COMPARATIVE PERFORMANCE OF EARLY MATURING SUGARCANE GENOTYPES IN SOUTH GUJARAT

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ABSTRACT

Eight early maturing sugarcane genotypes were tested at Regional Sugarcane Research Station, Navsari Agricultural University, Navsari (Gujarat) during (2008-09 and 2009-10) of two plants and one ratoon (2009-10) to evaluate the suitable variety for South Gujarat condition. The results showed that variety Co 0403, CoSnk 03632 and CoN 03131 was found superior in case of cane yield, commercial cane sugar and other characters and these clones should be recommended for commercial cultivation after testing their stability at various locations in South Gujarat conditions for getting higher cane yield.

KEY WORDS: Genotypes, ratoon, sugarcane

INTRODUCTION

Sugarcane plays a pivotal role in the national economy of India. So that being a cash crop, the cultivation of this crop is gradually increasing. Till-to-date, a very few research work has been done to develop and identify suitable high sugared varieties for South Gujarat conditions. Keeping the above problem in mind as initial step to select the high sugared varieties, some of the varieties in Advance Varietal Trail were compared to assess the improvement in cane yield and CCS t/ha by adopting improved methods of sugarcane cultivation.

MATERIALS AND METHODS

A field experiment was carried out at Regional Sugarcane Research Station, Navsari Agricultural University, Navsari (Gujarat) during 2008-09 and 2009-10 for two plants and 2009-10 for ratoon, with objective to study the comparative performance of 8 varieties including 3 standard checks of sugarcane. The experiment was conducted in Randomized Block Design with three replications with plot size of r rows of 6 m length with spacing of 0.90 m between the rows. All the recommended package of practices was followed during the entire crop season. Parameters for productivity of sugarcane viz., Commercial Cane Sugar (CCS) (t/ha), cane yield (t/ha), CCS (%), Sucrose (%), single cane weight and number of millable canes/ha were analyzed for individual planting and ratoon crop as per the method suggested by Panse and Sukhatme (1978).

RESULTS AND DISCUSSION

Comparative performance of various genotypes of sugarcane for two main plants, one ratoon and mean data for different productivity parameters are presented in Table 1. The results of CCS (t/ha) showed that varieties Co

0403, CoM 0326 and CoSnk 03632 were found significantly superior over standards Co 94008 and Co 85004 in II plant, while variety Co 0403 was significantly superior than all the standard checks in ratoon crop. The results of CCS was non-significant for all the genotypes in I plant. Pooled data of I plant, II plant and ratoon crops revealed that Co 0403 (14.25 t/ha) yielded highest CCS followed by CoM 0326 (13.63 t/ha).

In I plant, variety CoN 03131 yielded numerically higher cane yield (119.01 t/ha) followed by CoSnk 03632 and CoM 0326. The results indicated that varieties CoSnk 03632 and Co 0403 gave significantly higher cane yield over best standard check Co 94008 in II plant as well as in ratoon. With respect to cane yield over all the plantings, variety CoSnk 03632 (112.92 t/ha) recorded higher cane yield followed by Co 0403 (111.02 t/ha).

The results of CCS % revealed that none of the tested genotypes noted CCS % higher than best standard check CoC 671 in all the plantings. However, the genotypes *viz.*, Co 0403, CoSnk 03632 and CoSnk 03754 in II plant and genotypes Co 0403, CoM 0326, CoN 03131 and CoSnk 03754 in ratoon recorded significantly high CCS % than the standard check Co 94008. Overall mean performance of CCS % showed higher by variety Co 0403 (11.39 %) followed by CoSnk 03754 (11.16 %).

The results of sucrose % revealed that none of the tested genotypes noted sucrose % higher than best standard check CoC 671 in all the plantings. However, In I plant variety CoM 0326 recorded numerically higher sucrose % followed by Co 0403. Similarly, in II plant, CoSnk 03754 noted numerically higher sucrose % followed by Co 0403, whereas in ratoon crop, clone Co 0403 and CoN 03131 noted significantly higher sucrose % over standard check Co 94008. Overall among the tested clones, Co 0403 recorded higher sucrose % (16.38 %) followed by CoN 03131 (16.12 %).

For single cane weight (kg), variety CoSnk 03632 recorded significantly higher single cane weight than all the standard checks in I plant. The genotypes manifested non-significant differences for this trait in II plant as well as in ratoon. Overall, the mean single cane yield was recorded higher by clone CoSnk 03632 (1.20 kg) followed by CoN 03131 (1.16 kg).

The results of millable canes / ha revealed that in I plant, clone CoN 03131 and CoM 0326 yielded significantly higher millable canes than the best standard check Co 85004, whereas in II plant as well as in ratoon, clone CoN 0403 and CoSnk 03632 yielded significantly higher millable canes than the best standard check Co 85004. Overall among all the clones, CoSnk 03632 recorded higher number of millable canes/ha (106.78) followed by Co 0403 (106.21). Similar results were reported by Singh *et al.* (1999) and Nigade *et al.* (2004).

