Production Efficiency of Soybean Farmers in the Guinea Savannas of West Africa: Empirical Evidence from Nigeria

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This study estimates technical, allocative and economic efficiency measures for soybean farmers in the guinea savannas. A multi-stage sampling technique was employed for collecting primary data from a sample of 182 soybean farmers from Borno State, Nigeria, using structured questionnaires administered in 2006. Descriptive statistics and stochastic frontier production function using the maximum likelihood estimation (MLE) technique were used to analyse the data. The results show that soybean production is characterized by technical inefficiency as confirmed by the significant gamma (γ) of 0.79. The determinants of production, which include farm size, seeds and hired labour, were found to be statistically significant (ρ = 0.05). The estimated technical (TE); allocative (AE) and economic (EE) efficiencies of 0.98; 0.58 and 0.57 respectively were obtained from the analysis. This means that soybean farmers have to become better at choosing the cost-minimizing input bundles rather than using resources in the technically most efficient way as TE contribute more to EE than AE. The implication of this finding is that overall economic efficiency (production efficiency) could be increased by improving the allocative efficiency of soybean farmers by 42 percent through better-input allocation in the cost minimizing way.

Keywords: production efficiency, stochastic frontier, cost functions, soybeans