

INDIRA GANDHI KRISHI VISHWAVIDYALAYA,  
**S.K.COLLEGE OF AGRICULTURE AND RESEARCH STATION,**  
**KAWARDHA (KABIRDHAM)**

NO./SKCARS/ REPORT / Sugarcane/2015-16 /

Kawardha, Date: / /2016

To,

The Director & P.I. Crop Improvement - AICRP(S)  
Sugarcane Breeding Institute (ICAR)  
Coimbatore – 641 007, Tamil Nadu

Subject: AICRP (S) – Crop improvement data for the year 2015-16 regarding  
Through: Proper channel

R/Sir,

With the above mentioned subject, please find enclosed here with the data and report of AICRP (S) – Crop improvement of SKCARS, Kawardha (Chhattisgarh).

Thanking You

Yours sincerely

**(Om Narayan Verma)**  
**Asst. Professor,**  
**Genetics & Plant Breeding**

Endt. No. COA/ Sugarcane/2015/

Kawardha, Date: / /2016

Enc.: Copy forwarded for information to

1. The Director, Directorate of Research Services, IGKV, Raipur
2. The Project Coordinator (Sugarcane), Indian Institute of Sugarcane Research, Lucknow - 226002

**Om Narayan Verma)**  
**Asst. Professor,**  
**Genetics & Plant Breeding**

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

No. of entries	:	Twelve (12)
Standard	:	03(Co-85004, Co-94008 and CoC-671)
Design	:	Randomized Block Design
Replications	:	Two
Date of Planting	:	22/01/2015
Row to Row	:	1.2m                      No. of Rows : 4
Plot Size	:	4.8m x 6m = 28.8m <sup>2</sup>

**Methodology:** The twelve genotypes and three standard of early group sugarcane were evaluated in the completely Randomized block design with two replications for their yield performance and other yield attributing characters during *Rabi* -2015-16. 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 % and 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 (Q/ha)
11	COT-12366	230.6	13.17	1.46	2.94	<b>1088.342</b>
6	COM-12081	266.8	13.54	1.59	2.81	1085.781
7	COM-12082	283.7	15.26	1.61	2.66	1020.269
12	COT-12367	241.6	13.69	1.45	2.90	954.861
8	COM-12083	222.2	14.98	1.35	2.89	856.866
10	CON-12072	234.5	10.4	1.89	3.34	812.361
3	CO-12006	240.5	13.87	1.23	2.64	772.144
4	CO-12007	233.6	12.49	1.08	2.47	712.943
5	CO-12008	215.4	12.89	1.16	2.69	531.337
2	CO-12003	210.5	11.9	1.57	3.03	520.434
9	CON-12071	193	8.96	1.34	2.97	379.063
1	CO-12001	201.6	10.23	1.36	2.90	58.394
	<b>Standards</b>					
1.	Co 85004	200	10.68	1.015	2.57	813.038
2.	Co 94008	240.8	12.18	1.63	3.01	781.163
3.	CoC 671	238.9	12.75	1.725	3.09	660.469
	<b>Over All Mean</b>	<b>230.24</b>	<b>12.46</b>	<b>1.43</b>	<b>2.86</b>	<b>868.85</b>
	<b>CD (5%)</b>	<b>42.65</b>	<b>1.47</b>	<b>.446</b>	<b>0.350</b>	<b>273.53</b>
	<b>CV%</b>	<b>9.17</b>	<b>5.82</b>	<b>15.45</b>	<b>6.063</b>	<b>15.57</b>

