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# **AICRP Sugarcane**

## **Report**

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## Experiment 01

### Title: Initial Varietal Trial (IVT) of early group of Sugarcane genotypes

No. of entries	:	Eight (08)
Standard	:	03 (Co-85004, Co-94008 and CoC-671)
Design	:	Randomized Block Design
Replications	:	Three
Date of Planting	:	14/01/2016
Row to Row	:	1.2m                      No. of Rows : 4
Plot Size	:	5m x 4.8m = 24m <sup>2</sup>

**Methodology:** The eight genotypes and three standard of early group sugarcane were evaluated in the completely Randomized block design with three replications for their yield performance and other yield attributing characters during *Rabi* -2016-17. The genotypes of sugarcane were collected from **Central Sugarcane Research Station (MPKV), Padegaon (Maharashtra)**. The observation taken on stem height, single cane weight, length of nodes and yield quintal per hectare and other biochemical analysis *viz.*, Brix%, Pol % , purity % and sucrose %.

**Table 1: Evaluation of IVT-Early group of Sugarcane genotypes**

S. No.	Entries	Plant height (cm.)	Nodal length (cm.)	Weight of single cane (kg)	Diameter (Cm)	Cane yield (t/ha)
8	MS 13081	285.33	11.17	2.002	3.36	116.47
4	CON 13071	287.40	12.63	1.714	2.90	110.73
1	CO 13002	289.93	12.27	1.610	2.80	102.23
3	CO 13004	340.53	13.98	1.844	2.79	93.81
2	CO 13003	301.93	12.57	1.875	2.97	93.76
7	CoSnK 13102	283.73	13.64	2.126	3.33	88.58
5	CON 13072	270.60	13.05	1.785	3.09	84.86
6	CoSnK 13101	288.53	13.30	1.690	2.97	67.69
	<b>Standards</b>					
11	COC 671	345.53	13.65	2.056	3.09	102.44
10	CO 94008	316.00	12.74	1.933	3.02	85.9
9	CO 85004	261.27	9.69	1.489	2.64	78.21
	<b>Over All Mean</b>	<b>297.35</b>	<b>12.61</b>	<b>1.83</b>	<b>3.00</b>	<b>93.16</b>
	<b>CD (5%)</b>	<b>27.32</b>	<b>1.01</b>	<b>0.25</b>	<b>0.17</b>	<b>16.01</b>
	<b>CV%</b>	<b>5.57</b>	<b>4.84</b>	<b>8.15</b>	<b>3.54</b>	<b>10.42</b>

**Table 2: Chemical characteristics of IVT-Early group of Sugarcane genotypes**

S. No.	Entries	Juice Extraction %	Brix%	Sucrose % in Juice	Purity%
1.	CO 13002	61.35	21.04	11.80	80.57
2.	CO 13003	62.93	21.02	12.05	80.79
3.	CO 13004	56.10	18.88	10.01	79.33
4.	CON 13071	56.52	19.73	10.38	79.49
5.	CON 13072	58.36	18.47	10.11	79.33
6.	CoSnK 13101	59.07	20.78	11.15	79.72
7.	CoSnK 13102	55.11	20.63	10.67	80.98
8.	MS 13081	57.46	20.43	10.96	80.25
	<b>Standards</b>				
9.	CO 85004	56.53	20.43	10.82	80.21
10.	CO 94008	58.70	19.33	10.50	79.47
11.	COC 671	57.39	20.72	11.19	80.24

**Results:**

**Stem height (cm):** The stem height maximum was observed in the entry **CO 13004** (340.53 cm) followed by entry **CO 13003** (301.93 cm) and **CO 13002** (289.93 cm) and minimum was recorded in the entry **CoN-13072** (270.60 cm). None of the entry was found significantly superior over the best standard **CoC-671** (345.53 cm).

