

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

NO. COA/ Sugarcane/2015/

Kawardha, Date: / /2015

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 2014-15 regarding

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: / /2015

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

Experiment 01

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

No. of entries	:	Thirteen (13)			
Standard	:	03			
Design	:	Randomized Block Design			
Replications	:	Two			
Date of Planting	:	10/3/2014			
Row to Row	:	90 cm	No. of Rows	:	5
Plot Size	:	4m x 5m = 20m ²			

Methodology: The thirteen 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* -2014-15. 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 and purity percentage 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)
1.	Co-11001	263.6	12.91	1.513	2.85	1216.43
2.	Co-11004	277.9	13.64	1.390	2.66	937.45
3.	Co-11016	273.7	14.71	1.847	3.05	1140.40
4.	Co-11017	267.2	13.62	1.653	2.82	660.88
5.	Co-11018	241.9	13.41	1.431	2.80	782.30
6.	Co-11081	247.6	13.92	1.329	2.69	1148.23
7.	CoM-11082	252.6	14.06	1.383	2.69	834.05
8.	CoM-11083	287.5	13.96	1.664	2.78	885.70
9.	CoM-11084	236.3	12.37	1.200	2.67	852.18
10.	CoN-11071	196.9	12.94	1.109	2.71	513.18
11.	CoN-11072	252.5	12.87	1.364	2.80	893.33

12.	CoT-11366	245.6	11.92	1.380	2.75	883.15
13.	PI 11131	204.9	10.97	1.843	3.18	644.50
	Standards					
14.	Co 85004	207.5	10.68	1.188	2.42	883.4
15.	Co 94008	231.8	11.73	1.173	2.72	759.85
16.	CoC 671	260.3	13.61	1.585	2.97	866.65
	Over All Mean	246.73	12.97	1.44	2.78	868.85
	CD (5%)	30.45	1.31	0.273	0.2	273.53
	CV%	6.11	4.99	9.39	4.34	15.57

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

S. No.	Entries	Juice %	Brix%	Pol%	Purity%	Sucrose% In Juice
1.	Co-11001	55.06	24.88	20.06	80.63	20.06
2.	Co-11004	54.17	25.72	20.92	81.34	20.92
3.	Co-11016	55.80	24.32	19.64	80.76	19.64
4.	Co-11017	55.04	26.88	22.36	83.18	22.36
5.	Co-11018	56.14	23.92	19.17	80.14	19.17
6.	Co-11081	58.18	25.24	20.50	81.22	20.50
7.	CoM-11082	54.06	25.88	21.14	81.68	21.14
8.	CoM-11083	56.62	24.42	19.73	80.79	19.73
9.	CoM-11084	54.94	25.12	20.26	80.65	20.26
10.	CoN-11071	53.76	22.68	18.28	80.60	18.28
11.	CoN-11072	54.77	24.28	19.60	80.72	19.60
12.	CoT-11366	53.30	24.92	20.06	80.50	20.06
13.	PI 11131	57.55	23.32	18.75	80.40	18.75
	Standards					
14.	Co 85004	57.16	24.08	19.55	81.19	19.55
15.	CoC 671	55.52	24.88	20.12	80.87	20.12
16.	Co 94008	56.48	26.12	21.88	83.77	21.88

Results:

Stem height(cm): The stem height maximum was observed in the entry Co-11083 (287.5 cm) followed by entry Co-11014 (277.90 cm) and Co-11016 (273.70 cm) and minimum was recorded in the entry CoN-11071 (196.9 cm).None of the entry was found significantly superior over the best standard CoC-671 (260.30cm).

Length of Nodes: The maximum node length was observed in the entry Co-11016 (14.71 cm) followed by entry CoM-11082 (14.06 cm) and CoM-11083 (13.96 cm) and minimum was recorded in the standard Co-85004 (10.68 cm).None of the entry was found significantly superior over the best standard CoC-671 (13.61cm).

Single cane weight (kg): The maximum single cane weight (kg) was observed in the entry Co-11016 (1.847 Kg) followed by entry PI-11131 (1.843 Kg) and CoM-11083 (1.664 Kg) and minimum was recorded in the entry CoN-11071 (1.109 Kg).None of the entry was found significantly superior over the best standard CoC-671 (1.585 Kg).