CONCLUSION

From the above discussion, it can be concluded that pooled data of two plants and one ratoon showed that variety Co 0403, CoSnk 03632 and CoN 03131 was found superior in case of cane yield, commercial cane sugar and other characters. It is also suggested that the variety should be tried for their sustainability under various agro-climatic conditions of South Gujarat.

REFERENCES

Panse and Sukhatme (1978). Statistical Methods for Agricultural Workers, ICAR, New Delhi.

Singh, J. R. P., Sinha, U. P. and Kumar, S.(1999).Performance of mid-late sugarcane varieties of N.C.Z.in calciorthent soil of Bihar. *Indian Sugar,***XLIX** (6):411-413.

Nigade, R. D., Kadam, U. A. and Moore, S. N. (2004). Evaluation of sugarcane genotypes for yield and quality parameters under *suru* planting. *Cooperative Sugar*, **36**(4): 331-334.

Table 1 : Data on cane yield, quality and their contributing characters in early genotypes of sugarcane

Sr. No.	Genotypes	CCS (t/ha)				Cane Yield (t/ha)			
		I Pl.	II Pl.	Ratoon	Mean	I Pl.	II Pl.	Ratoon	Mean
1	Co 0403	12.95	14.74	15.06	14.25	112.46	113.95	106.66	111.02
2	CoM 0326	12.75	14.58	13.56	13.63	114.69	105.55	96.91	105.72
3	CoN 03131	12.39	12.51	13.75	12.88	119.01	101.85	102.46	107.77
4	CoSnk03632	11.26	14.37	13.12	12.92	116.17	115.30	107.28	112.92
5	CoSnk03754	11.73	12.27	11.69	11.90	109.50	93.33	85.80	96.21
Standards									
6	CoC 671	13.01	13.49	12.28	12.93	105.67	99.01	92.83	99.17
7	Co 85004	12.18	11.41	12.13	11.91	108.27	94.55	89.38	97.40
8	Co 94008	11.61	12.30	12.53	12.15	107.53	100.99	94.07	100.86
CD 5 %		NS	1.82	1.38	-	NS	10.33	8.50	-
CV %		8.25	7.90	6.06	-	5.35	5.71	5.01	-

Table 1: Conti….

Sr. No.	Genotypes	CCS (%)				Sucrose (%)			
		I Pl.	II Pl.	Ratoon	Mean	I Pl.	II Pl.	Ratoon	Mean
1	Co 0403	11.11	11.91	11.15	11.39	15.91	17.18	16.05	16.38
2	CoM 0326	11.09	11.39	10.86	11.11	16.04	16.43	15.67	16.05
3	CoN 03131	10.53	10.96	11.16	10.88	15.34	16.96	16.05	16.12
4	CoSnk 03632	9.82	11.93	8.96	10.24	14.08	15.82	13.05	14.32
5	CoSnk 03754	10.70	11.93	10.86	11.16	15.37	17.24	15.67	16.09
Standards									
6	CoC 671	12.31	12.45	12.33	12.36	17.70	17.99	17.96	17.88
7	Co 85004	11.26	11.64	11.47	11.46	16.20	16.87	16.50	16.52
8	Co 94008	10.77	11.20	10.02	10.66	15.58	16.99	14.65	15.74
CD 5 %		0.86	0.42	0.75	-	1.22	0.58	1.07	-
CV %		4.43	2.04	3.94	-	4.31	1.98	3.91	-

Table 1: Conti….

Sr. No.	Genotypes	Single Cane Weight (kg)				Number of Millables Canes / Ha			
		I Pl.	II Pl.	Ratoon	Mean	I Pl.	II Pl.	Ratoon	Mean
1	Co 0403	1.16	1.14	1.12	1.14	106.29	110.98	101.35	106.21
2	CoM 0326	1.15	1.06	1.06	1.09	109.75	103.33	92.71	101.93
3	CoN 03131	1.22	1.17	1.09	1.16	110.24	95.30	97.28	100.94
4	CoSnk03632	1.24	1.19	1.17	1.20	108.64	109.99	101.72	106.78
5	CoSnk03754	0.96	1.09	1.03	1.03	101.23	92.59	84.69	92.84
Standards									
6	CoC 671	1.14	1.19	1.14	1.16	98.51	92.09	85.18	91.93
7	Co 85004	1.04	1.10	1.09	1.08	102.22	93.33	87.16	94.24
8	Co 94008	1.06	1.21	1.05	1.11	100.24	97.16	90.12	95.84
CD 5 %		0.09	NS	NS	-	7.60	10.21	9.17	-
CV %		4.63	6.29	4.82	-	4.15	5.86	5.65	-

[MS received: January 12, 2014] *[MS accepted: February 24, 2014]*