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## A Multi-Output Production Efficiency Analysis of Commercial Banana Farms in the Volta Region of Ghana: A Stochastic Distance Function Approach

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### Abstract

The importance of the banana production and the export sector for Ghana's national development has increased over the past decades. Increasing export orientation and moving towards higher value banana supply chains has opened up new development pathways toward reducing rural-urban poverty. The initial government support in the early establishment phase of the banana sector led to a significant growth in export mainly to the EU due to a growing consumer demand of banana and other tropical fruits (i.e. banana export to the EU grew from a mere 1,788 tonnes in 2004 to 52,357 tonnes in 2010). The export oriented nature of the sector plays a very important role in generating employment opportunities for farmers and exporters which have in turn enhanced welfare and poverty reduction schemes in both rural and urban areas of this region. However, decreasing output trend in the sector due to lack of continuous technical support to improve production efficiency to help sustain productivity growth in the industry is hampering the ability of farmers and exporters to meet the rapidly increasing export demand. This has in turn denied the country of the urgently needed foreign exchange. Given the important contribution of the sector to the economy as well as Ghana's excellent comparative advantage (i.e. climate, soil, labour and proximity to Europe) in banana production, more could be done to enhance production in the sector. All of the 120 sampled farmers produce other crops beside banana using several inputs (i.e. multi-input, multi-output production process), either using the same piece of land or adjacent lands. This study therefore employed a stochastic multi-output distance function estimation technique to assess not only the current productivity level, but also what drives banana productivity in this region of Ghana where commercial production for export is most concentrated and provides some relevant empirical information regarding how to improve production efficiency of banana farmers in this region of Ghana.

**Keywords:** Commercial banana production and export in Ghana, determinants of technical efficiency, stochastic multi-output distance function