

Performance of Some Selected Sugarcane Varieties In Farmers Field Condition Under Tista Meander Floodplain Soils

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ABSTRACT

A comparative study was undertaken with six newly released sugarcane varieties viz. Isd 31, Isd 32, Isd 33, Isd 34, Isd 35 and Isd 36 at farmers field of Joypurhat sugar mills under Tista Meander Floodplain soils. The results revealed that Isd 35 showed the highest yield of 106.72 t ha⁻¹ followed by 104.17 t ha⁻¹ in Isd 36 and 103.45 t ha⁻¹ in Isd 34 among the newly released varieties at Ramvadrapur location. On the other hand Isd 31 produced the highest yield of 97.71 and 91.14 t ha⁻¹ at Vadsha and Mongalbaria locations respectively. So there is a great scope to increase productivity of sugarcane by using newly released varieties in farmers fields in Tista Meander Floodplain soils.

Key words : Performance, sugarcane varieties, tista meander floodplain soils.

INTRODUCTION

Developed sugarcane varieties by Bangladesh Sugarcane Research Institute do not perform equally in all Agro-Ecological Zones (Miah *et al.*, 1994). The yield of a particular variety depends upon the heredity potential of the genotype and environment where it is exposed to during the course of its life cycle (Yadava, 1993). It is an obscure and puzzling problem to scientists, growers and processors. Yield trial of newly developed promising clones in the different agro-ecological zones specially in the farmer's field before releasing as varieties for commercial cultivation is very essential. The varieties grown in the sugar mill zones of Bangladesh are not showing production in farmers field equally (Paul *et al.*, 1994). It is important to show the maximum yield potential of BSRI released cane varieties to increase cane productivity and economic benefit of the farmers for sustainable sugarcane cultivation. Soil is important to screen out sugarcane varieties suitable for Tista Meander Floodplain soils. The information would be useful to sugar industry as well as to gur makers. Considering the fact, a study was undertaken at Joypurhat sugar mills farmers field of the agro-ecological zone (Tista Meander Floodplain soils) to evaluate performance of those newly released varieties.

MATERIALS AND METHODS

The experiment was conducted at Joypurhat sugar mills farmers field under Tista Meander Floodplain soils during the cropping season 2004-2005 with six newly released varieties viz. Isd 31, Isd 32, Isd 33, Isd 34, Isd 35 and Isd 36. The experiment was laid out in a Randomized Complete Block (RCB) design with three replications at three

locations of this agro-ecological zone. Plantation was done with two budded soil bed settlings in the end of December, 2004. Plot size was 8m x 8m where row to row distance was maintained one meter. Necessary intercultural operations were done as and when required. Data were collected at different growth stage of crop. Brix reading was taken by hand refractometer from standing cane. Yield was taken at harvest in January, 2006. The average values of all parameters were statistically analyzed to compare different varieties under observation.

RESULTS AND DISCUSSION

It is observed from the Table 1 that the test varieties did not show significant differences in producing tillers and number of millable cane at Vadsha location but significant difference in yield was observed among the test varieties where Isd 31 showed the highest yield of 97.71 t ha⁻¹ followed by 95.75 t ha⁻¹ in Isd 32 which are statistically at par but differed statistically over Isd 36 and Isd 33 which gave yield of 72.22 and 74.25 t ha⁻¹ respectively and they did not differ statistically. The yield of Isd 34 and Isd 35 were 83.89 and 85.20 t ha⁻¹ respectively and showed alike statistically. Significant difference in brix was observed among the test varieties. The highest brix of 20.22% was recorded in Isd 35 followed by 20.00% in Isd 34 and showed at par statistically but differed over Isd 31, Isd 32 and Isd 33. The lowest brix of 17.31% was recorded in Isd 31 and did not differ with Isd 32 and Isd 33.

Table 1. Performance of BSRI bred varieties in respect of tillers, millable cane, yield and brix % at Vadsha, Joypurhat, 2004-2005.

