



THE EFFECT OF BIOZYME ON THE YIELD AND QUALITY BEHAVIOR OF SUGARCANE CROP

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ABSTRACT

The present study was undertaken during 2014-15 and 2015-16 to assess the effect of biozyme on the yield and quality behavior of sugarcane crop at farmer's field. The data indicate that the number of millable canes varied significantly due to different treatment of biozyme. All the doses of biozyme irrespective of granules or liquid form increased the number of millable canes when compared with that of control plot. The millable cane number from the plots without but receiving the recommended doses of nitrogen, phosphorous and potassium was significantly lower than that of those receiving biozyme also soil application or soil+ foliar application. The highest number was recorded when 150 ml. biozyme was sprayed on 180th day. The length of cane and number of internodes per cane also showed the same trend. Weight of cane also increased due to biozyme application. Highest cane weight of 845 gram was received when 10Kg biozyme grainuales were applied at the time of planting and 150 ml. formulation was sprayed in the time of planting and 150 ml. formulation was sprayed in the same field on 120th day of planting. During second season *i.e.* 2015-16 the millable canes. Length of cane, number of internodes per cane and weight per cane were also increased significantly when compared with control plot where only recommended doses of nitrogen, phosphorous and potassium were applied (But biozyme was not soil dressed or foliar sprayed). The significantly highest number of millable cane of 108.10 thousand per hectare was recorded when 10kg biozyme granules were applied as soil application +150ml liquid biozyme was sprayed on crop plants on 120th day of planting, followed by the treatment of 150 ml. biozyme sprayed on 120th day and again 150 ml. on 180th day of planting (150.00 thousand) . The highest length of cane was recorded when 10 kg granules of biozyme were applied as soil application followed by 300 ml. liquid biozyme sprayed on 120th day of planting . The number of internodes per cane was highest in case of treatment four where 25 kg grainules of biozyme per hectare applied at the time of planting. However, highest cane weight was recorded when 150 mi. biozyme per hectare was applied on 120th and the same dose was repeated on 180th of day of planting.

KEY WORDS: Millable cane, Brix values, Organic carbon, Potassium, Phosphorus, Cane juice.

INTRODUCTION

Sugarcane is most important crop of sugarcane under tropical and sub-tropical parts of the world. India ranks second and fourth with respect to area and sugar production amongst sugarcane growing countries of the world. It is primarily because of poor productivity of the crop. Within country, the yields are higher in tropical parts as compared to sub-tropical regions. So much so the same yields are not being repeated year after year or yields are not sustained even after proper management given to the crop. Farmers under north Indian conditions are visualizing that higher yields are not possible by putting the same amount of nitrogen, phosphorous and potassium every year. With the same amount and effect the productivity is declining. To increase productivity of the crop, special effects are needed. This may not only include heavy dressing of nitrogen, phosphorous and potassic fertilizers but also special managerial effects. It is not known as to what reasons put forward for this declining pattern. One could guess about some interactions between absorbed nutrients and assimilated compounds in the plant cell may be due to lack of certain active agents responsible for converting absorbed nutrients into economic products of the plants. At plant cell level there could be certain

enzymatic deficiencies which might be leading to such situations. The research laboratories in the world may be aware about exact problem of hormonal disorder in the cell cep. Never the less, they are busy in producing and experimenting upon certain hormonal formulations thinking that if such products were sprayed on the sugarcane plant at right time and in correct concentration then they might help in increasing the rate of assimilation of absorbed nutrients and trans-location of assimilated from source to sink. Biozyme which contains Cytokinin, Auxin precursor, enzymes and hydrolyzed protein complexes might well. It was, therefore planned to take up investigation on the use of biozyme in sugarcane so far as yield and quality of juice was concerned.

MATERIALS & METHODS

The field experiments consisting of the following treatments were conducted at the farmer's field under my close supervision during 2014-15 and 2015-16 crop seasons. The trial was conducted in a Randomized block Design with four replications. The soil of the experimental plot was slightly alkaline in nature (pH7.9), medium in organic carbon (0.95%), high in potassium (325 kg K₂O /ha), and medium in phosphorus content (26.0 Kg P₂O₅

/ha.). The sugarcane of variety Co-0238 was planted on 25th September and 05th October during the two crop seasons, respectively. All the recommended package of practices was followed while raising the experimental crop.

TREATMENTS:-

1. Control (150 Kg N +80Kg P2O5 /ha. and No. biozyme)
2. Treatment no.-1 + Biozyme @ 10 Kg/ha. soil application
3. Treatment no.-1 + Biozyme @ 15Kg /ha. Soil application
4. Treatment no.-1 + Biozyme @ 25Kg/ ha. Soil application
5. Treatment no.-1 + Biozyme @ 10 Kg/ha. Soil application +300 ml.biozyme /ha, spraying on 120th day of planting.
6. Treatment no.-1 + Biozyme @ 10 Kg/ha. soil application +150 ml.biozyme /ha, spraying on 120th day of planting.
7. Treatment no.-1 + Biozyme @ 150 ml/ha. spraying on 120th day +150 ml.biozyme /ha, spraying on 180th day of planting
8. Treatment no.-1 +water spraying on 120th day + water spraying on 180th day

RESULTS & DISCUSSION

Yield Contributory Characters

The data of crop season 2014-15 presented in Table -1 indicate that the number of millable canes varied significantly due to different treatment of biozyme. All the doses of biozyme irrespective of granules or liquid form increased the number of millable canes when compared with that of control plot. The millable cane number from the plots without but receiving the recommended doses of nitrogen, phosphorous and potassium was significantly lower than that of those receiving biozyme also either soil application or soil + foliar application. The highest number was recorded when 150 ml biozyme was sprayed on 180th day. The length of cane and number of internodes per cane also showed the same trend. Weight of cane also increased due to biozyme application. Highest cane weight of 845 gram was received when 10Kg biozyme granules were applied at the time of planting and 150 ml. formulation was sprayed in the time of planting and 150 ml. formulation was sprayed in the same field on 120th day of planting.

