EXPOLRING RATOON PROSPECTIVE OF SUGARCANE VARIEITES / CLONES AT TOBA TEK SINGH

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ABSTRACT

Sugarcane is the crop that have the quality to sprout after its first harvesting, phenomenon known as ratooning. Among all other major crops, sugarcane ratooning is widely acceptable to farmers of the Punjab. The more the tillers grew, the higher are the chances of a greater number of stalks to be harvested. It is proven that more the number of stalks, the thinner is the diameter, finally results in more stalks and high production. Similarly, higher number of canes produce favorable ratoon. In this experiment, performance of Seven promising sugarcane varieties/clones along with the check variety CPF-246, were tested for their ratoon ability capacity at farmer's field at Toba Tek Singh during the year 2017-18. It has been found that one of the varieties S2008-FD-19 produced that maximum ratoon yield, U2003-US-633 produced the maximum sugar recovery and S2003-US-133 produced maximum number of mill able canes. The observing of the current analysis also revealed that S2003-US-633 and S2003-US-133 have significant potential for boom sugar recovery through breeding programs and by improving the production techniques.

Key words: Sugarcane, Yield, Ratoon ability, Punjab

INTRODUCTION

The solution of problems with low sugar yields and sugar recovery can be solved with the help of improved sugar cane varieties (3). Significant being done work is to increase the production of sugarcane using high-yielding varieties and the use of advanced production technologies (5). Ratoon crops are economical for Pakistani agricultural communities because production costs are 30% lower than crop plants, saving seed material provides additional benefits. However, for renewable plants, more than 25% of N fertilizer (8) should be used over an approved N dose.

The unique productivity potential of different varieties with renewable products is important for maintaining high productivity. Now the wide range of different varieties depends to a great extent on their reproductive potential. Therefore. sugarcane varieties that perform well in plants and renewable products should be promoted for commercial cultivation.

The purpose of this study was to assess the productivity and quality of the sugar cane regeneration of some of the promising sugarcane varieties/clones at the Usman farms, Chak No. 286 J.B. Toba Tek Singh.

MATERIALS AND METHODS

Study Area:

The study was conducted at the Farm area of Chak No. 286 J.B. Toba Tek Singh during crop season 2017-18. The soil is loamy with pH of 7.8, EC (0.87 dsm⁻¹) and organic matter (OM) of 0.73 (%).

Establishment of Experiment:

The experiment was arranged in randomized complete block design(RCDB) with three replications and plot size of 6 x 8 m. Seven sugarcane varieties/clones, viz; S2003-S2008-FD-19, US-633, S2003-US-133, CPF-246, CPF-247, CPF-249 and CPF-246 were obtained from Shakarganj Sugar Research Institute, Jhang and sown at farm area of Chak No. 286 J.B. on February 20, 2016. All standard agronomic the other farm practices and operations were carried out as and when required.

Crop was sown in 120 cm apart trenches at a seed rate of 75000 double budded setts per hectare. The fertilizer was applied @ 168-112-112 kg NPK per hectare to fresh crop and 30% more NPK was given to ratoon crop.

Data Recording and Statistical Analysis

Harvesting was completed on 10 December, 2017 and data 1st ratoon of crop was recorded different for parameters which include number of sprouts and cane count. Obtained data was statistically analyzed and Least Significant Difference (LSD) was performed. Final harvesting was completed in January, 20, 2018 and data regarding cane yield and sugar recovery was recorded.

Ten random selected canes of each variety were taken and sent to the laboratory for qualitative analysis and were crushed in a power cane crusher for juice extraction. Brix readings were documented by brix hydrometer standardized at 20°C. Sucrose percentage was determined by Horn's dry lead sub-acetate method of sucrose analysis (13). The commercial cane sugar (CCS %) was recorded in the laboratory using the below formula:

CCS% = 3P/2 {1-(F+5)/100}-B/2 {1-(F+3)/100}

Where

P stands for pol percentage (sucrose percentage), F for fiber percentage and B for Brix percentage (13). The data was analyzed statistically. The treatment means was compared by Fisher's analysis of variance techniques and least significant difference test (12).

