

## Effect of Processed Green Organic Fertilizer on the Quality of Sugarcane

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**Abstract:** The experiment was conducted in randomized complete block design with four replications treatments comprised one variety BL-4 to determine the effect of processed green fertilizer on the quality of sugarcane. Maximum germination percentage (58.5), plant height as 3.1 meters, highest number of internodes (27.25), maximum girth of cane (2.5) cm was obtained from 275+112+180 kg/ha NPK+30bags of green fertilizer Combination.

**Key words:** Sugarcane, Processed Green Fertilizer, Quality

### Introduction

Sugarcane *Saccharum Officinarum* enjoys a social position in the agrain economy of Pakistan. Firstly the fixation of high procurement price and second availability of ready market (Ali *et al.*, 1987) sugarcane is one of the most important cash crop and occupied 4<sup>th</sup> position in crops (Memon *et al.*, 1997). It is one of the most efficient crop plant in this regards and is therefore of interest. Its high concentrations and total yields of sugar cane are readily converted to fuels, such as ethanol (Gaseho and Shish, 1981) Sugar cane has a very high water requirement ranging from 146 to 72 cm for 12 to 13 month crop (Thomas *et al.*, 1981). Sugar cane play a very important role in our economy, the cane and sugar yield per unit area in our country are much lower as compared to other sugar cane growing countries (Dero, 1999). The judicious management of fertilizer is an important factor in maximizing cane production (Ashraf and Fatima, 2000). In organic fertilizer is most expensive, little application results lower yield while excessive application gave harmful effect on cane crop. Sugar cane being juice crop has a special importance in manufacturing sugar which is ultimate product of the crop. (Talpur, 1998). No doubt the quality component of cane juice is known to be varietals characters but these are also affected by various agronomy factors. Importance of such type of basic research and their impact on sugar cane future production problem. The experiment was conducted to see the effect of processed green organic fertilizer on the quality of sugar cane.

### Material and Methods

The experiment for growth of sugar cane effect by processed green organic fertilizer was conducted at sugar cane section, Agriculture Research Institute Tando Jam, during growing season 1996-97. The experiment was laid down in RCBD, replicated four times having plot size 14 x 2.7m (37.8m<sup>2</sup>) the details of treatments were as under.

Variety = 01

V<sub>1</sub> = BL4

Treatments = 6

	N	P	K	+	Green fertilizer/h
T <sub>1</sub> =	0	0	0		-
T <sub>2</sub> =	275	112	180		-
T <sub>3</sub> =	275	112	180	+	10bagsGF/h
T <sub>4</sub> =	275	112	180	+	20bagsGF/h
T <sub>5</sub> =	275	112	180	+	30 bags GF/h
T <sub>6</sub> =	275	112	180	+	40bagsGF/h

All the necessary agricultural practices were done as usual; Fertilizer was applied by broad casting in rows. All P and K, green fertilizer and  $\frac{1}{3}$  nitrogen applied at time of sowing. Second  $\frac{1}{3}$  nitrogen before first earthing, Last  $\frac{1}{3}$  nitrogen was applied before second earthing.

### Results and Discussion

The present study indicated that the maximum germination percentage (58.5) was obtained when crop of sugar cane received 30 bags of fertilizer with the dose of 275-112-180 kg/ha. Where as the application of same amount of in organic fertilizer by increasing 10 bags green fertilizer, the germination was reduced up to 3.5%. This indicated that the increase of organic fertilizer beyond 30bags had a negative input on germination ability of sugar cane. Plant height of sugar cane increased progressively from 1.4m length it went up to 3.1meters as fertilizer dose increased from 0-0-0 N P K kg/ha to 275-112-180 kg/ha with 30 bags of green fertilizer. It is visible from data when applications of 40 bags of green fertilizer were made decreased plant height 0.35 meters. Data further show that the total numbers of internodes were counted as 12 in control. Number of internodes reached up to peak 27.25. Where 275 -112-180 N P K kg/ha with combinations of 30 bags of green fertilizer. Results further show that the girth of cane (cm) gave significant impact on dose of 275-112-180 N P K kg/ha at reached up to 0.25cm on alone dose where as with additional application of 30 bags of green fertilizer was increase girth of cane up to 1.35cm, i-e approximately more than double. The findings are supported by Sen *et al.* (1985) who reported then the germination percentage and plant height was significantly influenced by apply inorganic fertilizer singly or with all possible combination of FYM using. Olalla *et al.*,

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**Table 1: Mean Germination Percentage of Sugar Cane as Affected by Green Organic Fertilizer**

Treatment:	Replications				Mean
	I	II	III	IV	
T <sub>1</sub> =0-0-0	29	33	31	27	30.0
T <sub>2</sub> =275-112-180	46	47	44	43	45.0
T <sub>3</sub> =275-112-180+10BGF	53	51	48	44	49.0
T <sub>4</sub> =275-112-180+20BGF	54	54	50	48	51.5
T <sub>5</sub> =275-112-180+30BGF	58	60	59	57	58.5
T <sub>6</sub> =275-112-180+40BGF	55	56	54	55	55.0
Mean	49.167	50.167	47.667	45.667	

C.V%=3.43,

S.E/PLOT=1.6532

CDi=2.4899

CDii=3.4485.

