An expert based farm typology for targeting ecological intensification in smallholder agriculture in semi arid Limpopo, South Africa

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Abstract

In this study an expert based farm typology was developed, which identified three farm types based on the major the source in which gross maximum income was earned.

Different types of farmers are expected to pursue different trajectories in farm system design for targeting ecological intensification to harness ecosystem services that flow from the agro-ecosystems under study

Introduction

South Africa (SA) is food secure but most rural households are food insecure. The rural households are vulnerable to climate & other disaster risks because they are mostly dependent on rain agriculture

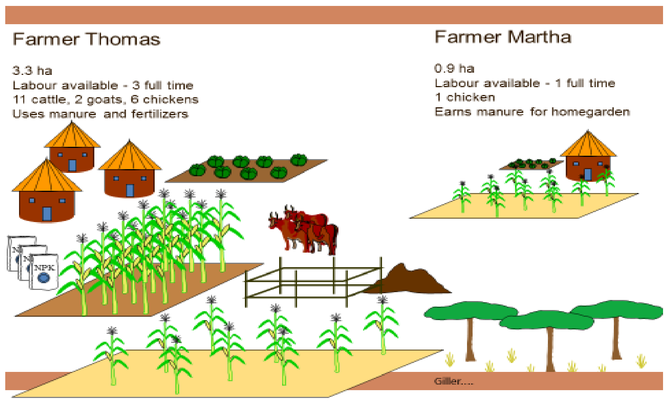
Agriculture is considered a vehicle to reduce poverty in SA. However, there is a wide-ranging debate on the way agricultural technologies are being promoted in SA and the region beyond

Agricultural technologies aiming to enhance production, income and household livelihoods, must capture the contrasting biophysical circumstances within & across the heterogeneous agro ecologies in smallholder agriculture in SSA

A practical way to understand smallholder farming systems, capture diversity of farm households & support a more tailored approach to agriculture development is through farm typologies

In SSA two models of fostering agricultural development and innovation to improve smallholder agriculture have gained momentum namely sustainable & ecological intensification.

In this study, we illustrate the expert based approach to build typologies to guide in targeting ecological intensification (EI) technologies to improve food security for smallholder farmers in marginal areas of SA



Methods and Materials

The study described was carried out in Ha Lambani, a village in Vhembe, a semi arid rural district in Limpopo, South Africa

An expert based process was used to develop a farmer typology for smallholder farmers in Ha Lambani based on production objectives, socio economic characteristics & resource endowments

A survey was then carried out using a snowball approach to identify farming patterns, constraints & opportunities for ecological intensification in different farm types in Ha Lambani

Results & Discussion

Farm types

(1) Cereal and livestock based farmers

- Large farm (>2 ha),with elderly household heads (60 years old and more)
- Maize is the most cultivated crop whereas legumes & vegetables are minor crops in this category of farmers
- Livestock is a determinant factor of those farms

(2) **Horticultural based**,

- Small farms sizes of < 1.5 ha.
- They comprise mainly of the young household heads of age ranging from (18-35 years).
- Vegetables are mostly grown & maize (green mealies) is cultivated as a minor crop.
- Most of the farmers in this category do not own livestock.

(3) Off farm income dependent

- Are average sized farms of between 1.5-2 ha
- . The household heads are aged between 36 to 60 years.
- maize mostly grown as a major crop & vegetables & legumes as minor crops.
- They own a small herd of livestock biased towards ruminants
- The largest household income comes from salaries & part time jobs they engage into in their local communities complemented in small portion by agricultural activities

Constraints

Typology	Cereal & livestock	Horticultural based	Off farm income
Constraints	Poor rainfall	Poor rainfall	Poor rainfall
	Limited irrigation	Limited irrigation	Limited irrigation
	Access to inputs	Access to inputs	Access to inputs
	Shortage of livestock feed	High pest & diseases incidences	Shortage of livestock feed
	Crop damage by livestock	Markets access	Crop damage by livestock

Opportunities for (EI)

Typology	Cereal & livestock	Horticultural based	Off farm income
Ecosystem services	Soil & water conservation	Soil & water conservation	Soil & water conservation
	Nutrient recycling	Natural pest control	Nutrient recycling
	Provision of forage	Water quality	Natural Pest Control

Conclusions

Expert based typologies offer a more contextualized representation of heterogeneity.

Farmers can be distinguished based on their sources of income, household involvement in both on and off farm activities and the diversity of the farmers' agricultural land use

Different types of farmers are expected to pursue different trajectories in farm system design for targeting ecological intensification to harness ecosystem services that flow from the agro-ecosystems under study

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