

Short Communication

Forage Yield Performance of Different Varieties of Oats (*Avena sativa* L.)

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ABSTRACT

Ten varieties of oats including a check variety were evaluated. Significant differences were observed for plant height, number of tillers per meter row, number of leaves per tiller and green fodder yield while differences for stem thickness and leaf area were non-significant. The highest green fodder yield of 61.11 t ha⁻¹ was produced by the variety S-2000 as well as Winjarde followed by No.1863-513 (57.41 t ha⁻¹) and check variety PD2LV65 (55.93 t ha⁻¹). Plant height ranged from 95.33 (West) to 143.89 cm (No.1863-513). Check variety PD2LV65 was 133.56 cm tall. Number of tillers per meter row varied from 103 (West) to 147 (S-2000). Check variety PD2LV65 produced 131 tillers per meter row. Number of leaves per tiller ranged from 5.78 (West) to 6.89 (S-2000, Winjarde and No. 1863-513). Check variety PD2LV65 produced 6.67 leaves per tiller. Stem thickness varied from 0.37 (Donald and Palestine) to 0.57 cm (No.1863-513). Check variety PD2LV65 had a stem thickness of 0.48 cm. Leaf area ranged from 63.96 (Donald) to 89.76 cm² (No.1863-513). Check variety PD2LV65 has a leaf area of 74.91 cm².

Key Words: *Avena sativa* L.; Plant characters; Yield; Pakistan

INTRODUCTION

The demand of meat, beef, milk, butter and their by-products is increasing due to rapidly growing human population in Pakistan. More nutritious and high yielding fodder varieties are needed to run an efficient livestock industry. Cultivated oats (*Avena sativa* L.) is an important winter fodder crop of both irrigated and rained areas of Pakistan. Many cultivars of oats are of high feed value if cut at the flowering stage or soon after and can meet the demands of rapidly growing livestock population of the country. Different cultivars/varieties of Oat have been reported to have wide variation in their traits (Singh & Singh, 1992; Kumar *et al.*, 1992; Weilenmann *et al.*, 1992; Tabata *et al.*, 1992; Bhatti *et al.*, 1992; Hussain *et al.*, 1993; Mufti *et al.*, 1996; Parkash *et al.*, 1997; Naeem *et al.*, 2002; Chohan *et al.*, 2003).

The present study was carried out to study the forage yield performance of different varieties of Oats (*Avena sativa* L.).

MATERIALS AND METHODS

Nine varieties of oats viz; S-2000, Winjarde, No.1863-513, Palestine, No.85-125, No.97081, Donald, Nile, West and a check variety PD2LV65 were planted at Fodder Research Sub-Station, Ayub Agricultural Research Institute, Faisalabad during Rabi, 2001-2002. The design of the trial

was randomized complete block with three replications. Each plot consisted of ten rows, 6 m long and 30 cm apart, thus having a plot size of 18 m². Seed rate used was 75 kg ha⁻¹. Fertilizer was applied @ 75-50-00 NPK kg ha⁻¹. The trial was planted on 16.11.2001 and harvested on 18.03.2002 on the completion of 50% flowering. In total, four irrigations were applied during the entire period of crop growth. Data for the following plant characters were recorded: Plant height (cm), number of tillers per meter row, number of leaves per tiller, stem thickness (cm), leaf area (cm²) and green fodder yield (t ha⁻¹). The data recorded were statistically analysed using the Fisher's analysis of variance technique and treatment means were compared by using the significant differences at 5% probability level (Steel & Torrie, 1984).

