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WHEAT RESPONSE TO ZINC APPLICATION IN RICE GROWING AREA OF BALOCHISTAN

Abdul Hadi, S. Asmatullah Taran*, Asif Azeem* , Z. Saeed** and M. Aslam***

ABSTRACT

Balochistani soils are generally deficient in zinc due to their calcareous-alkaline nature. We conducted a field study in rice growing area to investigate wheat response to different levels of zinc applications. Treatments were 0, 2.5, 5.0, 7.5 and 10.0 kg $ZnSO_4$ ha^{-1}. Nitrogen, P and K were applied to all treatments at 134, 67 and 67 kg ha^{-1}, respectively. Wheat grain yield increased with subsequent increase in Zn application levels. Maximum increase in grain yield over control was 48% in treatment with 10 kg $ZnSO_4$ ha^{-1}. Seasonal differences were also significant and grain yield was higher in 1992-93 than 1993-94. Economic analysis of wheat yield indicated a maximum net benefit of Rs.5432 ha^{-1} in treatment with 10 kg $ZnSO_4$ ha^{-1} as compared to treatment without Zn application. Therefore, zinc application is recommended to increase grain yield of wheat crop following rice in rice-wheat cropping system.

INTRODUCTION

Wheat is one of the most important cereal crop in Pakistan. In recent years, a large number of high yielding and disease resistant varieties of wheat have been released through out the country. The liberal uses of nitrogenous and phosphatic fertilizers along with increased cropping intensity and cultivation of high yielding varieties have intensified the depletion of various micro-nutrients availability of Zn to wheat sown after rice in calcareous soils. Therefore, this study was initiated to determine the wheat response to different levels of Zn applications and its economic benefits to farmers of rice growing areas of Balochistan.

MATERIALS AND METHODS

Field trials were conducted on wheat at Agriculture Development Institute, Khanpur during 1992-93 and 1993-94. Treatments were 0, 2.5, 5.0,7.5 and 10.0 kg $ZnSO_4$ ha^{-1}. In all treatments, N, P and K was applied at 134, 67 and 67 kg ha^{-1}, respectively. Fertilizer was applied as urea, DAP and SOP. Full doses of P, K and zinc were applied with a half dose of N at the time of land preparation, while rest of N was applied at the time of first irrigation. The experiment design was a randomized complete block with three replications. Individual plot size was 5m x 10m.

Weeding was done twice with manual labour to control weeds and avoid crust formation. Irrigation and all other cultural practices were carried out uniformly to raise a successful crop during both the years. At maturity, crop was harvested and grain yield was recorded. The data were statistically analyzed by using analysis of variance technique and differences among treatment means were compared by LSD at