

# PROFICIENCY OF SUGARCANE CLONES/ VARIETIES AT DIFFERENT LOCATIONS IN THAL AND SOUTHERN PUNJAB

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## ABSTRACT

The performance of promising varieties was compared with already released. The varieties trial was conducted at four different sites in Punjab, it is an essential component of sugarcane research and thus provides an important basis of recommendations to growers. The objective of this paper is to evaluate promising varieties under different ecological zones. Seven sugarcane promising and two commercial clones were evaluated. These clones were tested for their performance at four locations during Feb-March-2017 in "Thal" and South Punjab viz; Karampur Mailsi, Layyah, Alipur and Khanpur. The trials were conducted at farmer's field using RCBD with three replications. The data on germination%, Tillers/Plant, number of mill able cane, cane yield t/ha and commercial cane sugar% (CCS) were recorded during the course of study. Overall, pooled mean of four locations indicate that cane yield of clone S2003-US-127 produced statistically higher significant 124.64 t/ha cane yield as compared HSF-240 that produced statistically lower yield i.e. 103.14 t/ha. The Brix% of overall mean of four locations results S2003-US-633 was statistically significant i.e. 24.47% and Brix% of overall mean of four locations results S2008-AUS-134 was statistically lower i.e. 19.38%.

## INTRODUCTION

This mix of trial types provides scientists with the necessary information required to make informed variety recommendations to growers. Trial specific sites are strategically selected based on the need for information regarding variety performance in particular areas, and on the similarities of the sites to the general production conditions within a region (Redshaw, 1999). Furthermore, additional trials are also regularly established in order to answer 'specific' variety concerns within the different production regions. Sugarcane is the 2<sup>nd</sup> major cash crop of the Pakistan,

where it is grown on commercial scales in three provinces i.e. Punjab, Sindh and KPK. The cane and sugar yield obtained in our country is still less than that of other developed cane growing countries of the world. This is mainly due to unavailability of new sugarcane varieties having high cane yield and sugar potential (Afghan *et al*, 2013). Variety plays a fundamental key role both increasing and decreasing per unit area sugarcane yield. The sugarcane crop is planted around such areas where sugar mills are installed "Thal" and Southern Punjab are areas with low rainfall, less humidity and high

temperatures. The crop produces high cane and sugar yields in South Punjab because it is declared as Red Rot disease free zone.

## MATERIALS AND METHODS

The study was comprised on nine sugarcane clones / varieties viz; S2003-US-127, S2003-US-633, S2005-US-54, S2006-US-658, S2008-FD-19, S2008-AUS-130, S2008-AUS-134, CPF-249 and HSF-240 at four different locations during February-March 2017-18 in "Thal" and South Punjab. The detail of locations with sugarcane clones / varieties are as under in Table No. 1:

Sr. No.	Locations	Sugarcane Clones / Varieties
1.	Kotli Mahtam Karampur Mailsi	S2003US-127, S2003US-633, S2005US-54, S2006US-658, S2008FD-19, S2008AUS-130, S2008AUS-134, CPF-249 and HSF-240.
2.	Chak No. 142/TDA Lalazar Layyah	-do-
3.	Mauza Mudwala Alipur	-do-
4.	Chak No 8/P Khanpur	-do-

**Table No. 1**

The experiments were laid out in RCBD with their replications on an area of half acre. Data on germination % Tillers/Plant, no of millable canes /ha. Cane yield tones/ha and brix% with hand refractometer were recorded by using the standard procedure. The data was analyzed by employing the Fisher's analysis of variance technique (Steel *et.al.* 1997) compare the difference among treatments means with LSD test at 0.05 probability level.

## RESULTS AND DISCUSSION

### Mauza Kotli Mahtam Karampur Mailsi

The data in Table I revealed that the sugarcane clones S2003-US-127 & S2008-FD-19 produced the statistically significant cane yield i.e. 139.06 & 138.52 tones/ha as compared to others. The sugarcane clones / variety S2003-US-633, CPF-249, S2006-US-658, S2008-AUS-130 gave the cane yield 134.68, 134.19, 133.47 and 131.69 tones/ha respectively

statistically at par with aforesaid two sugarcane clones. The statistically lower cane yield was produce by HSF-240 120.64 tones/ha.