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

S. No.	Entries	Juice Extraction %	Brix%	Sucrose % in Juice	Purity%	CCS %
1.	<b>Co-12001</b>	77.59	20.95	17.97	85.78	11.35
2.	<b>Co-12003</b>	86.63	20.59	18.18	88.3	14.36
3.	<b>Co-12006</b>	78.20	20.82	17.64	84.73	11.58
4.	<b>Co-12007</b>	79.09	20.89	18.01	86.26	11.86
5.	<b>Co-12008</b>	79.42	22.84	20.04	87.78	12.83
6.	<b>CoM-12081</b>	79.57	20.30	17.10	84.24	11.53
7.	<b>CoM-12082</b>	78.79	20.92	18.25	87.28	12.07
8.	<b>CoM-12083</b>	80.52	21.20	17.89	84.39	12.50
9.	<b>CoN-12071</b>	79.23	20.55	17.76	86.47	11.91
10.	<b>CoN-12072</b>	<b>79.70</b>	22.28	19.63	88.15	13.06
11.	<b>CoT-12366</b>	79.39	21.58	19.07	88.37	12.79
12.	<b>CoT-12367</b>	78.83	21.62	19.09	88.30	12.63
	<b>Standards</b>					
13.	<b>Co 85004</b>	78.17	<b>24.12</b>	<b>21.84</b>	90.55	<b>14.24</b>
14.	<b>CoC 671</b>	78.12	22.02	20.08	<b>91.19</b>	13.34
15.	<b>Co 94008</b>	78.98	21.49	18.90	87.95	12.81

**Results:**

**Stem height (cm):** The stem height maximum was observed in the entry CoM-12082 (283.7 cm) followed by entry CoM-12081 (266.80 cm) and CoT-12362 (241.60 cm) and minimum was recorded in the entry CoN-12071 (193.0 cm). Entry CoM-12082 (283.7cm) was found significantly superior over the best standard Co 94008 (240.80cm).

**Length of Nodes:** The maximum node length was observed in the entry CoM-12082 (15.26 cm) followed by entry CoM-12083 (14.98 cm) and Co-12086 (13.8 cm) and minimum was recorded in the entry CoN-12072 (10.40 cm). Entry CoM-12082 (15.26 cm) was found significantly superior over the best standard CoC-671 (12.75 cm).

**Single cane weight (kg):** The maximum single cane weight (kg) was observed in the entry CoN-12072 (1.89 Kg) followed by standard CoC-671 (1.725 Kg) and Co 94008 (1.63 Kg) and minimum was recorded in the standard Co-85004 (1.015 Kg).None of the entry was found significantly superior over the best standard CoC-671 (1.725 Kg).

**Cane Diameter (cm):** The maximum cane diameter (cm) was observed in the entry CoN-12072 (3.34 cm) followed by standard CoC-671 (3.09 cm) and Co-12003 (3.03 cm) and minimum was recorded in the entry Co-12007 (2.47 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 CoT-12366 (1088.34 q/ha) followed by entry CoM-12081 (1085.78 q/ha) and CoM-12082 (1020.26 q/ha) and minimum was recorded in the entry Co-12001 (58.39 q/ha). **Entry CoT-12366 (1088.34 q/ha) was found significantly superior over the best standard Co-85004 (813.04 q/ha).**

**Brix%:** The maximum cane Brix% was observed in the standard Co-85004 (24.12%) followed by standard Co-12008 (22.84%) and CoN-12072 (22.28%) and minimum was recorded in the entry CoM-12081 (20.30%).

**CCS %:** The maximum CCS % was observed in the entry Co-12003 (14.36%) followed by standard Co-85004 (14.24%) and CoC-671 (13.34%) and minimum was recorded in the entry Co-12001 (11.35%).

**Purity%:** The maximum Purity% was observed in the standard CoC-671 (91.19%) followed by standard Co-85004 (90.55%) and CoT-12366 (88.37 %) and minimum was recorded in the entry CoM-12082 (84.24%).

**Juice Extraction %:** The maximum Juice Extraction % was observed in the entry Co-12003 (86.63%) followed by CoM-12082 (80.52%) CoN-12072 (79.70 %) and minimum was recorded in the entry Co-12001 (77.59%).

**Sucrose% in Juice:** The maximum sucrose% in juice was observed in the standard Co-85004 (21.84) followed by standard CoC-671 (20.08) and Co-12008 (20.04) and minimum was recorded in the entry CoM-12081 (17.10).

