

ADAPTABILITY OF PROMISING SUGARCANE CLONES/VARIETIES AT FARMER'S FIELD IN THAL AND SOUTHERN PUNJAB

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ABSTRACT

Some promising sugarcane clones/varieties of sugarcane research institute, Faisalabad which become moderately susceptible to red rot in North Punjab and some disease-free varieties were tested for their performance at five locations during February-March, 2016 in "Thal" and South Punjab. The trials were conducted at farmers' field using Randomize Complete Block Design (RCBD) with three replications. The data on germination%, tillers per plant, number of mill able canes, cane yield t/ha and commercial cane sugar %(CCS) were recorded during the course of study. The clone S2003-US-633 performed better as compared to other varieties with respect to yield. The CCS% of sugarcane clone S2003US-127 was statistically significant which was followed by others. In South Punjab S2006US-658 produced statistically significant cane yield.

INTRODUCTION

In Pakistan sugarcane is an important case crop. Sugarcane is grown on about one million hectares, with a total production of about 73 million tons (GOP 16-17). The contribution of the Punjab in the total cane production is around 60% sugarcane but varieties is one of the major factors responsible for low per acre sugarcane yield. Variety plays a fundamental key role both increasing and decreasing per unit-area sugarcane yield. Cultivation of good quality approved sugarcane varieties definitely improves yield, while use of

unapproved inferior quality cane varieties effects sugarcane production negatively as situation prevails today. The sugarcane crop is planted around such areas where sugar mills are installed. "Thal" and Southern Punjab are the areas with low rainfall, less humidity and high temperatures. South Punjab is declared as Red Rot disease free zone. The varieties for example BF-162 and SPF-234, both are early maturing, high yielding good ratoon crop but susceptible to rust and red rot in central and north Punjab but produce high cane & sugar yields in

South Punjab because it is declared as Red Rot disease free zone.

MATERIALS AND METHODS

The study was under taken on nine sugarcane varieties/ clones viz; S2003-US-127, S2003-US-633, S2006-US-658, S2008-FD-19, CPF-249, CPF-248, CPF-247 & CPF-246 (check variety) in "Thal" and South Punjab at four different locations during February-March 2016-17. The locations with varieties are as:

Sr. No.	Locations	Varieties
1.	Chak No.142/TDA Lalazar Layyah	S2003-US-127, S2003-US-633, S2006-US-658, S2008-FD-19, CPF-249, CPF-248, CPF-247 & CPF-246
2.	Chak No.327/E.B. Burewala	S2003-US-127, S2003-US-633, S2006-US-658, S2008-FD-19, CPF-249, CPF-248, CPF-247 & CPF-246
3.	MauzaAzeem Shah Khanpur	S2003-US-127, S2003-US-633, S2006-US-658, S2008-FD-19, CPF-249, CPF-248, CPF-247 & CPF-246
4.	Ittehad Sugar Mill Farm R.Y. Khan	S2003-US-127, S2003-US-633, S2006-US-658, S2008-FD-19, CPF-249, CPF-248, CPF-246&SPF-234

The experiments were laid out in Randomized complete block design (RCBD) with three replications and on an area of half an acre. Data on germination %, tillers/plant, mill able canes/ha, cane yield tones/ha and CCS% were recorded. Visual observations on disease information were also recorded. The collected data were analyzed statistically by employing the Fisher's analysis of variance technique (Steel *et al.*, 1997) using Statistix 8.1 (Analytical software, Statistix; Tallahassee, FL, USA, 1985-2003) compare the differences among treatments means with LSD test at 0.05 probability level.

RESULTS AND DISCUSSION

Chak No.142/TDA Lalazar, Layyah

A glance at the data given in table-1 revealed that variety CPF-249 and S2006-US-658 has out yielded all other the varieties significantly. The maximum cane yield produced by the variety can be attributed to higher tillers/plant and no. of canes/ha. The maximum CCS % was produced by the clone S2003-US-127 while S2006-US-658 and CPF-246 produced least CCS%. Clone S2003-US-778 showed the maximum germination percentage whereas S2008-FD-19 produced most tillers per plant. The results reported by Sarwar *et al.*, (2016) are in accordance with the present findings.

