

D.B.Phonde. Sr.Scientist & Head, Soil Science.

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June 06, 2015

To,

Dr. O. K. Sinha,
Project Co-coordinator,
AICRP on Sugarcane,
Indian Institute of Sugarcane Research,
Rae Bareli Road, Post- Dilkusha,
Lucknow - 226 002 (Uttar Pradesh)

Sub.: Submission of annual research report of AICRP on sugarcane Crop Production and Audit Utilization certificate 2014-15.

Sir,

The research work in Sugarcane Crop Production under AICRP program was conducted as per the technical programme during 2014-15. A report on research work done has been enclosed herewith for inclusion in the proceedings. A copy of the same has also been sent through E-mail. Audit utilization certificate of the contingency grant for the year 2014-15 is also enclosed herewith. No front Line demonstrations and Breeder seed production program was allotted to this centre.

This is submitted for compilation and further need full please.

Thanking you,

Yours faithfully,

Encl.:1) One hard copy of research work 2014-15
2) Audit Utilization Certificate. 2014-15

(D.B.Phonde)

Copy to:

Dr. T.K.Srivastava.
Principle Investigator (Crop production AICRP on sugarcane)
Head, Division of Crop Production
Indian Institute of Sugarcane Research,
Lucknow 226 002.
Uttar Pradesh

RESEARCH RESULTS OF WORK DONE IN SUGARCANE CROP PRODUCTION UNDER AICRP'S PROGRAM 2014-2015

Submitted to
**Project Co-ordinator, AICRP on Sugarcane.
Indian Institute of Sugarcane Research,
Lucknow.**

Submitted by
Mr. D. B. Phonde, Senior Scientist & Head, Soil Science Section
Mr. P. V. Ghodke, Scientist, Agronomy.
Division of Crop Production



**VASANTDADA SUGAR INSTITUTE,
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HIGHLIGHTS OF RESEARCH WORK CONDUCTED DURING 2014-2015

1. AS-42: Agronomic evaluation of promising sugarcane genotypes (Pooled results over two plant and ratoon crop)

The field trials over two plant and one ratoon crops were conducted on agronomic evaluation of promising sugarcane genotypes viz., PI07131, Co8001, and Co7015 along with CoC 671 and Co 86032 as standard checks. These genotypes were tested for their response to fertilizer levels viz., 75, 100 and 125% of recommended dose of NPK. The pooled data showed that, the genotype PI07131 recorded significantly higher cane yield (100.22t/ha) & B:C ratio (1: 1.90) than the other genotypes under study. However it was on par with the check variety Co 86032. Application 125% of recommended fertilizer dose of NPK to suru season sugarcane produced significantly higher cane yield (92.66 t/ha), CCS yield (13.31 t/ha) & B:C ratio (1: 1.75) than the other doses of NPK fertilizer applications.

Project No. AS-42 (AICRP'S)

Title of the experiment : Agronomic evaluation of promising sugarcane genotypes.
(Pooled results of two plant and one ratoon crops).

Objective: To work out agronomy of sugarcane genotypes from advanced varietal trial.

Principal Investigator : P.V.Ghodke

Associates : D.B.Phonde and S.S.Kadam

Location : Vasantdada R& D farm.

Time Frame : Three crop seasons (2 plants + 1 ratoon)

Year of commencement : 2012-13

Year of completion : 2014-15

Date of planting : Ist plant-11/01/2013, IInd plant-24/12/2013,
Ratoon-13/02/2014

Date of harvesting : Ist plant-12/02/2014, IInd plant-29/01/2015
Ratoon-18/02/2015

Soil type : Medium black soil.

Treatment details

Sr. No.	Genotypes	Fertilizer levels
V1	PI07131	F1- 75% RDF of NPK
V2	Co 8001	F2-100% RDF of NPK
V3	Co 7015	F3-125 % RDF of NPK.
V4	Co C 671	
V5	Co. 86032	

Recommended dose of fertilizer for suru sugarcane 250:115:115 kg NPK/ha.