The sugarcane clone S2003-US-633 produced higher brix% 23.06 which was followed by others. The lower brix% i.e. 19.76 recorded by S2008-AUS-130. The results reported by (Sarwar *et. al* 2016) are shown in Table No. 2 are in accordance with the present findings.

**Table No. 1**

Sr. No.	Varieties/ Clones	Germination %	Tiller/ plant	Canes/ ha (000)	Cane Yield (t/ha)	Brix%
1	S2003-US-127	47.04 BC	1.54	118.54 CD	139.06 A	22.7
2	S2003-US-633	54.18 A	1.52	127.94 BC	134.68 AB	23.6
3	S2005-US-54	47.72 B	1.06	108.25 D	122.25 B	20.47
4	S2006-US-658	40.42 E	1.13	114.05 CD	133.47 AB	20.17
5	S2008-FD-19	48.36 B	1.91	152.11 A	138.52 A	20.53
6	S2008-AUS-130	43.49 CDE	1.32	150.41 A	131.69 AB	19.76
7	S2008-AUS-134	48.31 B	1.39	114.74 CD	121.13 B	18.19
8	CPF-249	45.34 BCD	1.15	136.49 AB	134.29 AB	22.3
9	HSF-240	44.87 BCD	1.08	146.89 A	120.64 B	20.06
	<b>LSD at 0.05</b>	<b>1.7223</b>	<b>N.S</b>	<b>8.3336</b>	<b>6.7655</b>	<b>N.S</b>

**Chak No. 142/TDA Lalazar Layyah**

The perusal of the data in table-3 depicted that the sugarcane clone S2003US-633 gave the significantly more germination 61.58% while the sugarcane clones S2006US-658, S2008FD-19, CPF-249, and HSF-240 showed the lowest. Significantly maximum tillers/plant (1.8) was produced by S2008FD-19, while the sugarcane clone

S2003US-127 produced significantly less tillers/plant (1.00). The clone S2003-US-633 and HSF-240 produced statistically high no. of '000' canes/ha 135.27 and 132.72 having same letter while the sugarcane clones S2006US-658 and CPF-249 gave the 121.92 and 120.56 thousand canes/ha which were statistically at par with the aforesaid clones. The sugarcane clone S2003US-127 gave the statistically

significant cane yield i.e. 127.56 tones/ha whereas, the sugarcane clone S2008AUS-130 produced the lowest cane yield i.e. 99.59 tones/ha. The sugarcane clone S2003-US-633 gave the highest brix% 24.86 while the sugarcane clones S2008AUS-134 showed less brix i.e. 18.13%. The findings of (Sarwar *et al*, 2017) agree with these findings.

**Table No. 2**

Sr. No	Varieties/ Clones	Germination%	Tiller/plant	Canes/ Ha (000)	Cane Yield (t/ha)	Brix%
1	S2003-US-127	52.75 BC	1.003 C	107.32 BC	127.56 A	22.73
2	S2003-US-633	61.58 A	1.38 B	135.27 A	123.62 ABC	24.86
3	S2005-US-54	54.50 B	1.03 C	101.17 C	102.42 D	20.73
4	S2006-US-658	46.72 DEF	1.07 BC	121.92 AB	122.48 ABC	22.2
5	S2008-FD-19	44.92 EF	1.80 A	114.98 BC	109.74 CD	21.5
6	S2008-AUS-130	49.15 CDE	1.26 BC	116.55 B	99.59 D	21.73
7	S2008-AUS-134	49.47 CD	1.38 B	116.59 B	109.96 BCD	18.13
8	CPF-249	47.72 DEF	1.03 C	120.56 AB	127.12 AB	23.46
9	HSF-240	47.88 DEF	1.10 BC	132.72 A	109.52 CD	21.13
	<b>LSD at 0.05</b>	<b>2.069</b>	<b>0.1602</b>	<b>7.135</b>	<b>8.2307</b>	

**Mauza Mudwala Alipur**

All the sugarcane clones / varieties showed better germination% with S2005-US-54 at the top table-3. The tillers/plant were non-significant. The maximum no.

of millable canes/ha has direct effect on cane yield, hence sugarcane clones S2008-FD-19, and S2003-US-127 have produced significantly the maximum cane yield tones/ha and lowest by HSF-240. (Aslam *et*

*al*, 2014) reveals the results similar to the present findings. The sugarcane clone S2003-US-633 has shown the highest brix% however the sugarcane clone S2008-AUS-134 produced less brix%.