Chak No.327/E.B. Burewala

All the varieties showed better germination % with

CPF-247 at the top table-3. The maximum significant tillers/plant was given by S2008-FD-19 and CPF-249. The maximum no. of mill able canes/ha has direct effect on cane yield, hence S2008-FD-19 and S2006-US-658 has produced significantly the maximum cane yield t/ha and the lowest by CPF-248. Sarwer *et al.*, (2001) reveals the results similar to the present findings. CPF-247 has shown the highest ccs% the variety S2008-FD-19 statistically at par with CPF-247 however, CPF-249 produced less ccs%.

Mauza Azeem Shah, Khanpur

Significantly the maximum germination% was given by the variety CPF-246, however variety S2006US-658 statistically at par. The variety S2008FD-19 gave the lowest germination% but produced significantly more tillers/plant as compared to other given in table-4. The variety S2006-US-658 gave significantly more cane yield, However, clones/varieties S2003-US-633, CPF-249 and CPF-246 are statistically at par with the aforesaid. The variety CPF-248 produced the less cane yield t/ha than the prior mentioned varieties. The standard variety CPF-248 had produced maximum ccs % and is followed by S2006-US-658. Aslam *et al.*, (1998) expressed variations in different cane yield parameters of cane varieties.

Ittehad Sugar Mill, R.Y.Khan

The data given in table revealed that the variety CPF-246 gave the significantly

higher germination% but the variety SPF-234 produced lowest germination%. Maximum tillers/plant were obtained by variety CPF-249 & SPF-234 however, varieties S2006-US-658, S2008-FD-19, S2003-US-633 and CPF-248 are statistically at par with the prior mentioned varieties. The sugarcane variety CPF-246 have produced significantly higher no. of millable canes/ha however, variety S2008-FD-19 statistically at par with CPF-246 variety S2003-US-127 had produced the less no. of millable canes/ha. Maximum cane yield t/ha produced by varieties S2006-US-658, S2003-US-633, CPF-249, S2003-US-127 and CPF-246 respectively, however, variety S2008-FD-19 statistically at par with the aforesaid varieties. The ccs% of S2006-US-658 is the maximum among the cane varieties under test.

Summary

The summary table depict that the sugarcane clones/varieties S2006-US-658, S2008-FD-19 and S2003-US-633 increased 22.3%, 9.0% and 1.8% cane yield tonnes/ha over the check variety i.e. CPF-247. The sugarcane variety S2003-US-127 showed the less cane yield percent i.e. 6.4%. Whereas, increase ccs % concerned the sugarcane clones/varieties that's are S2008-FD-19, S2003-US-127, S2003-US-633 and S2006-US-658 produced 5.0%, 3.7%, 1.7% and 0.1% increase ccs% over the check variety CPF-247.

Table-1 Chak No.142/TDA Lalazar, Layyah

Sr. No.	Varieties / clones	Germ. %	Tillers / plant	Canes / Ha	Yield (t/ha)	CCS %
1.	S2008-FD-19	62.96 ab	1.92 a	173.60 a	107.00 b	12.63 c
2.	S2006-US-658	57.90 bc	1.78 ab	168.07 a	112.37 ab	11.70 d
3.	S2003-US-633	55.18 cd	1.76 ab	161.10 a	88.87 c	13.92 a
4.	S2003-US-127	48.89 d	1.62 ab	143.10 b	90.23 c	13.51 ab
5.	CPF-249	49.14 d	1.75 ab	130.50 bc	123.53 a	12.60 c
6.	CPF-248	63.70 ab	1.65 ab	131.97 bc	84.70 c	12.59 c
7.	CPF-247	68.02 a	1.27 b	115.63 c	86.13 c	12.70bc
8.	CPF-246 (check)	55.35 cd	1.19 b	130.15 bc	82.21 c	11.35 d
LSD at 0.05		7.05	0.56	17.88	15.42	0.82

