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Influence of Spacing, Sowing Time and Fertility Levels on Yield of Wheat under Irrigated Condition of South Gujarat

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A field experiment consisting of combination of three dates of sowing (15th Nov., 30th Nov. and 15th Dec.) and three row spacings (20, 25 and 30 cm) as main plot treatments and three fertility levels (50 + 25, 100 + 50 and 150 + 75 kg N + P_2O_5/ha) as sub-plot treatments was laid out in split plot design with three replications during *rabi* season of 1980-81 at Navsari. The soil of the experimental field was clayey with pH 7.8, total nitrogen 0.04%, available phosphorus 28.3 kg/ha and available potash 141 kg/ha. The full dose of phosphorus and potash and 50% of nitrogen was drilled in the rows as per treatments. The remaining 50% nitrogen was topdressed at 22nd day of sowing (CRI stage). The soures of nitrogen, phosphorus and potash were urea, single super phosphate and muriate of potash. The sowing was done manually in previously opened furrows using 100 kg seeds/ha for each spacing. First irrigation was given on 22nd day of sowing (CRI stage). In all six irrigations were given. The experiment was sown with wheat variety "LOK-1".

TABLE 1

Grain yield of wheat (kg/ha) as influenced by sowing time, spacing and fertility levels.

Treatment	*Grain yield (kg/ha)*
Sowing dates	
15th November	3663
30th November	3029
15th December	2934
S.Em. ±	74
C.D. @5%	218
C.V. %	11.0
Spacings	
20 cm	3191
25 cm	3226
30 cm	3211
S.Em. ±	74
C.D. @5%	N.S.
C.V. %	11.0
Fertility levels ($N + P_2O_5$ kg/ha)	
50 + 25	2819
100 + 50	3287
150 + 75	3521
S.Em. ±	46
C.D. @5%	131
C.V. %	7.0

N.S. = Not significant

Sowing dates had significant influence on grain yield of wheat. Wheat sown on 15th November registered the maximum grain yield of 3663 kg/ha which was significantly higher over rest of the sowing dates. Delaying sowing by

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15 to 30 days after 15th of November resulted in reduction in yield. Shekhawat *et al.* (1975) also obtained higher yield of wheat sown on 15th November. Higher grain yield in case of earlier sowing may be attributed to the availability of optimum temperature (14.5° to 18.8° c) for the germination of seeds at sowing and crop growth. These results are in line with those reported by Singh *et al.* (1971) and Mehta and Mathur (1972). The grain yield was reduced as sowing was delayed because the temperature conditions at the time of grain filling and development are very crucial for wheat yield. It has been reported that the temperature above 28° c during the period tended to decrease grain weight and yield (Anon., 1977). The extremely high temperature (29.7° to 34.6° c) which prevailed during the heading and flowering for the late sown crop hampered the grain yield. Purusothaman *et al.* (1979) also reported reduction in wheat yield when temperature at flowering and heading was higher.

Different row spacings had no significant influence on wheat yield, indicating that 20 cm row spacing was optimum for wheat. These results are in agreement with those reported by Dhillon *et al.* (1979).

Application of 150 N+75 P_2O_5 kg/ha recorded significantly higher grain yield of 3521 kg/ha than rest of the fertility levels. These results are in agreement with those reported by Shekhawat *et al.* (1975).

The increase in yield was to the tune of 702 (19.9%) and 234 (6.6%) kg/ha than 50 + 25 and 100 + 50, N + P_2O_5 kg/ha, respectively.

None of the interactions for grain yield was significant.

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