PERFORMANCE OF RATOONING ABILITY OF MIDLATE MATURING SUGARCANE GENOTYPES IN SOUTH GUJARAT

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ABSTRACT

Performance of a set of 5 new sugarcane mid-late genotypes along with two standard checks Co 7219 and Co 86032 was examined during 2009-10 as first plant crop and in 2010-11 as its ratoon to study the productivity for cane yield, commercial cane sugar yield, number of millable canes at harvest and ratooning ability. The trial was conducted at Regional Sugarcane Research Station, Navsari Agricultural University, Nasvari (Gujarat) following Randomized Block Design with three replications. Results obtained from one plant crop and its ratoon trial revealed that genotypes CoSnk 05104, CoVSI 05122 and CoVSI 05123 performed better than the best check Co 86032 for all the characters measured in the trial. Moreover, these genotypes also manifested low yield reduction index for all the characters, which indicated that these genotypes possessed very good ratooning ability. Therefore, genotypes CoSnk 05104, CoVSI 05122 and CoVSI 05123 may be recommended for commercial cultivation to the farmers after through testing of their stability.

KEY WORDS: Ratoon, sugarcane,

INTRODUCTION

Sugarcane is an important commercial cash crop of India. It is grown in an area of 49.44 lakh hectares. The productivity of sugarcane in India is 68.6 t/ha, which is low when compared to other countries and sugar recovery is 10.17 per cent. In Gujarat, area, productivity and sugar recovery during 2010-11 are 190 thousand hectares, 72.4 (t/ha) and 9.99 per cent, respectively (Anonymous, 2012). Varietal improvement is the basic need to fulfill the requirement of farmers and sugar industry of the region. Farmers get good monetary return from ratoon crop, as it saves seed, land preparation operations and planting cost.

A set of midlate maturing varieties received under All India Co-ordinated Research Project on Sugarcane was multiplied and tested in regular trials in 2009-10 as first plant crop and its ratoon in 2010-11 to identify suitable high cane and sugar yielding variety having good ratooning ability for the benefit of farmers and sugar industry.

MATERIALS AND METHODS

Performance of a set of 5 new sugarcane genotypes under final evaluation stage and two checks Co 7219 and Co 86032 was examined during 2009-10 as first plant crop and

in 2010-11 as its ratoon to study the productivity for cane yield, commercial cane sugar, number of millable canes at harvest and ratooning ability. The trial was conducted at Regional Sugarcane Research Station, Navsari Agricultural University, Nasvari (Gujarat) following Randomized Block Design with three replications. The gross plot size was 6 m x 5.4 m and net plot was 5 m x 5.4 m and seed rate adopted was 12 eye buds/meter length. The soil of the experimental plot was deep black and clayey with good moisture holding capacity. All recommended package of practices were followed for plant and ratoon crops. The observations on cane yield, commercial cane sugar and number of millable canes were recorded at harvest in the main plant crop as well as in ratoon and yield reduction index were calculated as per the formula suggested by Joshi (1997). The data were analyzed as per the standard procedure described by Panse and Sukhatme (1978).

RESULTS AND DISCUSSION

The data on cane yield (t/ha), commercial cane sugar (t/ha), number of millable canes (000/ha) recorded in main plant crop and its ratoon at harvest and yield reduction index are presented in Table 1. It is observed that varietal differences were found significant for cane yield in main plant as well as in ratoon, whereas the difference between varieties for commercial cane sugar and number of millable canes was found significant in ratoon crop. Similar results were reported by Khot *et al.* (1997), Patel *et al.* (1999) and Patel and Mali (2001).

In plant crop, CoSnk 05104 recorded significantly the highest cane yield of 131.11 t/ha followed by CoVSI 05123 (127.77 t/ha) over the best standard check Co 86032 (113.20 t/ha). In ratoon, top ranking genotypes CoSnk 05104 (113.09 t/ha) and CoVSI 05121 (112.35 t/ha), were significantly out yielded the best standard check Co 86032 (93.95 t/ha). Similar results were reported by Khot *et al.* (1997), Patel *et al.* (1999) and Patel *et al.* (2010).

