

Ratooning Potentiality of Selected Sugarcane Varieties in Farmers' Field Condition

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ABSTRACT

A comparative study on ratooning potentiality of six selected sugarcane varieties viz. Isd 31, Isd 32, Isd 33, Isd 34, Isd 35 and Isd 36 were conducted at Joypurhat sugar mill farmers field under Tista Meander Floodplain soils. The results revealed that Isd 35 showed the highest yield of 94.05 t ha⁻¹ followed by Isd 36 (87.14 t ha⁻¹) as ratoon among the newly released varieties at Ramvadrapur location. On the other hand, Isd 31 produced the highest yield of 111.81 and 93.13 t ha⁻¹ followed by Isd 36 that gave 99.17 and 93.13 t ha⁻¹ as ratoon cane at Vadsha and Mongalbari locations, respectively. So there is a great scope to increase the productivity of ratoon cane by using newly released varieties in farmers field of Tista Meander Floodplain soils.

Key words: *Field, Sugarcane varieties, ratoon cane, ratooning potentiality, farmers.*

INTRODUCTION

Sugarcane is a relatively risk free cash crop for low rainfall belt of the Ganges River Floodplain as well as low to moderately fertile high lands of Himalayan Piedmont Plain and the Tista Meander Floodplain areas of Bangladesh (Matin *et al.*, 1989). Bangladesh Sugarcane Research Institute developed varieties, which do not perform equally well in all Agro-Ecological Zones (Miah *et al.*, 1994). Ratooning ability is one of the most important characteristics of sugarcane, which influence the decision to plant a particular variety (Chardon *et al.*, 1979).

In Bangladesh, only 20% of the cane area is ratooned every year producing an average of 40 t ha⁻¹ while the potential yield has been found to be around 80 t ha⁻¹ (Anon., 2001). In Mauritius five to eight ratoon crop are commonly grown (Ponnappan, 1994). As many as six to eight successive ratoons are raised in Taiwan (Soopramanien and Hunsigi, 1996). In India, research strategies for sugarcane production through ratooning has been undertaken as an aid to cut down production cost (Srivastava *et al.*, 1990). In recent years there has been found considerable increased interest on multi-ratooning to reduce the cost of cultivation and also to improve sugar recovery in early part of the crushing season. But often it is found that ratoon canes of the existing varieties are not always satisfactory as that of the plant cane, which disappoint the growers. The present investigation was, therefore, undertaken to study the yield potentiality of plant and ratoon cane of six selected varieties in farmers field of Tista Meander Floodplain Soils.

MATERIALS AND METHODS

The experiment was conducted at Joypurhat sugar mill farmers field under Tista Meander Floodplain soils during the cropping season 2004-2005 as plant cane with six selected varieties viz. Isd 31, Isd 32, Isd 33, Isd 34, Isd 35 and Isd 36. After harvest of plant cane, ratoon crops were raised from left over stubble of harvested plant cane in the next cropping season 2005-2006. The experiment was laid out in a randomized complete block design with three replications at three locations of this agro-ecological zone. The plot size was 8m x 8m where row to row distance was maintained at one meter. Stubble shaving just after harvesting of plant cane was done in first week of January 2005. Gap filling was done within one-month aged poly bag raised settling. Necessary intercultural operations were done as and when required. Data were collected at different growth stages of crop. Brix reading was taken by hand refractometer from standing cane. Yield was taken at harvest in December 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 tested varieties did not show significant differences in producing tillers and number of millable canes ha^{-1} at Vadsha location but significant difference in yield was observed among the test varieties. The highest yield of 111.81 t ha^{-1} was recorded in Isd 31 followed by 99.17 t ha^{-1} in Isd 36, 93.41 t ha^{-1} in Isd 32 and 91.67 t ha^{-1} in Isd 35, which are statistically identical. On the other hand, Isd 31 and Isd 36 differed statistically over Isd 33 and Isd 34 that gave yield of 80.35 and 85.21 t ha^{-1} , respectively and they did not differ statistically. The yield of Isd 32 and Isd 35 were 93.41 and 91.67 t ha^{-1} , respectively and were statistically identical. No significant difference was observed in brix (%). However apparently the highest brix (19.78%) was recorded in Isd 36 and the lowest (18.22%) in Isd 32 and Isd 33.

Table 1. Performance of BSRI bred varieties in respect of tillers, millable canes, yield and brix (%) as ratoon cane at Vadsha, Joypurhat

Varieties	No. of tillers (10^3 ha^{-1})	No. of millable canes (10^3 ha^{-1})	Yield (t ha^{-1})	Brix (%)
Isd 31	179.59	102.09	111.81 ^a	18.89
Isd 32	149.00	85.42	93.41 ^{ab}	18.22
Isd 33	162.92	76.95	80.35 ^b	18.22
Isd 34	174.38	78.34	85.21 ^b	19.28
Isd 35	162.64	85.84	91.67 ^{ab}	18.78
Isd 36	163.34	86.60	99.17 ^a	19.78
LSD (5%)	NS	NS	17.15	NS

* In a column figures having similar letter do not differ significantly whereas figures with dissimilar letters differ significantly as per DMRT at 5% level of probability..

