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RESPONSE OF WHEAT TO POTASSIUM APPLICATION IN DIFFERENT SOIL SERIES OF PUNJAB

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ABSTRACT

A pot experiment was conducted to observe the response of wheat to K application in six soil series. Five levels of K (0, 25, 50, 75 and 100 mg K_2O Kg^{-1} soil were applied to each series alongwith a basal dose of N and P. Potassium application @ 100 mg K_2O kg^{-1} soil produced highest number of tillers $plant^{-1}$ (6.33), plant height (57.4 cm) and straw yield (15.99 g pot^{-1}) whereas, highest grain yield (14.15 g pot^{-1}) was recorded at 75 mg K_2O kg^{-1} of soil. Highest K content of grain (0.4980%) and straw (1.583%) and K uptake (299.40 mg pot^{-1}) were noted where K was applied @ 100 mg K_2O kg^{-1} of soil. It was inferred that 50 mg K_2O kg^{-1} (110 kg K_2O ha^{-1}) was sufficient for optimum yield of wheat.

INTRODUCTION

Potassium is third major element in plant nutrition and is vital for many important metabolic functions and high yields. It is absorbed by wheat and other crops in larger amounts than any other mineral element except N (Kemmler, 1983). The soils of Pakistan have potential to provide K to crops under ordinary conditions but introduction of high yielding varieties and increased cropping systems alongwith imbalanced use of fertilizers have resulted in considerable drain of K resources and need for K fertilization to crops is being realized (Malik *et al.*, 1989). They have also reported that soil analysis data for the last 14 years revealed a continuous decline of K level in the wheat (Sing and Ghosh, 1984; Mehdi, 1987; Saad *et al.*, 1988, Ranjha, 1988; Malik *et al.*, 1983 and Bhatti *et al.*, 1989). Therefore, it is realized that response to K fertilizers is site and crop-specific. Keeping in view the behaviour of K, the present study was conducted to see the response of wheat to K fertilizer in different soil series.

MATERIALS AND METHODS

A pot experiment was conducted to monitor the effect of applied K on wheat. following soils were used:

S.No.	Soil Series	Taxonomic Name
1.	Kotli	Fine, mixed hyperthermic Entic Chromustert
2.	Pindorian	Coarse loamy, mixed, hyperthermic Typic Haplustalf
3.	Wazirabad	Coarse loamy, mixed, hyperthermic Typic Haplustalf
4.	Shahdara	Coarse silty, mixed, hyperthermic Typic, Ustic Torrifluvent
5.	Lyallpur	Coarse silty, mixed, hyperthermic Typic Haplargid
6.	Sultanpur	Coarse silty, mixed, hyperthermic, Fluventic Camborthid

Soil and Plant analysis

Soil samples collected from each soil series were analysed for different parameters. Analytical procedures given by Richards (1954) were used for the determination of pH (method 21a), EC (method