Replications : Three

Design : Factorial R.B.D

Soil analysis :

Year	pH	EC mmhos/cm	Organic. caban%	Av. N kg/ha.	Av.P ₂ O ₅ kg/ha.	Av. K ₂ O kg/ha.
Ist crop	8.23	0.55	0.51	280.98	17.04	332.08
IInd crop	8.12	0.26	0.62	233.67	46.51	325.84
Ratoon crop	8.17	0.21	0.66	304.96	49.87	413.20

Results:

The pooled data of two plant and one ratoon crops pertaining to cane and CCS yields, growth observations and quality parameters are presented in table 1 & 2.

Cane and CCS yield -

Effect of genotypes:

Pooled data presented in table 1 revealed that PI07131 recorded significantly higher cane yield (100.22 t/ha) followed by the check variety Co 86032 (96.72 t/ha). Cane yield of rest of the genotypes i.e. Co 8001 & Co 7015 (92.82 t/ha & 84.38 t/ha respectively) were more than the variety Co C 671 (76.60 t/ha).

CCS yield was significantly higher in variety Co 86032 (14.26 t/ha) than rest of the genotypes under testing, but at par with the genotype PI07131 (14.17 t/ha).

Effect of fertilizer levels:

The application of 125 % recommended fertilizer dose of NPK to suru season sugarcane recorded significantly higher cane yield (92.66 t/ha) & CCS yield (13.31 t/ha) than rest of the fertilizer levels. It produced 4.30 & 0.47 t/ha more cane and CCS yields over recommended dose of NPK fertilizers.

Effect of interaction:

The effect of interaction between genotypes & fertilizer levels in respect of pooled cane yield was significant, where in CCS yield was not significant.

Growth and yield attributes -

The pooled data regarding growth and yield attributes are presented in table 2.

Effect of genotypes:

All the growth and yield attributes except single cane weight were found significant. The pooled data revealed that the genotype PI07131 recorded significantly higher germination (71.05%), number of millable canes (0.72 lac/ha.) no of internodes (22/cane). While the highest tillering at 120 DAP (1.44 la/ha), cane girth (10.29 cm) and single cane weight (1.43 kg) was recorded in genotype Co 8001. Maximum total and millable height (255 and 223 cm) was observed in variety Co 86032.

Cost benefit ratio was significantly higher (1: 1.90) in genotype PI07131 followed by the check variety Co 86032 (1: 1.83).

Effect of fertilizer levels:

The pooled data revealed that application of 125% recommended fertilizer dose of NPK to suru season sugarcane, recorded significantly maximum germination (69.88%), total & millable height (250 & 213 cm respectively), single cane weight (1.41 kg), & no of millable canes (0.67 l/ha) than the recommended dose of NPK fertilizers. The B:C ratio was also numerically higher (1: 1.75) in 125% NPK application.

Effect of interaction:

Effect of interaction between genotypes & fertilizer levels in respect of all the pooled growth attributes were found significant to single cane weight, germination at 45 DAP, and cane girth while it was no significant to the tillering at 120DAP, number of internodes. total and millable heights

Quality parameters:

The pooled data pertaining to juice quality parameters presented in table 2 revealed that the genotype PI07131 recorded significantly highest brix % (24.82%), than the rest of the genotypes under study. The variety CoC 671 noticed significantly higher sucrose% and CCS% (22.00% & 15.86%), respectively. Which was followed by the variety Co 86032 (sucrose% 20.43 & CCS 14.76 %).

The pooled data on application of recommended fertilizer dose of NPK to suru season sugarcane revealed that 75% RDF of NPK recorded higher CCS% & sucrose% (14.95% & 20.64% respectively) than other fertilizer levels however, differences were no significant.

Interaction effect between genotypes & fertilizer levels were found not significant.

Conclusion:

The genotype PI07131 recorded significantly higher cane yield (100.22t/ha) & B:C ratio (1: 1.90) than the other genotypes under study. However it was on par with the check variety Co 86032. Application 125% of recommended fertilizer dose of NPK to suru season sugarcane produced significantly higher cane yield (92.66 t/ha), CCS yield (13.31 t/ha) & B:C ratio (1: 1.75) than the other doses of NPK fertilizer applications.

