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Performance of wheat Varieties Under Irrigated Conditions in Pune Region.

Dwarf, eariy maturing and high yielding varieties have made revolution in grain yield production of wheat crop in India with a view to test the performance of such varieties at Pune an experiment was conducted at the college of Agriculture Farm. Pune : 411 005 In 'F' division on 591 to 593 plots in 1977-78.

There were in all 25 varieties under study. They were replicated for six times in the Randomised block design. The gross plot size was 6.00 m x 2.76 m and net plot size was 5.00 m x 2.30 m. The spacing in between rows was 22.5 m. The sowing was done with the seedrill on 5th December 1977. The harvesting was done as per maturity. The soil from the experimental plot was well drained and medium black in type. Fertilizer 100 kg N/ha 60 kg P_2O_5/ha and 40 kg K_2O/ha was applied to the crop. Half dose of nitrogen and full dose of phosphate and potash were applied at the time of sowing remaining $\frac{1}{2}$ dose of nitrogen was applied at 28 days after sowing.

The varieties under study were HD-4502, WSM-14, NI-7041, HD-2189, UP-368, CC-464, JNK-4, W-184, NI-5439, DWR-6, NI-7851, DWR-16, NI-7861, UP-215. NI-6988, NI-7846. UP-270, UPK-1, NI-7588, NI-7862, K. sona, HW-698, NI-7444, NI-7623. NI-7479, NI-7863 The k. sona was used as a local check.

The data on climatic conditions is given in Table 1.

It could be seen from the data presented in Table-1 that the mean maximum temperatures were lowerdown in the month of November, 1977 and December, 1977. However, mean maximum temperatures were found to increase gradually from January 1978 onwards during the grand growth period of the crop. Showing thereby the mean maximum temperature were not much more favourable for the growth and development of wheat crop in Pune region, Minimum temperatures were in the range of 10.8°C to 18.0°C. There were rise and fall in case of humidity during the growth period of the crop. Rainfall was optimum in the month of October and November.However,November onwards crop was irrigated at each physiological stage. Sunshine hours were found to be satisfactory and in the range of 8.2 hrs/day to 10.2 hrs/day.

The mean height in cm, days required for maturity, thousand grain weight in 'g' and grain yield in q/ha as influenced by different varieties during 1977-78 is given in Table 2.

It could be seen from the data given in Table 2 that mean height was influenced from 56.50 cm to 97.50 cm. Maximum height was recorded from DWR-16 however minimum was recorded from UP-270, There was a significant difference in height among the varieties. DWR-16 has increased its height significantly over all the varieties excepting NI-7588. The variety JNK-4 W-184 and NI 5439 were at par in increasing the plant

height and were significantly superior to all the varieties except DWR-16 and NI-7588. The varieties NI-7041, HD-2189, UP-215, NI-6988, NI-7846. NI-7862, HW-698 and NI-7479 were equally effective in increasing the plant height. The varieties UP-368, and UP-270 were dwarf in comparison with all the varieties. The varieties HD-4502, WSM-14, CC-464, DWR-6, NI-7861, K. sona, NI-7444, NI-7623 and NI-7863 were at par in increasing the plant height.

The data on days required for maturity varies from 98 to 107 days. The minimum days were required for NI-6988 (98), however, maximum days were required for DWR-6, HW-698 and NI-7851 (108), The data were not analysed statistically inferances are drawn from the mean values.

Maximum thousand grain weight was obtained from NI-7444 (42.610 g), however. minimum thousand grain weight was obtained from NI-7851 (25.995 g). The second best and third best varieties for obtaining thousand grain weight were HW-698 (40. 350 g) and UPK-1 (40.135 g) respectively. The data were not analysed statistically inferances are drawn from the mean values.

Maximum grain yield of 36.89 q/ha was obtained from HD-4502. There was a significant difference in grain yield of wheat HD-4502 increased the grain yield significantly over all the varieties excluding WSm-14 (35.52 q/ha) JNK-4 W-184 (34.67 q/ha) and UPK-1 (36.32 q/ha). Though the thousand grain weight of the variety was not much higher the yield increase was maximum and it may be due to its maximum tillering capacity and maximum grains/panicle.

