

NUTRIENT AVAILABILITY TO SOYBEAN (*GLYCINE MAX* (L) MERR.) FROM OGUN PHOSPHATE ROCK AND ZINC APPLICATION IN SOME SOUTH-WESTERN NIGERIAN ALFISOLS.

Shokalu A. O.*¹, Shokalu O.², Adetunji M. T.³ and Azeez J. O.³

¹ Department of Vegetables and Floriculture, NIIHORT, Ibadan, Oyo State.

² Soybean Programme, NCRI, Badeggi, Niger State.

³ Department of Soil Science and Land Management, UNAAB, Abeokuta, Ogun State.

*Email: kemishokalu@yahoo.co.uk.

ABSTRACT

The response of soybean (*Glycine max* (L) Merr.) to phosphorus from beneficiated Ogun phosphate rock (OPR) and zinc application (as ZnO; 80 % Zn) was studied in both pot and field experiments. Pot experiment was conducted with six surface soils collected from 0-20 cm depth of different land uses within Ogun state, Nigeria while the most representative of the locations was used for the field trial. Soybean was raised to maturity in both pot and field trials. Phosphorus was applied as beneficiated product of Ogun phosphate rock at 0, 40, 60 and 80 kg P ha⁻¹. Zinc was applied at 0, 3, 6 and 9 kg Zn ha⁻¹, giving a total of 16 treatments per soil type. Zinc and phosphorus fertilizers were intimately mixed with the soil before planting. The pot trial was a factorial experiment with four replications while the field trial was a randomized complete block design with four replications. Soybean cultivar TGX 1485-1D was the test crop. Phosphorus application as OPR significantly increased the crop uptake of phosphorus and zinc in the pot trial and P uptake in the field. Phosphorus uptake, seed weight in some soils (pot trial) and yield (field trial) were significantly increased with the application of up to 9 kg Zn ha⁻¹.

Phosphorus and zinc interaction was not significantly different among treatments for soybean yield and nutrient uptake in the field. Significant response of soybean yield to OPR up to 40 kg P ha⁻¹ was observed. For soils low in P and Zn, application of 40 kg P ha⁻¹ and 6 kg Zn ha⁻¹ was recommended for optimum soybean yield.

Keywords: Nutrient Interactions, Legume, nutrient, Alfisols, Soybean.