The highest commercial cane sugar was recorded by CoSnk 05104 (15.46 t/ha) followed by CoVSI 05121 (15.11 t/ha) and CoVSI 05122 (15.07 t/ha), which were found numerically superior to the best standard check Co 86032 (15.31 t/ha) in plant crop. In ratoon crop, CoVSI 05121 (14.41 t/ha) and CoSnk 05104 (13.98) recorded significantly higher commercial cane sygar than best check Co 86032 (11.62 t/ha). These results are in confirmation with Hasabnis *et al.* (1996) and Patel *et al.* (2010).

In plant crop, genotype CoSnk 05104 (123.20) recorded numerically higher number of millable canes followed by CoVSI 05123 (114.81) and CoVSI 05121 (111.6) over the best check Co 86032 (110.74), while in case of ratoon crop, genotype CoSnk 05104 (121.48) recorded significantly highest mlaable canes at harvest over better check Co 86032 (102.59). The genotypes CoVSI 05122 (113.7) and CoVSI 05121 (110.37) also recorded numerically higher number of millable canes at harvest in ratoon crop.

In sugarcane, ratooning ability of a variety is governed by genetic factor. More than 50 per cent of total cane area is under ratoon crop every year. To know the rationing ability, yield reduction index was worked out for all the genotypes for cane yield, commercial cane sugar and number of millable canes (Table 1). It was observed that for cane yield genotype CoVSI 05121 had the lowest yield reduction index (0.04) followed by CoVSI 05122 (0.10) and Co 05007 (0.11). Low yield reduction index

indicated that there was less reduction in cane yield of ratoon crop as compared to plant crop in these genotypes. Such genotypes are more desirable to sustain crop yield. While for CCS (t/ha), low yield reduction index was found in genotype CoVSI 05121 (0.05), CoSnk 05104 (0.10) and Co 05007 (0.12). For number of millable canes at harvest, low yield reduction index was obtained in genotype CoVSI o5122 (-0.039), Co 05007 (0.003), CoVSI 05121 (0.011) and CoSnk 05104 (0.014).

CONCLUSION

Results obtained from one plant crop and its ratoon trial indicated that genotypes CoSnk 05104, CoVSI 05122 and CoVSI 05123 performed better than the best check Co 86032 for all the characters measured in the trial. Moreover, these genotypes also manifested low yield reduction index for all the characters, which indicated that these genotypes possessed very good ratooning ability. Therefore, genotypes CoSnk 05104, CoVSI 05122 and CoVSI 05123 may be recommended for commercial cultivation to the farmers after through testing of their stability.

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Table 1: Cane yield (t/ha), CCS (t/ha), number of millable canes at harvest and yield reduction index recorded by mid-late sugarcane genotypes during 2009-10 (plant crop) and 2010-11 (ratoon crop)

Sr. No.	Genotypes	Cane Yield (t/ha)		Yield Reduction Index	CCS (t/ha)		Yield Reduction Index	Number of Millable Canes (000/ha) at harvest		Yield Reduction Index
		Plant	Ratoon		Plant	Ratoon		Plant	Ratoon	
1	**Co 05007**	111.60	98.77	0.11	14.78	13.03	0.12	105.67	105.31	0.003
2	**CoSnk 05104**	131.11	113.09	0.14	15.46	13.98	0.10	123.20	121.48	0.014
3	**CoVSI 05121**	116.79	112.35	0.04	15.11	14.41	0.05	111.60	110.37	0.011
4	**CoVSI 05122**	117.16	105.56	0.10	15.07	13.09	0.13	109.38	113.70	-0.039
5	**CoVSI 05123**	127.77	105.31	0.18	13.70	11.45	0.16	114.81	110.12	0.041
Standards										
1	**Co 7219**	98.15	82.72	0.16	12.98	10.98	0.15	99.62	91.48	0.082
2	**Co 86032**	113.20	93.95	0.17	14.98	11.62	0.22	110.74	102.59	0.074
CD at 5 %		11.04	12.88		NS	1.77		NS	12.34	
CV %		5.32	7.12		8.43	7.88		5.95	6.43	

[MS received: January 11, 2014] *[MS accepted: February 24, 2014]*