

# RESPONSE OF WHEAT (*TRITICUM AESTIVUM* L.) TO SOIL APPLICATION OF ZINC AND BORON UNDER RAINFED CONDITIONS

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## ABSTRACT

A field study was conducted to investigate the effect of five levels of zinc (0, 5, 10, 15, 20 kg ha<sup>-1</sup>) and three levels of boron (0, 0.5 and 1.0 kg ha<sup>-1</sup>) on yield and yield components of wheat under rainfed conditions. Zinc application significantly increased the yield and yield components of wheat. Maximum grain yield was obtained with an application of 10 kg of Zn ha<sup>-1</sup>. Higher levels of Zn application, however, reduced the grain yield. Response of wheat to B fertilization was non-significant. Zinc and boron application significantly increased their contents in soil and wheat plant and grain. Critical concentration of Zn in the wheat plant (at heading) and in grain was found to be 144 µg g<sup>-1</sup> and 45 µg g<sup>-1</sup>, respectively at 95% of the maximum grain yield.

## INTRODUCTION

Several reports indicate widespread deficiency of micronutrients particularly those of Zn and B in alkaline calcareous soils of Pakistan (PARC, 1985; Sillanpaa, 1982). Application of their fertilizers increased yield of several crops in

Treatments	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Zn	B
			(kg ha <sup>-1</sup> )		
1	115	85	63	0	0
2	115	85	63	5	0
3	115	85	63	10	0
4	115	85	63	15	0
5	115	85	63	20	0
6	115	85	63	0	0.5
7	115	85	63	0	1.0

Nitrogen, P and K fertilizers were applied at recommended rate just before sowing of wheat (Pak-81). Zinc and B were applied three weeks after sowing as side-dressing in the form of solutions of zinc sulfate and borax, respectively. All the treatments were replicated four times in Randomized Complete Block Design (RCBD).

Soil and plant samples were taken when crop was just near heading. Grain samples were collected after harvesting. Number of tillers per plant, spikes per plant, spike length, plant height, fresh and dry weights of biomass, number of grains per spike, hundred-grain weight, and grain yield were recorded from each treatment.