**Length of Nodes:** The maximum node length was observed in the entry **CO 13004** (13.98 cm) followed by entry **CoSnK (13102)** (13.64 cm) and **CoSnK 13101** 13.30 cm) and minimum was recorded in the entry **MS 13081** (11.17 cm). None of the entry was found significantly superior over the best standard **CoC-671** (13.65 cm).

**Single cane weight (kg):** The maximum single cane weight (kg) was observed in the entry **CoSnK 13102** (2.126 Kg) followed by standard **MS 13081** (2.002 Kg) and **Co 13003** (1.875 Kg) and minimum was recorded in the standard **Co-13002** (1.610 Kg).None of the entry was found significantly superior over the best standard **CoC 671** (2.056 Kg).

**Cane Diameter (cm):** The maximum cane diameter (cm) was observed in the entry **MS 13081** (3.36 cm) followed by standard **CoSnK 13102** (3.33 cm) and **CON 13072** (3.09 cm) and minimum was recorded in the entry **Co-13004** (2.79 cm). None of the entry was found significantly superior over the best standard **CoC 671** (3.09 cm).

**Cane Yield (q/ha):** The maximum cane yield was observed in the entry **MS 13081** (116.47 t/ha) followed by entry **CON 13071** (110.73 t/ha) and standard **COM 265** (103.39 t/ha) and minimum was recorded in the entry **CoSnK 13101** (67.69 t/ha). None of the entry was found significantly superior over the best standard **CoC 671** (102.44 t/ha).

**Brix%:** The maximum cane Brix% was observed in the entry **CO 13002** (21.04%) followed by **Co 13003** (21.02%) and **CoSnK 13101** (20.78%) and minimum was recorded in the entry **CON 13072** (18.47%).

**Purity%:** The maximum Purity% was observed in the **CoSnK 13102** (80.98 %) followed by Co 13003 (80.79%) and co 13002 (80.57 %) and minimum was recorded in the entry Co 13004 (79.33%) & CON 13072 (79.33%).

**Juice Extraction %:** The maximum Juice Extraction % was observed in the entry Co-13003 (62.93%) followed by Co 13002 (61.35%) and **CoSnK 13101** (59.07 %) and minimum was recorded in the entry **CoSnK 13102** (55.11%).

**Sucrose% in Juice:** The maximum sucrose% in juice was observed in the Co 13003 (12.05) followed by Co 13002 (11.80) and standard Coc 671 (11.19) and minimum was recorded in the entry Co 13004 (10.01).

## Experiment 02

**Title: Initial Varietal Trial (IVT) of Mid-late group of Sugarcane genotypes**

No. of entries : Twenty (20)  
 Standard : 02 (Co86032 and Co99004)  
 Design : RBD  
 Replications : Two  
 Date of Planting : 21/01/2016  
 Plot Size : 5m x 6m= 30m<sup>2</sup>

**Methodology:** The 20 genotypes and two standards of mid late group sugarcane were evaluated in the completely Randomized block design in two replications for their yield performance and other yield attributed characters during *Rabi* -2016-17. The genotypes of sugarcane were collected from **Central Sugarcane Research Station (MPKV), Padegaon (Maharashtra)**. The observation taken on stem height, single cane weight, length of nodes and yield quintal per hectare and other biochemical analysis *viz.*, Brix percentage, Pol percentage, juice percentage, purity percentage and sucrose percentage.

