



STUDY OF PRESSMUD ALONG WITH FERTILIZER FOR YIELD AND QUALITY OF PLANT AND RATOON SUGAR CANE

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ABSTRACT:

The failed experiment was conducted during 2018-19 and 2019-20 to study of pressmud along with fertilizer for yield and quality of plant and ratoon sugar cane (*saccharum officinarum L.*) Pressmud alone or in combination with nitrogen improved the cane yield and quality of plant and ratoon crops. Pressmud @30 Tonnes /ha +120 kg N/ha increased the ratoon yield over recommended dose 280 kg N/ha +140 kg /P₂O₅+ 140 kg K₂O /ha. Pressmud @ 30 tonnes p/he +120 kg N/ha recorded the highest sucrose sugar contain (percentage)in a ratoon crop. The total Production of commercial cane sugar was higher in pressmud @30 tonnes /ha +120 kg N/ha compared with recommended dose of fertilizer.

INTRODUCTION:

Sugarcane (*Saccharum officinarum L.*) produced heavy tonnage and removes large amount of plant nutrients. Considerable quantity of nutrients on inorganic fertilizer is lost through leaching, volatilization and run-off during flooding. Thus, under such condition a suitable combination organic and inorganic sources, and split application of nitrogen may increase fertilizer use efficiency and finally cane yield (Kumar and Misra, 1992). Pressmud is resources of organic Carbon (35-37 %) and supplies 1.0 – 1.5% N, 2.5 –3.5 % P₂ O₅ and 0.5 -0.8 % K₂ O. Besides a good source of secondary and micro nutrients (Kale, 1981), pressmud contains cane wax 8-15 % and it's slow decomposition may be benefit the ratoons. Therefore, an experiment was conducted to do study of pressmud along with fertilizer for yield and quality of plant and ratoon sugar cane.

MATERIAL AND METHODS:

The field experiment was conducted during 2018-19 on plant crop and 2019 -20 on ratoon crop at research farm of Mula sugar factory, Sonai dist. Ahmednagar, state: Maharashtra. There were five treatments viz T₁ Control, T₂ Pressmud @ 30 tonnes/ha, T₃ Pressmud @30 tonnes/ha + 60kg N/ha through fertilizer T₄ Pressmud @ 30 tonnes/ha +120 kg N/ha through fertilizer T₅ Recommended Dose of fertilizer that is plant crop 340kg N/ha, 170kg /ha P₂O₅, 170kg/ha K₂O. And for ratoon crop 280kg N/ha, 140kg /ha P₂O₅, 140kg/ha K₂O. Nitrogen was supplied through urea whereas P₂O₅ was supplied through single super phosphate and K₂O was Supplied through muriate of potash. All organic and inorganic fertilizers were supplied at the time of planting.

Before experiment, field soil sample was taken result revealed that experimental soil is with pH 0.3, organic carbon .69%, N 260kg/ha, P₂O

30kg/ha and available K₂O 340kg/ha . The field experiment was conducted R.B.D. design. The sugar cane variety CO86 032 was planted for adsali season and same was repeated for ratoon crop. The main treatments were doses of fertilizer and organic manure and they were replicate with three times. The cane length, girth, weight, and yield were recorded at harvesting. Juice was analysed for total soluble solids and sucrose contain (%) sugar recovery was calculated as per formula Spencer and Meade (1964). Commercial cane sugar was calculated by multiplying sugar recovery percentage by cane yield divided by 100.

RESULT AND DISCUSSION:

Yield attributes

Tillers/ha, millable canes/ha length, weight, and girth of cane were significantly affected due to various pressmud and fertilizer treatments in both plant and ratoon crop (Table .1) Application of Pressmud @30 tonnes of increased the tiller/ha, milable canes/ha, cane length, weight and girth were significant compared with the control in plant and ratoon crops. The recommended dose of fertilizer treatment recorded significantly better yield attributers than other treatment in plant crop. However, pressmud @30 Tonnes /ha + 120 kgN/ha was significantly superior in yield attributes of ratoon crop and increased milable cane length, cane weigth and cane girth over the control Yadhuvanshi *et al.* (1990) Yadhav (1992) O.P. Singh *et al* (1995) reported si milar results