Table 1:Pooled Mean of cane and CCS yield (t/ha) as affected by various genotypes and levels of fertilizers.

Treatment	Cane yield (t/ha)				CCS yield (t/ha)			
	Ist Plant	IInd Plant	Ratoon	Pooled mean	Ist Plant	IInd Plant	Ratoon	Pooled mean
A) Genotype								
PI07131	114.16	99.34	89.13	100.22	15.38	15.10	13.03	14.17
Co 8001	96.50	92.99	86.28	92.82	13.37	14.22	12.96	13.58
Co 7015	83.09	82.16	70.42	84.38	13.79	11.68	9.92	11.54
CoC 671	104.70	67.16	65.18	76.60	13.94	10.69	10.34	11.63
Co 86032	101.15	96.97	92.29	96.72	12.70	15.21	13.56	14.26
S.E. ±	5.75	0.90	11.65	7.17	0.82	0.02	0.84	1.18
C.D. at 5 %	18.74	1.47	19.09	11.69	NS	0.04	1.38	1.93
Fertilizer Level								
75 %	99.16	81.56	77.38	83.42	13.53	13.07	11.87	12.35
100 %	98.31	88.74	81.64	88.36	13.95	13.76	12.11	12.84
125 %	102.29	92.86	82.96	92.66	14.02	13.91	12.50	13.31
S.E. ±	3.68	0.77	9.16	3.94	0.80	0.91	0.45	0.82
C.D. at 5 %	NS	NS	NS	5.82	NS	0.3	0.95	1.21
Interaction								
S.E. ±	8.86	1.67	20.38	10.16	1.68	0.42	1.45	1.90
C.D. at 5 %	NS	2.55	31.12	15.78	NS	0.70	2.21	2.93
CV%	17.26	11.55	21.69	8.68	17.86	0.29	10.47	12.40

Table 2: Pooled mean of Growth and Yield attributes as affected by various genotypes and levels of fertilizers.

Treatment	Germ .%	Tillering Lac/ha.	Height (cm)	Girth (cm)	NMC 000/ha.	Wt/cane (Kg)	B:C Ratio	Brix %	Sucrose%	CCS %
Genotype										
PI07131	71.05	1.40	237	9.38	0.72	1.34	1.90	24.82	20.33	14.65
Co 8001	66.35	1.44	234	10.29	0.65	1.43	1.76	21.23	20.04	14.29
Co 7015	70.59	1.11	255	9.21	0.64	1.35	1.60	21.27	19.37	13.80
CoC 671	67.49	0.93	259	9.42	0.49	1.38	1.26	23.37	22.00	15.86
Co 86032	60.39	1.29	255	9.48	0.72	1.33	1.83	21.62	20.43	14.76
S.E. ±	2.24	0.11	5.07	0.18	0.33	0.10	--	0.80	0.63	0.77
C.D. at 5 %	3.72	0.18	8.28	0.30	0.05	0.16	--	1.31	1.47	1.28
Fertilizer Level										
75 %	64.39	1.24	246	9.59	0.60	1.37	1.58	21.77	20.64	14.95
100 %	67.26	1.22	230	9.62	0.65	1.32	1.67	21.82	20.19	14.38
125 %	69.88	1.23	250	9.46	0.67	1.41	1.75	22.00	20.47	14.69
S.E. ±	1.23	0.89	5.91	0.23	0.15	0.03	--	0.39	0.35	0.41
C.D. at 5 %	1.82	0.13	8.72	0.34	0.20	0.05	--	0.57	0.73	0.62
Interaction										
S.E. ±	3.19	0.19	11.93	0.33	0.45	0.12	---	1.07	0.90	1.08
C.D. at 5 %	4.98	0.30	17.94	0.69	0.70	0.19	--	1.68	1.99	1.71
CV%	3.56	14.01	4.74	4.70	4.89	5.63	--	3.47	4.74	5.57
General Mean	67.17	1.23	242	9.56	0.64	1.37	--	21.86	20.43	14.67

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