

Influence of Different Planting Techniques on the Tillering, Tiller Mortality and Production of Millable Stalks in Two Selected Sugarcane Clones

A.B.M.M. Rahman and M.A. Matin

Sugarcane Research & Training Institute,
Ishurdi, Pabna, Bangladesh.

Sugarcane is an important cash crop of Bangladesh with an average yield of 45 TCH (ton cane per hectare) as against its theoretical approximation of 75 TCH. under rainfed condition. The main reasons of poor yield of sugarcane have been identified to be insufficient number of millable stalks and lower unit-stalk weight. Earlier works on sugarcane yield and yield-contributing factors indicated that plant population vis-a-vis the number of millable stalks had the strongest direct effect on cane yield followed by cane weight (Bull, 1975; Irvine *et al.*, 1980; Khairwal and Babu, 1975). Considerable amount of work has been done elsewhere on various agronomic practices including planting techniques pertaining to yield contributing factors and yield components of sugarcane (Rahman *et al.*, 1987; Kanwar and Sharma, 1974; Tang, 1977 and Rahman and Rahman, 1979). The present investigation was undertaken to determine the relative merits of three dominant planting techniques viz. (a) conventional planting of three-budded setts (b) paired spaced planting (PSP) of two-budded setts and (c) spaced transplanting (STP) of settlings (raised in poly bag) with two sugarcane varieties, Isd-16 and Co. 63015. PSP and STP were tried at three inter-plant spacings i.e., 60 cm, 75 cm and 90 cm.

The experiment was planted in the autumn (September) during 1987-88 crop season at Shahebganj farm, Rangpur Sugar Mills. The experiment was laid out in a Randomized Complete Block Design with three replications. The row to row distance was maintained at one meter and plot size was 8m×9m. Commercial fertilizers viz. urea, Triple-super phosphate (TSP) and Muriate of potash (MP) were applied @ 165-165-221 kg of N, P₂O₅ and K₂O per hectare respectively. In addition to the above fertilizers, mustard oil cake was applied @ 368.72 kg per hectare. Necessary inter-cultural operations like weeding, mulching etc. were done as per normal practice. The experiment comprised of the following treatment combinations:

T₁=Isd. 16 planted in conventional method.

T₂=Isd. 16 planted in paired spaced planting (PSP) at 60 cm.

T₃=Isd. 16 spaced transplanted (STP) at 60 cm.

T₄=Isd. 16 spaced transplanted (STP) at 75 cm.

T₅=Isd. 16 spaced transplanted (STP) at 90 cm.

T₆=Co. 63015 planted in conventional method.

T₇=Co. 63015 planted in paired spaced planting (PSP) at 60 cm.

T₈=Co. 63015 spaced transplanted (STP) at 60 cm.

T₉=Co. 63015 spaced transplanted (STP) at 75 cm.

T₁₀=Co. 63015 spaced transplanted (STP) at 90 cm.

Data on germination in respect of conventional and PSP (Paired Spaced Planting) showed 48-52% germination which is quite satisfactory. The establishment of transplanted settlings in both the varieties likewise ranged from 97-99% indicating negligible post transplanting settling death.

Production of tiller as recorded in January and April indicated no major variations due to the different planting techniques. In both the varieties, comparable tiller population was recorded in the conventional and PSP as against STP. This is presumably due to early (September) planting indicating that a fairly satisfactory crop stand can be attained in conventional and PSP if planted early with selected quality-seed (Table 1). As regards the mortality of tillers, conventionally planted cane suffered the highest tiller mortality in both the varieties. In other planting techniques, however, the tiller death was fewer.

The least tiller mortality was recorded in both the varieties with STP at the widest (90 cm) inter-plant spacing. The tiller mortality in PSP was fewer than both conventional planting and STP-60 cm in both the varieties indicating considerable

Table 1. Influence of different planting techniques on the germination/establishment of settlings, tiller production, tiller mortality and production of millable stalk in two sugarcane clones, Isd. 16 and Co. 63015.

Treatments	Germination/ establishment ¹ (%)	Tiller population ($\times 10^3 \text{ ha}^{-1}$)		Tiller mortality (%)	Millable stalks ($\times 10^3 \text{ ha}^{-1}$)
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T ₁ =Isd-16 Planted in conventional method	50.00	98.01 ab	197.73 a	40.76	117.13 def
T ₂ = Isd-16 Planted in Paired spaced planting (PSP) at 60 cm	52.00	92.64 ab	168.77 bc	29.00	119.81 cde
T ₃ =Isd-16 Spaced transplanting (STP) at 60 cm	98.00	84.86 bc	178.01 b	36.87	115.93 ef
T ₄ =Isd-16 Spaced transplanting (STP) at 75 cm	98.00	86.85 bc	171.95 bc	34.73	108.80 bcde
T ₅ =Isd-16 Spaced transplanting (STP) at 90 cm	98.00	71.57 c	163.52 bc	25.94	121.11 bcde
T ₆ =Co. 63015 planted in conventional method	48.00	94.26 ab	157.27 bc	20.87	124.45 bcde
T ₇ = Co. 63015 planted in paired spaced planting (PSP) at 60 cm	52.00	88.01 bc	157.83 c	19.21	127.50 abc
T ₈ =Co. 63015 spaced transplanted (STP) at 60 cm	99.00	108.75 a	156.81 c	20.00	135.28 a
T ₉ = Co. 63015 Spaced transplanted (STP) at 75 cm	98.00	103.78 ab	164.07 bc	14.74	126.76 abcd
T ₁₀ =Co. 63015 Spaced transplanted (STP) at 90 cm	98.00	88.29 bc	152.55 c	14.00	130.65 ab

¹Establishment refers to transplanted setting under STP treatments (T₄, T₅, T₆, T₈, T₉ and T₁₀).

*Figures accompanied by similar letters do not differ significantly as per DNMR test at 5% level of probability.

physio-agronomic merit of this technique (Table 1). In the case of Isd-16, there was virtually no significant difference among the different planting techniques in respect of millable stalk, the indicator of the ultimate cane yield.

In Co. 63015, however, the highest number of millable stalks was produced under STP at 60 cm inter-plant spacing. Evidently, there was no significant difference among the different inter-plant spacings in both the varieties (Table 1). The data thus indicate that for autumn transplanting as early as September, the inter-plant spacing can be wider than 60 cm. The result obtained strongly suggest that for early transplanted cane, the spacing between settlings need not be any lesser than 60 cm thus providing further scope for seed economy. The results are in agreement with Narasiman *et al.*, (1981) who reported 1,20,000 millable stalks per hectare under STP with similar spacing.

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