

# Uptake of integrated soil fertility management in maize mixed farming systems of Malawi



## Introduction

Six decades of farming systems research and development has:

- made available several soil fertility management (SFM) technologies
- with the potential to enhance sustainable agricultural productivity in Africa (Vanlauwe et al., 2017)

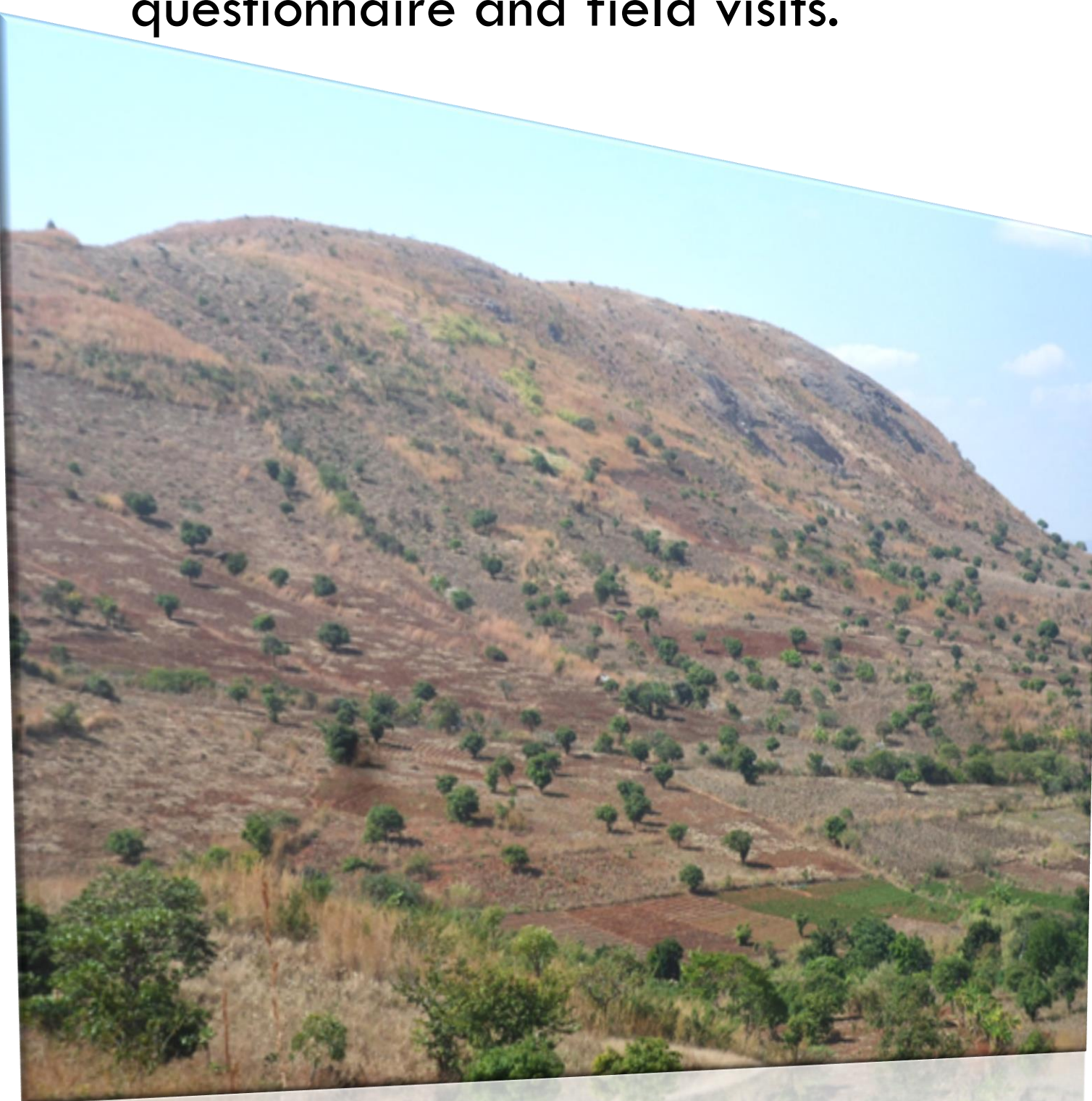
Most rural farmers in Africa are yet to take advantage of many promising technologies.

As a result, declining soil fertility continues to be the major biophysical limiting factor that **must** be addressed before the benefits from other technologies can be harnessed (Sanchez, 2002)

**But**, why are farmers not imitating their neighbours?

## Materials and methods

A fragile sloping landscape in rift valley escarpments of Malawi was purposively chosen to collect empirical data through questionnaire and field visits.

