

Improving the Establishment and Yield of Soybean through Planting Depth and Land Preparation Methods in Northern Ghana

I. Y. D. Lawson¹, E. A. Mensah² and E. N. Yeboah²

¹*Department Soil Science, University of Ghana, Box LG 245, Legon-Accra*

²*Faculty of Agriculture, University for Development Studies, P. O. Box TL 1882, Tamale, Ghana*

Abstract

Two field experiments, organized in randomized complete block design, were conducted in 2005 and 2006 farming seasons at Nyankpala in the Northern Region of Ghana to investigate the effects of planting depth (1, 2, 4, 6 and 8 cm) and land preparation methods (flat field, mounding and ridging) on crop establishment (percentage number of established plants) and grain yield of soybean (*Glycine max* cv. Anidaso). In the 2005 farming season results indicated that crop establishment increased from planting depth of 1 cm (97.75%), reached a peak at 4 cm (98.82%) and declined through 6–8 cm (94.15%) under flat field condition. Nodule formation was high between planting depth of 2 and 4 cm. Generally, the number of pods and grain yield decreased with increasing plant depth. The grain yield values for 1, 2, 4, 6 and 8 cm depths were 4.25, 4.22, 3.87, 3.26 and 3.12 t/ha, respectively. In the 2006 farming season, at 4 cm planting depth ridging gave the highest crop establishment of 97.77%. The highest number of pods was recorded for mound (197 per plant) followed by ridge (189 per plant) and flat (143 per plant). This pod formation characteristic reflected in the grain yield of 6.14 t/ha, 5.95 t/ha and 4.07 t/ha for mound, ridge and flat, respectively. The study revealed that for good crop establishment and optimum grain yield of soybean in northern Ghana planting could be done on mounds or ridges at planting depth between 1 and 4 cm. Ridging may be preferred because it can easily be prepared mechanically using a tractor to save time and labour.