Table-2 Chak No.327/E.B.Burewala

Sr. No.	Varieties / clones	Germination %	Tillers / plant	Canes / ha	Yield (t/ha)	CCS %
1	S2008-FD-19	58.99 b	1.63 a	203.3 a	165.0 a	12.80 ab
2	S2006-US-658	59.48 b	0.53 c	196.7 b	171.6 a	10.89 d
3	S2003-US-633	66.59 ab	1.01 b	170.3 b	111.5 c	13.10 a
4	S2003-US-127	69.78 a	1.44 a	181.6 ab	140.3 b	12.54abc
5	CPF249	60.70 b	1.48 a	206.6 a	106.0 d	12.07bc
6	CPF 248	60.66 b	0.41 c	126.6 c	74.33 e	12.11bc
7	CPF 247	71.50 a	0.53 c	186.6 ab	120.0 c	11.89 c
8	CPF 246 (check)	63.57 b	1.03 b	173.3 b	139.3 b	11.80 c
LSD at 0.05		7.44	0.45	22.93	13.88	0.87

Table-3 MauzaAzeem Shah Khanpur

Sr. No.	Varieties / clones	Germination%	Tillers / plant	Canes / ha (000)	Yield (t/ha)	CCS %
1	S2008-FD-19	31.85 c	3.07 a	83.37 c	105.0 b	12.54
2	S2006-US-658	56.94 a	2.91 b	116.6 a	116.6 a	11.27
3	S2003-US-633	46.48 b	2.27 b	104.4 ab	113.3 ab	12.99
4	S2003-US-127	51.19 ab	2.02 b	105.1 ab	109.3 ab	12.06
5	CPF-249	41.39 b	1.86 b	103.3 ab	114.9 ab	11.92
6	CPF-248	42.94 b	1.83 b	99.62 bc	93.4 c	11.57
7	CPF-247	37.60 c	1.91 b	96.61 bc	97.5 c	11.84
8	CPF 246 (check)	41.89 b	1.77 b	95.01 bc	98.3 c	11.60
LSD at 0.05		8.48	0.73	14.37	10.52	N.S

Table-4 MauzaAzeem Shah Khanpur

Sr. No.	Varieties / clones	Germination %	Tillers / plant	Canes / ha (000)	Yield (t/ha)	CCS %
1.	S2008-FD-19	37.31 cd	1.94 ab	108.33 ab	95.36 ab	11.89
2.	S2006-US-658	44.91 bc	1.95 ab	93.65 cd	103.32 a	10.70
3.	S2003-US-633	52.87 b	1.71 ab	104.48 bc	101.66 a	13.03
4.	S2003-US-127	37.31 cd	1.33 b	85.04 d	99.85 a	12.09
5.	CPF-249	50.65 b	2.34 a	103.33 bc	101.66 a	12.11
6.	CPF-248	51.11 b	1.63 ab	94.92 cd	86.70 b	12.02
7.	CPF-247	33.79 d	2.15 a	90.03 d	85.04 b	12.52
8.	CPF-246 (check)	68.33 a	1.42 b	119.95 a	98.34 a	11.27
LSD at 0.05		10.05	0.73	12.99	12.85	N.S

Summary Table: Pooled means of 4 locations for 8 clones/varieties during 2016-17

Sr. No.	Variety	Yield	Increase Yield %	CCS%	Increase CCS %
1	S2008-FD-19	118.1	13.0	12.5	8.3
2	S2006-US-658	126.0	20.5	11.1	-3.2
3	S2003-US-633	103.8	-0.7	13.3	15.3
4	S2003-US-127	109.9	5.1	12.6	9.1
5	CPF-249	111.5	6.7	12.2	5.8
6	CPF-248	84.8	-18.9	12.1	4.9
7	CPF-247	97.2	-7.1	12.2	6.4
8	CPF-246 (check)	104.5	0.0	11.5	0.0

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