

Scientific Notes

Performance of Some Varieties/Promising clones in the Sandy soil of Setabganj Sugar Mills

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Sugarcane varieties after a considerable period of cultivation show a tendency to decline in yield and vigour (Barnes, 1954 and Humbert, 1959). To maintain high yield it is necessary to replace varieties every few years with new clones (Poehlman and Barthakur, 1969). The varieties now grown in the sugar mill zones of Bangladesh are all recommended varieties but all of them are not showing good performance in all ecological zones. For example, four recommended varieties Isd-1/53, Isd-2/54, Isd.16 and L.J.C. are not performing well in the sandy soils of Setabganj Sugar Mills (STSM) although they are doing well in other mill zones. Considering the fact an experiment with 25 varieties/promising clones having higher percent of sucrose content was conducted in the sandy soil of STSM in order to find out suitable varieties/clones for the area.

Twenty five varieties/promising clones including two check varieties (Isd.2/54 and Isd.16), I-2/66, I-21/75, I-24/76, I-25/80, I-41/75, I-59/74, B.O. 70, I-70/79, I-80/80, I-91/79, I-96/74, I-96/80, I-112/76, I-119/77, M.147/44, I-147/77, I-258/77, I-354/77, I-491/76, Kallanpur, Mohishkundu, Nagarbari and the newly released variety Isd.17 were used as experimental materials. The experiment was laid out in a randomized block design with three replications and canes were planted on 15th November, 1984 at the Protap farm of STSM. Plot size was 5m x 3m where row to row distance maintained 1 metre. Sugarcane setts were planted in trenches following half-overlapping method and fertilizer was applied as per recommended dose. Normal cultural practices were done from time to time to provide optimum conditions for growth and development. The canes were harvested on 17th January, 1986 and data were recorded on height (m), number of millable cane, yield per hectare and percent infected stalk by Top Shoot Borer (TSB) and Stem Borer (SB). The average values of all parameters were statistically analysed and the differences were determined through DNMR test.

No varieties/clones was found to differ significantly for their height from the standard varieties except M.147/44 which produced the tallest cane than both standards (Table 1). The clone I-119/77 was the shortest cane and was significantly shorter than Isd-2/54.

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Table 1. Mean values of different parameters of different varieties/clones planted in the sandy soil of Setabganj Sugar Mills.

Varieties/ clones	Height (m)	Girth (cm)	No. of millable cane ($\times 10^3/\text{ha}$)	TSB and SB infested stalk (%)	Yield (TCH)
Isd.2/54	1.68 bcdef*	2.03 gh	76.67 abc	32.67 cdef	38.00 efghi
Isd.16	1.53 efg	2.10 cdefgh	45.33 ef	35.00 bcdef	27.67 ijk
I-2/66	1.50 efg	2.18 bcdefg	49.33 de	50.00 a	26.00 k
I-21/75	1.47 fg	2.16 bcdefg	50.89 de	37.33 abcde	27.22 jk
I-24/76	1.82 abcd	2.11 cdefgh	89.33 a	25.00 efg	66.67 a
I-25/80	1.92 abc	2.20 bcdefg	72.67 bc	22.67 fg	44.83 cde
I-80/80	1.78 abcde	2.07 efgh	81.56 ab	25.00 efg	52.17 bc
I-41/75	1.52 efg	2.09 defgh	54.89 de	32.67 cdef	31.33 ghijk
I-59/74	1.87 abcd	2.29 abc	69.56 bc	30.00 defg	44.33 cdef
Isd. 17	1.89 abc	2.24 abcdef	79.11 abc	35.00 bcdef	59.50 ab
B.O. 70	1.72 abcdef	2.27 abcd	50.00 de	25.00 efg	31.67 ghijk
I-70/79	1.69 bcdef	2.12 cdefg	55.33 de	40.00 abcd	39.67 defgh
I-91/79	1.77 abcde	2.06 fgh	82.67 ab	25.00 efg	54.50 bc
I-96/74	1.73 abcdef	2.02 gh	82.67 ab	45.00 abc	38.83 defgh
I-96/80	1.65 cdef	1.96 h	52.22 de	30.00 defg	29.00 hijk
I-112/76	1.68 bcdef	2.21 abcdefg	50.67 de	35.00 bcdef	31.33 ghijk
I-119/77	1.37 g	2.08 defgh	31.33 f	47.33 ab	15.17 l
M-147/44	2.00 a	2.24 abcdef	74.45 abc	35.00 bcdef	52.33 bc
I-147/77	1.76 abcde	2.32 ab	45.33 ef	45.00 abc	33.83 fghijk
I-258/77	1.50 efg	2.40 a	52.67 de	37.67 abcde	37.83 efghij
I-354/77	1.76 abcde	2.07 efgh	71.78 bc	50.00 a	49.17 bcd
I-491/76	1.59 defg	2.04 gh	64.00 cd	17.67 g	34.83 efghijk
Kallanpur	1.85 abcd	2.12 cdefg	70.22 bc	27.33 defg	54.22 bc
Mohiskundu	1.96 ab	2.26 abcde	72.45 bc	40.00 abcd	55.00 bc
Nagarbari	1.84 abcd	2.25 abcde	71.56 bc	35.00 bcdef	40.22 defg.

