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COMPARATIVE STUDY OF DIFFERENT ORGANIC MANURES AND FERTILIZERS ON NUTRIENT UPTAKE OF PLANT AND RATOON SUGARCANE CROP

V. E. Darandale
Assistant Professor, Dept. of Botany A.C.S. College, Sonai, Tal. Newasa, Dist-Ahmednagar.
vitthalrao.darandale@gmail.com

Abstract:
A field experiments were conducted on plant and ratoon sugarcane during the year 2007-08 and 2008-09 at Research farm of Mula sugar factory Sonai Dist. Ahmednagar. The main objective was comparative study of different organic manures and fertilizers on nutrient uptake of plant and ratoon sugarcane with variety CO-86032. The experiment was laid out in randomized block design with three replication and thirteen treatment. The treatment consisted of 50% and 25% levels of organic manures viz. Compost, Vermi compost, Neem cake, Press mud and Cassia leaves along with inorganic fertilizers like urea at 50% and 75% levels. The data revealed that maximum increase in nutrient uptake such as nitrogen, phosphorus and potassium kg/ha in total plant for plant crop were 366.72, 99.56 and 300.49kg/ha respectively. In case of ratoon crop it was recorded 369.54, 99.67 and 300.39 kg/ha respectively. Where nitrogen was supplied through 50% press mud and 50% urea. Second best treatment was 50% vermicompost + 50% urea which was followed by 50% neem cake + 50% urea.
Keywords: Press mud, Sugarcane, Nutrient uptake, Manure.

Introduction

Sugarcane (*Saccharum officinarum*L.) is one of the most important commercial cash crop of the world. Sugar industry is the second largest agro based industry next to textiles in the country. Sugarcane crop cultivated in about 121 different countries of the world. India contributes an area about 4.0 million ha. With 300 million ton of production having average production of 68 t/ha and sugar recovery is about 9-10 percent [12]. Maharashtra is one of the leading sugar producing state in the country having sugar producing state in the country having area about 10.46 lac hectares with cane production 735.4 lac tones with an average cane production of 70.33 t/ha and recovery of 11.91%. According to national projection our country need 22.29 and 20.69 million tons of sugar and jiggery by 2020 and in order to achieve these targets sugarcane production will be required 284.3 million tons. There is little scope for increasing area under sugarcane. The alternative way would be to maximize the productivity per unit. Sugarcane crop stands in the field for period of 12-18 months for planting season and 12 months for ratoon season and it required 16 different types of nutrients. Nitrogen, phosphorus and potassium are the major nutrients. At present nitrogen was supplied through chemical fertilizers. The continuous use of fertilizers degraded the soil fertility and productivity. Integrated application of organic manures and fertilizers assures high crop and soil productivity. In order to achieve improvement in nutrient uptake for plant and ratoon sugarcane crop present investigation was carried out.

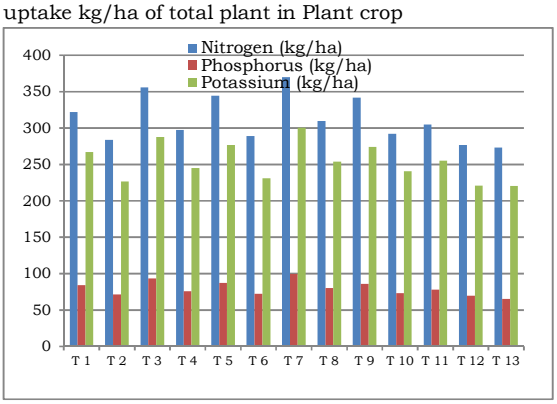
Materials and Methods

Field experiment was conducted in research farm of Mula Sugar factory Sonai. Dist. Ahmednagar. Experiment was performed on the plant and ratoon season with sugarcane variety CO- 86032. The soil was medium black having p^H 8.3 Electrical conductivity 0.30Dc/Mint, Organic carbon 0.69 and available N,P,K was 260 kg/ha^{-1}, 30 kg/ha^{-1}314 kg/ha^{-1} respectively. The experiment was laid out randomized block design with three replications and thirteen different treatments. The treatment consisted of 50% and 25% levels of organic manures viz. Compost, Vermicompost, Neemcake, Pressmud and Cassia leaves along with inorganic fertilizers like urea at 50% and 75% levels.Which was comprised with mixed organic manures, R.D.F. and control treatments. The nutrient uptake such as nitrogen, phosphorus and potassium kg/ha in stem, leaves and total plant were analyzed in plant and ratoon crop.

