EFFECT OF FOLIAR APPLIED POTASSIUM ON THE GROWTH AND CHEMICAL COMPOSITION OF RICE UNDER SALINE CONDITIONS

By

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ABSTRACT

Rice cv. KS 282 was tested at four salinity levels (EC 1.6, 4.0, 8.0 and 12.0 dS m^{-1}) and two intervals of foliar application of 0.5 % K_2SO_4 solution in a pot experiment. The plant height, shoot, straw and paddy yield decreased while sterility percentage increased with increasing salinity. Similarly concentration of K, K/Na ratio in rice shoots and straw decreased while N and Na concentration increased with increasing salinity. Foliar application of potassium increased the paddy and shoot yield but decreased the sterility percentage. The concentration of N, K and K/Na in rice shoots and straw increased while Na concentration decreased with foliar application of potassium.

INTRODUCTION

Out of 5.73 million hectares of salt-affected soils in Pakistan, about 55.4 % are saline-sodic, 44.1 % are saline and only 0.5% are sodic (Muhammed, 1983). The salt-affected soils can be brought under cultivation by the removal of excessive soluble salts and exchangeable sodium through various reclamation techniques. But on account of certain limitations such as saline irrigation water and low permeability of soils the

1979) and enhances the activity of nitrate reductase enzyme (Sinha, 1978). Foliar application of K is an effective method to avoid problems such as excessive fixation or leaching of soil applied potassium (Garcia and Hanway, 1976) and it provides nutrients to the plants when uptake through plant roots is inadequate particularly under saline conditions (Jurgens, 1976). Therefore, the present study was undertaken to evaluate the effect of foliar applied K on the growth and chemical composition of rice under saline soil conditions.

MATERIALS AND METHODS

Experiment was conducted in the net-house, Department of Soil Science, University of Agriculture, Faisalabad. Glazed pots were filled with 12 kg of air-dry clay loam soil and a salt-tolerant rice cv. KS 282 (Aslam, 1987; Muhammad, 1986) was tested at four salinity levels (EC_e 1.6, 4.0, 8.0 and 12.0 dSm^{-1}) and two intervals (10 and 20 days) of foliar application of 0.5 % K_2SO_4 solution. For F_1 the total amount of K_2SO_4 sprayed in three sprays was 8.75 g in 12 pots. While for F_2 the total amount of K_2SO_4 sprayed in six sprays was 20 g in 12 pots. The experiment was run in triplicate. A basal dose @ 60 mg N, 25 mg P and 50 mg K kg^{-1} soil was applied