Cane Diameter (cm): The maximum cane diameter (cm) was observed in the entry PI-11131 (3.18 cm) followed by entry Co-11016 (3.05 cm) and Co-11001 (2.85 cm) and minimum was recorded in the entry Co-11004 (2.66 cm). Entry PI-11131 (3.18 cm) was found significantly superior over the best standard CoC-671 (2.97 cm).

Cane Yield (q/ha): The maximum cane yield was observed in the entry Co-11001 (1216.43 q/ha) followed by entry Co-11081 (1148.23 q/ha) and Co-11016 (1140.40 q/ha) and minimum was recorded in the entry CoN-11071 (513.18 q/ha). Entry Co-11001 (1216.43 q/ha) was found significantly superior over the best standard Co-85004 (883.4 q/ha).

Brix%: The maximum cane Brix% was observed in the entry Co-11017 (26.88%) followed by standard CoC-671 (26.12%) and CoM-11082 (25.88%) and minimum was recorded in the entry CoN-11071 (22.68%).

Pol%: The maximum Pol% was observed in the entry Co-11017 (22.36%) followed by standard CoC-671 (21.88%) and CoM-11082 (21.14 %) and minimum was recorded in the entry CoN-11071 (18.28%).

Purity%: The maximum Purity% was observed in the standard CoC-671 (83.77%) followed by Co-11017 (83.18%) and CoM-11082 (81.68 %) and minimum was recorded in the entry Co-11018 (80.14%).

Juice%: The maximum Juice% was observed in the entry Co-11081 (58.18%) followed by PI-11131 (57.55%) and standard Co-85004 (57.16 %) and minimum was recorded in the entry CoT-11366 (53.30%).

Sucrose% in Juice: The maximum sucrose% in juice was observed in the entry Co-11017 (22.36) followed by standard CoC-671 (21.88) and CoM-11082 (21.14) and minimum was recorded in the entry CoN-11071 (18.28).

Experiment 02

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

No. of entries	:	Fourteen (14)
Standard	:	02 (Co86032 and Co99004)
Design	:	RBD
Replications	:	Two
Date of Planting	:	10/03/2014
Plot Size	:	4m x 5m= 20m ²

Methodology: The 14 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* -2014-15. 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)	Cane diameter (Cm)	Cane yield (Q/ha)
1	CO-11005	259.6	13.68	1.337	2.471	868
2	CO-11007	289.6	13.16	2.0365	2.615	955
3	CO-11012	268.7	14.13	1.6425	2.761	1148
4	CO-11019	278	12.38	1.5105	2.739	991
5	CO-11020	265.6	13.64	1.615	2.589	1101
6	CO-11021	191.1	12.32	0.981	2.366	54
7	CO-11022	248	13.04	1.239	2.545	600
8	CO-11023	234.3	13.58	1.5095	2.939	778
9	CO-11024	228.6	12.38	1.4077	2.545	699
10	COM-11085	247.2	13.62	1.403	2.615	797
11	COM-11086	261.4	12.6	1.1755	2.315	725

12	COM-11087	242.7	12.2	1.4901	2.522	612
13	CON-11073	276	13.82	1.6085	2.627	1189
14	CON-11074	264.5	12.77	1.788	2.933	974
	Standards					
15	Co86032	250.1	13.09	1.568	2.752	886
16	Co99004	262.8	12.93	1.438	2.525	872
	Mean	254.26	13.08	1.484	2.73	828.05
	CD at 5%	35.07	1.18	0.243	0.203	285.34
	CV%	6.83	4.45	8.131	4.52	17.05

