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Effect of Harvesting Stages and Levels of N and P on Yield, Quality and Uptake of Nutrients by Fodder Maize (*Zea mays*)

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A field experiment was conducted at the Agronomy Farm, Gujarat Agricultural University, Junagadh during *rabi* season 1992-93. The soil was clay loam in texture and slightly alkaline in reaction (pH 7.8) with normal E.C. (0.29 dS/m) and having total N 0.07%, available P 34 kg/ha and available K 303 kg/ha. Twenty four treatment combinations consisting of two stages of harvesting (silking and milking) as main plots, four levels of N (0, 40, 80 and 120 kg N/ha) and three levels of P (0, 40 and 80 kg P_2O_5/ha) as sub-plots were tried in split plot design and replicated thrice. The maize cv Ganga Safed-2 was sown at row spacing of 30 cm with seed rate of 60 kg/ha on October 22, 1992 and harvested on December 20, 1992 and January 2, 1993 at silking and milking stages, respectively. Treatment-wise half dose of N and full dose of P in form of urea and SSP, respectively were applied at sowing and remaining half dose on N was top-dressed at 25 DAS.

Green and dry fodder yields recorded at milking stage were significantly higher than that recorded at silking stage. Milking stage recorded higher green and dry fodder yield to the tune of 13.9 and 22.8% over silking stage, respectively. Nitrogen and crude protein contents were low in milking stage of harvesting as compared to silking stage. This might be due to fact that at milking stage, consumption of N and protein increase with rapid cell division and multiplication resulting in low N and protein in plants. The findings are in accordance with those of Tiwana *et al.* (1983). There was no significant difference between the two stages of harvesting in respect of P content. Crude fibre content was more in delayed harvesting. Delayed harvesting significantly increased the uptake of N and P also. Similar results are also reported by Patel and Saiyed (1990).

Application of 120 kg N/ha significantly increased the contents of N, crude protein and crude fibre, while decreased the P content. Increase in level of N significantly increased the uptake of N and P as well as protein yield. The observations are in line with those of Singh *et al.* (1989) and Dodia (1991).

TABLE 1

Effect of different treatments on forage yield, quality and nutrient uptake by maize.

Treatments	*Fodder yield (q/ha)* Green	Dry	*N content (%))*	*P content (%)*	*Crude protein content (%)*	*Crude fibre content (%)*	*N uptake (kg/ha)*	*P uptake (kg/ha)*	*Protein yield (kg/ha)*
Harvesting stages									
Silking	280.6	66.9	1.06	0.14	6.62	26.92	72.49	9.43	442.2
Milking	319.5	82.1	1.01	0.13	6.32	27.48	85.04	11.38	519.1
C. D. at 5%	23.1	7.9	0.05	NS	0.28	0.41	12.25	0.95	72.9
Nitrogen (kg/ha)									
0	191.7	47.2	0.91	0.15	5.68	26.67	42.57	6.93	266.7
40	294.6	72.8	0.96	0.14	5.98	27.03	69.29	10.34	430.4
80	333.3	82.2	1.07	0.14	6.69	27.38	87.84	11.31	549.7
120	380.6	95.6	1.21	0.13	7.54	27.72	115.36	12.73	675.6
C. D. at 5%	14.8	4.2	0.03	0.01	0.17	0.23	5.68	0.56	46.1
Phosphorus (kg P_2O_5/ha)									
0	266.7	66.3	1.03	0.10	6.42	27.35	69.61	6.65	434.8
40	314.2	78.0	1.03	0.14	6.46	27.20	82.46	10.82	492.0
80	319.2	79.2	1.05	0.18	6.53	26.92	84.22	13.73	515.2
C. D. at 5%	12.8	3.6	NS	0.01	NS	0.20	4.91	0.48	39.9

Application of 40 and 80 kg P_2O_5/ha being at par recorded significantly higher green and dry fodder yields over control. P application did not exert significant influence on N and protein contents. P fertilization significantly increased the content of P, while decreased the fibre content. Application of 80 kg P_2O_5/ha recorded significantly higher uptake of N and P as well as protein yield but remained at par with that of 40 kg P_2O_5/ha in respects of N uptake and protein yield. The findings corroborates the reports of Dodia (1991).

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