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Effect of Farm Yard Manure, Spacings and Nitrogen Application on Chemical Constituents of Elephant Foot Corm (*Amorphophallus campanulatus* Blume)

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A field experiment was conducted on the College Agronomy Farm of Gujarat Agricultural University, Anand during the *kharif* season of 1980-81 to study the effect of farm yard manure, spacing and nitrogen on nitrogen, phosphorus, potassium starch and silica content (%) and uptake (kg/ha) by elephant foot corm. The treatments consisting of all combinations of two levels of farm yard manure (0, 30 t/ha), three levels of spacing (60 cm x 90 cm, 90 cm x 90 cm and 120 cm x 90 cm) and four levels of nitrogen (0, 50, 100 and 150 kg N/ha) were tested in split plot design with four replications. Entire dose of farm yard manure and P_2O_5 (SSP) with half the dose of nitrogen was given manually in pits 30 cm x 30 cm x 30 cm before planting of corm. Remaining half dose of nitrogen was top-dressed in two equal splits (25% and 25%) around the plant after 95 and 123 days of planting the crop. The soil of the experimental plot was deep, alluvial and well drained loamy sand locally known as *goradu* soil.

Data presented in Table 1 indicated that nitrogen content did not show any effect of farm yard manure. Nitrogen content of corm showed higher value by 8.49% at wider spacing of 120 cm x 90 cm, however, uptake was increased by 32.80 per cent over narrow spacing of 60 cm x 90 cm. Significantly higher nitrogen content was noticed at 50 kg nitrogen application over no application. However, the highest uptake was observed at 150 kg nitrogen. The results indicated that as such the crop was very exhaustive using very high amount of nitrogen.

Application of 30 t F.Y.M. increased 17.27% higher phosphorus uptake over no application. Effect of spacing was absent on phosphorus content of corm but uptake increased by 19.10 and 38.59% in 60 cm x 90 cm sepacing over 90 cm x 90 cm and 120 cm x 90 cm spacing respectively. Application of nitrogen at the rate of 150 kg showed increased phosphorus content by 2.5 per cent compared to 50 kg application. As far as uptake was concerned there was a decreasing trend with decreasing nitrogen levels.

Application of 30 t F.Y.M./ha increased potassium content as well as uptake appreciably. The content was increased by 4.25%. As regard the effect of spacing on potassium content and its uptake, it was noticed that narrow spacing of 60 cm x 90 cm increased both its content and uptake. Data revealed that at 150 kg nitrogen application potassium content and uptake was increased by 2.10 and uptake by 10.76%. It was evident from the results that high amount

TABLE 1

Mean corm yield, nitrogen, phosphorus, potassium, starch and silica content (%) and uptake (kg/ha) by elephant foot corm.

Treatments	*Corm yield (kg/ha)*	*Nitrogen*	*Phosphorus*	*Potassium*	*Starch*	*Silica*
F.Y.M.(t/ha)						
0	31815	1.09	1.04	2.35	58.14	3.03
		(361.41)	(378.34)	(785.87)		
30	36731	1.31	1.34	2.45	58.79	3.31
		(411.29)	(443.69)	(893.01)		
C.D. at 5%	391.69	N.S.	0.58	0.05	N.S.	0.20
		(15.11)	(20.82)	(10.59)		
Spacing(cm)						
60 x 90	40138	1.06	1.19	2.44	58.20	3.29
		(433.55)	(481.43)	(1005.54)		
90 x 90	33694	1.11	1.19	2.39	58.12	3.26
		(399.17)	(404.23)	(809.77)		
120 x 90	28988	1.15	1.19	2.37	59.08	2.95
		(326.31)	(347.38)	(703.01)		
C.D. at 5%	616.34	0.06	N.S.	0.03	0.68	N.S.
		(28.45)	(18.52)	(29.66)		
Nitrogen(kg/ha)						
0	33243	1.05	1.20	2.38	57.96	3.18
		(353.17)	(383.71)	(781.34)		
50	34006	1.13	1.16	2.40	58.34	3.00
		(394.89)	(408.82)	(859.33)		
100	34446	1.11	1.23	2.40	58.75	3.26
		(389.20)	(425.44)	(851.67)		
150	35397	1.12	1.18	2.43	58.80	3.24
		(408.13)	(426.08)	(865.32)		
C.D. at 5%	711.69	0.06	0.05	0.03	0.79	N.S.
		(32.86)	(21.38)	(34.25)		

Figures in parenthesis are of uptake and expressed in kg/ha.

of potassium was utilized which indicates that critical assessment for the potash requirement may be ascertained.

The starch content at 120 cm x 90 cm spacing was found significantly higher as compared with 90 cm x 90 cm. Similarly it was significantly higher at 150 kg nitrogen dose as compared with no nitrogen application. Application of 30 t F.Y.M. increased silica content by 9.24% in corm over no F.Y.M. application. No remarkable differences due to silica content in corms were observed as a result of different levels of spacing and nitrogen.

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