

RESPONSE OF WHEAT TO DIFFERENT SEEDRATES AND LEVELS OF FERTILITY IN KYARI LAND OF COASTAL SALT AFFECTED SOILS OF SOUTH GUJARAT

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A field experiment was conducted during the kharif season of the years 1978-79 and 1979-80 at Agricultural Research Station, Danti (Navsari) to study the response of wheat to different seedrates (100, 120, 140, 160 and 200 kg/ha) and levels of fertility (80, 120, 160 and 200 kg N/ha) under kyari land of Coastal salt affected soils of South Gujarat. Yields on wheat were not significantly influenced by the different treatments of seedrates during both the years. While it is significantly influenced (pooled data) by the different levels of fertility treatment involving 120, 160 and 200 kg N/ha were statistically at par but significantly superior over lower dose of 80 kg N/ha. For securing higher yield from wheat variety Sonalika applied 120 kg N/ha, using 100 kg/ha seed rate.

More and more areas are being affected by the problem of soil salinity and alkalinity with the introduction of irrigation projects accompanied by improper use of water. Under normal soil conditions the plant population is adjusted in such a way that maximum yields are obtained with any ill competition for nutrients. The purpose of maintaining the plant population under problematic soil condition is to get high yields with maximum competition for the salts present in the root zone. The maintenance of Plant population for successful crop production is important. Along with the above mentioned facts, supply of nutrients through fertilizers in optimum proportion also given sufficient weightage, as normally the reclaimed soils are low in fertility.

Keeping the above facts in view, field experiment was conducted at Agronomic Research Station, Danti in the year 1978–79 and 1979–80, which is situated at a distance of 40 km from Surat in South west direction on the Arabian Sea coast. The experiments were conducted with a view to find out (1) seedrate and (2) the fertilizer requirement of wheat variety Sonalika.

MATERIALS AND METHODS

The texture of the soil varies between clay to clay loam upto a depth of 30 cm and silty clay loam beyond 160 cm. The Ece of the experimental plots ranged from 2.6 to 12.6 mmhos/cm. the pH between 8.3 and 9.4 and the RSP from 14.00 to 49.5 from the depth of 180 cm. The magnitude of salinity and sodicity increased with increase in depth. The under ground water table ranged from 1.5 m to 3.2 m during the different parts of

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Table Grain yield as affected by seedrates and levels of fertility.

Treatment	Grain yield (kg/ha)		
	1978-79	1979-80	Pooled
Seedrates (kg/ha)			
N ₁ —100	1802	1303	1553
N ₂ —120	1955	1195	1575
N ₃ —140	1879	1354	1617
N ₄ —160	1935	1210	1572
N ₅ —200	2089	1417	1753
S. Em ±	143	86	73
C. D. at 5%	N. S.	N. S.	N. S.
Levels of fertility (kg/ha)			
F ₁ — 80	1457	1222	1340
F ₂ —120	2124	1347	1736
F ₃ —160	2081	1372	1727
F ₄ —200	2064	1243	1654
S. Em ±	127	66	73
C. D. at 5%	362	N. S.	205

the year. In summer the white crust of salt is seen in the surface of the soil due to deposition of salts through capillary rise of under ground water. The experiment was conducted in a split plot design with four replications during the year 1978-79 and 1979-80. Different seed rates grown in the main plot and levels of fertility in the sub-plot were as mentioned in Table-I. The reason of keeping higher rates of N than normal was the occurrence of deficiency of this element in reclaimed soil. A common dose of phosphorus @ 90 kg/ha was applied in all the treatment. Potash was not applied due to high available K₂O in the soil (540 Kg K₂O/ha). The spacing between the two rows was 25 cm. Canal water was used for irrigating the crop.

RESULTS AND DISCUSSION

The effect of different levels of seedrate and fertility on the grain yield of wheat are given in table-1. Non-significant differences were observed amongst the seedrate in both the individual years and in pooled data. Yield obtained under 100, 120, 140, 160 and 200 kg/ha seed rate were statistically at par Table 1. Increasing seed rate beyond 100 kg/ha did not significantly increase the grain yield of wheat. Failure to significant increase in the grain yield of wheat beyond 100 kg/ha seedrate can only imply that the optimum production has already been attained under 100 kg/ha seed rate. The yield obtained under 100, 120, 140, 160 and 200 kg/ha seedrates were at par which evidently resulted due to lack of response of seed rate.

The effect of levels of fertility was non-significant in the year 1979-80 while it was significant in the year 1978-79 and in the pooled data (table-1). The data revealed that treatments of 120 kg (F₂), 160 kg. (F₃), 200 kg (F₄) nitrogen per hectare were at par and significantly superior to 80 kg (F₁) nitrogen per hectare. The interaction in all the cases were non-significant. Many times it is argued that the addition of fertilizer under saline and sodic soil conditions would aggravate the situation. However, considerable data from field and pot culture trials (Anon, 1958-61, Anon, 1958-61) have shown that by the application of nutrients, particularly N and P, O₆, inorganic and organic forms, high yields of rice, barley, wheat and other crops have been obtained. The data presented here are in agreement with the above finding. The interaction effects was non-significant.

The results of these study indicate that optimum grain yield from wheat variety sonalika in kyari land of coastal salt affected soils of South Gujarat can be secured by applying 120 kg N/ha using 100 kg/ha seed rate.

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