

Effect of Press Mud on the Yield and Quality of Sugarcane

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ABSTRACT

An experiment was conducted to study the effect of press mud on the yield and quality of sugarcane. Variety Co. 1158 was used for the present investigation. Application of ten tons of press mud per hectare along with normal dose of chemical fertilizer gave higher ton sugar per hectare (TSH).

INTRODUCTION

Press mud, a by-product of the Sugar Mills, is profitably utilized elsewhere in the sugar producing world for better crop production. Press mud consists of a mixture of sugarcane fibres, sucrose, coagulated colloids including cane wax, albuminoids and phosphates of lime, plus sand and soil. On the average, one ton of millable cane contains 30 kg. of press mud in the mill waste (Quilloy, 1974). Physically, press mud is a soft, spongy, lightweight, amorphous, dark-brown to black material. It can easily absorb large quantities of moisture when dry and generally, it contains 55 to 70% moisture on wet basis (Haines, 1961). It varies in chemical composition depending upon such factors as the cane variety, cane source, climate and mill performance (Samuels and Landrau, 1956). There is a significant variation of pH values of press mud from mill to mill and month to month. The pH values of the press mud varies from 5.34 to 6.90 with an average value of 6.64. The reason of variation of the pH depends upon the addition of varying quantities of SO_2 used for clarification of the juice in the factory (Patil *et. al.*, 1983). It was assumed that press mud might provide nutrients to increase the yields and quality of cane. Press mud, according to Samuels and Landrau (1956), has very little residual action on the soil. But no study of press mud as sugarcane nutrients was made in Bangladesh. Therefore, a study on the effect of press mud on the yield and quality of cane was conducted at SRTI.

MATERIALS AND METHODS

An experiment was conducted with press mud collected from North Bengal Sugar Mills at the experimental farm of SRTI with the variety Co. 1158. The experiment comprised of following four treatments laid out in a randomized complete block design with three replications.

T_1 —(standard) 120 kg N+90 kg P_2O_5 +110 kg K_2O /ha applied as follows :

- (a) $\frac{1}{3}$ N+Total P+ $\frac{1}{3}$ K at planting time in trenches.
- (b) $\frac{1}{3}$ N+ $\frac{1}{3}$ K as top-dressing after 160 days of planting.
- (c) The rest N and K top-dressed 190 days of planting.

T_2 —10 tons of press mud/ha at planting.

T_3 — T_1 + T_2

T_4 — T_1 +5 tons press mud/ha at planting+5 tons press mud/ha at tillering stage.

The plants were grown under normal field conditions. The size of each plot was 10m x 10m. The cane setts were treated by fungicide prior to planting. All normal cultural practices were applied from time to time to provide right conditions for optimum growth and development of plants. Total yield per hectare and number of millable cane was taken after harvest. The chemical analysis was done following Horne's Dry Lead Method (Meade, 1963). Statistical analyses of data were done on number of millable cane, yield of cane and sugar and percent recoverable sugar.

RESULTS AND DISCUSSION

Results of experiments reported from different sugarcane growing areas on the influence of press mud on yield indicated wide variations. Some salient aspects of the experimental results are presented in Table 1. It was evident from the results that cane yield was significantly increased with the application of press mud (Table 1). Highest cane yield was produced by T_4 i. e., application of 10 tons press mud/ha in two splits along with normal dose of fertilizer. This might be due to the significantly higher number of millable cane. Similar results were reported by Urgel and Hernandez (1972), who reported that application of 10 to 20 tons/ha of press mud increased cane yield. But the % recovery was found to be less than other treatments. The fall in sugar content was also observed by Golden (1975) in Louisiana who claimed increase in cane and sugar yield but reported adverse effect on juice quality. Sugar recovery and production were however, the highest in treatment T_3 . This observation was further confirmed by Urgel *et al.* (1972). They claimed that the application of press mud in a clay loam soil increased tonnage but sugar recovery decreased with increasing amount

Table 1. Effect of different treatments on the yield of cane, sugar, number of millable cane and percent recoverable sugar.

Treatments	No. of millable cane/ha ('000'	Yield of cane/ha. (m. ton)	Yield of sugar/ha (m. ton)	Percent recoverable sugar
T ₁	88.6 b*	86.04 b	8.70 b	10.10 b
T ₂	78.3 a	75.83 a	7.36 a	9.70 ab
T ₃	89.1 b	87.69 b	8.94 b	10.20 b
T ₄	91.2 b	92.66 b	8.60 b	9.27 a

*Figures followed by the same letter are not significantly different at 5% level of probability as determined by the Duncan's New Multiple Range test.

of press mud both in plant and ratoon crops. The results of the experiment indicate that the recommended dose of chemical fertilizer when supplemented with 10 tons of press mud/ha at plantation might give higher TSH. Further works is needed on the economic and precise dose of press mud.

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