INFLUENCE OF ZINC AND BORON APPLICATION ON RICE YIELD AND THEIR RESIDUAL EFFECT ON THE YIELD AND COMPOSITION OF FOLLOWING WHEAT

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ABSTRACT

Soils containing high B are found in many places in Pakistan. Generally these soils are also low in Zn content. A pot culture experiment was conducted to determine the effect of higher doses of Zn and B application on the yield of rice and to determine their residual effect on the yield and composition of following wheat. Two rice genotypes (DM-25 and Basmati-385) that differed in B tolerance were grown up to maturity in pots supplied with nil or 20 mg kg-1 each of Zn and B alone or in combination. The results indicated that high B application decreased the dry matter yield of both rice genotypes at vegetative stage and the grain yield at maturity. Zinc application without B increased grain yield of Basmati-385 but not of DM-25, but in the presence of high B, applied Zn could not improve the grain yield of both genotypes to a significant level. Residual B had little depressive effect on the following wheat. However, Punjab-85, which is more tolerant to high B in soil, yielded higher than low tolerant Faisalabad-83 and this increase was mainly due to increased number of tillers per plant. Residual B did not reduce Zn concentration while residual Zn significantly increased Zn concentration in wheat grain. Contrarily, residual Zn decreased B concentration and B-uptake in wheat grain where excessive B was applied to previous rice.

Key Words: Boron toxicity, Rice, Wheat, Zinc