



Tropentag, October 9-11, 2007, Witzenhausen

“Utilisation of diversity in land use systems:  
Sustainable and organic approaches to meet human needs”

## A Comparative Economic Analysis of Conservation Tillage and the Mouldboard Plough in Zimbabwe’s Subsistence Farming Sector.

SHEPHARD SIZIBA<sup>1,2</sup>, FRANZ HEIDHUES<sup>1</sup>, MULUGETTA MEKURIA<sup>2</sup>

<sup>1</sup>*University of Hohenheim, Institute of Agricultural Economics and Social Sciences in the Tropics and Subtropics, Germany*

<sup>2</sup>*CIMMYT Southern Africa Regional Office, Maize and Wheat Systems and Impact Assessment, Zimbabwe*

### Abstract

There is increasing concern about environmental degradation globally. In developing countries, the agricultural practices hitherto used by farmers are leading to accelerated soil erosion and land degradation. Resultantly, in fragile and low input agriculture systems like those in sub Sahara Africa crop yields show a decline trend, threatening the livelihoods of the majority of the population who are poor subsistent farmers. As an intervention, conservation tillage which ensures minimum disturbance of the soil is being encouraged to replace the erosive convention mouldboard plough in southern Africa. Besides reducing soil erosion, conservation tillage is claimed to reduce the drudgery associated with the mouldboard plough. Findings have shown that among many factors, financial returns is the most dominant factor farmers consider in abandoning their old practice for the new one. The main objective of this study was to evaluate the possibility of adoption of the environmentally benign conservation tillage. The study compared financial profitability of conservation tillage relative to the conventional mouldboard plough in the production of the main staple crop, maize under typical subsistence farmer conditions in Zimbabwe. The standard enterprise gross margin analysis was used to show the relative financial profitability of the two technologies in terms of three indices: gross margin, returns to land and returns to labour. The study is based on one cropping season (2005/6) data from 8 on-farm trials located in two contrasting agro ecological zones in Zimbabwe. Average labour use and maize grain yields were obtained from the on-farm trials, and prevailing local market prices were used for all inputs and outputs. In addition, sensitivity analysis was done to compare the risk profiles of the two technologies.

**Keywords:** Conservation tillage, economic, profitability, subsistence farmer, Zimbabwe