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Co 88017, A PROMISING SUGARCANE VARIETY

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Abstract : The results of the study on sixteen zonal varieties received from the All India Co-ordinated Project (AICRP) on Sugarcane along with Madhuri (CoTl 88322), the ruling variety in Kerala as check revealed that Co 88017 out yielded the check in tenns of cane yield as well as commercial cane sugar. It has recorded a cane yield of 102.5 t ha^{-1} and sugar yield of 13.18 t ha^{-1}. This variety was superior to many other entries tested in quality aspects of juice. Co 88017 was moderately resistant to red rot disease.

Key words : Cane yield, quality, screening, sugarcane.

INTRODUCTION

Sugarcane plays an important role in the national economy of India as it is sustaining the second largest agro-base in our country. But, the average productivity both in tropical and subtropical cane growing belts is far below the yield potential of the crop. In Kerala, sugarcane is mainly grown in the deltaic regions of the important rivers i.e., Pampa, Manimala and Achankoil and in the semiarid tracts of Palghat district covering an area of 8200 ha. The average cane yield in Kerala is 69 ha^{-1} although the yield potential is about 250 t ha^{-1} (Mahalingam, 1992). This is mainly due to the lack of a spectrum of varieties suitable for the different agroclimatic tracts. Hence concerted efforts are being undertaken to evolve high yielding and disease resistant varieties with high sugar content. The present study was undertaken to evaluate the performance of mid-late varieties received from ICAR centres for the acid alluvial soils of Kerala.

MATERIALS AND METHODS

The experiment was conducted at the Sugarcane Research Station, Thiruvalla during the crop seasons of 1991-92 and 1992-93 in randomised block design with 17 mid-late varieties replicated thrice. The plot size was 6.0 x 5.5 m^2 with six rows in each plot at 90 cm apart. The study involved two plant crops and one ratoon. The mid-late varieties tested were (1) Co 88002; (2) Co 88011; (3) Co 88016; (4) Co 88017; (5) CoM 88121; (6) Co S8025; (7) Co 88027; (8) Co 88028; (9) Co 88029; (10) Co 88030; (11) Co 88031; (12) Co 88032; (13) Co 88033; (14) Co 88071; (15) Co 88072; (16) Co 88073 and (17) CoTl 88322 (Madhuri) as check. Five hills were selected as observational plants at random from each plot to record stalk height, stalk weight, cane girth and juice quality. The juice quality study included SMT brix, sucrose per cent, commercial cane sugar per cent (CCS %) and purity. They were determined as per the procedures of Spencer and Meade (1955). The number of millable cane was counted for each plot and cane yield per plot was obtained by weighing the millable canes. The commercial cane sugar t ha^{-1} was computed from commercial cane sugar per cent and cane yield per ha. The crop was raised as per the package of practices recommendations of the Kerala Agricultural University (KAU, 1993) and harvested at maturity.

RESULTS AND DISCUSSION

The data on yield attributes revealed that the varieties significantly differed in stalk length, stalk weight, millable canes, cane yield and commercial cane sugar. Co 88017 had produced maximum millable canes (94300), cane yield (102.5 t ha^{-1}) and commercial cane sugar (13.2 t ha^{-1}) and it was significantly superior to

Table 1. Yield attributes and juice quality of sugarcane as influenced by varieties