At Mongalbari location, no significant difference was observed in tiller and millable cane production among the test varieties (Table 2) but significant difference was observed in yield where Isd 36 gave the highest yield 93.13 t ha^{-1} followed by 93.02 t ha^{-1} in Isd 31, 89.83 t ha^{-1} in Isd 33 and 89.12 t ha^{-1} in Isd 35, which were statistically identical but differed statistically over Isd 32 and Isd 34 which gave yield of 69.85 and 70.16 t ha^{-1} , respectively and they did not differ statistically. Significant difference was observed in brix (%) among the tested varieties. The highest brix (20.67%) was recorded in Isd 33 followed by 20.11% in Isd 32 but differed over Isd 35. The lowest brix of 17.00% was recorded in Isd 35, which and did not differ with Isd 31, Isd 34 and Isd 36.

Table 2. Performance of BSRI bred varieties in respect of tillers, millable canes, yield and brix (%) as ratoon cane at Mongalbari, Joypurhat location

Varieties	No. of tillers (10^3 ha^{-1})	No. of millable canes (10^3 ha^{-1})	Yield (t ha^{-1})	Brix (%)
Isd 31	97.86	93.13 ^a	18.63abc	
Isd 32	156.04	101.30	69.85b	20.11ab
Isd 33	164.17	116.51	89.53a	20.67a
Isd 34	186.04	104.12	70.16b	18.33bc
Isd 35	180.05	107.82	89.12a	17.00c
Isd 36	157.09	99.27	93.03a	18.67abc
LSD (5%)	NS	NS	7.87	15.05

* In a column figures having similar letter do not differ significantly whereas figures with dissimilar letters differ significantly as per DMRT at 5% level of probability.

No significant difference was observed in number of tillers and yield among the varieties at Ramvadrapur location (Table 3). Significant difference was observed in millable canes production. The highest number of millable canes ($106.90 \times 10^3 \text{ ha}^{-1}$) was recorded in Isd 35 followed by $103.09 \times 10^3 \text{ ha}^{-1}$ in Isd 33 and $94.52 \times 10^3 \text{ ha}^{-1}$ in Isd 34, which were statistically identical but differed statistically over Isd 36. The lowest number of millable canes was found in Isd 36 ($76.19 \times 10^3 \text{ ha}^{-1}$) which were similar to Isd 31 and Isd 32. Significant difference in brix was observed among the tested varieties. The highest brix of 19.89% was recorded in Isd 33 followed by Isd 36 (18.89%). The lowest brix of 16.24% was recorded in Isd 34 but it did not differ with Isd 31, Isd 32 and Isd 35.

Kashem *et al.* (2005) reported that the plant cane of Isd 31, Isd 32, Isd 33, Isd 34, Isd 35 and Isd 36 gave yield of 97.71, 93.75, 74.25, 83.89, 85.20 and 72.22 t ha^{-1} at Vadsha; 91.14, 74.58, 77.86, 63.33, 77.99 and 90.99 t ha^{-1} at Monglabari and 95.18, 100.00, 92.09, 103.45, 106.72 and 104.17 t ha^{-1} at Ramvadrapur, respectively. Compared to this result ratoon cane produced higher yield than plant cane of Vadsha and Mongalbari locations expect Ramvadrapur location. It is also observed that plant cane and ratoon cane gave 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 plant cane as well as ratoon cane in the Tista Meander Floodplain Soils by using newly released BSRI varieties thereby benefiting the country through increasing national average yield of sugarcane.

Table 3. Performance of BSRI bred varieties in respect of tillers, millable canes, yield and brix (%) as ratoon at Ramvadrapur, Panchbibbi location

Varieties	No. of tillers (10^3 ha^{-1})	No. of millable canes (10^3 ha^{-1})	Yield (t ha^{-1})	Brix (%)
Isd 31	196.67	90.00bc	85.71	17.69 [*] abc
Isd 32	161.19	89.94bc	83.33	17.03bc
Isd 33	205.48	103.09ab	85.71	19.89a
Isd 34	184.05	94.52ab	87.02	16.24c
Isd 35	157.62	106.90a	94.05	16.49c
Isd 36	167.14	76.19c	87.14	18.89ab
LSD (5%)	NS	16.84	NS	2.35

*In a column figures having similar letter do not differ significantly whereas figures with dissimilar letters differ significantly as per DMRT at 5% level of probability.

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