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

S. No.	Entries	Juice %	Brix%	Pol%	Purity%	Sucrose% in Juice
01	CO-11005	53.68	23.34	18.88	80.89	18.88
02	CO-11007	56.74	25.92	21.48	82.87	21.48
03	CO-11012	55.63	25.34	20.67	81.57	20.67
04	CO-11019	55.95	25.68	20.56	80.06	20.56
05	CO-11020	55.99	25.12	20.26	80.65	20.26
06	CO-11021	58.84	20.09	16.11	80.19	16.11
07	CO-11022	56.89	24.52	19.73	80.46	19.73
08	CO-11023	56.37	23.72	19.31	81.41	19.31
09	CO-11024	56.91	21.68	17.34	79.98	17.34
10	COM-11085	54.93	23.68	19.17	80.95	19.17
11.	COM-11086	54.92	25.52	21.08	82.60	21.08
12.	COM-11087	53.73	25.08	20.46	81.58	20.46
13	CON-11073	57.49	23.96	18.88	78.80	18.88
14.	CON-11074	58.92	20.04	16.05	80.09	16.05
	Standards					
15.	Co-86032	55.26	24.68	20.11	81.48	20.11
16.	Co 99004	54.10	25.72	21.66	84.21	21.66

Results:

Stem height(cm): The maximum cane height was observed in the entry Co-11007 (289.9 cm) followed by entry Co-11019 (278 cm) and CoN-11073 (276 cm) and minimum was recorded in the entry Co-11021 (191.10 cm).None of the entry was found significantly superior over the best standard Co-99004 (262.80cm).

Length of Nodes: The maximum node length was observed in the entry Co-11012 (14.13 cm) followed by entry Co-11073 (13.82 cm) and Co-11005 (13.68 cm) and minimum was recorded in the entry CoM-11087 (12.2 cm).None of the entry was found significantly superior over the best standard Co-86032 (13.09cm).

Single cane weight (kg): The maximum single cane weight (kg) was observed in the entry Co-11007 (2.036 Kg) followed by entry CoN-11074(1.788 Kg) and Co-11012 (1.643 Kg) and minimum was recorded in the entry Co-11021 (0.981 Kg). Entry Co-11007 (2.036 Kg) was found significantly superior over the best standard Co-86032 (1.568 Kg).

Cane Diameter (cm): The maximum cane diameter (cm) was observed in the entry Co-11023 (2.939 cm) followed by entry CoN-11074 (2.933 cm) and Co-11012 (2.761 cm) and minimum was recorded in the entry CoM-11086 (2.315 cm). None of the entry was found significantly superior over the best standard Co-86032 (2.752 cm).

Cane Yield (q/ha): The maximum cane yield was observed in the entry Co-11073 (1189 q/ha) followed by entry Co-11012 (1148 q/ha) and Co-11020 (1101 q/ha) and minimum was recorded in the entry CoN-11021 (540 q/ha). Entry Co-11073 (1189 q/ha) was found significantly superior over the best standard Co-86032 (886 q/ha).

Brix%: The maximum cane Brix% was observed in the entry Co-11007 (25.92%) followed by standard Co-99004 (25.72%) and Co-11019 (25.68%) and minimum was recorded in the entry CoN-11074 (20.04%).

Pol%: The maximum Pol% was observed in the standard Co-99004 (21.66%) followed by entry Co-11007 (21.48%) and CoM-11086 (21.08 %) and minimum was recorded in the entry CoN-11074 (16.05%).

Purity%: The maximum Purity% was observed in the standard Co-99004 (84.21%) followed by Co-11007 (82.87%) and CoM-11086 (82.60 %) and minimum was recorded in the entry CoN-11073 (78.80%).

Juice%: The maximum Juice% was observed in the entry CoN-11074 (58.92%) followed by Co-11021 (58.84%) and entry CoN-11073 (57.49 %) and minimum was recorded in the entry Co-11005 (53.68%). The Juice% observed in the best standard Co-99004(54.10%)

Sucrose% in Juice: The maximum sucrose% in juice was observed in the standard Co-99004 (21.66) followed entry Co-11017 (21.48) and CoM-11086 (21.08) and minimum was recorded in the entry CoN-11074 (16.05).