*Figures in column(s) accompanied by similar letter(s) do not differ significantly at 0.05 level as per DNMR test.

This difference in height might be due to differential response of the varieties and clones with the environment. Regarding cane girth, most of the varieties and clones produced insignificant diameter with the standard varieties (Table 1). Only the girth of I-258/77 and I-119/77 was significantly higher than both standards. None of the varieties and clones was found statistically less in diameter than the standard varieties. The various diameter of different varieties and clones might be due to different combined effect of genotype and environment. In case of millable cane, neither of the varieties nor clones was found to produce significantly more or less number than both the two standard varieties (Table 1). The maximum number of millable cane was produced by I-24/76 and was significantly higher than Isd.16. On the contrary, the minimum number was produced by I-119/77 and was statistically shorter than Isd.2/54. The various number of millable cane of different varieties and clones might be due to varietal

characteristics and their response to the environment. The clone I-491/76 was significantly resistant to Top Shoot Borer (TSB) and Stem Borer (SB) over the standard varieties. All the remaining varieties/clones were statistically equal in resistance to the standard varieties except I-2/66, I-354/77 and I-119/77 which exhibited significantly higher percent of susceptibility to the insects. The different rate of infection by TSB and SB to various varieties and clones might be due to differential reaction of the varieties/clones to the insect pests. In respect of ton cane per hectare, the clone I-24/76 outyielded all other varieties/clones and was significantly higher than the standard varieties (Table 1). The varieties/clones Kallanpur, Mohiskundu, I-80/80, I-17, I-91/79, M.147/44 and I-354/77 also produced significantly higher yield than the standards I-2/54 and I-16 while the clones Nagarbari, I-96/74, I-70/79, I-59/74 and I-25/80 produced statistically higher yield than the standard I-16 only. It is observed in most cases that the varieties/clones having tall cane, more diameter and maximum number of millable cane have produced higher yield per hectare. The result partially corroborated with the findings of Singh and Sangwan (1980) where they stated that attributes like height and diameter contributes towards cane yield. The result was also supported by the findings of Poehlman and Barthakur (1969) where they reported that height, thickness of stalk, and tillering ability of the clone all contribute to the tonnage of cane harvested per hectare. SRI Annual Report (1979) reported that in spite of higher infestation rate by TSB and SB in I-112/67 the yield was still higher than the control (Co. 1158) which is partially true in case of present findings.

From the results it was found that the variety I-17 and the clones I-24/76, I-91/79, Mohiskundu and Kallanpur were better in their performance. Hence, the variety I-17 may be cultivated in the sandy soil of STSM. The promising four clones may also be cultivated after release.

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