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Smallholder Maize Productivity under Alternative Soil Fertility Management Options in Malawi

JOHANNES SAUER¹, HARDWICK TCHALE², PETER WOBST³

¹ZEF - Centre for Development Research, University of Bonn, Germany

²University of Malawi, Bunda College, Rural Development Department, Malawi

³University of Bonn, Department of Economics and Technical Change, Germany

Abstract

This contribution focuses on smallholder maize production in Malawi by investigating the link between productivity and soil fertility management. Many studies conducted on Malawi indicate declining levels of maize productivity that pose serious food security concerns, since maize is the staple crop in most areas of the country. In this paper, we analyse the factors influencing productivity of maize among smallholder farmers, especially given the fears that unfavourable output and input market conditions throughout the 1990s may have compelled smallholder farmers into unsustainable agricultural intensification. Farm-household survey data is analysed in order to compare the productivity of smallholder maize production under integrated (ISFM) and chemical-based soil fertility management. A normalised translog yield response model is estimated by imposing monotonicity and curvature correctness at the sample mean. The results indicate higher maize yield responses for integrated soil fertility management options, after controlling for the intensity of fertiliser application, labour intensity, the seed rate as well as land husbandry practices and policy factors. The estimated model is highly consistent with theoretical regularity conditions. Thus we conclude that the use of ISFM increases the productivity of maize production in comparison to the use of inorganic fertilisers. Since most farmers in the maize-based farming systems are crowded out of the agricultural input market and can hardly afford optimal quantities of inorganic fertiliser, enhancement of ISFM is likely to enhance their maize productivity. In terms of policy implications, ISFM provides scope for improving maize productivity especially where use of inorganic fertiliser is highly unaffordable and risky. Thus there is need for policy interventions to promote smallholder uptake of ISFM options. Finally areas of policy support are identified to enhance ISFM uptake in smallholder maize-based farming systems.

Keywords: Malawi, normalized translog yield response model, smallholder agriculture, soil fertility management