Background

- Agricultural productivity growth is a crucial element in improving livelihoods in many developing countries particularly in East Africa.
- However, increased population pressure, land degradation, unreliable rains, drought, pests, and diseases, and inadequate technology are major constraints faced by farmers. As a consequence, farm productivity remains low.
- Groundnut farming could improve significantly farmers’ livelihoods given the likelihood for high returns per unit area and the potential to improve soil fertility. But, available data show average yields far below those obtained at research stations and in trial plots of collaborating farmers.
- The study aims to analyze the potential to increase household income through productivity growth by estimating the technology and management gaps of groundnut farmers in Ndihiwa district in Kenya.

Objective of the Study

To analyze productivity differentials between groundnut producers. The specific null hypotheses (Ho) to be tested are:

Ho-1: The productivity from traditional and improved groundnut varieties is equal
Ho-2: The managerial ability of research and non-research farmers is equal
Ho-3: The managerial ability of male and female farmers is equal

Data and Methodology

- Two farmer groups are compared: Research Farmers (RF); those with direct support from researchers and extensionists Non-Research Farmers (NRF); those who did not receive any direct support
- Data comes from a survey conducted in three divisions, Ndihiwa, Nyarongi, and Kobama, in the Ndihiwa district of Kenya for the two seasons of 2009
- A total of 223 households are included in the data set.
- Cobb-Douglas Stochastic Production Frontier (SPF) models were estimated based on the Battese and Coelli (1995) framework

Model Specification

Stochastic frontier

\[ \ln(Y) = \beta_0 + \beta_1 \ln(Land) + \beta_2 \ln(FF) + \beta_3 \ln(HF) + \beta_4 \ln(BS) + \beta_5 (Loc1) + \beta_6 (Loc2) + \beta_7 (Sex) + \beta_8 (Dist) + \beta_9 (Fert) + \mu + \nu + c \]

Inefficiency Effects

\[ \mu = \delta_1 + \delta_2 X_1 + \delta_3 X_2 + \delta_4 X_3 + \delta_5 X_4 + \delta_6 X_5 + \omega \]

(See definition of terms in Table

- Total land under groundnut cultivation was obtained by adding the area under pure and mixed stands
- Total annual production was obtained by adding total output in the two seasons
- Total Value Product (TPV) obtained by converting unshelled to shelled groundnut quantities, using standard conversion scales, multiplied by net prices received by farmers.
- The coefficient of the dummy for seed variety was positive and significant, i.e., the productivity of farmers using improved varieties is higher than for those using local varieties.
- TE for RF ranged from 0.23 to 0.80, with a mean of 0.56 while that of NRF ranged from 0.19 to 0.83, with a mean of 0.55.
- The Mean TE (MTE) for all farms is 55% suggesting that groundnut output could be increased by 45% using available inputs and existing technology.
- This MTE is relatively low suggesting a significant management gap. However, this gap was the same for RF and NRF.
- Male farmers were found to have a higher TE than female farmers.

Results cont.

Conclusions and Recommendations

- Farmers need to reduce technical inefficiency and technological gaps in order to improve their productivity and consequently raise their incomes.
- TE for RF and NRF was not significantly different, suggesting that there is room for improvement in the delivery of extension programmes in Ndihiwa district. A more effective delivery of extension services should improve managerial performance.
- Female farmers appear to be less efficient than male farmers. Since groundnut is considered a female crop in the project area, women’s efficiency and productivity need to be enhanced. This will help to reduce malnutrition, increase income, and empower female headed households.
- Groundnut farmers in Ndihiwa need support from the government, national research centers and international agencies in order to achieve higher levels of productivity, lower poverty rates and thus improved livelihoods.