RESULTS AND DISCUSSION

Tiller/Sprouts Population

the From farmer's perspective, farming is the most desirable feature. Good provides planting good planting position and end productiveness and better restorative ability of sugarcane plants (6). The extent and nature of tillering till maturity is largely a varietal character. It is also influenced by the light and temperature available in the field. The data in Table 1 show that there is significant difference no between the rods. The maximum number of sprouts (101.13) was observed in the S2008-FD-19. However, this difference did differ not significantly from the CPF-246 (100.13). **CPF-249** showed the least number of buds (82.27).

Sr. No.	Variety	Sprouts (000 ha ⁻¹)	Cane count/ Mill able canes (000 ha ⁻¹)	Cane Yield (t ha ⁻¹)	Sugar recovery (%)
2	S2008-FD-19	101.13a	92.17b	78.87b	10.48bc
3	S2003-US-633	89.32cd	83.57c	73.77c	11.29a
4	S2003-US-133	92.33c	97.13a	85.10a	10.81b
5	CPF-246	100.13ab	95.60ab	74.60c	10.04c
6	CPF-247	98.43b	85.40c	70.37d	10.02c
7	CPF-249	82.27d	84.13c	72.03d	10.15c

Table-1 Mean values of Parameters representing ratooning ability of different varieties

Cane Count/ Mill able Canes

Junejo *et al.* (7) claimed that mill able canes is an important sugar yield contributing factor Observations recorded in this study reveal (Table 1) that maximum number of cane count (97.13) were observed in S2003US-133. This variety showed significant difference from all the other varieties and no variety represented number of mill able canes up to the number represented by S2003-US-133. Minimum number of mill able canes (83.57) were observed in S2003-US-633. Maximum number of mill able canes in case of S2003-US-133 might be due to the higher number of sprout presence as compared to other varieties. This has also been claimed by Matin *et al.* (9) and Alam *et al.* (1).





Cane Yield

Cane yield is a polygenic character; multiple genes are involved controlling cane height, thickness, tillering, germination and internodes pattern. By and large plant characters like root system, leaf growth, vigor, lodging etc all in one form or the other affect yield. All the breeding programs, ever-evolving production technologies, development of newer technologies are aimed at enhancing the crop yield. This prime focus has enabled human being to pave the way for food security. From the observed data (Table 1), it is evident that maximum cane yield was observed in S2003-US-133 ($85.10 ext{ tha}^{-1}$) and showed significant difference with S2008-FD-19 which represented 78.87 t ha⁻¹ yield. It is noteworthy to mention

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that there was no significant difference in the number of sprouts among both varieties but there was significant difference in terms of cane count/ number of millable canes. Minimum cane yield was obtained in case of CPF-247 (70.37 t ha⁻¹).

Sugar Recovery (%)

Total soluble solid or brix (%) is the percent amount of sugars and minerals dissolved in water. Different chemicals can be considered as responsible factors for the fluctuation in the brix reading (MO *et al.*, 2018). Maximum sugar recovery (11.29%) was observed in S2003-US-633 while minimum (10.02 %) was found in CPF-247. It can be admitted that all the three evaluated parameters contributed to different levels for having significantly different Sugar recovery percentage

CONCLUSION

From above discussion, it is evident that number of sprouts are an important considerable factor for the sugar yield and sugar recovery. But it can also be admitted that in some situations, this trend is was not found in case of S2003-US-633 which stood at fourth number in case of number of sprouts, third in case of yield

of sugarcane but it gave maximum sugar recovery (11.29%) as compared to other 6 tested sugarcane varieties. It can be inferred all the factors that are important and good agronomic practices also contribute in enhancement of yield and sugar recovery.

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