

Humic Acid Coated Phosphatic Fertilizers Enhance Growth, Yield and Phosphorus Uptake of Maize Crop in Alkaline Soil

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Phosphorus availability to crop is one of the major causes of poor crop production worldwide. Effect of inorganic phosphorus (P) fertiliser sources, i.e., nitro phosphate (NP), di-ammonium phosphate (DAP) and single superphosphate (SSP) coated with different humic acid levels on crop production and P utilization efficiency (PUE) of maize was studied. All P sources at a recommended rate of 90 kg P₂O₅ ha⁻¹ coated with 3 humic acids (HA) levels (0, 5 and 10 kg ha⁻¹) with one absolute control (no fertilisation) were arranged in Randomised Complete Block design with three replicates. Results showed that all P sources coated with HA significantly increased the plant height, grains cob⁻¹, thousand-grain weight, grain yield, plant and soil P concentration and P utilization efficiency. Average values indicated that the coating of P sources with 5 and 10 kg HA ha⁻¹ increase 9.5 and 12 percent grain yields over uncoated P application, respectively. Similarly, all the other agronomic attributes, plant and soil P concentrations increased with the coating of P fertilisers. Overall the P uptake due to the coating of P sources in comparison of sole uncoated P fertilisers was 18% (12% and 23% with 5 and 10 kg HA ha⁻¹, respectively). Phosphorus utilization efficiency of inorganic P was increased with HA coating, and the highest PUE was recorded in DAP coated with 10 kg HA ha⁻¹. Generally, the coating of DAP with 10 kg HA ha⁻¹ proved superior over the remaining P fertiliser treatments.