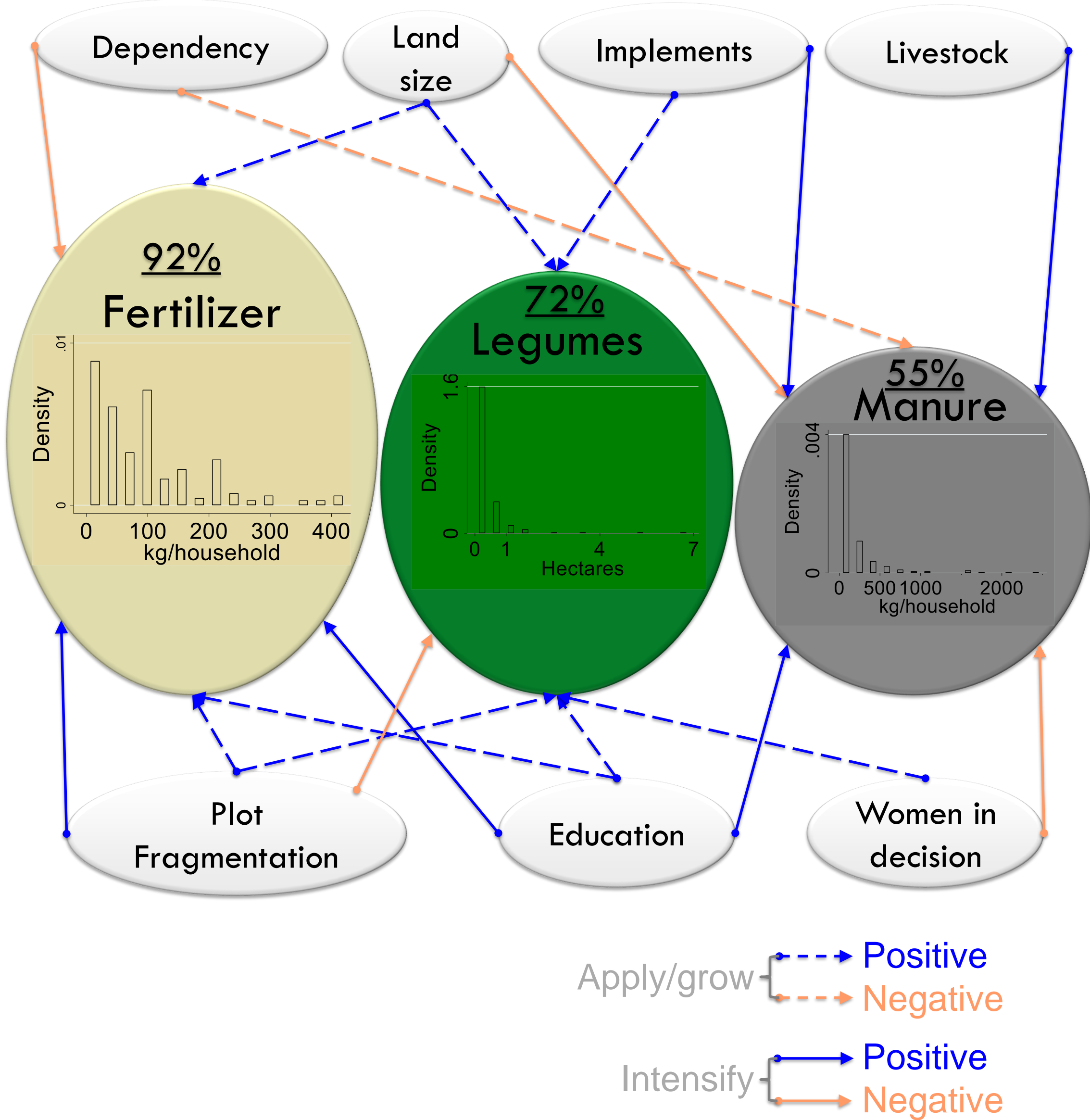


Using double-hurdle model, we analyzed farmer's decision to apply fertilizer/manure or grow legumes and intensify these basic soil fertility management options.

## Results (see figure below)

### Wide usage but in variable quantities & extent

- 9/10 households use inorganic fertilizers
- A third plant legumes
- More than half apply manures.



### Driven by multiple factors with positive and negative effects on initial and intensification decisions

- Positive effects from increasing labour supply were offset by the negative effects associated with increasing dependency ratios.
- Associated with increasing land size, women decision makers have higher probability to grow legume cropping but have negative effects on organic manure application. This is expected with the matrilineal marriage system practiced in the area.
- Education and availability of farming implements underpins the initial decision for Legumes and increased usage of manures
- Increasing livestock would intensify manure

## Conclusions

Unlike the usual narratives that agricultural technology adoption in Africa is low, we see that:

- Within fragile landscapes there is widespread usage of the three most common soil fertility technologies.
- Usage levels are generally low than recommended but there are positive deviants

Proximate and underlying drivers of choice and intensification set boundary conditions for diffusion pathways.

- There exist some drivers with similar effects on both decisions
- No single driver consistently influence both decisions for all the three technologies.

## NEXT STEPS:

All factors are dynamically changing with different magnitudes and confidence intervals

Sustainability can be achieved by harnessing the positive effects; concurrently reducing the negative influences over a decision space.

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## Literature cited

Vanlauwe et al., 2017. *International Journal of Agricultural Sustainability*, 15(6).  
Sanchez, 2002. *Science*, 295(5562).

## Acknowledgments

Funding: DAAD, Foundation fiat Panis, CIAT.

## Further information

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