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Evaluation of Different Varieties of Pearl Millet for Green Fodder Yield Potential

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Abstract: Nine varieties of pearl millet including a check were evaluated. Significant differences were observed for plant height, while differences for number of tillers per plant, number of leaves per tiller, leaf area and green fodder yield were non-significant. The variety Tift-383 produced the highest green fodder yield of 83.23 t ha⁻¹ followed by Quetta Millet Selection (82.41 t ha⁻¹) and Tandojam Millet Selection (81.02 t ha⁻¹). The check variety MB-87 produced the lowest green fodder yield of 73.15 t ha⁻¹.

Key words: Evaluation, *Pennisetum americanum*, varieties, plant height, no. of tillers per plant

Introduction

Pearl millet (*Pennisetum americanum*) locally known as "bajra" is an important crop of arid and semi arid areas of Pakistan, where moisture is a limiting factor. It can be grown successfully throughout the country both under irrigated and rainfed conditions. It has the potential of producing high green fodder yield. To increase the fodder production in Pakistan it is necessary to develop new high green fodder yielding varieties of pearl millet. Zafar (1972) studied the performance of different pearl millet varieties and reported that plant height ranged from 153.4 to 222.3 cm. Exborneo was the tallest cultivar and produced more number of leaves and least number of tillers per plant. Din (1981) reported that the variety DB2 produced greater fodder yield (32.97 t ha⁻¹) than local variety (23.91 t ha⁻¹). Din (1981) in another study found that the variety Giant Bajra produced significantly higher fodder yield than other varieties. Parkash (1983) reported that out of 34 pearl millet strains 7003, 7009, 7111 and 7018 were superior in growth characters. Plant height, forage and dry matter yield had higher coefficient of variation. Correlation and path coefficient studies revealed that plant height and leaf breadth had higher direct effects on forage yield per plant. Rao *et al.* (1986) observed considerable variation for days to 50% flowering and plant height among 260 cultivars of pearl millet. Majority of the accessions flowered in 70 days and grew very tall. Sharma *et al.* (1987) found that green fodder yield and plant height varied considerably from the 12 x 12 diallel cross. Choi *et al.* (1988) compared 26 millet genotypes for fodder yield, which ranged from 64 to 154 t ha⁻¹, while plant height ranged from 3 to 4 meters.

Byregovvda (1990) reported that fresh fodder yield ranged widely (15.7 to 22.2 t ha⁻¹) among thirteen pearl millet genotypes. The genotype PCB produced higher fodder yield than MBFH 1, L-72, VVJI and 49 A. Naeem *et al.* (1991) studied the performance of seven pearl millet varieties for grain and fodder yield. The variety C-47 ranked top in fodder yield by producing 15.08 t ha⁻¹ followed by Y-84 (13.58 t ha⁻¹), ICMS 7704 (13.38 t ha⁻¹) and IC-8206 (12.79 t ha⁻¹). Plant height ranged from 207 (ugandi) to 247 cm (C-47). Akmal *et al.* (1992) studied the performance of nine varieties of pearl millet for grain and fodder yield. Fodder yield ranged from 12.50 (ICMV 87902) to 20.28 t ha⁻¹ (ICMV 84400). Ugandi was the tallest variety with a plant height of 259 cm followed by ICMV 84108 (256 cm) and ICMS 7704 (252 cm). Naeem *et al.* (1993) evaluated the performance of seven varieties of pearl millet for grain and fodder yields. They observed that the fodder yield ranged from 12.76 (ICTP 8203) to 20.85 t ha⁻¹ (MP 155). The variety Ugandi was the tallest having a plant height of 256 cm followed by ICMS 7703 (254 cm) MDH-25- BUS-7 and MP 155 each showing plant height of 250 cm. Naeem *et al.* (1994) observed the performance of ten varieties of pearl millet. They noted that fodder yield ranged from 8.89 (B-18) to 17.11 t ha⁻¹

(PARC-MS-I), while plant height ranged from 232 (IC 8206) to 267 cm (New Composite, C-47 and Y 72). Naeem *et al.* (2002) evaluated eleven varieties of sorghum for their green fodder yield potential and its components. They observed that green fodder yield ranged from 18.06 to 69.44 t ha⁻¹. Number of leaves per plant varied from 9.0 to 13.78, while plant height ranged from 101.11 to 209.40 cm. Leaf area varied from 264.12 to 379.44 cm² and stem thickness ranged from 1.1 to 1.67 cm. The present study was conducted to identify new high green fodder yielding varieties of pearl millet.