Experiment 03

Title: Advance Varietal Trial (AVT) plant I 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	:	20/02/2014
Plot Size	:	4m x 5m=20m ²

Methodology: The three genotypes and three standards of early group plant-I of sugarcane were evaluated in the completely Randomized block design with four replications for their yield performance and other yield attributed characters during *year* 2014-15. 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).	Weight of single cane (kg)	Cane Diameter	Cane yield (Q/ha)
1	Co 09004	242.2	13.28	1.32	2.72	1146.25
2	Co 09007	210.2	11.31	1.35	2.95	975.55
3	CoN 09072	179.85	11.26	0.97	2.64	924.79
	Standards					
4	Co 85004	154.6	9.20	0.99	2.48	945.78
5	Co 94008	173.55	10.34	0.89	2.61	910.55
6	CoC 671	198.85	11.62	1.21	2.86	1027.98
	Over All Mean	193.2	11.16	1.124	2.71	988.48
	CD at 5%	29.69	1.35	0.27	0.10	92
	CV%	10.75	8.46	16.82	2.13	6.51

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

S. No.	Varieties	Juice %	Brix%	Pol%	Purity%	Sucrose% In Juice
1	Co 09004	54.93	23.92	19.22	80.35	19.22
2	Co 09007	53.31	23.52	18.86	80.19	18.86
3	CoN 09072	54.66	23.04	18.45	80.08	18.45
	Standards					
4	Co 85004	54.71	25.04	21.74	86.82	21.74
5	Co 94008	52.82	20.88	16.72	80.08	16.72
6	CoC 671	52.15	23.88	19.31	80.86	19.30

Results:

Stem height (cm): The maximum cane height was observed in the entry Co-09004 (242.2 cm) followed by entry Co-09007 (210.2 cm) and standard CoC-671 (198.85 cm) and minimum was recorded in the standard Co-85004 (154.60 cm). Entry Co-09004 (242.2 cm) was found significantly superior over the best standard CoC-671 (198.85 cm).

Length of Nodes: The maximum node length was observed in the entry Co-09004 (13.28 cm) followed by standard CoC-671 (11.62 cm) and entry Co-09007 (11.31 cm) and minimum was recorded in the entry standard Co-85004 (09.20 cm). Entry Co-09004(13.28 cm) was found significantly superior over the best standard CoC-671 (11.62 cm).

Single cane weight (kg): The maximum single cane weight (kg) was observed in the entry Co-09007 (1.35 Kg) followed by entry Co-09004 (1.32 Kg) and standard CoC-671 (1.21 Kg) and minimum was recorded in the standard Co-94008 (0.89 Kg). None of the entry was found significantly superior over the best standard CoC-671 (1.21 Kg).

Cane Diameter (cm): The maximum cane diameter (cm) was observed in the entry Co-09007 (2.95 cm) followed by standard CoC-671 (2.86 cm) and entry Co-09004 (2.72 cm) and minimum was recorded in the standard Co-85004 (2.48 cm). None of the entry was found significantly superior over the best standard CoC-671 (2.86 cm).

Cane Yield (q/ha): The maximum cane yield was observed in the entry Co-09004 (1146.25 q/ha) followed by standard CoC-671 (1027.98 q/ha) and entry Co-09007 (975.55 q/ha) and minimum was recorded in the standard Co-94008 (910.55 q/ha). Entry Co-09004 (1146.25 q/ha) was found significantly superior over the best standard CoC-671 (1027.98 q/ha).

Brix%: The maximum cane Brix% was observed in the standard Co-85004 (25.04%) followed by entry Co-09004 (23.92%) and standard CoC-671 (23.88%) and minimum was recorded in the standard Co-94008 (20.88%).

Pol%: The maximum cane pol% was observed in the standard Co-85004 (21.74%) followed by standard CoC-671 (19.31%) and entry Co-09004 (19.22%) and minimum was recorded in the standard Co-94008 (16.72%).

Purity%: The maximum purity % was observed in the standard Co-85004 (86.82%) followed by standard CoC-671 (80.86%) and entry Co-09004 (80.35%) and minimum was recorded in the standard Co-94008 & CoN09072 (80.08%).

Juice%: The maximum Juice% was observed in the entry Co-09004 (54.93%) followed by standard Co-85004 (54.71%) and entry CoN-09072 (54.66 %) and minimum was recorded in the standard CoC-671 (52.15%).

Sucrose% in Juice: The maximum sucrose% in juice was observed in the standard Co-85004 (21.74%) followed by standard CoC-671 (19.30%) and entry Co-09004 (19.22%) and minimum was recorded in the standard Co-94008 (16.72%).