Cane yield

Cane yield of plant and ratoon crops were increased significantly with pressmud @30tonnes/ha over the control. Similarly, Pressmud +fertilizer treatment shows increase in a yield in plant cane and ratoon crop however pressmud @30tonnes/ha +120kg N/ha

resulted in highest cane yield 141.40 and 100.51 tonnes/ha in plant and ratoon crop respectively. (Table.2) This indicate that pressmud application either alone or in combination with fertilizer was more effective on ratoon crop as compare with inorganic sources Kanwar *etal.* (1987), Ydhavanshi *et al.* (1990) and Ydhavanshi and Yadhav (1992) O.P. Singh *et al* (1995) also reported beneficial effect of pressmud application.

R.D.F treatment recorded significantly higher cane yield 84.40 and 87.63 tonnes/ha in plant ratoon crop respectively (Table.2). Pressmud @30tonnes/ha +120kgN/ha gave significantly higher yield on plant cane than other pressmud + fertilizer treatments. As the soil requires adequate nutrients for internal establishment i.e tillering, millable cane and yield attributers and thus resulted in higher cane yield under RDF treatments.

Plant crop receiving pressmud @30kg tonnes/ha +120kgN/ha gave more ratoon cane yield over RDF. this indicates greater the of combine application of pressmud + fertilizer yield ratoon crop compared then in organic sources because of prolonged availability of nutrients due to complete decomposition of pressmud for ratoon crop

Quality

Application of pressmud @ 30 tonnes/ha significantly improve sugar commercial cane sugar (% and tonnes/ha) over the control, however pressmud @ 30 tonnes/ha +120kgN/ha resulted significantly better sucros % and sugar % Compaired with the recommended dose of fertilizer.

(Table.2) Commercial cane sugar was significantly higher with pressmud @30 tonnes/ha +120 kgN/ha than the other

treatments. These results are conformity with those of Singh et al (1986) and Kanwar and Kapur (1987), O.P. Singh *et al* (1995), who reported improvement in juice owing to pressmud application in ratoon crop.

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Tabel :- 1 Study of pressmud along with fertilizer on yield attributers of plant and ratoon crop

Treatment	Tillers (000/ha)		Millable cane (000/ha)		Cane length (cm)		Cane weight (g)		Cane Girth (cm)	
	Plant	Ratoon	Plant	Ratoon	Plant	Ratoon	Plant	Ratoon	Plant	Ratoon
T ₁ Control	94.20	111.20	54.10	70.60	160	151	760	703	9.80	10.00
T ₂ Pressmus@30kg/ha	135.10	152.40	98.60	112.80	185	187	800	840	10.50	10.70
T ₃ Pressmus@30kg/ha +60KgN/ha	150.10	165.10	110.10	125.50	245	208	988	1000	11.40	12.00
T ₄ Pressmus@30kg/ha+ 120 gN/ha	153.13	180.10	113.23	150.30	270	225	1020	1044	12.30	13.80
T ₅ RDF.	142.20	160.20	102.20	120.40	200	195	900	900	11.00	11.00

Tabel :- 2 Study of pressmud along with fertilizer on juice quality and cane yield of plant and ratoon crop

Treatment	Sucrose %		Sugar %		Commercial cane sugar (tonnes/ha)		Cane Yield (tonnes/ha)	
	Plant	Ratoon	Plant	Ratoon	Plant	Ratoon	Plant	Ratoon
T ₁ Control	16.47	19.28	10.58	12.90	8.06	11.08	76.30	58.73
T ₂ Pressmus@30kg/ha	19.10	19.77	12.47	13.17	16.41	12.53	131.60	95.14
T ₃ Pressmus@30kg/ha +60KgN/ha	19.80	20.00	13.09	13.26	17.82	13.11	136.10	98.89
T ₄ Pressmus@30kg/ha+ 120 gN/ha	20.27	19.47	13.46	12.91	19.05	12.97	141.40	100.51
T ₅ RDF.	17.74	19.86	11.417	13.14	9.68	11.51	84.40	87.63