FACTORS INFLUENCING ADOPTION OF IMPROVED POST-HARVEST STORAGE TECNOLOGIES BY SMALLHOLDER MAIZE FARMERS IN TANZANIA

By

Elizabeth Raphael Ngowi

&

Onesmo Selejio

OUTLINE

- INTRODUCTION
  - ❖ Background
  - ❖ Objectives
- METHODOLOGY
- STUDY FINDINGS
- POLICY IMPLICATION AND RECOMMENDATIONS
- CONCLUSION

INTRODUCTION

Post-harvest loss

- Measurable quantitative, qualitative, and economic crop loss across the post-harvest chain

Post-harvest chain (value chain)

- Harvest
- Transport
- Drying
- Shelling
- Winnowing
- Storage
- Processing
- Marketing

Introduction….

Situation of PHL

- 20–40 percent in SSA
- Occur in grain crops such as maize, paddy, millet, and sorghum.

PHL in Tanzania

- Smallholder farmers lose up to 40 percent of harvest
- Maize grain is the crop with the highest PHL

Causes and drivers of PHL

- Poor post-harvest handling procedures.

Major causes

- High crop perishability, mechanical spoilage, excessive exposure to high temperatures, relative humidity and rain, contamination by spoilage fungi and bacteria; invasion by birds, rodents, insects and other pests such as the Large Grain Borer (LGB), and theft .

Introduction......

Impact of PHL

- Livelihood, income, production incentive and investment

- ❖ Most losses of maize harvest occur during storage

Post-harvest storage facilities

- Improved and modern (sacks/open drums, airtight drums and modern stores and modern facilities include modern stores and airtight drums)

- Traditional (locally made structures, improved locally made structures, unprotected pile and ceiling)

Mitigation of PHL

- The government of Tanzania
- Development agencies and institutes such as Alliance for Green Revolution in Africa (AGRA), HELVETAS and International Institute of Tropical Agriculture (IITA)

Introduction….

- introduced and promoted IPHSTs

Adoption of IPHSTs

- A lot has been done on the dissemination of PHL reduction,
- these approaches for mitigation of PHL have had little success.

- Many smallholder farmers in Tanzania still continue with traditional storage methods and suffer losses despite huge investments in IPHSTs implying that there is poor adoption of the improved technologies.

Objectives

- **Generally:** evaluating factors influencing adoption of IPHSTs by smallholder maize farmers in Tanzania

- **Specifically:** examining determinants of maize PHL
  examining determinants of adopting the IPHSTs

METHODOLOGY

- **Coverage** ⟶ smallholder maize growing HH in Tanzania

- **Data** ⟶ national panel survey (NPS); wave one (2008-2009), wave two (2010-2011) and wave three (2012-2013).

- Sample of 1620 observations

Analytical tools

- Descriptive analysis
- Regression analysis ⟶ Logit Model

STUDY   FINDINGS

I. DESCRIPTIVE ANALYSIS

- The average area cultivated → 5 acres

- Average output of maize harvested per area cultivated → 533 Kgs.

- The average amount of maize in storage → 304 kgs.

- Only 9 percent of the smallholder farmers had experienced PHL

- 115 kg of maize on average was lost in various stages of PH chain.

- 90% percent of losses were due to pests insects and rodents

- Smallholder farmers who adopted IPHSTs and used storage protectorant comprised of 19 percent and 20 percent respectively.

Study findings

- 94 % of smallholder farmers stored crops for the purpose of food for household

- On average household used 42 days (equivalent to average of 7 days per each member of the household) on harvesting

- 28% of the famers hired labour during harvest.

- The average distance from farm plot to the nearest market is 11km

- Most of the farmers use bicycle to transport their crops to the market for sale.

II. REGRESSION ANALYSIS

Results of random effects logit model on PHL

- Six (6) independent variables

Study findings….

- Four (4) variables were found to significantly influence PHL

- Marital status
- Distance from plot to market
- Gender (+sig)
- Harvest working days (+sig)
- Use of hired labour and (+sig)
- Use of storage protectorant (+sig)

Results of fixed effects logit model on adoption of IPHSTs

- Six (6) independent variables,
- Two (2) variables were found to significantly influence adoption of IPHSTs

Study findings….

- Age(+sig)
- Household size
- Farm size
- Harvest (+sig)
- Food expenditure
- Access to Extension services

POLICY IMPLICATIONS AND RECOMMENDATIONS

- The government and development agencies should put emphasis on provision of extension education on post harvest management to farmers in order to mitigate loss moreover on the use of storage protectorant of which most of them are harmful to human health.

- Constant monitoring through regular visits and close supervision to the farmers by the extension agents and representatives from development agencies should be made to the farmers specifically the hired labour.

- Emphasis should be put to all groups (youth, middle-aged, elderly) on the use of IPHSTs.

- Female farmers should also be encouraged to participate in post-harvest activities since they are the overall seers of food in the household hence will make sure of sustained food security by minimizing losses.

Policy Implications and Recommendations….

- Provision of up-to-date tools for post-harvest handling such as combined harvesters which take only few days in harvesting. This should be done through credit and subsidies provision from government and development agencies.

- More emphasis should be placed on the sustained researches and development programmes on the improved post-harvest handling technologies. This can be undertaken by government, NGOs, research institutions and various development agencies so as to provide a strong basis for knowledge diffusion among smallholder farmers in Tanzania.

CONCLUSION

- Further research can be carried in areas which have been given support by the government and/or development agencies to evaluate on the impact of PHL and impacts on adoption of IPHSTs.

- A comparative analysis should be done to find if any differences exist in the food security and income levels from farmers with high PHL and poor adoption of IPHSTs in comparison to those with little or no post-harvest losses and high adoption of IPHSTs.

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