TABLE 1: Number of Millable cane, Length of cane, Number of Internodes / cane and Weight / Cane as influenced by the treatments of Biozyme During 2014-15.

Treatment	Millable canes (000 /ha.)	Lenth of cane (m)	Number of Internodes/cane	Weight of cane (g)
1.	88.41	2.12	28.10	609
2.	101.02	2.42	33.20	701
3.	99.45	2.30	35.40	699
4.	96.84	2.38	34.60	708
5.	102.40	2.15	35.10	714
6.	101.52	2.41	35.00	845
7.	106.11	2.22	34.80	718
8.	101.41	2.01	33.20	699
CD 5%	5.11	0.12	1.05	10.65

TABLE 2: Number of Millable cane, Length of cane, Number of Biozyme Internodes /cane and Weight /Cane as influenced by the treatments of during 2015-16.

Treatment	Millable canes (000 /ha.)	Lenth of cane (m)	Number of Internodes/cane	Weight of cane (g)
1.	87016	1.85	27.40	588
2.	99.21	1.95	29.20	612
3.	98.60	1.90	30.10	619
4.	101.50	2.00	34.20	625
5.	100.30	2.12	33.40	648
6.	108.10	1.98	32.00	608
7.	105.00	1.88	29.90	765
8.	100.80	2.12	30.80	605
CD 5%	6.51	0.08	1.10	11.28

During second season *i.e.* 2015-16 the millable canes length of cane , number of internode per cane and weight per cane were also increased significantly when compared with control plot where only recommended doses of nitrogen, phosphorous and potassium were applied (But biozyme was not soil dressed or foliar sprayed). The significantly highest number of millable cane of 108.10 thousand per hectare was recorded when 10 Kg biozyme granules' were applied as soil application + 150ml liquid biozyme was sprayed on crop plants on 120th day of planting, followed by the treatment of 150 ml. biozyme sprayed on 120th day and again 150 ml. on 180th day of

planting (150.00 thousand). The highest length of cane was recorded when 10 Kg granules of biozyme were applied as soil application followed by 300 ml. liquid biozyme sprayed on 120th day of planting . The number of internodes per cane was highest in case of treatment four where 25 kg grainules of biozyme per hectare applied at the time of planting. However, highest cane weight was recorded when 150 mi. biozyme per hectare was applied on 120th and the same dose was repeated on 180th of day planting.

TABLE 3: Sugarcane yield (t /ha.) as influenced by different treatments of Biozyme during 2014-15 and 2015-16

Treatment	Year		Mean
	2014-15	2015-16	
1	85.48	80.84	83.16
2	98.31	82.67	90.48
3	99.21	88.53	93.87
4	98.13	91.23	94.68
5	101.14	92.12	96.63
6	102.12	90.67	96.39
7	100.21	87.87	94.04
8	99.00	83.74	91.37
CD 5%	5.42	4.91	-

Cane Yield

Like yield contributory characters of the plant, cane yield also increased significantly due to biozyme application during both the crop seasons. The control plot (where all the recommended doses of nitrogen, phosphorus and potassium were applied) recorded a yield of 85.48 t/ha. during the year 2014-15, which was significantly inferior then those of biozyme treated plots. The highest yield of 102.12 t/ha. was recorded when 150 ml biozyme per hectare sprayed on 120th day of planting and same dose was repeated on 180th day. However, during 2015-16, the highest cane yields of 92.12 t/ha. was recorded when 10 kg biozyme grainules per

hectare were applied as basal dressing followed by 300 ml biozyme per hectare sprayed in the same plot. The significant yield increase due to biozyme treatment over to control was mainly due to good effect of biozyme on millable cane and individual cane weight. During grand growth phase of sugarcane crop, biozyme must have done something good which contributed in more number of millable cane and higher individual cane weight.

Quality of Cane Juice

The quality parameter judged by recording brix values of pooled juice indicated that the biozyme neither increased the quality of juice nor it had little edge over control treatment.

TABLE 4: Brix values (%) of Sugarcane Juice as Influenced by different treatment of biozyme during 2014-15 and 2015-16

Treatment	Year		Mean
	2014-15	2015-16	
1	19.1	18.5	18.8
2	20.0	18.6	19.3
3	19.5	18.4	18.9
4	20.6	18.8	19.7
5	19.5	19.0	19.2
6	19.0	18.8	18.9
7	19.2	18.3	18.7
8	19.6	18.8	19.2

CONCLUSION

When sugarcane crop, variety Co-0238 treated with biozyme produced 16.1 percent higher cane yield. In terms of absolute quantity it gave 134.7 quintal higher cane yield per hectare when compared to treatment no. 5 over to control plot (where only recommended doses of nitrogen, phosphorus and potassium were applied), with a gross advantage of Rs. 43105 per hectare accounting for extra cost of chemical and spraying charge of Rs.3100.00 per hectare.

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