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Shetye VN
Agronomist, Agricultural Research Station, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Phondaghat, Tal. Kankavali, Dist. Sindhudurg, Maharashtra, India

Pawar DM
Agricultural Supervisor, Agricultural Research Station, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Phondaghat, Tal. Kankavali, Dist. Sindhudurg, Maharashtra, India

Deshmukh SV
Assistant Professor, Department of Soil Science and Agricultural Chemistry, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Dist. Ratnagiri, Maharashtra, India

Kudtarkar US
Assistant Professor, Department of Agronomy, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Dist. Ratnagiri, Maharashtra, India

Lohale SH
Ph.D. Scholar, Department of Agronomy, College of Agriculture, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Dist. Ratnagiri, Maharashtra, India

Corresponding Author:
Shetye VN
Agronomist, Agricultural Research Station, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Phondaghat, Tal. Kankavali, Dist. Sindhudurg, Maharashtra, India

Performance of sugarcane varieties grown in lateritic soils of Konkan region

Shetye VN, Pawar DM, Deshmukh SV, Kudtarkar US and Lohale SH

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Abstract

A field experiment was conducted at Sugarcane Research Station, Napane, and Tal. Vaibhavwadi, Dist. Sindhudurg of Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Dist. Ratnagiri, Maharashtra, India during the year 2021-22, 2022-23 and 2023-24 to study the performance of sugarcane varieties grown in lateritic soils of Konkan region. The experiment was laid out in a randomized block design taking eight varieties with three replications. The results of study indicated that significantly more millable cane per hectare and millable cane yield was recorded by the variety Co 92005.

Keywords: Sugarcane varieties, yield attributes, millable cane yield, economics

Introduction

Sugarcane is an important cash crop of India. It contributes approximately 80% of the world's sugar production. With increasing human population in the world, sugar demand has also gone up. Sugarcane is an important commercial crop of the country occupying around 58.83 Lakh hectares of land with the annual cane production of around 494.22 million tones and productivity is 84.01 t ha⁻¹ in the year 2022-23. In Maharashtra the area under this crop is 13.59 Lakh hectares with production of 123.97 million tones and productivity is 91.20 t ha⁻¹ during the year 2022-23. It indicates the importance and hold of sugar industry in the state.

In Konkan region of Maharashtra particularly in Sindhudurg district area under sugarcane cultivation is increasing day by day. During the year 2010-11 area under sugarcane in Sindhudurg district was 378.65 ha. During 2017-18 area under sugarcane was reached upto 1754.00 ha. The farmers in the Sindhudurg district are cultivating this crop as cash crop. However, the productivity of the crop is very low in Konkan region. There are many factor which are responsible for low productivity, Out of that selection of suitable variety is one of the important factor. Therefore it is necessary identify the suitable variety for konkan region to increase the productivity and profit of the farmer. To meet the needs of increasing population, productivity per unit area need to be increased as there is very little scope for horizontal expansion of area under sugarcane. Therefore this is possible mainly through selection of high yielding varieties, adoption of ideal agronomy practices and plant protection measures. Selection of suitable variety play a vital role in increasing sugarcane yield. While selection of unapproved, inferior variety affects the sugarcane production negatively. According to (Glaz and Gilbert, 2000) [3], sugarcane production can only be increased through the adoption of promising varieties and technologies. Sugarcane breeding and better agronomy practices have contributed to a huge increase in sugarcane yield (Abdul and Muhammad, 2018) [1]. Keeping these points in view, the present experiment was designed to study the performance sugarcane varieties grown in lateritic soils of Konkan region.

Material and methods

A field experiment was conducted at Sugarcane Research Station, Napane, and Tal. Vaibhavwadi, Dist. Sindhudurg of Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Dist. Ratnagiri, Maharashtra, India during the year 2021-22, 2022-23 and 2023-24 to study the performance of sugarcane varieties grown in lateritic soils of Konkan region. The experiment was laid out in a

randomized block design taking eight sugarcane varieties viz., CoM 0265, CoM 9057, Co 86032, Co 92005, Co 8014, Co 7527, MS 10001 and CoC 671 with three replications. The plant cane were taken during the year 2021-22 and 2023-24 and ratoon crop was taken during the year 2022-23. In case of plant cane seedlings were used for planting. The seedlings were planted at row spacing of 105 cm, keeping seedlings to seedling spacing 37.5 cm. Normal crop husbandry practices were followed for satisfactory crop growth.

Results and discussion

Millable cane height

The data presented in table 1 showed that on pooled basis there were significant difference in millable cane height among different sugarcane varieties. Sugarcane variety 10001 produced more millable cane height than sugarcane varieties CoM 0265, Co 92005 and Co 7527. However, it statistically at par with sugarcane varieties CoM 9057, Co 86032, Co 8014 and CoC

671 for millable cane height.

