Implementation of a multi-criteria assessment of sustainability \mathcal{A} ProEco of smallholder organic and conventional farms in Kenya

Africa

Ndungu J. M.^{1,4}, Muriuki A. W.², Blockeel J.³, Borgemeister C.¹, Biber-Freudenberger L.¹, Kirui O.K.¹, Gitonga J.⁴, Gathambiri C.5, Kiuru P.4, Kamau M.4, Kadzere I.3 and Schader C.3

Introduction

- agriculture Organic gaining importance in Kenya.[6]
- Comprehensive assessments on the comparative sustainability of organic and conventional farming systems are still lacking[1,2,5].
- The Organic Food Systems Africa (OFSA) project aimed to evaluate social, economic, environmental, and governance sustainability dimensions and to identify hotspots for sustainability improvements.
- Sustainability Monitoring The Assessment RouTine (SMART) farm tool used as per FAO Guidelines for Sustainability Assessment in Food and Agriculture (SAFA) [3,4,7].

Objectives

- To evaluate the SMART farm tool as used in sustainability assessments in Murang'a, Machakos & Kirinyaga counties
- Draw lessons in implementing the SMART farm tool for future improvement of tool and other studies

Research Methods

- Study sites Kirinyaga, Murang'a, and Machakos Counties (864) organic and conventional farms)
- Resource mobilization
 - Personnel (enumerator selection), staff/partners (OACK, MoALF, Limbua Group, site managers,
 - Research plans and budgets, data base
 - Equipment (laptops notebooks), vehicles
- Training
 - In-house (2 weeks)
 - Practical on 15 farms and farm tours
- Introduction and farmer sensitization meetings
 - Introduction to sustainability assessment
 - Introduce enumerators to farmers
 - What the enumerators will be doing
 - General discussions with Q&A sessions
- Data collection and monitoring

Data consistency and relevance check verification for

Enumerator ratings for

00004_EnvironmentalResponsibilityProcurement

- Data verification and cleaning
- Farmer feedback workshops



Farmer feedback

Farmers reading reports

workshops

■ Gen0

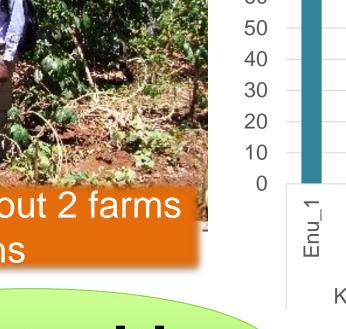
Results/ Lessons

Capacity development



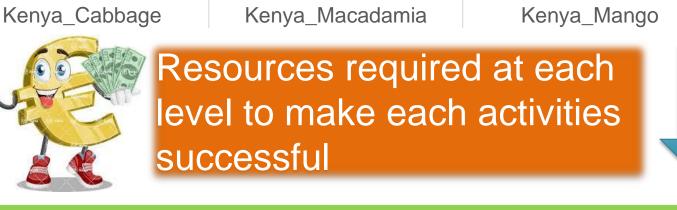






335 indicators





Case Study	Initial No. of farmers	Final No. of Farmers	
Murang'a	300	286	95.3%
Kirinyaga	300	282	94.0%
Machakos	300	296	98.7%
Total	900	864	96.0%

A farmer retention rate of 96.0% was maintained (dropped out sold the land, death of household head and some not willing to continue)

Farmer record keeping training





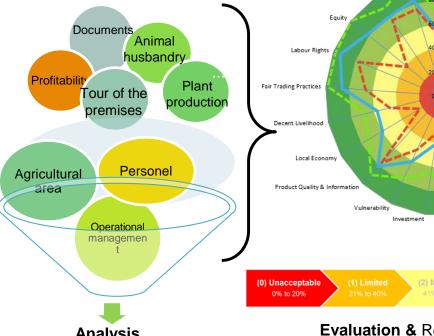
Lesson Learnt

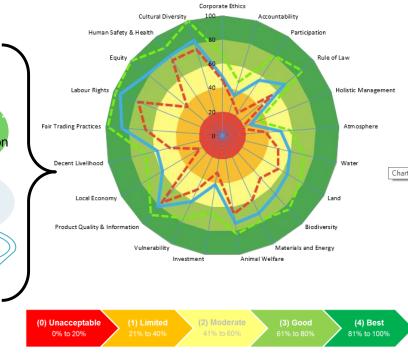
- SMART farm tool proved to be useful for the Kenyan context. However, sufficient time, human and financial resources as well as good technical capacity and peer learning and exchanges are prerequisites for its successful use.
- Good collaboration with partners, flexibility to implement changes at different sites when needed, and good communication ensured delivery to target farms.

Next Steps

Performance of: Organic vs conventional

 Different sites, by gender etc.





Evaluation & Report Automatic Report Generation

References

- 1. Alrøe, Hugo Fjelsted and Kristensen, Erik Steen (2004) Why have basic principles for organic agriculture? ... and what kind of principles should they be? Ecology & Farming, No. 36, pp. 27-30. Available at http://orgprints.org/00002538 Accessed on 21/08/2019
- 2. De Olde, E. M., Oudshoorn, F. W., Sørensen, C. A. G., Bokkers, E. A. M., & De Boer, I. J. M. (2016). Assessing sustainability at farm-level: Lessons learned from a comparison of tools in practice. Ecological Indicators, 66(July), 391-404. https://doi.org/10.1016/j.ecolind.2016.01.047
- 3. FAO 2013. Food and Agriculture Organization. Sustainability Assessment of Food and Agriculture Systems: Guidelines 3.0. Rome.
- 4. FAO 2014. Food and Agriculture Organization of the United Nations. Sustainability Assessment of Food and Agriculture Systems (SAFA); FAO: Rome, Italy, 2014c. Available online:
- http://www.Fao.Org/nr/sustainability/sustainability-assessments-safa/en/ accessed on 20/08/2019 5. Luttikholt, L.W.M. 2007. Principles of organic agriculture as formulated by the International Federation of Organic Agriculture Movements NJAS 54-4.
- 6. Ngungiri R. 2017. Organic farming in Kenya: Promising growth and a bright future in Willer, Helga and Jilia Lemoud (Eds) 2017, The World of Organic Agriculture: Statistics and Emerging Trends 2018 Research Institute of Organic Agriculture FiBL- Frick and IFOAM Organic International Bonn pg 167-168
- 7. Schindler, J., Graef, F., & König, H. J. (2015). Methods to assess farming sustainability in developing countries. A review. Agronomy for Sustainable Development, 35(3), 1043–1057. https://doi.org/10.1007/s13593-015-0305-2

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Contact details

ZEF, Genscherallee 3, 53113 Bonn, Germany, e-mail: s7jondun@uni-bonn.de











Author Affiliations

1 ZEF University of Bonn, Germany 2 KALRO FCRI, Kabete 3 FiBL Switzerland

4 KALRO HRI Thika