## Experiment 02

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

No. of entries	:	Fifteen (15)
Standard	:	02 (Co86032 and Co99004)
Design	:	RBD
Replications	:	Two
Date of Planting	:	24/01/2015
Plot Size	:	4.8m x 6m= 28.8m <sup>2</sup>

**Methodology:** The 15 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* -2015-16. 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 (Q/ha)
15	CoVSI-12121	356	17.2	2.571	3.04	1634.84
14	CoN-12368	269.4	13.68	2.282	3.20	1178.68
9	CoM-12084	290.4	14.82	2.193	3.14	1141.68
12	CoN-12073	245.6	12.27	1.895	3.02	1127.99
2	Co-12012	309.4	13.94	1.576	2.67	1117.17
11	CoM-12086	292.2	13	2.031	3.25	989.36
3	Co-12014	275.8	14.6	1.823	2.96	988.32
5	Co-12017	370.4	15.17	2.280	2.74	975.47
7	Co-12021	237.4	15.36	2.096	3.13	973.94
6	Co-12019	210.8	12.4	1.303	2.78	846.83
4	Co-12016	296.8	16.13	2.190	2.90	833.85

8	<b>CoM-12024</b>	250.8	11.9	1.777	3.05	833.25
1	<b>Co-12009</b>	345.4	15.02	2.002	2.87	830.16
10	<b>CoM-12085</b>	299.8	14.02	2.424	3.43	791.13
13	<b>CoN-12074</b>	218.2	10.97	1.736	3.36	301.61
	<b>Standards</b>					
16	<b>Co86032</b>	286.8	14.67	1.779	2.82	1065.82
17	<b>Co99004</b>	344.4	15.42	1.942	2.84	1005.34
	<b>Mean</b>	<b>289.38</b>	<b>14.15</b>	<b>1.993</b>	<b>2.99</b>	<b>978.55</b>
	<b>CD at 5%</b>	<b>56.16</b>	<b>1.74</b>	<b>.684</b>	<b>0.201</b>	<b>241.97</b>
	<b>CV%</b>	<b>9.60</b>	<b>6.09</b>	<b>16.97</b>	<b>3.33</b>	<b>12.23</b>

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

S. No.	Entries	Juice Extraction%	Brix%	Sucrose % in Juice	Purity%	CCS %
01	<b>Co-12009</b>	78.08	23.36	19.67	87.97	13.15
02	<b>Co-12012</b>	76.26	22.25	18.44	82.88	11.45
03	<b>Co-12014</b>	76.00	20.74	16.89	81.44	9.94
04	<b>Co-12016</b>	74.42	20.82	17.10	82.18	10.12
05	<b>Co-12017</b>	79.18	20.69	16.22	80.33	11.01
06	<b>Co-12019</b>	76.84	21.89	18.19	83.10	11.10
07	<b>Co-12021</b>	80.78	21.34	17.47	81.87	11.95
08	<b>CoM-12024</b>	77.79	22.09	18.52	83.88	11.42
09	<b>CoM-12084</b>	78.81	20.49	16.74	81.70	11.25
10	<b>CoM-12085</b>	79.91	21.74	18.47	84.96	12.41
11.	<b>CoM-12086</b>	77.03	22.39	18.72	83.65	11.42
12.	<b>CoN-12073</b>	80.95	21.14	17.85	84.11	12.16
13	<b>CoN-12074</b>	77.58	17.92	14.47	80.75	9.59
14.	<b>CoN-12368</b>	<b>81.36</b>	21.89	18.19	83.10	12.73
15	<b>CoVSI-12121</b>	<b>80.60</b>	23.14	19.78	85.48	13.34
	<b>Standards</b>					
15.	<b>Co86032</b>	79.40	22.82	18.78	82.34	12.23
16.	<b>Co99004</b>	77.92	<b>24.02</b>	<b>20.71</b>	<b>86.26</b>	13.14

## Results:

**Stem height(cm):** The maximum cane height was observed in the entry Co-12017 (370.4 cm) followed by entry CoVSI-12121 (356 cm) and Co-12009 (245.4 cm) and minimum was recorded in the entry Co-12019 (210.8 cm). None of the entry was found significantly superior over the best standard Co-99004 (344.40cm).