**Table 3: Evaluation of IVT-Mid late group of Sugarcane genotypes**

S. No	Entries	Plant height (cm.)	Nodal length (cm).	Weight of single cane (kg)	Diameter (Cm)	Cane yield (t/ha)
6	CO 13013	385.1	12.88	2.53	3.10	<b>153.04</b>
4	CO 13009	351.4	13.47	2.55	3.32	<b>150.13</b>
13	CON 13074	338.4	11.7	2.85	3.58	<b>147.16</b>
11	COM 13082	339	13.46	2.10	2.97	<b>146.25</b>
12	CON 13073	320.4	12.26	2.95	3.30	144.19
7	CO 13014	312.4	13.56	2.45	3.43	138.90
3	CO 13008	345.9	13.97	2.11	3.00	133.91
1	CO 13005	318.9	12.52	1.92	2.99	131.40
15	COSnk 13104	301.7	13.76	1.99	3.12	125.03
10	CO 13020	330	14.08	2.15	3.13	124.46
2	CO 13006	335.7	13.36	1.48	2.62	109.92
14	COSnk 13103	352.9	15.33	1.73	2.75	105.84
8	CO 13016	297	13.24	2.02	3.18	102.22

17	COSnk 13106	308.5	13.64	1.72	2.98	102.11
16	COSnk 13105	288.5	11.5	2.14	3.19	101.86
9	CO 13018	277.3	14.15	1.64	2.90	101.49
19	PI 13131	275	14.16	1.71	3.02	98.30
5	CO 13011	302.7	13.17	1.85	3.08	95.73
18	COT 13366	268.9	11.93	1.74	3.03	85.74
20	PI 13132	304.4	13.62	1.91	3.07	43.11
	<b>Standards</b>					
22	CO 99004	361.1	16.55	2.62	3.39	113.10
21	CO 86032	323.3	14.68	1.99	2.95	106.49
	<b>Mean</b>	<b>319.93</b>	<b>13.50</b>	<b>2.10</b>	<b>3.10</b>	<b>116.38</b>
	<b>CD at 5%</b>	<b>40.09</b>	<b>1.40</b>	<b>0.63</b>	<b>0.27</b>	<b>31.31</b>
	<b>CV%</b>	<b>6.20</b>	<b>5.15</b>	<b>14.90</b>	<b>4.33</b>	<b>13.31</b>

**Table 2: Chemical characteristics of IVT-Midlate group of Sugarcane genotypes**

S. No.	Entries	Juice Extraction%	Brix%	Sucrose % in Juice	Purity%
1	CO 13005	51.17	19.60	11.35	82.50
2	CO 13006	48.64	19.50	10.73	81.69
3	CO 13008	57.53	20.50	12.70	84.73
4	CO 13009	57.62	17.70	11.16	86.27
5	CO 13011	56.09	18.04	10.74	85.03
6	CO 13013	57.86	20.50	12.77	86.15
7	CO 13014	54.05	20.08	11.17	79.30
8	CO 13016	59.90	20.90	12.50	81.05
9	CO 13018	65.44	21.48	12.91	81.72
10	CO 13020	62.28	22.72	13.53	83.10
11	COM 13082	64.65	19.60	11.93	79.80
12	CON 13073	60.81	20.04	12.00	81.24
13	CON 13074	62.12	16.42	9.77	77.95
14	COSnk 13103	61.72	22.18	12.73	81.83
15	COSnk 13104	63.81	20.54	12.27	80.96
16	COSnk 13105	61.68	22.99	13.75	83.78
17	COSnk 13106	63.39	22.59	13.69	81.94
18	COT 13366	61.97	19.32	11.52	79.97
19	PI 13131	64.28	20.42	12.17	80.51
20	PI 13132	63.35	21.29	13.26	81.82
	<b>Standards</b>				
21	CO 86032	64.21	21.79	13.46	82.29
22	CO 99004	61.23	22.00	13.41	82.50

## Results:

**Stem height (cm) :** The maximum cane height was observed in the entry CO 13013 (385.1cm) followed by standard **CO 99004** (361.1 cm) and **COSnk 13103** (352.9 cm) and minimum was recorded in the entry COT 13366 (268.9 cm). None of the entry was found significantly superior over the best standard Co-99004 (361.1 cm).

**Length of Nodes:** The maximum node length was observed in the standard Co 99004 (16.55 cm) followed by entry COSnk 13103 (15.33 cm) and standard **CO 8014** (15.10 cm) and minimum was recorded in the entry **COSnk 13105** (11.50 cm). None of the entry was found significantly superior over the best standard standard Co 99004 (16.55 cm).