Varieties	No. of Tillers (10 ³ ha ⁻¹)	No. of millable cane (10 ³ ha ⁻¹)	Brix (%)	Yield (t ha ⁻¹)
Isd 31	144.30	100.21	17.33c	97.71a
Isd 32	157.20	94.05	18.56bc	93.75a
Isd 33	125.62	100.56	18.52bc	74.25b
Isd 34	168.06	106.25	20.00a	83.89ab
Isd 35	152.68	114.79	20.22a	85.20ab
Isd 36	125.33	94.58	19.45ab	72.22b
LSD (5%)	NS	NS	1.30	15.74

No significant difference was observed in tiller production among the test varieties at Mongalbari location (Table 2) but significant difference was observed in number of millable cane where Isd 34 produced highest number of millable cane (100.52 x 10³ ha⁻¹) followed by Isd 33 (99.32 x 10³ ha⁻¹) and Isd 31 (97.81 x 10³ ha⁻¹). The lowest number of millable cane was recorded in Isd 32 (85.26 x 10³ ha⁻¹), which differed statistically over all other varieties. Significant difference in yield was observed among the released varieties. The highest yield was observed in Isd 31 (91.14 t ha⁻¹) followed by Isd 36 (90.99 t ha⁻¹) and they differed with all other varieties. No significant differences were observed among Isd 32, Isd 33 and Isd 35 in yield but they differed statistically over Isd 34 (63.33 t ha⁻¹). No significant difference was observed in Brix among the varieties. Brix percentage was ranged from 19.67 to 20.72 among the varieties.

Table 2. Performance of BSRI bred varieties in respect of tillers, millable cane, yield and brix % at Mongalbaria, Joypurhat, 2004-2005.

Varieties	No. of Tillers (10^3 ha^{-1})	No. of millable cane (10^3 ha^{-1})	Brix (%)	Yield (t ha^{-1})
Isd 31	142.50	97.81ab	20.17	91.14a
Isd 32	145.65	85.26c	19.74	74.58b
Isd 33	130.59	99.32ab	20.22	77.86b
Isd 34	158.43	100.52a	20.72	63.33c
Isd 35	144.30	95.63b	19.67	77.99b
Isd 36	135.28	96.87ab	20.05	90.99a
LSD (5%)	NS	8.21	NS	7.87

No significant difference was observed in number of tiller and brix among the varieties at Ramvadrapur location (Table 3). Significant difference was observed in number of millable cane production. The highest number of millable cane $120.24 \times 10^3 \text{ ha}^{-1}$ was recorded in Isd 34 followed by $106.73 \times 10^3 \text{ ha}^{-1}$ in Isd 35 and $101.43 \times 10^3 \text{ ha}^{-1}$ in Isd 36 and they were statistically similar. The highest yield was observed in Isd 35 (106.72 t ha^{-1}) followed by Isd 36 (104.17 t ha^{-1}) and Isd 34 (103.45 t ha^{-1}) and they are statistically similar and showed statistically superior over Isd 33 and Isd 31. The variety Isd 33 had the lowest cane yield (92.09 t ha^{-1}). Brix of different varieties ranged from 17.44 to 19.74% no significant difference among test varieties was observed.

Table 3. Performance of BSRI bred varieties in respect of tillers, millable cane, yield and brix % at Ramvadrapur, Panchbibi, 2004-2005.

Varieties	No. of Tillers (10^3 ha^{-1})	No. of millable cane (10^3 ha^{-1})	Brix (%)	Yield (t ha^{-1})
Isd 31	151.72	94.29c	17.66	95.18bc
Isd 32	135.05	98.99bc	17.44	100.00ab
Isd 33	143.43	93.93c	18.54	92.09c
Isd 34	168.62	120.24a	17.77	103.45a
Isd 35	170.55	106.73b	19.31	106.72a
Isd 36	150.49	101.43bc	19.74	104.17a
LSD (5%)	NS	3.34	NS	6.47

Chowdhury et al. (1999) reported that Isd 16, Isd 18, Isd 20, Isd 22, Isd 27 Isd 28 produced yield of 59.64, 71.80, 58.50, 77.27, 72.63 and 42.09 t ha^{-1} respectively at different level of demonstration categories. Rashid et al. (1999) also reported that Isd 2-54 and L.J.C showed yield of 69.20 and 71.26 t ha^{-1} respectively. It was observed that newly released varieties had higher cane yield than varieties released earlier. The varieties tested in the present experiment produced much higher yield compared to national average of 41.60 t ha^{-1} (Anon., 1995) and there is a great scope to improve cane production in the Tista Meander Floodplain soils by using newly released BSRI varieties and benefit the country through increasing national average yield of sugarcane.

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