**Length of Nodes:** The maximum node length was observed in the entry CoVSI-12121 (17.2 cm) followed by entry Co-12016 (16.13 cm) and standard Co-99004 (15.42 cm) and minimum was recorded in the entry CoN-12074 (10.97 cm). The entry CoVSI-12121 (17.2 cm) was found significantly superior over the best standard Co-99004 (15.42 cm).

**Single cane weight (kg):** The maximum single cane weight (kg) was observed in the entry CoVSI-12121 (2.571 Kg) followed by entry CoM-12085 (2.424 Kg) and CoN-12368 (2.282 Kg) and minimum was recorded in the entry Co-12019 (1.303 Kg). None of the entry was found significantly superior over the best standard Co-99004 (1.924 Kg).

**Cane Diameter (cm):** The maximum cane diameter (cm) was observed in the entry CoM-12085 (3.43 cm) followed by entry CoN-12074 (3.36 cm) and CoM-12086 (3.25 Kg) and minimum was recorded in the entry Co-12012 (2.67 cm). All the three entry was found significantly superior over the best standard Co-99004 (2.84 cm).

**Cane Yield (q/ha):** The maximum cane yield was observed in the entry CoVSI-12121 (1634.84 q/ha) followed by entry CoN-12368 (1178.68 q/ha) and CoM-12084 (1141.68 q/ha) and minimum was recorded in the entry CoN-12074 (301.61 q/ha). CoVSI-12121 (1634.84 q/ha) was found significantly superior over the best standard Co-86032 (1065.82 q/ha).

**Brix%:** The maximum cane Brix% was observed in the standard Co99004 (24.02%) followed by entry Co-12009 (23.36%) and CoVSI-12121 (23.14%) and minimum was recorded in the entry CoN-12074 (17.92%).

**CCS %:** The maximum CCS % was observed in the entry CoVSI-12121 (13.34%) followed by entry Co-12009 (13.15%) and standard Co-99004 (13.14%) and minimum was recorded in the entry CoN-12074 (09.59%).

**Purity%:** The maximum Purity% was observed in the entry Co-12009 (87.97%) followed by standard Co-99004 (86.26%) and CoVSI-12121 (85.48%) and minimum was recorded in the entry Co-12017 (80.33%).

**Juice Extraction%:** The maximum Juice extraction % was observed in the entry CoT-12368 (81.36%) followed by Co-12021 (80.78%) and entry CoVSI-12121 (80.60 %) and minimum was recorded in the entry Co-12016 (74.72%). The Juice% observed in the best standard Co-99004(77.92%)

**Sucrose% in Juice:** The maximum sucrose% in juice was observed in the standard Co-99004 (20.71) followed entry CoVSI-12121 (19.78) and Co-12009 (19.67) and minimum was recorded in the entry CoN-12074 (14.47).

### 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* 2015-16. 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	Co 09004	266.75	13.50	1.435	2.77	849.36
2	Co 09007	263.6	12.02	1.629	3.03	992.69
3	CoN 09072	229.4	12.88	1.229	2.82	821.28
	<b>Standards</b>					
4	<b>Co 85004</b>	210	11.05	0.954	2.44	699.55
5	<b>Co 94008</b>	238.75	12.15	1.535	3.00	649.86
6	<b>CoC 671</b>	256.15	12.88	1.661	2.97	878.47
	<b>Over All Mean</b>	<b>244.10</b>	<b>12.41</b>	<b>1.407</b>	<b>2.84</b>	<b>815.20</b>
	<b>CD at 5%</b>	<b>21.84</b>	<b>1.11</b>	<b>.240</b>	<b>0.229</b>	<b>161.45</b>
	<b>CV%</b>	<b>6.26</b>	<b>6.30</b>	<b>11.97</b>	<b>5.65</b>	<b>13.85</b>

