

INTERACTIVE EFFECTS OF SULPHUR, PHOSPHORUS AND ZINC APPLICATION ON GROWTH AND IONIC RELATIONS OF MUSTARD (*Brassica campestris*)

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ABSTRACT

Application of S, P and Zn to a soil of Nabipur series (Typic Camborthids) significantly ($P < 0.05$) increased dry matter yield of brassica grown in pots. There was no interactive effect of these elements on dry matter yield. Sulphur, P and Zn application had significant main and all first order interactive effects on S concentration as well as total S contents in plants. Only S and P had a significant main effect on concentration and uptake of P by plants. Also significant main and first order interactive influence of S and P application on concentration and total content of Zn in plants has been discussed.

INTRODUCTION

Brassica, an important oilseed crop, is grown in various parts of Pakistan mostly on marginal lands. A great potential exists for improving its current average yield of 759 kg/ha (GOP, 1988). Farmers generally apply N and P fertilizers for improving mustard yield. Oilseed crops need comparatively greater amount of S than cereals for proper growth and higher yield. Recently favourable effects of S on brassica and groundnut had been observed on light textured

randomized design. Ammonium sulphate, KH_2PO_4 and ZnCl_2 were used to add S, P and Zn, respectively. A uniform dose of each N, K, Fe, Cu and B was applied to all the pots @ 200, 250, 5, 5 and 1 mg kg^{-1} , respectively. Urea and KNO_3 were used to supply additional amounts of N and K. All nutrients were applied in solution form. Pots were irrigated with distilled water and equilibrated for one week before sowing 10 seeds of mustard (*Brassica Campestris*, cv. Westar). Plants were thinned to 6 per pot two weeks after germination. The soil was maintained at near field capacity with distilled water throughout the experiment. Sixty days old plants were harvested (at flowering), washed with distilled water and dried at $65 \pm 2^\circ\text{C}$ to a constant weight for dry matter yield. A portion of each fine ground plant sample was digested with $\text{HNO}_3 : \text{HClO}_4$ mixture. Phosphorus was analysed colourmetrically by vanadomolybdate yellow colour method and S was estimated turbidimetrically (Verma et al 1977). Zinc was determined by atomic absorption spectrophotometry.