

Effects of Soil Covering on Germination in Sugarcane

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Higher and uniform germination is the primary condition to get higher yield in sugarcane. Many internal and external factors affecting germination depending on time of planting. Soil covering over setts placed in trench plays an important role in maintaining plant population, and ultimate sugarcane yield. It is observed that during early planting (August to September) thin layer of soil over setts is enough, while in winter planting fairly thick soil covering is required to preserve moisture for germination. Investigation on soil covering has been carried out, and reported elsewhere (Oworu, 1978; Afolabi, 1993). Effects of soil covering on germination in SRTI bred varieties have not yet been examined. Therefore, the present investigation was undertaken to evaluate the (1) effects of soil covering on germination, and (2) varietal response to soil covering on germination. The investigation was conducted at SRTI farm with two commercial varieties such as Isd-16 and L. J. C. following RCB design, and comprised of following treatments :

- T₁ : 5 cm soil covering over setts placed in trench.
T₂ : 10 cm soil covering over setts placed in trench.
T₃ : 15 cm soil covering over setts placed in trench.

Two-budded fresh setts were planted in trenches following end to end method of planting on 1st September, 15th September, 1st October, 15th October, 1st November, 15th November and 1st December. Germination was recorded on apparent completion of germination of each batch and shown in the Table 1.

Table 1. Effects of soil covering on germination in sugarcane.

Thickness of soil covering	Varieties	1st Sept.	15th Sept.	1st Oct.	15th Oct.	1st Nov.	15th Nov.	1st Dec.	Mean
5 cm	Isd-16	50.0	53.0	30.0	20.0	15.0	6.0	3.0	25.3
	L-Jaba-C	52.0	54.0	35.0	32.0	30.0	12.0	13.0	32.0
10cm	Isd-16	38.0	35.0	25.0	15.0	10.0	10.0	4.0	19.6
	L-Jaba-C	46.0	51.0	40.0	19.0	15.0	7.0	3.0	26.0
15cm	Isd-16	35.0	30.0	25.0	16.0	8.0	6.0	2.0	17.4
	L-Jaba-C	32.0	30.0	35.0	15.0	12.0	9.0	10.0	20.4
Mean		42.2	42.2	31.7	19.5	15.0	8.3	5.8	

The Table 1 shows that as the thickness of soil covering was increased, percentage of germination decreased in all planting dates in both the varieties although there is varietal as well as seasonal difference exists. Higher percentage of germination was obtained in L. J. C. compared to Isd-16 irrespective of different dates of planting and soil covering over setts. Higher germination was obtained in 5 cm soil covering in trench followed by 10 cm and 15 cm soil covering. However, the table shows that when ambient temperature around 16-19°C, higher germination was obtained in thick soil covering in 1st October and 15th October planting. It is perhaps because of ambient temperature as well as soil moisture since ambient temperature becomes hot or cool faster compared to soil temperature. Thick soil covering preserved more moisture required for germination. From the results it is seen that 5 cm soil covering is better for germination when higher ambient temperature, and fairly higher soil moisture prevail during germination period. It is also seen from the Table 1 that date of planting affected germination of both the varieties. Reduction in germination during late planting dates possibly due to fall of temperature (Miah, *et al.*, 1988; Hossain *et al.* 1993). It is reported earlier that germination percentage gradually decreased as the ambient temperature became lower. These results agree with the previous reports published elsewhere (Humbert, 1968; Afolabi, 1993). They reported that germination is decreased as the thickness of soil covering is increased.

In Bangladesh, early planting such as August and September receives higher ambient temperature and adequate soil moisture (some times excess moisture) required for sugarcane bud germination, and virtually thick soil covering damage sugarcane buds if higher rainfall is taken place. On the other hand, during late October and onward little or no rainfall takes place and gradually soil moisture stress is increased.

Sugarcane of late October to late January planting under rainfed condition suffers from poor germination due to soil moisture stress in addition to lower ambient temperature; and thick soil covering over setts helps in preserving soil moisture, and results higher germination. Therefore, upto 5 cm soil covering over setts is recommended for Autumn and Spring planting and around 10 cm soil covering during winter planted sugarcane to get higher germination.

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