Result and Discussion

Perusal of data in table no 1 shows that in a plant crop maximum increase in nutrient uptake such as nitrogen, phosphorus and potassium kg/ha in stem, leaves and total plant were recorded 369.72, 99.56 and 300.49 kg/ha respectively. The data also shows that in a ratoon crop maximum increase in nutrient uptake such as nitrogen, phosphorus and potassium kg/ha in stem, leaves and total plant were recorded 369.54, 99.67 and 300.39 kg/ha respectively

Graph No.1: Nitrogen, phosphorous and potassium uptake kg/ha of total plant in Plant crop



Graph No.2: Nitrogen, phosphorous and potassium uptake kg/ha of total plant in Ratoon crop

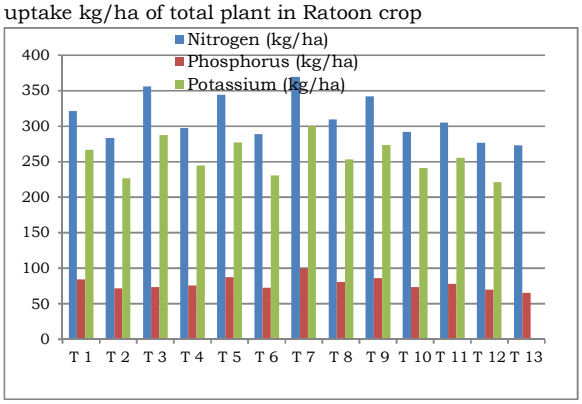


Table 1. Effect of different organic manures and fertilizers on nitrogen, phosphorus and potassium kg/ha of total plant in plant and ratoon sugarcane crop.

Sr.no	Treatments	Nitrogen uptake kg/ha^{-1}		Phosphorus uptake kg/ha^{-1}		Potassium uptake kg/ha^{-1}	
		Plant Crop	Ratoon Crop	Plant Crop	Ratoon Crop	Plant Crop	Ratoon Crop
1	50%C.O+50% U	321.63	321.64	84.24	84.18	266.92	266.85
2	25%C.O+75% U	283.62	283.54	71.52	71.51	226.53	226.54
3	50%V.C+50%U	355.87	355.58	93.34	93.36	287.54	287.70
4	25%V.C.+75%U	297.41	297.34	75.72	75.71	244.80	244.80
5	50%N.C+50%U	344.38	344.41	87.34	87.38	276.94	277.00
6	25%N.C+75%U	288.96	288.89	72.52	72.60	230.87	230.84
7	50%P.M+50%U	369.72	369.54	99.56	99.67	300.49	300.39
8	25%P.M+75%U	309.57	309.56	80.36	80.48	253.59	253.51
9	50%C.L+50%U	341.61	341.66	86.14	86.16	273.73	273.75
10	25%C.L+75%U	292.13	291.96	73.33	73.30	240.98	240.87
11	M.O.M	304.92	304.93	78.16	78.09	255.26	255.36
12	R.D.F.	276.73	276.70	69.93	69.85	220.93	220.92
13	Control	273.06	273.02	65.32	65.21	220.77	220.78
	SE	4.68	4.69	1.41	1.42	4.3	4.31
	CD	8.86	8.87	2.96	2.98	9.04	9.06

Conclusion

Comparative study of different organic manures and fertilizers on nutrient uptake was extremely important for growth and productivity of plant and ratoon sugarcane. From above experiments it was concluded that in plant and ratoon sugarcane crop among the various treatments maximum increase in a nutrient uptake such as nitrogen, phosphorus and potassium kg/ha in a total plant was found in a treatment where nitrogen was supplied through 50% pressmud and 50% urea.

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