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

S. No.	Varieties	Juice Extraction %	Brix%	Sucrose % in Juice	Purity%	CCS %
1	Co 09004	<b>81.34</b>	21.50	19.13	89.02	13.99
2	Co 09007	81.06	21.89	20.14	<b>92.05</b>	13.98
3	CoN 09072	78.69	23.84	21.47	90.10	14.03
	<b>Standards</b>					
4	<b>Co 85004</b>	79.49	<b>24.12</b>	21.84	90.55	<b>14.79</b>
5	<b>Co 94008</b>	79.08	21.49	18.90	87.95	12.20
6	<b>CoC 671</b>	78.23	24.04	<b>22.02</b>	91.60	14.22

**Results:**

**Stem height (cm):** The maximum cane height was observed in the entry Co-09004 (266.75 cm) followed by entry Co-09007 (263.6 cm) and standard CoC-671 (256.15 cm) and minimum was recorded in the standard Co-85004 (210.00 cm). None of the entry was found significantly superior over the best standard CoC-671 (256.15 cm).

**Length of Nodes:** The maximum node length was observed in the entry Co-09004 (13.50 cm) followed by standard CoC-671 (12.88 cm) and entry CoN-09072 (12.88 cm) and minimum was recorded in the entry standard Co-85004 (11.05 cm). None of the entry was found significantly superior over the best standard CoC-671 (12.88 cm).

**Single cane weight (kg):** The maximum single cane weight (kg) was observed in the standard CoC-671 (1.661 Kg) followed by entry Co-09007 (1.629 Kg) and standard Co-94008 (1.535 Kg) and minimum was recorded in the standard Co-85004 (0.954 Kg). None of the entry was found significantly superior over the best standard CoC-671 (1.661 Kg).

**Cane Diameter (cm):** The maximum cane diameter (cm) was observed in the entry Co-09007 (3.03 cm) followed by standard Co-94008 (3.00 cm) and standard CoC-671 (2.97 cm) and minimum was recorded in the standard Co-85004 (2.44 cm). None of the entry was found significantly superior over the best standard Co-94008 (3.00 cm).

**Cane Yield (q/ha):** The maximum cane yield was observed in the entry Co-09007 (992.69 q/ha) followed by standard CoC-671 (878.47 q/ha) and entry Co 09004 (849.36 q/ha) and minimum was recorded in the standard Co-94008 (649.86 q/ha). None of the entry was found significantly superior over the best standard CoC-671 (878.47 q/ha).

**Brix%:** The maximum cane Brix% was observed in the standard Co-85004 (24.12%) followed by standard CoC-671 (24.04%) and entry CoN-09072 (23.84%) and minimum was recorded in the standard Co-94008 (21.49%).

**Sucrose % in Juice:** The maximum cane Sucrose % in Juice was observed in the standard standard CoC-671 (22.02%) followed by standard Co-85004 (21.84%) and entry CoN09072 (21.47%) and minimum was recorded in the standard Co-94008 (18.90%)

**Purity%:** The maximum purity % was observed in the entry Co 09007 (92.05%) followed by standard CoC-671 (91.60%) and entry CoN 09072 (90.10%) and minimum was recorded in the standard Co-94008 (87.95%).

**Juice Extraction %:** The maximum Juice Extraction % was observed in the entry Co-09004 (81.34%) followed by entry Co 09007(81.06%) and standard Co-85004 (79.49 %) and minimum was recorded in the standard CoC-671 (78.23 %).

**CCS %:** The maximum **CCS %** was observed in the standard Co-85004 (14.79%) followed by standard CoC-671 (14.22%) and entry CoN 09072 (14.03%) and minimum was recorded in the standard Co-94008 (12.20%).