**Single cane weight (kg):** The maximum single cane weight (kg) was observed in the entry **CON 13073** (2.950 Kg) followed by entry **CON 13074** (2.850 Kg) and standard Co 99004 (2.620 Kg). and minimum was recorded in the entry Co 13006 (1.480 Kg). None of the entry was found significantly superior over the best standard Co 99004 (2.620 Kg).

**Cane Diameter (cm):** The maximum cane diameter (cm) was observed in the entry CON 13074 (3.58 cm) followed by entry Co 13014 (3.43 cm) and standard **Co 99004** (3.39 Cm) and minimum was recorded in the entry Co-13006 (2.62 cm). None of the entry was found significantly superior over the best standard Co 99004 (3.39 cm).

**Cane Yield (q/ha):** The maximum cane yield was observed in the entry CO 13013 (153.04 t/ha) followed by entry CO 13009 (150.13 t/ha) and Co 13074 (147.16 t/ha) and minimum was recorded in the entry PI 13132 (43.11 t/ha). Top four entries was found significantly superior over the best standard CO 99004 (113.10 t/ha).

**Brix%:** The maximum cane Brix % was observed in the entry COSnk 13105 (22.99 %) followed by entry CO 13020 (22.72 %) and COSnk 13106 (22.59 %) and minimum was recorded in the entry CON 13074 (16.42 %).

**Purity%:** The maximum Purity % was observed in the entry **CO 13009** (86.27 %) followed by entry **CO 13013** (86.15 %) and **CO 13011** (85.03 %) and minimum was recorded in the entry **CON 13074** (77.95 %).

**Juice Extraction%:** The maximum Juice extraction % was observed in the entry **CO 13018** (65.44 %) followed by **COM 13082** (64.65 %) and entry **PI 13131** (64.28 %) and minimum was recorded in the entry **CO 13006** (48.64 %).

**Sucrose% in Juice:** The maximum sucrose % in juice was observed in the entry **COSnk 13105** (13.75) followed by entry **COSnk 13106** (13.69) and **CO 13020** (13.53) and minimum was recorded in the entry **CON 13074** (9.77).

### Experiment 03

**Title: Advance Varietal Trial (AVT) plant II of early group of Sugarcane genotypes**

No. of entries : 03  
Standards : 03 (Co-85004, Co-94008 and CoC-671)  
Design : RBD  
Replications : Four  
Date of Planting : 16/02/2015  
Plot Size : 4.8m x 5m=24m<sup>2</sup>

**Methodology:** The three genotypes and three standards of early group plant-II of sugarcane were evaluated in the completely Randomized block design with four replications for their yield performance and other yield attributed characters during year 2016-17. The observation taken on stem height, single cane weight, length of nodes and yield quintal per hectare and other biochemical analysis viz., Brix percentage, pol percentage, juice percentage, purity percentage and sucrose percentage.

**Table 5: Evaluation of AVT- Early-I group of Sugarcane genotypes**

S. No	Entries	Plant height (cm.)	Nodal length (cm).	Single Cane Weight (kg)	Diameter (Cm)	Cane yield (Q/ha)
1	<b>Co 09004</b>	297.05	14.4	1.471	2.68	794.901
2	<b>Co 09007</b>	312.4	14.0	1.707	2.90	1027.245
3	<b>CoN 09072</b>	302.25	22.2	1.448	2.62	1204.422
	<b>Standards</b>					
4	<b>Co 85004</b>	278.5	12.6	1.213	2.57	907.6177
5	<b>Co 94008</b>	290.7	13.8	1.426	2.66	871.6094
6	<b>CoC 671</b>	331.7	14.7	1.827	2.84	1046.172
<b>Over All Mean</b>		<b>302.1</b>	<b>14.03</b>	<b>1.52</b>	<b>2.71</b>	<b>975.33</b>
	<b>CD at 5%</b>	<b>19.28</b>	<b>0.89</b>	<b>0.24</b>	<b>0.18</b>	<b>146.98</b>
	<b>CV%</b>	<b>4.47</b>	<b>4.44</b>	<b>11.31</b>	<b>4.66</b>	<b>10.54</b>

