

EVALUATION OF SOYBEAN FOR GRAIN YIELD AND YIELD COMPONENTS AT VARYING LEVELS OF PHOSPHORUS IN MAKURDI (SOUTHERN GUINEA SAVANNA), NIGERIA

G. O. S. Ojo¹, N. B. Ibrahim² & A. A. Akinwande³

1, 3Department of Crop Production, Federal University of Agriculture, P.M.B. 2373, Makurdi, NIGERIA

2 Department of Soil Science, Federal University of Agriculture, P.M.B. 2373, Makurdi, NIGERIA

ABSTRACT

Field experiments were conducted during the 2012 and 2013 cropping seasons at the Teaching and Research Farm of the Federal University of Agriculture, Makurdi, Benue State, Nigeria, to evaluate soybean for grain yield and yield components at varying levels of Phosphorus (P). Treatments were 4 x 7 factorial combinations of four levels of phosphorus (0, 20, 40 and 60P) and seven varieties of soybean in a randomized complete block design with three replications. Results showed that the 40P level of phosphorus significantly improved grain yield and the yield components of nodule score, plant height, and number of pods/plant compared to other levels of P, indicating 40kgP₂O₅/ha as the most appropriate level of phosphorus required for soybean production in Makurdi and that any application beyond this level is counterproductive. Four varieties (TGX 1895-35F, Milena, TGX 1485-1D and TGX 1448-2E) with grain yield of 3.33 – 4.38t/ha at 40P (222.22kg single superphosphate fertilizer/ha) were suggested for subsequent evaluation at 0, 30, 40 and 50P prior to final recommendation for production. The two early maturing varieties (Milena and TGX 1485-1D) among them were recommended for resource poor farmers in Makurdi area (Benue State) of the southern Guinea Savanna ecology of Nigeria in view of their outstanding performance (grain yield of 2.92 – 3.11t/ha) when no fertilizer was applied. Crossing of Milena to adapted late maturing IITA improved varieties of TGX 1895-35F and TGX 1448-2E and selecting for phosphorus use efficiency in the segregating populations is further suggested.

Keywords: Phosphorus, prepodding, postpodding, southern Guinea Savanna.