

Factsheet final findings Applied Research Fund Call 1



Building on Fertile Ground in Burundi

Summary

Agricultural interventions in Burundi are characterized by insufficient impact on the levels of food security of the smallholder farmer communities, on the sustainable improvement of the productivity of land and labour, and on the levels of preparedness for climate change. This project has been designed to make inputs and advice much more site-specific required to increase adoption rates of improved technologies. The project Building on Fertile Grounds aims to contribute to the food security of the vulnerable smallholder farmer community in South Burundi. The project aimed to develop, field-test and refine innovations per agro-ecological zone. As a result, an improved crop cultivation method which reduces labour inputs was rapidly adopted by farming households in Burundi, including the most vulnerable households. The method consists of: 1) use of herbicides to control perennial and persistent weeds and eliminating manual hoeing to prepare the ground for sowing; 2) the application of low doses of organic and inorganic fertilizers; and 3) the use of green manure (ground cover) so that herbicides are phased out. Farming households saved money and time needed for land preparation and weeding, yields increased and the resilience to climate extremes improved. Government and non-government agricultural extension services are integrating the method in their advice to farming communities, in planning and in funding proposals. Instead of intensive manual cultivation and weeding which leaves soils bare for part of the year, soils now remain undisturbed, covered and fertilized. Soil erosion is reduced or prevented and soil quality gradually improves.

Research Findings

The hypothesis was that a site specific soil analysis could be used to generate site-specific fertiliser applications which would maximise yield and return. This hypothesis was not proven. It was found that farmers' choice of crop was not based on maximising yield or return but influenced by other social and cultural factors. The intention was to define agro-ecological zones but this proved to be difficult since insufficient data exists in poor post-conflict countries such as Burundi. Nevertheless, altitude plus examination of satellite images enabled agro-ecological zones to be tentatively identified. Conservation agriculture using low dose organic fertiliser and green manures seemed easier for farmers to adopt. The reduction in labour requirements was seen as attractive. Farmers and agriculture extension workers were initially resistant to use herbicides but were persuaded by demonstrations. Agro-dealers had to be persuaded to stock herbicides. Undergraduate studies indicated that the amount of fertiliser used by farmers is strongly influenced by distance from the collection point and that the most effective way of communicating new information to isolated and illiterate farmers is probably by radio broadcasts.

Outcomes achieved

The original hypothesis was not proven so reduced fertiliser application were combined with conservation agriculture, which was adopted by the farmers after initial trials. The innovations include the use of *Mimosa pudica* as green manure. After two seasons of herbicide spraying and zero tillage, green manures can effectively be introduced. When the green manures are fully integrated, the herbicide use is phased out. The green manures significantly contribute to the quality of the soils, to the availability of nitrogen and to the resilience to extreme weather. A ZOA extension worker observed: *"The method of conservation agriculture plus low fertilizer doses plus green manures means a real agricultural revolution. The value/cost ratio is very positive and*

the stability of the crop production system is greatly improved. The method is especially suitable for the most vulnerable households which have labour shortages”.

Stories of Change

Mrs. Immaculée successfully applied herbicides on her plot, located on a steep slope. She sowed beans by making holes, without further soil tillage. Per planting hole, she applied one teaspoon of DAP. She observed that the beans have germinated well, while the weeds were dying off. After germination, the beans grew vigorously and the dead weeds covered the soil completely. No weeding was needed. Mrs. Immaculée has never experienced this before: *“It is almost a miracle. I don’t need to pay any labour for land preparation or weeding. Only a little money for spraying the weeds. And my harvest will be very good. On my other plots, crops are suffering from drought, but from this plot I am confident that I will have lots to eat and to sell”.*

Mr. Epimène: *“I will mobilise the entire farming community in my area to apply conservation agricultural methods. Come again next seasons, you will see how things will have changed”.*

Project messages to

A) Actors from private sector:

- There is cultural antipathy to herbicides and low take up of herbicides by farmers so many agro-dealers do not stock them. Agro-dealers should stock herbicides and herbicide application materials so that farmers can apply conservation agriculture
- In addition, information should be provided on use, dose and safe handling of herbicides in local language and in graphics for illiterate farmers.

B) Civil society and practitioners organizations:

- The calculation of the benefit of new practices should take into account the cost of labour. When new practices add to the labour requirements compared to traditional methods, there is a significant obstacle to adoption.

C) Policy makers:

- The Government has a monopoly position as supplier of fertiliser since all organic fertilisers are part of a subsidy scheme. However, only certain types of fertiliser are imported and the subsidy scheme requires a lot of time from the farmers. And only farmers near the distribution points are able to use much fertiliser because it is carried to the farms. The fertiliser market should be liberated and suppliers must be encouraged to set up distribution businesses and provide advice to farmers.

Knowledge products

- Agro-Ecological Zonation in South Burundi, R.Voortman, M.Heinen, R vd Wijngaart, N.van Duivenbooden, VU-SOW, October 2015
- Results soil sampling for the province of Makamba in Burundi, districts Vugizo and Mabanda. Univ Wageningen, M.Heinen, 2015
- Effet de la distance d’approvisionnement des engrais minéraux sur leur consommation dans la commune de Vugizo, J.Kwizera, J-P. Ndayishemeze, University of Burundi 2016
- Effet de la distance d’approvisionnement des engrais minéraux sur leur consommation dans la commune de Mabanda, T.Keringingo, F.Ndayishmiye, University of Burundi 2016

Knowledge networks

ZOA was active in the Rural Agricultural Development meetings in Burundi but due to the political crisis that started in April 2015, these meetings ceased. ZOA is part of an agriculture development project in Burundi led by IFDC (PAPAB) where some of the lessons learned could be applied.

Co-creation

The consortium was constructed to ensure that all necessary expertise and networks were available, including expertise from the private sector and from Burundi. Each member has played a specific and significant role, which complemented each other. VU University led on defining agro-ecological zones. Wageningen Environmental Research led soil analyses and crop yield analyses. The University of Burundi provided under-graduate students to conduct useful studies and to communicate with the stakeholders. Agrifirm advised on conservation agriculture. With the VU-SOW, ZOA identified an opportunity for collaborating in improving access to local good quality seeds. Improving local seed systems is a logical next step for farming communities which are successfully applying sound integrated soil fertility management methods.

Consortium Partners

- [ZOA, Burundi](#)
- [University of Burundi, Bujumbura](#)
- [Agrifirm, the Netherlands](#)
- [Centre for World Food Studies \(SOW-VU\), The Netherlands](#)
- [Wageningen Environmental Research \(Alterra\), the Netherlands](#)

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Project website

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