

Research Application Summary

Translating integrated soil fertility management knowledge into livelihood benefits through farmer learning and participatory action in Zimbabwe

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Abstract

Smallholder agriculture production is constrained by poor technology adoption often linked to lack information dissemination strategies, among other factors. This study sought to evaluate the effectiveness of participatory information management and smallholder farmer learning alliances in integrated soil fertility management (ISFM) technology information dissemination and adoption. Participatory research approaches were employed to mobilise farmers for experimentation with selected ISFM technologies. Preliminary results have shown that there are no readily available sources of information. However, there is scope for participatory development of technical materials on ISFM. Findings suggest the need to harmonise knowledge systems and communicating scientific technologies directly with farmers.

Key words: Information dissemination, integrated soil fertility management, learning alliances, participatory action research

Résumé

La production agricole des petites exploitations est limitée par l'adoption de technologies pauvres, souvent liés au manque des stratégies de diffusion de l'information, entre autres facteurs. Cette étude visait à évaluer l'efficacité de la gestion de l'information participative de petits exploitants agricoles d'apprentissage des alliances dans la gestion des sols intégrée de la fertilité (GIFS), de la diffusion de l'information technologique et de l'adoption. Les approches de recherche participatives ont été employées pour mobiliser les agriculteurs pour l'expérimentation de technologies choisies GIFS. Les résultats préliminaires ont montré qu'il n'y a pas de sources facilement accessibles de l'information. Toutefois, il est possible pour le développement participatif des documents techniques sur la GIFS. Les résultats suggèrent la nécessité d'harmoniser

les systèmes de connaissances et de communiquer des technologies scientifiques directement avec les agriculteurs.

Mots clés: Diffusion de l'information, la gestion intégrée de fertilité des sols, l'apprentissage des alliances, la recherche-action participative

Background

Smallholder farming in Zimbabwe is rained with the majority of farming households having poor access to draught power, timely access to crop production inputs and labour challenges. Maize (*Zea mays* L.) is the staple cereal for Zimbabweans, but average yields in many smallholder communities have remained $< 1 \text{ t ha}^{-1}$ (CSO, 2004). It has been estimated that food production should increase by 4 to 7 % per annum to arrest food insecurity in sub Saharan Africa (Breman and Debrah, 2003), but this has not been achieved due to poor technology adoption. There is emerging evidence for lack of suitable mechanisms for transferring the available knowledge on Integrated Soil Fertility Management (ISFM) from researchers to major players in the agriculture sector in ways that promote innovation and adoption (Mapfumo, 2009). This study therefore aims to evaluate the effectiveness of participatory information management and establishment of smallholder farmer learning alliances in translating ISFM technologies into tangible livelihood benefits for diverse households.

Literature Summary

Soils in Zimbabwe are characterized by low inherent fertility (Nyamapfene, 1991). Soil nutrient mining is continuing due to the inability of smallholder farmers to invest in mineral fertilizers and other alternative improved farming practices. Alternative nutrient sources such as cattle manure, woodland litter and nitrogen fixing legumes have not been efficiently used. Evidence from research has shown that, when systemically combined, inorganic and organic fertilizers can result in considerable yield increases. Use of ISFM technologies hinge on combined and efficient use of organic and inorganic resources for improved crop production to achieve increased productivity and food security, while maintaining long term soil productivity (Mapfumo, 2009). Recent studies have seen the integration of local and scientific knowledge through the development of participatory learning and action research for ISFM, to help farmers to improve their soil fertility management strategies (Baltissen *et al.*, 2000). It involves activities where the farmers work together with researchers in identification, generation, testing and application of new technologies and practices (Mutimba, 1997).

Study Description

The project is being carried out in Goto and Dendenyore wards of Wedza district. Wedza (18°41'S and 31° 42'E) is in agro-ecological region (natural region- NR) II which receives an average annual rainfall of > 750 mm between November and March. The soils are predominantly sandy, often classified as lixisols (World Reference Base, 1998), and have known problems of low organic carbon and inherently poor nutrient supply capacity, particularly N and P. The farming system is maize-based with low legume utilization and is characterized by crop-livestock interactions (Mtambanengwe and Mapfumo, 2005). Cattle manure is the major source of nutrients for crop production as most farmers do not use mineral fertilizers.

Research Approach

The study is being conducted under the auspices of Soil Fertility Consortium for Southern Africa (SOFECISA) research for development initiatives on-going within the study sites. It hinges on emerging experiences in the promotion of ISFM technologies among farmers of different resource categories using the learning centre (LC) concept. Various partnerships formed under SOFECISA provide platforms for knowledge exchange and technology dissemination. The study examines major information and knowledge flow pathways that influence current and future decision-making processes. By exposing farmers to different ISFM technology options through field-based learning centres and learning fora facilitated by different players, prioritized information sources and effective learning avenues by different farmer categories are being promoted and evaluated. Farmers are being mobilized for action using farmer participatory research approaches to enable them to experiment with selected ISFM technologies in their own fields. Criteria for participatory monitoring of farmer interactions and joint assessment of crop yield benefits are being developed.

Findings

The preliminary findings from this study, based on initial characterization of technical information flows among farmers and between farmers and service providers, show that there are no readily available sources of information on ISFM technologies. Most information is obtained from extension agents, who in turn often have poor access to current information. It is not clear whether the diverse service providers working with smallholder farmers share a common knowledge on principles and concepts of ISFM. There is therefore scope for participatory development of technical materials. It is also apparent that farmers' response to participatory evaluation of information and development of technical guidelines is likely to

be differentiated by factors such as gender, social status in the community, resource endowment and literacy levels, among others. On-going research work will therefore focus on evaluation of these factors in the testing of ISFM technologies. Focus group discussions and one to one interviews with farmers indicate opportunities for participatory development and use of different indicators to jointly assess the benefits of ISFM technologies. Such a criteria for joint monitoring of indicators is being developed with communities and service providers.

Research Application

Findings suggest the need for a new focus in communicating scientific technologies to rural communities. Current dissemination approaches are apparently limited by poor packaging of technical information.

Recommendation

Diverse knowledge systems from various service providers working with smallholder farmers need to be harmonized taking into account the needs of different categories of farmers.

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