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EVALUATION OF OGUN PHOSPHATE ROCK AS PHOSPHORUS SOURCE FOR SOYBEAN

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ABSTRACT

An experiment was conducted in the laboratory, green house and on the field to determine phosphorus fertilizer requirement of soybean and to compare the effectiveness of indigenous PR (OPR) alone or in combination with single super phosphate (OPR:SSP) and single super phosphate (SSP) as phosphorous source for soybean in a severely phosphorous deficient soil at Abeokuta, South West Nigeria. Sorption study in the laboratory showed that the equilibrium solution phosphorus concentration (SPC) required to achieve 95% maximum yield of soybean in the test soil was 0.05 $mgmL^{-1}$. On the field, significant responses to phosphorus application were obtained irrespective of phosphorus source and rates. The optimum phosphorus requirement of soybean in the soil was 30 kg Pha^{-1}. All the sources showed significant residual effect. After 2 years as much as 56 to 62%, 60 to 73% and 77 to 81% of the phosphorus fertilizer applied at 30,60,90 kg ha^{-1} respectively were unutilized. This was highest for OPR followed by SSP and least with OPR:SSP. It is concluded that direct OPR application as phosphorus source for soybean in South Western Nigeria soil is feasible and the agronomic efficiency could be increased by mixing OPR and SSP at ratio 1:1.

Keywords: Phosphate rock, soybean, Equilibrium solution, sorption.