**Table 2: Mean Plant Height in Meter of Sugar Cane as Affected by Green Organic Fertilizer**

Treatment:	Replications				Mean
	I	II	III	IV	
T <sub>1</sub> =0-0-0	1.5	1.4	1.5	1.2	1.4
T <sub>2</sub> =275-112-180	2.6	2.4	2.5	2.0	2.30
T <sub>3</sub> =275-112-180+10BGF	2.8	2.7	2.8	2.7	2.75
T <sub>4</sub> =275-112-180+20BGF	2.9	2.8	2.9	3.0	2.9
T <sub>5</sub> =275-112-180+30BGF	3.1	3.2	3.1	3.0	3.1
T <sub>6</sub> =275-112-180+40BGF	2.7	2.6	2.7	2.6	2.65
Mean	2.60	2.517	2.5	2.3	2.417

C.V%=4.60

S.E/PLOT=0.118

CDi=0.1753

CDii=0.2438

**Table 3: Mean Internodes Per Cane as Affected by Green Organic Fertilizer**

Treatment:	Replications				Mean
	I	II	III	IV	
T <sub>1</sub> =0-0-0	12	13	12	11	12.0
T <sub>2</sub> =275-112-180	15	14	15	16	15.0
T <sub>3</sub> =275-112-180+10BGF	19	20	19	20	19.5
T <sub>4</sub> =275-112-180+20BGF	21	22	21	22	21.5
T <sub>5</sub> =275-112-180+30BGF	27	28	26	28	27.25
T <sub>6</sub> =275-112-180+40BGF	25	26	24	23	24.5
Mean	19.833	20.50	19.50	20.0	

V%=4.22

S.E/PLOT=0.8414

CDi=1.2676

CDii=1.1.7555

**Table 4: Mean Girth of Cane(cm) of Sugar Cane as Affected by Green Organic Fertilizer**

Treatment:	Replications				Mean
	I	II	III	IV	
T <sub>1</sub> =0-0-0	1.2	1.1	1.1	1.2	1.15
T <sub>2</sub> =275-112-180	1.4	1.3	1.4	1.3	1.35
T <sub>3</sub> =275-112-180+10BGF	1.7	1.6	1.5	1.4	1.55
T <sub>4</sub> =275-112-180+20BGF	1.9	1.8	1.7	1.8	1.8
T <sub>5</sub> =275-112-180+30BGF	2.4	2.5	2.6	2.5	2.5
T <sub>6</sub> =275-112-180+40BGF	2.0	2.1	2.1	2.0	2.05
Mean	1.767	1.733	1.733	1.700	

C.V%=4.87

S.E/PLOT=0.837

CDi=0.1271

CDii=0.1761

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(1986) applied N at 0-450 kg/ha,  $P_2O_5$  at 0-200 kg/ha and  $K_2O$  at 0-300kg/ha with or without FYM at 0-200-t/ha gave ideal response in germination percentage, plant height and girth of cane. Kanwar *et al.* (1987) conduct field trial in Punjab on cultivar Co.J-0-64 by two press mud cakes and FYM each at 20-t/ha were applied alone or plus 100kg N/ha or 150 kg N/ha. The monetary return were obtained in plant height, inter nodes and girth of cane. Chan and Weng, (1998) applied pig manure as a base dressing at 250kg/ha, gave highly response in germination percentage and plant height. Dua *et al.* (1988) conduct field experiment on cultivar Co.1148, found than urea alone gave significant result in plant height internodes and cane girth than FYM alone or combined with urea. Bhatti *et al.* (1989) conducted field trial applied K fertilizer after green manure crops, the response of green manure crops satisfactory but the K was in consistent. Murayama *et al.* (1990) planted sugar cane cultivar Ishurdi-16 in Bangladesh by using recommended fertilizer rates with 10-t cattle manure/ha. Result indicates that increase germination percentage, tiller number, plant height and girth of cane on application of cattle manure with organic fertilizers. Jonathan *et al.* (1991) tested press mud 25-t/ha, FYM 20-t/ha, Poultry manure 20-t/ha and sugar cane bagasse 25-t/ha. Gave highly response in germination percentage but press mud were the most effective on plant height and internodes also. Cosanova *et al.* (1991) used combination of different substances FYM sugar cane filter cake, rice husks. Result indicated that plant height; cane girths are significantly increased on FYM and sugar cane filter cake respectively.

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