GAU Res. J. 1997. 23 (1) : 88-90

Effect of Harvesting Stages and Levels of Nitrogen and Phosphorus on Yield of Fodder Maize (*Zea mays* L.)

B. M. Agath, M. G. Jethwa, V. D. Khanpara, B. B. Kaneria and R. K. Mathukia

Department of Agronomy, Gujarat Agricultural University, Junagadh-362 001

A field experiment was conducted at the Instructional Farm, Gujarat Agricultural University, Junagadh during *rabi* season of 1992-93. The soil was clay loam in texture, low in total nitrogen (0.07%), medium in available phosphorus (33.89 kg/ha), high in available potassium (302.75 kg/ha) and slightly alkaline in reaction (7.8 pH) with normal E.C. (0.29 dS/m). Twenty four treatment combinations consisting two stages of harvesting (silking and milking), four levels of nitrogen (0, 40, 80 and 120 kg N/ha) and three levels of phosphorus (0, 40 and 80 kg P_2O_5/ha) were tried in a split plot design and replicated three times. Half dose of N and full dose of P as urea and SSP, respectively were applied at sowing and remaining half dose of N in the form of urea was top-dressed at 25 days after sowing. The crop variety was sown on October 22, 1992 at inter-row spacing of 30 cm with 60 kg seeds/ha.

Plant height at harvest, length of internode and leaf area/plant recorded at milking stage were significantly higher than those recorded at silking stage. While plant height at 40 DAS, leaves/plant, internodes/plant and stem thickness did not differ between the two stages of harvesting. Green and dry fodder yields recorded at milking stages were significantly higher than silking stage. At milking stage, 13.87 and 22.77% higher green and dry fodder yields were recorded over at silking stage, respectively. The higher yield at milkiing stage could be because of the fact that vegetative growth in maize normally take place upto milking stage and thenafter the nutrients absorbed by plants get utilized for maturity and grain fromation. The findings corroborates the reports of Tiwana *et al.* (1983).

The growth attributes were significantly improved with each incremental level of N and application of 120 kg N/ha recorded maximum values of plant height at 40 DAS and at harvest, leaves/plant, internodes/plant, length of internode, stem thickness and leaf area/plant. At this level, 98.5, 29.2 and 14.2% higher green fodder and 102.5, 31.3 and 16.3% higher dry fodder yield were recorded over 0, 40 and 80 kg N/ha, respectively. The results are in confirmity with those of Singh *et al.* (1981) and Hunshal *et al.* (1989).

Application of phosphorus above 40 kg/ha failed to show significant influence on growth attributes. Application of 40 kg P_2O_5/ha while

TABLE 1

Effect of different treatments on growth and yield of fodder maize.

Treatment	*Plant height (cm) at*		*Leaves/plant at*		*Internodes/ plant*	*Length of internode (cm)*	*Stem thickness (cm)*	*Leaf area/ plant (cm^2)*	*Fodder yield (q/ha)*	
	40 DAS	*Harvest*	*40 DAS*	*Harvest*					*Green*	*Dry*
Harvesting stages										
Silking	105.6	155.6	13.1	15.7	13.1	13.6	1.16	14.60	280.6	66.9
Milking	108.3	164.4	13.4	16.0	13.4	15.4	1.24	15.74	319.5	82.1
C. D. at 5%	NS	8.4	NS	NS	NS	1.0	NS	0.93	23.1	7.9
Nitrogen (kg/ha)										
0	91.7	141.0	10.4	15.1	11.7	13.3	0.96	14.37	191.7	47.2
40	102.8	158.8	12.8	15.6	13.1	14.2	1.12	14.97	294.6	72.8
80	111.1	166.7	13.9	16.1	13.7	14.7	1.28	15.58	333.3	82.2
120	122.2	173.5	15.8	16.6	14.6	15.8	1.44	16.19	380.6	95.6
C. D. at 5%	3.8	5.0	0.7	0.4	0.4	0.5	0.09	0.60	14.8	4.2
Phosphorus (kg/ha)										
0	99.4	149.8	11.4	15.0	12.9	13.6	0.75	14.74	266.7	66.3
40	109.6	165.3	13.8	16.2	13.4	14.9	1.39	15.37	314.2	78.0
80	111.8	165.5	14.3	16.4	13.4	15.0	1.46	15.80	319.2	79.2
C. D at 5%	3.3	4.3	0.6	0.4	0.4	0.5	0.08	0.52	12.8	3.6

producing statistically similar green and dry fodder yields to that of 80 kg P_2O_5/ha gave 17.8% higher green fodder yield and 17.6% higher dry fodder yield over control. The results are in accordance with those reported by Hunshal *et al.* (1989) and Dodia (1991).

(Received on 8th May, 1996)

REFERENCES

Dodia, N. C. 1991. Forage production potentiality of maize cultivars as influences by graded doses of nitrogen and phosphorus under South Gujarat conditions. M. Sc. (Agri.) thesis, Gujarat Agricultural University, Sardar Krushinagar.

Hunshal, C. S., Balikal, R. A. and Viswanath, D. P. 1989. Influence of N and P levels on green forage yield of South African maize. *J. Maharashtra Agric. Univ.* **14** (3) : 362-363.

Singh, M., Mazmudar, H. K., Dhingra, K. K. and Grewal, S. S. 1981. Performance of newly evolved maize varieties under varying levels of nitrogen and its time of application for fodder yield. *Indian J. Agron.*, **26** (4) : 382-386.

Tiwana, M. S., Puri, K. P. and Gill, S. S. 1983. Fodder maize in relation to cutting intervals. *J. Res. Punjab Agric. Univ.*, **20** (4) : 430-434.