Varieties	Millable cane ha^{-1} ('000)	Cane yield t ha^{-1}	SMT brix %	CCS %	Sucrose %	Purity %	Sugar yield t ha^{-1}	Single cane wt. kg	Stalk length, m	Cane thickness cm
Co 88002	68.35	53.64	18.04	11.93	16.93	93.82	6.94	0.884	2.08	2.14
Co 88011	62.03	38.53	19.77	11.87	17.28	87.37	4.58	0.754	2.07	2.46
Co 88016	69.80	47.63	21.27	13.09	18.87	88.68	6.41	0.723	2.15	2.31
Co 88017	94.32	102.47	19.35	11.15	17.78	91.84	13.18	0.908	2.28	2.82
CoM 88021	76.75	85.58	19.54	12.80	18.51	94.25	11.10	0.898	2.04	2.49
Co 88025	60.56	50.27	19.40	11.84	17.08	89.56	4.79	0.859	1.83	2.28
Co 88027	58.88	47.42	21.50	11.87	17.62	81.99	5.78	0.813	2.34	2.47
Co 88028	50.31	53.59	21.50	12.84	19.05	88.62	7.25	0.845	1.88	2.36
Co 88029	73.11	42.56	17.92	10.30	15.23	85.01	6.04	0.719	1.51	2.42
Co 88073	42.99	44.95	19.61	12.58	18.07	92.16	6.39	0.900	1.52	2.28
Co 88072	57.14	47.47	19.77	12.17	17.45	88.22	6.72	0.841	2.26	2.58
Co 88071	68.22	42.65	19.36	11.78	17.00	87.83	4.86	0.733	2.17	2.38
Co 88033	53.48	31.09	19.83	12.00	17.35	87.52	4.34	0.669	1.49	2.34
Co 88032	62.05	42.32	19.12	10.96	16.03	83.86	5.69	0.761	1.75	2.31
Co 88031	54.93	36.00	19.46	11.66	17.00	87.34	4.30	0.719	2.05	2.18
Co 88030	63.86	38.31	19.05	12.33	17.91	94.06	5.41	0.740	1.84	2.12
CoT1 88322 (Madhuri)	54.26	91.58	20.27	13.02	18.41	90.66	12.12	1.117	1.91	2.60
CD (0.05)	16.35**	9.53**	9.57**	1.19**	0.58**	2.69**	1.82**	0.105**	0.247**	NS

** Significant at 1 per cent level

all other varieties and was followed by CoT1 88322 and CoM 88121. Among the varieties, Co 88033 had produced the lowest cane yield (31.1). Co 88017 had also recorded maximum stalk height and cane girth (2.28 and 2.82 cm), while CoT1 88332 showed highest value for stalk weight (Table 1).Zende and Kibe (1984) reported that the number of tillers and millable canes are positively and significantly correlated with cane yield, while the stalk height has positive correlation with stalk girth (Balasundaram and Bhagyalakshmi,1978). Co 88017 had recorded maximum number of millable cane and highest values for stalk length and cane girth. These yield parameters might have attributed for this variety to produce maximum cane yield. The above results are in accordance with the findings of Singh *et al.* 1983, Malavia and Ramani (1992). The check variety CoT1 88322 had produced the second highest values for cane yield and commercial cane sugar. The millable cane count was comparatively lower than Co 88017 and CoM 88121, but recorded the highest stalk

weight. The number of millable canes had significant negative correlation with stalk weight (Malavia and Ramani, 1992). The reduced number of millable cane in CoTl 88322 might have adversely affected its cane yield although it is having maximum stalk weight. The expressions of all growth parameters as well as yield attributes were found to be at the lowest level in the case of Co 88033; Co 88031; Co 88032; Co 88029; Co 88027; Co 88016; Co 88011; Co 88073 and Co 88072 and recorded a cane yield less than 50 t ha^{-1}. These varieties were found unsuitable for the tract.

The data on juice quality also revealed that it varied with different varieties and was significant for SMT brix, sucrose, CCS and purity per cent. Among the varieties, Co 88016 had shown excellent juice quality as it has recorded maximum values for SMT brix (21.27) sucrose (18.87) and commercial cane sugar per cent (13.09) and was followed by CoTl 88322. However, the yield of 88016 was 53.51 per cent less than that of Co 88017. This might have resulted for this variety to record comparatively less commercial cane sugar as it is the contribution of cane yield and CCS per cent.

Patil and Singh (1990) observed a positive correlation of sugar yield with brix, sucrose and purity per cent of juice. The sucrose per cent of juice was found highly significant and positively associate with CCS per cent and CCS t ha^{-1} (Malavia and Ramani, 1992). The juice quality of Co 88017 was optimum and comparatively higher values were recorded for the quality parameters such as sucrose (17.78%), brix (19.35%), CCS (11.15%) and purity (91.84%). These factors have interacted with the cane yield and produced maximum sugar yield, while CoTl 88322 had recorded the second highest values for all the quality parameters studied. But the cane yield was 10.62 per cent less than the quantity produced by Co 88017. This has resulted in the reduction of commercial cane sugar to the tune of 8.04 per cent less than that of Co 88017.

It can be concluded that Co 88017 had outyielded the ruling check variety CoTl 88322 both for cane yield and commercial cane sugar. Although the juice quality parameters found highest with Co 88016 followed by CoTl 88322, both were inferior in terms of cane yield and commercial cane sugar per ha. Hence. Co 88017 can be promoted as a variety for the acidic alluvial soils of Kerala.

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