

SHORT COMMUNICATION

Performance of BSRI Recommended Sugarcane Varieties for Sugar and Gur Production in Plant and Ratoon Cane under Modhupur Tract

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Sugarcane (*Saccharum officinarum* L) is one of the most important agro-industrial crop and it is the main source of sugar and gur in our country. Yield of a particular variety depends upon the heredity potential of the genotype and the environment where it is exposed during the course of its life cycle (Yadava, 1993). Farmers cultivated sugarcane in the month of March to April under rainfed situation in non mill zone. Such late planted sugarcane varieties give lower yield. Cane production in this area is mainly used for gur production, chewing and juice purpose. Sugarcane varieties after a considerable period of cultivation show a tendency to decline in yield and vigor (Branes, 1954). In this area locally adapted variety Misrimala is being cultivated since a long period around thousand household and it is highly susceptible to white leaf & red rot diseases. Recently Misrimala cultivated area is decreasing gradually because of its lower yield. Moreover, there is no other suitable variety that could be used as an alternate to Misrimala (Anon., 1999). It is considered that newly released BSRI varieties don't perform equally in different locations. Paul *et al.* (1994) observed that all the newly released sugarcane varieties produced significantly higher cane yield compared to local standard variety in every place. Sugarcane also able to regenerate shoots from the left-over stalk of preceding crops known as ratoon crop. The main advantage of ratooning in sugarcane lies in its reduced crop life and cost of production as well as higher sugar recovery (Verma, 2002). Ratooning is profitable because nothing is spent on the land preparation, planting operation, seed materials etc. (Yadav, 1986). The major causes of poor average yield of ratoon cane is lack of suitable plant and ratooning varieties as well as improve production technologies. Different varieties perform various yield attributes in their rationing potential (Yadav, 1992). BSRI develop few varieties suitable for gur production and ratooning. The performance of these varieties needs to be evaluated under farmer's condition at Modhupur Tract. Considering the above fact, this study was undertaken to find out the modern sugarcane varieties for sugar and gur production in both plant and ratoon cane of Modhupur Tract Soils.

The experiment was conducted in farmer's field at Sreepur, Gazipur under Modhupur Tract during the cropping season 2005-06 and 2006-07. It was laid out in a randomized complete block design (RCB) with three replications. The varieties Misrimala (local standard), Isd 16, Isd 26, Isd 30, Isd 32, Isd 36 and Amrita were included in this experiment. The unit plot size was 8m x 6m. About 45 days old two budded settlings of sugarcane were planted in the main field at the mid February 2005 and harvested on mid March 2006. The left-over preceding planted cane varieties were stubble shaving by spade just immediate after harvest of plant cane. The inter row spacing between two cane rows were tith well by country plough followed by laddering just immediate after stubble shaving. Application of chemical fertilizers for plant cane was done @ 240 kg ha⁻¹, 200 kg ha⁻¹, 200 kg ha⁻¹, 165 kg ha⁻¹ and 33 kg ha⁻¹ as urea, triple super phosphate, muriate of potash, gypsum and regent 3 GR respectively. In plant cane, full doses of TSP, Gypsum, Zinc sulphate and Regent 3 GR were applied in trenches during the time of transplanting. One third of MP and one third of Urea were applied after 25 days of transplantation in ring method as basal. The rest MP and Urea were applied in two equal splits at early growth stage of tillers (120 days after transplanting) and late tillering phase (150 days after transplanting) of sugarcane. In ratoon cane, all fertilizers were applied as of plant

cane except Urea, where 50% extra of recommended dose was applied. Intercultural operations were done in plant and ratoon cane as and when required. Data on different growth parameters were collected and analyzed statistically.

Performances of the different varieties in plant and ratoon cane are presented in Table 1 and Table 2. Settlings mortality in plant cane varieties ranged from 1.54% to 4.62% (Table 1). The lowest mortality (1.54%) was found in Amrita and Isd 32 while the highest (4.62%) was recorded in Isd 16 and Isd 30. In case of ratoon cane there was a significant effect on sprouting percentage per clump among the varieties. The highest sprouting was observed in Amrita (91.66%) followed by Isd 32 (90.73%) where the lowest (75.92%) was found in local standard Misrimala (Table 2). Similar observation was also reported by Rashid *et al.* (2001) and Anon. (2008).