Materials and Methods

Eight varieties of pearl millet viz. Tift-383, Quetta Millet Selection, Tandojam Millet Selection, NARC-1, EXD₂ Bulk, DBR-3, NARC-5, Potohar Selection and a check variety MB-87 were planted at Fodder Research Sub-Station, Ayub Agricultural Research Institute, Faisalabad during kharif 2000. The design of the trial was Randomized Complete Block. Each plot consisted of 4 rows 6 meter long and 30 cm apart thus having a plot size of 7.2 m². Seed rate used was 15 kg ha⁻¹. Fertilizer was applied @ 60-60-00 NPK kg ha⁻¹. The trial was planted on 08.07.2000 and harvested on 08.09.2000 on the completion of 50% flowering. In total three irrigations were applied during the entire period of crop growth. Data for the following plant characteristics was recorded. Plant height (cm), number of tillers per plant, number of leaves per tiller, leaf area (cm²) & green fodder yield (t ha⁻¹). The data recorded was statistically analyzed using the analysis of variance technique and least significant differences at 5% probability (Steel and Torrie, 1960).

Results and Discussion

Significant differences were observed for only plant height, while differences for all other characters i.e., no. of tillers per plant, no. of leaves per tiller, leaf area and green fodder yield were non significant (Table 1). The variety Tift-383 produced the highest green fodder yield of 83.23 t ha⁻¹ followed by Quetta Millet Selection (82.41 t ha⁻¹), Tandojam Millet Selection (81.02 t ha⁻¹) and NARC-1 (79.17 t ha⁻¹). The check variety MB-87 produced the lowest green fodder yield of 73.15 t ha⁻¹ (Table 1). Plant height ranged from 148.11 (check variety MB-87) to 254.11 cm (Potohar Selection) (Table 1). NARC-5 (233.78 cm) ranked second in plant height followed by Tift-383 (233.11 cm) and NARC-1 (230.89 cm). The variety Tift-383 (6.79) produced highest number of tillers per plant followed by Quetta Millet Selection and Tandojam Millet Selection each producing 6 tillers per plant. The check variety MB-87 and Potohar Selection produced lowest number of tillers (5.55) per plant (Table 1). Tift-383 (14.67) produced the highest number of leaves per tiller followed by EXD₂ Bulk (14.45), Potohar Selection (13.56) and DBR-3 (13.44). The check variety MB-87 (12) produced the lowest number of leaves per tiller (Table 1). Leaf area

Naeem *et al.*: Evaluation, *Pennisetum americanum*, varieties, plant height, no. of tillers per plant

Table 1: Mean plant height, number of tillers per plant, number of leaves per tiller, leaf area and green fodder yield of different varieties of pearl millet

Variety	Plant height (cm)	No. of tillers per plant	No. of leaves per tiller	Leaf area (cm ²)	Green fodder yield (t ha ⁻¹)
Tift-383	233.11	6.79	14.67	275.76	83.23
Quetta Millet Selection	219.78	6.00	13.00	213.89	82.41
Tandojam Millet Selection	225.33	6.00	12.78	179.84	81.02
NARC-1	230.89	5.89	12.44	203.93	79.17
DBR-3	224.78	5.78	13.44	198.99	78.70
EX D2 Bulk	227.89	5.78	14.45	221.52	77.78
NARC-5	233.78	5.66	13.22	185.36	76.85
Pothar Selection	254.11	5.55	13.56	189.93	74.07
MB-87 (Check)	148.11	5.55	12.00	182.16	73.15
LSD (0.05)	021.05	NS	NS	NS	NS
CV (%)	006.65	17.05	12.00	19.76	8.91

NS: non - significant

ranged from 179.84 (Tandojam Millet Selection) to 275.76 cm² (Tift-383). EXD2 Bulk (221.52 cm²) ranked second in leaf area followed by Quetta Millet Selection (213.89 cm²) and NARC-1 (203.93 cm²). Leaf area for check variety MB-87 was 182.16 cm². Previous researchers Zafar (1972), Din (1981), Parkash (1983), Rao *et al.* (1986), Sharma (1987), Choi *et al.* (1988), Byregowda (1990), Naeem *et al.* (1991, 1993, 1994 and 2002) and Akmal *et al.* (1992) reported similar results.

The study revealed that although the differences for most of the plant characteristics were non-significant still the varieties Tift-383, Quetta Millet selection, Tandojam Millet selection and NARC-1 possess very high green fodder yield potential and could be considered for general cultivation.

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