**Table No. 3**

Sr. No.	Varieties/ Clones	Germination %	Tiller/ plant	Canes/Ha (000)	Cane Yield (t/ha)	Brix%
1	S2003-US-127	56.96 B	1.02	100 DE	120 A	22.8
2	S2003-US-633	77.18 A	1.32	110 C	115.22 AB	24.74
3	S2005-US-54	79.70 A	1.12	95.78 E	104.28 CD	20.93
4	S2006-US-658	75.33 A	1.15	103.89 CD	110.50 ABC	22.05
5	S2008-FD-19	59.63 B	1.56	126.94 A	117.20 A	21.59
6	S2008-AUS-130	59.11 B	1.44	104.83 CD	104.50 CD	19.76
7	S2008-AUS-134	76.25 A	1.28	108.54 C	112.21 ABC	18.19
8	CPF-249	73.04 A	1	103.89 CD	105.39 BCD	22.54
9	HSF-240	59.33 B	1.09	118.22 B	98.04 D	21.49
	<b>LSD at 0.05</b>	<b>5.1936</b>	<b>N.S</b>	<b>3.2731</b>	<b>5.0257</b>	

**Chak No. 8/P Khanpur**

Significantly the maximum germination% was given by sugarcane clones HSF-240, S2006-US-658 and S2005-US-54 as compared to other given in table-4. The variety CPF-249 gave the lowest germination% but produced significantly more tillers/plant however, the sugarcane

clones S2003-US-127, statistically at par. The sugarcane clone S2005-US-54 gave the lowest tillers/plant. The sugarcane clones S2003-US-127 and S2006-US-658 gave significantly higher cane yield as compared to others in table-4. The variety HSF-240 produced the less cane yield

t/ha as compared to others. The sugarcane clone S2003-US-633 produced the maximum brix% 24.67 and this was followed by S2003-US-127 which gave 23.67% brix sarwar et.al (2018) and Aslam et.al (1998) expressed variations in different cane yield parameters of cane varieties.

**Table No. 4**

Sr. No.	Varieties/ Clones	Germination %	Tiller/ plant	Canes/Ha (000)	Cane Yield (t/ha)	Brix%
1	S2003-US-127	48.00 B	2.01 AB	96.39 CD	111.95 A	23.67
2	S2003-US-633	49.33 B	1.60 BC	103.06 CD	102.69 B	24.67
3	S2005-US-54	66.00 A	1.11 D	98.89 CD	106.11 B	21
4	S2006-US-658	64.45 A	1.14 D	100.56 CD	110.83 A	21.67
5	S2008-FD-19	44.22 BC	2.12 A	124.26 A	90.74 C	22.67
6	S2008-AUS-130	45.78 B	1.39 CD	108.15 BC	91.57 C	22.33
7	S2008-AUS-134	47.11 B	1.38 CD	109.72 ABC	93.70 C	23
8	CPF-249	34.89 D	2.07 A	109.91 ABC	103.70 B	22
9	CHSF-240	65.56 A	1.20 D	119.63 AB	84.35 D	21
	<b>LSD at 0.05</b>	<b>6.99</b>	<b>0.43</b>	<b>15.75</b>	<b>4.31</b>	<b>N.S</b>

**Table No. 5 Summary Table (4 locations pool data)**

Sr. No.	Variety	Yield (t/ha)	% Increase	Brix %	% Increase
1	S2003-US-127	124.64	20.85	22.97	9.80
2	S2003-US-633	119.05	15.43	24.47	16.97
3	S2005-US-54	108.76	5.45	20.78	-0.67
4	S2005-US-658	119.32	15.69	21.52	2.87
5	S2008-FD-19	114.05	10.58	21.57	3.11
6	S2008-AUS-130	106.84	3.59	20.89	-0.14
7	S2008-AUS-134	109.25	5.92	19.38	-7.36
8	CPF-249	117.62	14.04	22.57	7.89
9	HSF-240	103.14	0.00	20.92	0.00

## CONCLUSION

Average data presented in summary table revealed that variety S2003-US-127 gave the highest yield and produced 20.85% more yield than check variety HSF-240. On the other hand, variety S2003-US-633 gave the maximum brix percent of 24.47 that is 16.97 % more than the check variety HSF-240.

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