

FODDER YIELD AND QUALITY OF PEARL MILLET (*Pennisetum americanum*) AS INFLUENCED BY DIFFERENT NITROGEN RATES

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Investigations to ascertain the effect of different nitrogen rates on the fodder yield and quality of pearl millet, were carried out at the Agronomic Research Area, University of Agriculture, Faisalabad. The nitrogen rates were 0, 75, 100 and 125 kg per hectare. All nitrogen levels produced significantly more plant height, leaf area and green weight per tiller, final plant stand, green fodder as well as dry matter than the control. However, the plant height, final plant stand and green fodder yield was not increased significantly by the application of nitrogen beyond the level of 100 kg per hectare. There was consistent increase in protein content of the fodder with successive increase in the nitrogen rate.

Key words: *Pennisetum americanum* L. Nitrogen rates, Growth and yield.

INTRODUCTION

Pearl millet (*Pennisetum americanum*) is a quick growing and short duration summer fodder crop. It serves as a palatable and nutritious fodder for animals when fed green whereas the grains can be used as a feed for poultry birds. The supply of green fodder to the existing number of animals at present demands increased fodder production. Among the factors responsible for increasing the yield, judicious use of fertilizer plays a vital role in enhancing the yield of crops.

The soils of Pakistan are characteristically deficient in nitrogen and it has been reported that the application of nitrogenous fertilizer is an effective way of improving yield and quality of fodder crops [1]. However, the use of fertilizer either in excess or less than the optimum rate may deteriorate both yield and quality of bajra fodder to a remarkable extent [4] and yield and protein contents of forage could greatly be increased by nitrogen application [5]. There was consistent increase in stalk thickness, leaf number and area, green fodder yield and nitrogen percentage in bajra fodder with successive increase in nitrogen rate [3,2]. Malik and Sharma [6] stated that irrigation at the depletion of 50 percent available soil moisture from 10 to 30 cms. soil layer increased green fodder yield of pearl millet with increased nitrogen application. Taneja *et. al.* [7] reported that application of 100-150 kg N/ha gave similar yield but higher than 50 kg N/ha.

MATERIALS AND METHODS

Studies to investigate the effect of various nitrogen rates on the fodder yield and quality of pearl millet were

carried out on a sandy loam soil at the Agronomic Research Area, University of Agriculture, Faisalabad during 1981. The nitrogen rates were 75, 100 and 125 kg per ha. against control. The experiment was quadruplicated in randomized complete block design with a net plot size of 0.003 ha.. Pearl millet (*Niger composite*) was sown in the first week of June, using a seed rate of 8 kg per ha. Whole of the nitrogen, in the form of urea, was applied at sowing. All other agronomic practices were normal and uniform for all the treatments. The data collected were analysed statistically and Duncan's Multiple Range Test was employed to test the significance of treatment means.

RESULTS AND DISCUSSION

The data presented in Table 1 reveal that the green fodder yield was increased significantly by all nitrogen applications over control. However, there was nonsignificant difference between nitrogen applied at the rates of 100 kg and 125 kg per hectare. Nitrogen application at the rate of 125 kg per ha. yielded the maximum green fodder (36.67 thousand kg per ha.), whereas the minimum yield (21.92 thousand kg per ha.) was produced by control. Increased fodder yield by the application of nitrogen had also been reported by Ahmad [1], Iqbal [4], Malik and Sharma [6], Ghani [2] and Taneja *et. al.* [7]. Accordingly all the nitrogen applications yielded higher dry matter than control. Nitrogen application at the rates of 75 and 100 kg per ha. produced the same yield. The maximum dry matter yield (12.04 thousand kg per ha.) was obtained at 125 kg nitrogen application. The results lent strong support by those of Ahmad [1] and Khan [5] who considered that dry matter yield had been a direct function of nitrogen application.

Table 1. Fodder yield and quality of pearl millet as influenced by different nitrogen rates.

Treatments	Plant height (cm)	Final plant stand per m ²	Leaf area per tiller (cm ²)	Green fodder yield (000 kg/ha)	Dry matter (000 kg/ha)	Protein content (%)
Nitrogen rates (kg/ha)						
Control	204.21c*	26.30c*	1236.38d*	21.92c*	7.29c*	10.17d*
75	226.53b	30.74bc	1713.84c	28.67b	9.42b	11.25c
100	253.42a	34.41ab	3128.07b	33.10a	10.22b	12.30b
125	262.34a	36.97a	3615.17a	36.67a	12.04a	13.10a

* = Means not sharing a letter in common differ significantly.

The increase in green fodder as well as in dry matter with nitrogen application was due to its beneficial effect on plant height, leaf area, green weight per tiller and final plant population. Plant height increased significantly upto 100 kg N/ha. However, all the nitrogen applications, differing significantly with one another, increased leaf area per tiller over control. These results are in conformity with those of Iqbal [3] and Ghani [2]. As regards final plant stand the nitrogen rate of 125 kg per hectare remaining at par with 100 kg per hectare produced significantly more plants than 75 kg per ha. and control. Ghani [4] also obtained increased plant population due to the increased application of nitrogen.

There is a linear relationship between protein contents of the plant and the nitrogen rates. The protein contents increased consistently as the nitrogen rate was increased. The increase in protein contents with nitrogen application is due to the fact that the nitrogen is an integral part of proteins. The results are in line with those of Khan [5], Ahmad [1] and Iqbal [4].

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