Girth of cane

An examination of the data presented in table 1 revealed that on pooled basis the girth of the cane differ significantly among different sugarcane varieties. Sugarcane variety MS 10001 recorded significantly maximum cane girth than rest of the varieties under study, except varieties CoM 0265, Co 92005, Co 7527 and CoC 671 which remained on par the variety MS 10001

Number of internodes

A perusal of the data presented in table 1 reveals that on pooled basis significantly more number of internodes per cane was recorded by the sugarcane variety MS 10001 than rest of the varieties under study except varieties CoM 0265, CoM 9057 and Co 92005 which behaved statistically in similar manner with variety MS 10001.

Table 1: Millable cans height, Girth of cane, Number of internodes, Weight cane⁻¹, No. of millable cane ha⁻¹ and millable cane yield as influenced by different varieties (Pooled mean)

Treatments	Millable cane height (cm)	Girth of cane (cm)	Number of internodes	Weight cane ⁻¹ (kg)	No. of millable cane ha ⁻¹	Millable cane yield (t/ha)
CoM 0265	204.08	2.83	25.00	1.33	72898	82.88
CoM 9057	218.66	2.80	24.70	1.31	69875	80.56
Co 86032	210.81	2.70	22.07	1.16	67994	69.24
Co 92005	191.14	3.04	24.44	1.29	74578	82.92
Co 8014	210.77	2.82	22.48	1.19	65642	69.90
Co 7527	196.98	2.99	22.74	1.30	71286	77.73
MS 10001	224.94	3.06	26.04	1.62	59595	81.52
CoC 671	221.02	2.89	23.96	1.62	55430	57.84
SE (m) ±	6.04	0.08	0.72	0.04	334	1.11
C. D. at 5%	17.23	0.23	2.05	0.11	952	3.17
General Mean	209.80	2.89	23.93	1.35	67162	75.32

Weight per cane

A critical examination of the data presented in table 1 revealed that on pooled basis there was statistically significant difference in weight per cane among different sugarcane varieties. Variety MS 10001 and CoC 671 given statistically more weight per cane than rest of the varieties under study.

Number of millable cane per hectare

It is apparent from the data presented in table 1 that on pooled basis the number of millable cane per hectare differ significantly among different varieties. Sugarcane variety Co 92005 recorded significantly more number of millable cane per hectare than rest of the varieties under study.

Millable cane yield

On pooled basis significantly more millable cane yield was recorded by the variety Co 92005 than rest of the varieties under study, except varieties CoM 0265, CoM 9057 and MS 10001 which behaved statistically in similar way with variety Co 92005.

The data indicates that on pooled basis the performance of sugarcane varieties differed significantly with respect to yield attributes and yield. Sugarcane variety MS 10001 recorded significantly maximum millable cane height, more girth of cane,

maximum number of internodes and weight per cane than rest of the varieties under study, except sugarcane varieties CoM 9057, Co 86032, Co 8014 and CoC 671 for millable cane height, sugarcane varieties CoM 0265, Co 92005, Co 7527 and CoC 671 for cane girth, sugarcane varieties CoM 0265, CoM 9057 and Co 92005 number of internodes and sugarcane variety CoC 671 for weight per cane which remained statistically at par with variety MS 10001. The variation in yield attributing characters might be due to genetic structure of varieties under study. Similar findings were also reported by Sohu *et al.* (2008) ^[4]. Significantly more millable cane per hectare and millable cane yield was recorded by the variety Co 92005 than rest of the varieties under study, except varieties CoM 0265, CoM 9057 and MS 10001 for millable cane yield which behaved statistically similar with variety Co 92005. Increase in millable cane yield is might be due to more number of millable cane per hectare and due genetic potential of variety under study. Similar observations were also reported by Chaudhari *et al.* (2014) ^[2]

Economics

Data presented in table 2 and 3 indicates that higher gross return, net return and Benefit cost ratio was given by the variety Co 92005, followed by variety CoM 0265.

Table 2: Economics of different sugarcane varieties at input cost

Treatments	Gross returns (Rs.)	Input cost (Rs.)	Net returns (Rs.)	B:C
CoM 0265	265216	101326	163890	2.62
CoM 9057	257792	101326	156466	2.54
Co 86032	221568	101326	120242	2.19
Co 92005	265344	101326	164018	2.62
Co 8014	223680	101326	122354	2.21
Co 7527	248736	101326	147410	2.45
MS 10001	260864	101326	159538	2.57
CoC 671	185088	101326	83762	1.83

Table 3: Economics of different sugarcane varieties at total cost

Treatments	Gross returns (Rs.)	Total cost (Rs.)	Net returns (Rs.)	B:C
CoM 0265	265216	165255	99961	1.60
CoM 9057	257792	164017	93775	1.57
Co 86032	221568	157980	63588	1.40
Co 92005	265344	165276	100068	1.61
Co 8014	223680	158332	65348	1.41
Co 7527	248736	162508	86228	1.53
MS 10001	260864	164529	96335	1.59
CoC 671	185088	151900	33188	1.22

Conclusion:

From the experiment conducted for three years it was concluded that sugarcane varieties Co 92005 and CoM 0265 should be grown in lateritic soils of Konkan region during *suru* season for obtaining higher millable cane yield and profit.

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