Human Impact on Desert Environment
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Arid Zone Research Association of India & Scientific Publishers (India), Jodhpur, 2003

Response of Pearl Millet to N and FYM under Rainfed Condition

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Pearl millet is widely grown as a rainfed crop in western Rajasthan. The soils in this region are sandy, poor in nitrogen and organic matter content (0.21%) with a high infiltration rate (15-30 cm). The addition of FYM decreases the bulk density of soil and increases the water holding capacity at 1.0 bar tension together with increase in organic carbon, total and available nitrogen status (Gupta *et al.*, 1983). The response of pearl millet to nitrogen application up to 40 kg ha^{-1} has been found to be optimum for hybrids (Singh *et al.*, 1974). Keeping this in view the present investigation was carried out to know the combined effect of FYM and nitrogen on growth and dry matter production of pearl millet under rainfed condition.

MATERIALS AND METHODS

Experiments were conducted during *kharif* season of 1994 and 1995 at Central Arid Zone Research Institute, Regional Research Station, Bikaner, on sandy loam soil under rainfed conditions. Three levels of FYM (0, 2.5 and 5.0 t ha^{-1}) along with three levels of nitrogen (0, 20, and 40 kg ha^{-1}) were tested on pearl millet crop in randomized block design with three replications. The soil of experimental site was sandy loam poor in organic carbon, low in nitrogen and medium in phosphorus having poor water holding capacity and high infiltration rate. The growth and dry matter yield was recorded at harvest. The total rainfall during the cropping seasons was 275.4 mm in 1994 and 304.3 mm in 1995 (Fig. 1).

RESULTS AND DISCUSSION

Increase in FYM and nitrogen doses increased the plant height only up to

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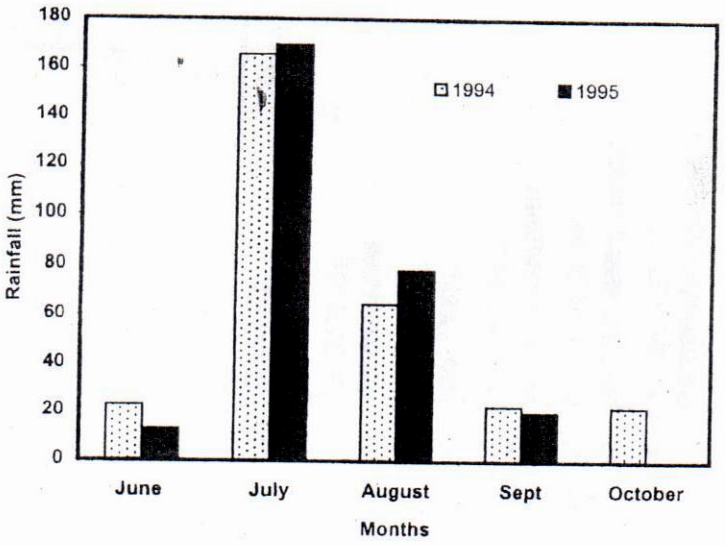

Fig.1: Rainfall (mm) distribution during cropping season at Bikaner

20 kg N ha^{-1}. Further increase in N beyond 20 kg ha^{-1} exhibited a decrease in plant height which was at par with 20 kg N ha^{-1} alone up to 60 DAS. This was due to lack of moisture when plants could not utilize the applied N resulting in detrimental effect on plant growth.

Table 1. Total dry matter yield (q ha^{-1}) of pearl millet

FYM (t ha^{-1})	Nitrogen (kg ha^{-1})			
	N_0	N_{20}	N_{40}	Mean
		1994		
0 (Control)	15.14	25.13	30.29	23.25
2.5	15.23	28.68	39.92	27.94
5.0	28.98	38.50	56.83	41.93
Mean	19.78	30.77	42.34	—
	N	FYM	N x FYM	
SEm ±	1.75	1.98	NS	
CD 5%	4.25	5.94	NS	
		1995		
0 (Control)	31.05	39.32	58.61	42.99
2.5	35.68	55.73	62.35	51.25
5.0	38.04	57.69	66.96	54.23
Mean	34.92	50.91	62.24	—
	N	FYM	N x FYM	
SEm ±	1.69	1.79	3.38	
CD 5%	5.07	5.37	8.78	