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Resource Use Efficiency in Maize Production Under Traditional and Improved Technology in Western Ethiopia

Arega Alene

University of Pretoria, South

Abstract

In view of the growing gap between the demand for and supply of food in Ethiopia against the background of an increasing pressure on land, the efficiency with which available resources and technology are used by the farmers becomes a priority subject of investigation. It is argued that agricultural production can be increased either through an efficient use of traditional technology and practices, or through the introduction of a package of improved technologies like fertilizer, improved seeds and cultural practices provided that no production gains are possible through better use of the traditional practices. This paper uses a dual stochastic frontier efficiency decomposition methodology to derive the technical, allocative, and economic efficiency measures for a sample of 60 maize producers using improved technology, and of 35 maize producers using traditional technology in Western Ethiopia. The mean technical, allocative, and economic efficiencies under improved technology are estimated at 74 %, 82 % and 61 %, respectively, while the corresponding results under traditional technology are estimated at 92 %, 80 % and 73 %, respectively. The results thus suggest that there exists an immense potential for increasing production through efficiency improvement under improved technology as compared with that under traditional technology. By operating at full technical efficiency levels, traditional farmers gain only an 8 % increase in maize production while those operating under improved technology can gain a 26 % rise in maize output. This study, therefore, confirms that the potential for increasing production through improved performance with available resources and traditional technology is limited. Given the weak institutional support services such as extension, education and credit, the finding of considerable inefficiency in improved maize production is as expected and thus an efficient use of improved techniques of production coupled with better management of land through increased institutional and infrastructural support will help enhance maize production.

Keywords: Ethiopia, improved technology, production frontier, stochastic efficiency decomposition, traditional technology

Contact Address: Arega Alene, University of Pretoria, Pretoria, South, e-mail: s20221942@tuks.co.za