

Effects of different fertilizer inputs on the growth and yield of soybean planted on an Alfisols in Minna, Southern, Guinea Savanna zone of Nigeria

Uzoma, A.O., Nkor, S.M., Adekanmbi, A.A., Afolabi, S.G., Odofin, A. J. and A. Bala
Departments of Soil Science and Land Management, School of Agriculture and Agricultural Technology, Federal University of Technology, Minna, Nigeria.

Abstract

Effects of different fertilizer inputs on the growth and yield of soybean planted on an Alfisols in the Teaching and Research Farm of the Federal University of Technology, Minna during the 2011 cropping season. Minna lies within the southern Guinea savanna zone of Nigeria on longitude of 06°27'E and latitude of 09°32'N. Treatments consisted of five fertilizer combinations as follows: Control at 0 kg ha⁻¹, single supper phosphate (SPP) at 30 kg ha⁻¹, Rock phosphate (RP) at 30 kg P ha⁻¹, Agrolyzer at 900 g ha⁻¹ and combinations of SSP at 30 kg Pha⁻¹ and single super phosphate at 30kg Pha-1 and urea at 20 kg N ha⁻¹. The experiment was arranged in a Randomized Complete Block Design with 3 replicates. Result revealed that TGX 1448-2E plants supplied with sole phosphorus or in combination with either agrolyzer or urea produced better response compared with zero fertilizer application. Plants supplied with SSP were taller and heavier than those receiving rock phosphates. Pod weight, shoot biomass, nodule number, haulms weight, grain yield and plant height decreased when plants received an inclusion of Urea to single super phosphate compared with sole SSP and its agrolyzer inclusion respectively. Plants supplied with single super phosphate and urea however flowered earliest at 45 days while Pod number per plant was high when single super phosphate was supplied solely or in combination with agrolyzer. Nodule numbers were higher in plants that received single super phosphate and rock phosphate respectively but poor as a result of N inclusion to phosphorus may be as a result of the presence of Nitrogen. Urea applied at the rate of 20 kg N ha⁻¹ may just be enough to suppress nodulation as evidenced by reduction in nodule number compared with the value obtained when agrolyzer was included.

Keywords: Growth, nodulation, yield, soybean, fertilizer inputs, urea, nitrogen, phosphates, agrolyzer

E-mail: uzo_ozo@yahoo.com: alexunj1@yahoo.co.uk: ooreoluwa14@gmail.com

Received: 2015/12/22

Accepted: 2016/06/15

DOI: <http://dx.doi.org/10.4314/njtr.v11i2.1>