RESULTS AND DISCUSSION

Data (Table I) showed significant differences for plant height, number of tillers per meter row, number of leaves per tiller and green fodder yield while differences for stem thickness and leaf area were non-significant. Plant height ranged from 95.33 (West) to 143.89 cm (No.1863-513). The variety S-2000 (139.89 cm) ranked second in plant height closely followed by Winjarde (139.78 cm). Check variety PD2 LV65 was 133.56 cm tall. Bhatti *et al.* (1992), Hussain *et al.* (1993), Mufti *et al.* (1996) and Naeem *et al.* (2002) reported similar results. The variety S-2000 (147) produced

Table I. Data on yield and yield parameters of different varieties of oats

Varieties	Plant Height (cm)	No. of tillers per meter row	No. of leaves per tiller	Stem thickness (cm)	Leaf area (cm ²)	Green fodder yield (t ha ⁻¹)
S-2000	139.89 a	147 a	6.89 a	0.50	87.23	61.11 a
Winjarde	139.78 a	146.67 a	6.89 a	0.52	82.49	61.11 a
No.1863-513	143.89 a	144.33 a	6.89 a	0.57	89.76	57.41 b
PD2LV65 (check)	133.56 b	131 b	6.67 a	0.48	74.91	55.93 bc
Palestine	127.89 c	130.67 b	6.67 a	0.37	68.59	55.56 c
No.85-125	120.56 d	125 c	6.67 a	0.38	70.96	52.96 d
No.97081	133.11 b	119 d	6 b	0.40	72.11	50.74 e
Donald	123.55 cd	118 d	6 b	0.37	63.96	48.52 f
Nile	114.78 e	117 d	5.89 b	0.38	68.63	47.78 f
West	95.33 f	103 e	5.78 b	0.38	64.08	44.44 g
LSD (5%)	4.66	3.36	0.45	N.S.	N.S.	1.82
CV (%)	2.64	1.89	5.03	13.84	16.25	2.45

Any two means not sharing a letter in common differ significantly at 5% level of significance. NS: Nom-significant

highest number of tillers per meter row followed by Winjarde (146.67), No.1863-513 (144.33) and check variety PD2LV65 (131). The variety West (103) produced the lowest number of tillers per meter. Bhatti *et al.* (1992), Hussain *et al.* (1993), Mufti *et al.* (1996) and Naeem *et al.* (2002) made similar findings. Number of leaves per tiller varied from 5.78 (West) to 6.89 (S-2000, Winjarde and No.1863-513). The check variety PD2LV65, Palestine and No.85-125 produced identical number of leaves (6.67) per tiller. Bhatti *et al.* (1992), Hussain *et al.* (1993), Mufti *et al.* (1996) and Naeem *et al.* (2002) also reported similar findings. Stem thickness ranged from 0.37 (Palestine and Donald) to 0.57 cm (No.1863-513). The variety Winjarde (0.52 cm) ranked second in stem thickness followed by S-2000 (0.50 cm) and check variety PD2LV65 (0.48 cm). Bhatti *et al.* (1992) and Naeem *et al.* (2002) also reported similar results. Leaf area varied from 63.96 (Donald) to 89.76 cm² (No.1863-513). The variety S-2000 (87.23 cm²) ranked second in leaf area followed by Winjarde (82.49 cm²) and check variety PD2LV65 (74.91 cm²). Bhatti *et al.* (1992), Hussain *et al.* (1993) and Naeem *et al.* (2002) also reported similar findings.

The varieties S-2000 and Winjarde ranked top in green fodder yield each producing 61.11 t ha⁻¹ followed by No.1863-513 (57.41 t ha⁻¹) and check variety PD2LV65 (55.93 t ha⁻¹). The variety West (44.44 t ha⁻¹) produced the lowest green fodder yield. Singh and Singh (1992), Kumar *et al.* (1992), Weilenmann *et al.* (1992), Tabata *et al.* (1992), Bhatti *et al.* (1993), Hussain *et al.* (1993), Mufti *et al.* (1996), Parkash *et al.* (1997) and Naeem *et al.* (2002) also reported similar results.

In conclusion, the varieties S-2000, Winjarde and No.1863-513 possess very high green fodder yield potential and could be considered for general cultivation.

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