In plant cane significantly the highest numbers of tillers ($105.90 \times 10^3 \text{ ha}^{-1}$) was found in variety Isd 36 and the lowest number of tillers ($84.68 \times 10^3 \text{ ha}^{-1}$) was produced in variety Misrimala (Table 1). Similar result of tiller production among the different varieties in plant cane was stated by Miah *et al.* (1994) and Rashid *et al.* (2001). In case of ratoon cane, highest tiller ($109.65 \times 10^3 \text{ ha}^{-1}$) was obtained from Amrita followed by Isd 30, Isd 26, Isd 32 and Isd 16. The lowest tiller ($56.67 \times 10^3 \text{ ha}^{-1}$) was produced by the variety Misrimala.

Table 1. Performance of sugarcane varieties in plant cane

Treatments/ Varieties	Mortality (%)	No. of Tiller (10^3 ha^{-1})	Millable cane (10^3 ha^{-1})	Yield (tha^{-1})	Brix (%)
Misrimala	4.16 ab	84.68 c	67.84 d	115.10 ab	16.00 b
Isd 16	4.62 a	90.30 c	72.96 cd	91.49 b	17.02 ab
Isd 26	2.15 ab	98.25 b	80.57 bc	89.22 b	20.16 ab
Isd 30	4.62 a	97.90 b	78.13 bc	91.12 b	16.22 b
Isd 32	1.54 b	98.90 b	82.97 ab	97.61 ab	15.66 b
Isd 36	2.15 ab	105.90 a	90.10 a	93.55 ab	21.61 a
Amrita	1.54 b	90.80 c	73.50 cd	118.90 a	20.00 ab
LSD at 10%	2.59	6.89	7.41	24.59	4.84
CV (%)	49.08	2.90	3.81	9.90	15.04

Variety Isd 36 gave the highest significantly ($90.10 \times 10^3 \text{ ha}^{-1}$) number of millable canes but similar with Isd 32 while the lowest ($67.84 \times 10^3 \text{ ha}^{-1}$) was obtained in Misrimala. In case of ratooning, the highest number of millable canes ($84.16 \times 10^3 \text{ ha}^{-1}$) was observed in Amrita but no significant difference among the varieties except local standard Misrimala ($36.24 \times 10^3 \text{ ha}^{-1}$). Millable cane production in ratooning was found lower compared to plant cane. This might be due to higher percentage of tiller mortality in ratoon canes. Matin *et al.* (1989), Paul *et al.* (1994) and Anon. (2008) also reported the similar results on millable cane production.

Table 2: Performance of sugarcane varieties in ratoon cane

Treatments/ Varieties	Sprouting per clump (%)	No. of Tiller (10^3 ha^{-1})	Millable cane (10^3 ha^{-1})	Yield of cane (tha^{-1})	Brix (%)
Misrimala	75.92 c	56.67 b	36.24 b	57.21 c	17.67 bc
Isd 16	79.63 bc	96.66 a	67.36 a	92.01 ab	16.33 cde
Isd 26	87.96 ab	104.37 a	72.63 a	83.18 abc	18.33 ab
Isd 30	86.11 abc	107.29 a	75.30 a	88.17 ab	17.33 bcd
Isd 32	90.73 a	102.70 a	80.97 a	94.58 ab	15.00 e
Isd 36	87.96 ab	83.33 ab	68.05 a	70.34 bc	15.67 de
Amrita	91.66 a	109.65 a	84.16 a	103.18 a	19.70 a
LSD at 5%	11.04	33.11	20.97	29.94	1.79
CV (%)	7.24	19.72	17.03	20.01	5.9

The highest plant cane yield was obtained from Amrita (118.90 tha^{-1}) followed by Misrimala (115.10 tha^{-1}) and the lowest was found in Isd 26 (89.22 tha^{-1}). In ratoon canes, the highest yield was recorded in Amrita (103.18 TCH) and the lowest was obtained from Misrimala (57.21 tha^{-1}) because it was highly susceptible to white leaf diseases. Soheli *et al.* (2009) and Anonymous (1999) also supported these findings.

The highest Brix (21.61%) percent was observed in Isd 36 which was similar with Isd 16, Isd 26 and Amrita where the lowest (15.66%) was recorded from variety Isd 32. In ratoon canes, the highest Brix percent (19.70%) was found in Amrita and the lowest (15.00%) was obtained from Isd 32. Therefore, in plant and ratoon cane cultivation the higher gur production is possible using variety Isd 36 and Amrita, respectively because higher brix % of any variety is an indication to produce higher gur and sugar. Anon. (1997) and Azad *et al.* (2009) reported that significantly higher percentages of Brix indicate the highest gur producing cane variety.

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