	1.36
	<b>Mean</b>	<b>96.25</b>	<b>93.96</b>	<b>3.30</b>	<b>3.25</b>	<b>3.30</b>	<b>1.29</b>
	SE±	5.11	3.66	0.23	0.26	0.23	0.11
	CD 0.05	15.45	11.08	N.S.	N.S.	N.S.	0.33
	CV %	9.19	6.75	12.33	13.81	12.33	14.44

**Table 20: Mean yield and quality parameters as influenced by various treatments in ratoon cane.**

Treatments Details	Yield (t ha <sup>-1</sup> )		Quality parameters			
	Cane	CCS	Brix <sup>0</sup>	Sucrose %	CCS %	Purity %
T <sub>1</sub>	61.25	8.40	20.77	19.30	13.66	92.96
T <sub>2</sub>	70.58	9.64	20.79	19.32	13.67	92.91
T <sub>3</sub>	91.87	12.62	20.78	19.38	13.74	93.27
T <sub>4</sub>	100.31	14.39	21.09	20.07	14.35	95.14
T <sub>5</sub>	102.20	14.83	21.43	20.31	14.50	94.81
T <sub>6</sub>	101.54	14.68	21.09	20.16	14.44	95.56
T <sub>7</sub>	99.20	14.28	21.43	20.21	14.39	94.32
T <sub>8</sub>	99.69	14.43	21.59	20.35	14.49	94.26
T <sub>9</sub>	96.35	13.97	21.59	20.35	14.49	94.24
<b>Mean</b>	<b>91.44</b>	<b>13.03</b>	<b>21.17</b>	<b>19.94</b>	<b>14.19</b>	<b>94.16</b>
SE±	5.78	0.82	0.21	0.22	0.20	0.92
CD 0.05	17.48	2.48	0.64	0.67	0.60	N.S.
CV %	10.94	10.88	1.73	1.92	2.41	1.70

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|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1. Project No.</b>                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>2. Title</b>                                                                       | <b>6. AS-69</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>3. Objectives</b>                                                                  | <b>Use of plant growth regulators (PGRs) for enhanced yield and quality of sugarcane</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>4. Details of the treatment</b>                                                    | <ol style="list-style-type: none"> <li>1. To accelerate rate and extent of sugarcane germination through the use of PGRs</li> <li>2. To assess the effect of PGRs on sugarcane growth, yield and juice quality</li> </ol> <ol style="list-style-type: none"> <li>1. Conventional planting/ Farmers' practice (3-bud setts)</li> <li>2. Planting of setts after overnight soaking in water</li> <li>3. Planting of setts after overnight soaking in 50 ppm ethrel solution</li> <li>4. Planting of setts after overnight soaking in 100 ppm ethrel solution</li> <li>5. T<sub>1</sub>+GA<sub>3</sub> spray (35 ppm) at 90, 120 and 150 DAP</li> <li>6. T<sub>2</sub>+ GA<sub>3</sub> spray (35 ppm) at 90, 120 and 150 DAP</li> <li>7. T<sub>3</sub> +GA<sub>3</sub> (35 ppm) spray at 90, 120 and 150 DAP</li> <li>8. T<sub>4</sub> + GA<sub>3</sub> (35 ppm) spray at 90, 120 and 150DAP</li> </ol> |
| <b>5. Design</b>                                                                      | Randomized block design.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>6. Replications</b>                                                                | Three                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>7. Plot size</b>                                                                   | 7m × 7r x 1.20m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>8. Date of planting</b>                                                            | 11/02/2016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>9. Climatic parameters (rainfall, Temperature-maximum &amp; minimum, RH, etc.)</b> | The total rainfall of 724.90 mm in 58 rainy days. The average maximum temperature 34.75°C and average minimum temperature 19.10°C. Average morning humidity 81.85 % and average evening humidity 31.42 %.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>10. Initial soil health status</b>                                                 | pH 7.6, EC (dSm <sup>-1</sup> ) 0.7 dSm <sup>-1</sup> , OC 0.65%, Available N 228 kg ha <sup>-1</sup> , Available P 12.4 kg ha <sup>-1</sup> , Available K 289 kg ha <sup>-1</sup> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>11. Result:</b> The trial is vitiated due to poor germination.                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**Table 21: Data on germination influenced by various treatments.**

<b>Sr. No.</b>	<b>Treatment Details</b>	<b>Germination Count plot<sup>-1</sup> 10 DAP</b>	<b>Germination Count plot<sup>-1</sup> 20 DAP</b>	<b>Germination Count plot<sup>-1</sup> 30 DAP</b>	<b>Germination Count plot<sup>-1</sup> 40 DAP</b>
<b>1</b>	Conventional planting/ Farmers' practice (3-bud setts)	9	11	17	25
<b>2</b>	Planting of setts after overnight soaking in water	3	7	14	17
<b>3</b>	Planting of setts after overnight soaking in 50 ppm ethrel solution	1	5	13	18
<b>4</b>	Planting of setts after overnight soaking in 100 ppm ethrel solution	2	7	14	16
<b>5</b>	T <sub>1</sub> +GA <sub>3</sub> spray (35 ppm) at 90, 120 and 150 DAP	3	9	14	19
<b>6</b>	T <sub>2</sub> + GA <sub>3</sub> spray (35 ppm) at 90, 120 and 150 DAP	4	8	16	19
<b>7</b>	T <sub>3</sub> +GA <sub>3</sub> (35 ppm) spray at 90, 120 and 150 DAP	2	9	19	21
<b>8</b>	T <sub>4</sub> + GA <sub>3</sub> (35 ppm) spray at 90, 120 and 150DAP	2	9	17	20

\*Note: 10 eye buds m<sup>-1</sup>x 7m=70 Eye buds  
70 Eye buds x 7 rows=490 Eye buds

**Technical Programme (2016-17)**

<b>Sr. No.</b>		<b>Title</b>
1	AS-72	Agronomic performance of elite sugarcane genotypes (Early Group)
2	AS-72	Agronomic performance of elite sugarcane genotypes (Midlate Group)