The second best variety in increasing the grain yield was UPK-1 and it may be due to the fact that variety was having higher thousand grain weights. In addition to its yield contributory character the variety was early maturing; similarly the third best was observed to be JNK-4 W-184.

The variety CC-464 was found to be effective in increasing the grain yield of wheat as par with HD-2189 (31.97 q/ha) and DWR-6 (31.16 q/ha), however it was significantly superior in increasing the grain yield over all the low yielding varieties excluding WSM-14, JNK-4 W-184 and UPK-1 The lowest grain yield of 19.53 q/ha was obtained from NI-6988 and it may be due to the lower tillering capacity, lower thousand grain weight and most early maturing ability. Differential response of different varieties of wheat was reported by several earlier workers viz. Sen and Pal (1953), Sikka and Jain (1960) and Hassaini (1975). They have stated that the performance of varieties is the result of the extent of expression of genotype getting adopted in a perticular environmental conditions for the purpose of optimum growth and development. Similarly, in this study the variety HD-4502 reacted more favourably under the environmental conditions of PUNE region. The second best was UPK-1 and the third best was observed to be JNK-4 W-184.

As regards the colour of the grains the varieties HD-4502, WSM-14, UP-368, CC–464. NI.5439, DWR-6, NI-7851. UP-215, NI-6988, UP-270, UPK-1, NI-7862, HW-698, NI 7479 and NI-7863 were having amber colour. However JNK-4 W-184, DWR-16, NI-7588, and NI-7444 were having yellow colour and other varieties were having dark yellow colour.

As about the infection of rust the varieties NI–7041. NI-6988, and NI-7846 were heavily infested due to black and brown rust, however NI-7588 and NI-7479 were moderatly infested. The variety Kalyan sona and NI-7851 were heavily infested due to black rust however, DWR-6 and NI-7623 were moderately infested.

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Table 1 Mean maximum and minimum temperatures, humidity at 7-30 and 14-30 hrs, sunshine and rainfall during 1977-78.

Month	Temperature		Humidity		Sunshine	Rainfal
	Maximum	Minimum	7.30 hrs	14.30 hrs	hrs/day	in mm
October 1977	35.00	17.5	83	38	9.00	54.6
November 1977	28.00	14.9	94	48	8.2	51.4
December 1977	28.00	10.8	93	37	9.0	0.0
January 1978	30.8	12.8	90	33	9.9	1.2
February 1978	33.9	15.5	81	26	9.2	18.00
March 1978	36.6	18.0	57	16	10.2	1.00

Table 2 : Mean height in cm, days required for maturity, thousand grain weight in g and grain-yield in q/ha as influenced by different varieties during 1977-78.

Name of the variety	Height in cm	Days required for maturity *	Thousand grain weight in 'g' *	Grain yield in q/ha.
HD-4502	68.0	107	35.310	36.89
WSM-14	69.0	106	36.350	35.52
NI-7041	75.33	100	28.370	28.27
HD-2189	75.17	100	36.210	31.97
UP-368	56.50	102	33.915	27,54
CC-464	69.83	100	29.970	32.39
JNK-4W-184	84.83	100	38.975	34.67
NI-5439	80.00	106	32.470	20.03
DWR-6	71.83	108	28.845	31.16
NI-7851	66.50	108	25.995	22.19
DWR-16	97.50	106	33.085	25.56
NI-7861	71.00	107	35.825	27.81
UP-215	73.33	107	29.210	25.89
NI-6988	75.50	98	28.500	19.53
NI-7846	73.67	100	30.950	21.25
UP-270	56.83	102	34.035	24.15
UPK-1	65.17	101	40.135	36.32
NI-7588	96.33	108	33.795	25.62
NI-7862	78.17	107	35.125	20.07
K.Sona.	71.33	100	28.110	22.99
HW-698	76.00	108	40.350	28.07
NI-7444	70.17	107	42.610	30.88
NI-7623	71.00	104	31.835	25.88
NI-7479	74.50	107	30.330	20.27
NI-7863	72.33	101	39.225	26.75
F' test	Sigt.	-	-	Sigt
S. E. ±	1.83	-	-	1.50
C. D. at 5%	5.08	-	-	4.08

Sigt : Significant.
*Not analysed statistically.

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Sigt : Significant.
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