**Table 6: Chemical analysis AVT- Early group of Sugarcane genotypes**

S. No.	Varieties	Juice Extraction %	Brix%	Sucrose % in Juice	Purity%
1	<b>Co 09004</b>	52.74	21.55	11.11	85.20
2	<b>Co 09007</b>	50.96	20.69	10.63	84.85
3	<b>CoN 09072</b>	51.37	21.18	10.76	82.01
<b>Standards</b>					
4	<b>Co 85004</b>	53.62	20.77	10.89	58.19
5	<b>Co 94008</b>	52.49	19.45	10.83	88.46
6	<b>CoC 671</b>	54.22	20.22	10.78	82.36



**Results:**

**Stem height (cm):** The maximum cane height was observed in the standard CoC-671 (331.70 cm) followed by entry Co 09007 (312.4 cm) and **CoN 09072 (302.25 cm)** and minimum was recorded in the standard Co 85004 (278.50 cm). None of the entry was found significantly superior over the best standard CoC-671 (331.70 cm).

**Length of Nodes:** The maximum node length was observed in the entry **CoN 09072** (22.2 cm) followed by standard CoC 671 (14.7 cm) and entry **Co 09004** (14.4 cm) and minimum was recorded in the entry standard Co 85004 (12.6 cm). Entry **CoN 09072** (22.2 cm) was found significantly superior over the best standard CoC 671 (14.7 cm).

**Single cane weight (kg):** The maximum single cane weight (kg) was observed in the standard CoC 671 (1.827 Kg) followed by entry Co 09007 (1.707 Kg) and **Co 09004** (1.471 Kg) and minimum was recorded in the standard Co 85004 (1.213 Kg). None of the entry was found significantly superior over the best standard CoC 671 (1.827 Kg).

**Cane Diameter (cm):** The maximum cane diameter (cm) was observed in the entry Co 09007 (2.90 cm) followed by standard CoC 671 (2.84 cm) and **Co 09004** (2.68 cm) and minimum was recorded in the standard Co 85004 (2.57 cm). None of the entry was found significantly superior over the best standard standard CoC 671 (2.84 cm).

**Cane Yield (q/ha):** The maximum cane yield was observed in the entry **CoN 09072** (1204.422 q/ha) followed by standard CoC-671 (1046.172 q/ha) and entry Co 09007 (1027.245 q/ha) and minimum was recorded in the standard **Co 09004** (794.901 q/ha). **CoN 09072** (1204.422 q/ha) entry was found significantly superior over the best standard CoC-671 (1046.172 q/ha).

**Brix%:** The maximum cane Brix% was observed in the entry **Co 09004** (21.55%) followed by **CoN 09072** (21.18%) and standard Co 85004 (20.77%) and minimum was recorded in the standard Co-94008 (19.45%).

**Sucrose % in Juice:** The maximum cane Sucrose % in Juice was observed in the entry **Co 09004** (11.11%) followed by standard Co 85004 (10.89%) and standard **Co 94008** (10.83%) and minimum was recorded in the entry **Co 09007** (10.63%)

**Purity%:** The maximum purity % was observed in the standard Co 94008 (88.46 %) followed by entry **Co 09004** (85.20%) and entry **Co 09007** (84.85%) and minimum was recorded in the standard Co 85004 (58.19%).

**Juice Extraction %:** The maximum Juice Extraction % was observed in the entry **CoC 671** (54.22%) followed by standard **Co 85004** (53.62%) and entry **Co 09004** (52.74 %) and minimum was recorded in the entry **Co 09007** (50.96%).