

FODDER YIELD AND QUALITY OF PEARLMILLET GENOTYPES AS INFLUENCED BY NITROGEN LEVELS

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SUMMARY

Field experiment was conducted at main Forage Research Area, CCSHAU, Hisar during **kharif** 2010 to study the relative performance of pearl millet genotypes at different nitrogen levels for high forage production. Treatments comprising seven pearl millet genotypes (JHPM 08-1, NDFB 13, NDFB 11, AFB 4, AFB 3, Raj Bajra Chari-2 (NC) and Giant Bajra (NC) and four nitrogen levels (0, 30, 60 and 90 kg N/ha) were laid out in factorial randomized block design with three replications. The growth and fodder yield of pearl millet genotypes were influenced significantly with different nitrogen levels. The genotype Giant Bajra significantly outyielded all the other genotypes except JHPM 08-1. The application of 90 kg N/ha produced 53.6, 26.0 and 12.0 per cent higher green fodder yield and 53.2, 25.9 and 11.9 per cent higher dry matter yield over 0, 30 and 60 kg N/ha, respectively.

Key words : Green fodder yield, Nitrogen, Fodder quality, Pearl millet

In India, there is a short supply of about 38 per cent green fodder specially during summer season. Pearl millet is an important cereal fodder crop grown during summer and rainy season in western Haryana. Its drought resistance, quick growth habit and palatable to animal offer an opportunity to supply green fodder during the scarcity period of April-June. It can be fed to animals at any stage of growth without deleterious effect. Pearl millet, being a cereal crop, responds well to nitrogen because nitrogen is one of the basic plant nutrients for profuse growth. Information on the relative performance of pearl millet genotypes for high forage production at different nitrogen levels is meagre, therefore, the present study was carried out.

The field experiment was conducted at main Forage Research Area, CCSHAU, Hisar during **kharif** 2010. The experiment was laid out in factorial randomized block design with three replications. Treatments comprised seven pearl millet genotypes (JHPM 08-1, NDFB 13, NDFB 11, AFB 4, AFB 3, Raj Bajra Chari-2 (NC) and Giant Bajra (NC) and four nitrogen levels (0, 30, 60 and 90 kg N/ha). The soil of experimental field was clay loam in texture, low in organic carbon and available nitrogen and medium in

available phosphorus and potassium. The crop was sown on August 7, 2010. The full dose of nitrogen was applied as basal at the time of sowing. The crop was harvested at 50 per cent flowering and samples were collected for quality analysis.

The growth and fodder yield of pearl millet were influenced significantly with genotypes (Table 1). The pearl millet genotype Giant Bajra recorded significantly higher plant height (235.1 cm) and number of tillers (30.4) as compared to other genotypes but it was at par with JHPM 08-1. The genotype Giant bajra significantly outyielded all the other genotypes except JHPM 08-1. The Giant bajra recorded highest green fodder yield of 434.9 q/ha and dry matter yield of 126.1 q/ha followed by genotype JHPM 08-1 (408.2 and 118.1 q/ha of green and dry matter yield, respectively). This was due to the superiority of the genotype to produce more values of growth characters like plant height and number of tillers. The highest green fodder and dry matter yield by Giant Bajra in Punjab were also reported by Tiwana and Puri (2005).

Crude protein content was also influenced significantly by different genotypes. The highest crude protein content (12.42%) was recorded in NDFB-13

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TABLE 1
Effect of different nitrogen levels on growth, yield and quality of fodder pearl millet

Treatment	Plant height (cm)	No. of tillers/ metre as length	Green fodder yield (q/ha)	Dry matter yield (q/ha)	Crude protein content (%)	Crude protein yield (q/ha)
Varieties/Genotypes						
JHPM 08-1	229.0	29.3	408.2	118.1	12.28	11.50
NDFB 13	209.6	24.0	293.3	85.0	12.42	10.56
NDFB 11	202.1	23.2	248.7	72.1	9.36	6.75
AFB 4	205.8	23.3	279.7	81.0	10.75	8.71
AFB 3	216.1	25.3	300.5	87.2	11.31	9.86
Raj Bajrachari-2	198.0	22.8	230.9	67.1	12.03	8.07
Giant Bajra	235.1	30.4	434.9	126.1	11.98	15.11
S. Em±	4.66	1.04	16.13	4.67	-	-
C. D. (P=0.05)	13.26	2.94	45.87	13.27	-	-
Nitrogen levels (N kg/ha)						
0	185.1	18.3	244.8	71.1	10.45	7.43
30	206.1	24.4	298.5	86.5	11.40	9.86
60	224.1	27.5	335.6	97.3	11.91	10.99
90	239.2	31.7	376.0	108.9	12.01	13.08
S. Em±	3.53	0.78	12.20	3.53	-	-
C. D. (P=0.05)	10.02	2.22	34.67	10.03	-	-

followed by JHPM 08-1 (12.28%). Whereas the highest protein yield was recorded in Giant Bajra (15.11 q/ha) followed by JHPM 08-1 (11.5 q/ha). This may be due to higher dry matter yield of Giant Bajra.

Among nitrogen levels, there was significant increase in growth parameters and yield with increase in nitrogen level up to 90 kg N/ha. The maximum plant height (239.2 cm) and number of tillers (31.7) were recorded at 90 kg N/ha which were significantly higher than lower doses of nitrogen. The highest green fodder and dry matter yield of 376.0 and 108.9 q/ha, respectively, were obtained with 90 kg N/ha and these were significantly superior to the lower levels of nitrogen. The vegetative growth of plant was positively correlated for higher forage yield and dry matter accumulation. The application of 90 kg N/ha produced 53.6, 26.0 and 12.0 per cent higher green fodder yield and 53.2, 25.9 and 11.9 per cent higher dry matter yield over 0, 30 and

60 kg N/ha, respectively. Similar results were also reported by Pathan and Bhilare (2009). The protein content also increased with increase in nitrogen level up to 90 kg N/ha. The highest green fodder, dry matter and crude protein yield at higher level of nitrogen (100 kg N/ha) were also reported by Bhilare *et al.* (2010).

The genotype Giant Bajra gave significantly higher fodder yield as compared to other genotypes except JHPM 08-1 and the fodder pearl millet genotypes responded up to 90 kg N/ha.

REFERENCES

- Bhilare, R. L., S. H. Pathan, and S.V. Damame, 2010 : *J. Maharashtra agric. Univ.* **35** : 304-306.
 Pathan, S. H., and R. L. Bhilare, 2009 : *J. Maharashtra agric. Univ.*, **34** : 101-102.
 Tiwana, U. S., and K. P. Puri, 2005 : *Forage Res.*, **31** : 142-143.