

Creating an innovation platform for research impact: Lessons from the smallholder soyabean program in Zimbabwe

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Introduction

The major challenge for most agricultural research projects in Africa is poor adoption of the technologies generated. The Integrated Agricultural Research for Development (IAR4D) concept which was tested through a challenge program coordinated by the Forum for Agricultural Research in Africa (FARA) and with pilot learning sites across east, south and west Africa demonstrated the importance of different stakeholders working together to achieve impact.

In the period 1996 to 2006, University of Zimbabwe agricultural scientists, with funding support from Rockefeller Foundation conducted a research and development project that promoted soyabean biological nitrogen fixation (BNF) technologies among smallholder farmers. A stakeholders' workshop convened before project initiation in 1996, set up a Soyabean Promotion Task Force with representation from both public and private sector stakeholders. The Task Force resolved that a parallel program of research and soyabean technology promotion be implemented.

The University of Zimbabwe was given the task of mobilizing resources and spearheading the program. Although initially the focus was largely on soil fertility, the mandate broadened over time to include aspects agronomy, animal nutrition and socio-economics. Farmers ended up summarizing the multiple benefits from soyabean in the slogan: *food on farmers' tables and money in their pockets*.

This paper outlines the establishment of a broad innovation platform on to which more players were invited in efforts to meet the demands of participating farmers. We share this experience to encourage others to undertake impact-oriented programs. Scientific papers emanating from this work have been published in a wide range of local and international journals and conference proceedings available on the internet.

The bulk of this work was funded by the Rockefeller Foundation through its FORUM for Agricultural Resource Husbandry, which later transformed into the present day African institution called the Regional Universities Forum (RUFORUM). Several 'generations' of students undertook the research work alluded to here.

The research innovation platform

Our entry point was to research the soil fertility benefits of BNF in smallholder cropping systems. A research grant was obtained from the Rockefeller Foundation through their FORUM for Agricultural Resource Husbandry postgraduate training program. Two students were recruited. One worked on quantifying soyabean BNF and its residual soil fertility benefits on maize in rotation, while the second worked on microbiological aspects.

The research supervision team consisted of university soil scientists, a soyabean breeder from the Department of Research and Specialist Services, who supplied seed varieties and an extension agronomist from the Department of Extension (AGRITEX) who mobilized extension workers to support the farmers hosting our trials on farm. The hosting farmers were an integral part of the research platform and had been identified through the Zimbabwe Farmers Union. The Union was also represented on the Task Force.

The research platform expanded in response to farmer demand: can we use soyabean residues and grain to feed livestock? Animal scientists came on the platform with two graduate students to investigate soyabean livestock interactions.

Questions on varietal performance of promiscuous Magoye and improved commercial varieties brought crop scientists on the platform. A team of three graduate students researched various agronomic traits under smallholder cropping conditions while another pair looked at intercropping soyabean and cereals and the effect on *Striga asiatica*.

Plant pathologists came on board as soyabean crops were threatened by fungal rust disease *Phakospora pachyrhizi* and insect pests. Three graduate students worked on pests and diseases of soyabean.

Agricultural economists joined the research platform as marketing assumed greater importance due to the large volume smallholders were seeking to market. They researched alternative marketing strategies that would maximize returns for smallholder soyabean crops. In the end all departments under the Faculty of Agriculture at University of Zimbabwe were represented on the research innovation platform. The research conducted was demand driven; each team only came in as and when the promotion program encountered new challenges in the field but remained to consolidate and provide back-up to the farmers and small scale processors.

The promotion innovation platform

While the research results ultimately informed the extension messages of the soyabean promotion program, promotion of the soyabean and its attendant technologies required expansion of the innovation platform beyond research. Working with the agronomists on the research team, components of an inputs package were identified which could be constituted into a 'starter pack' for smallholder farmers. There were no resources to put together the starter pack. Donors like Rockefeller Foundation had expressed skepticism about promoting

soyabean among smallholders; conventional wisdom was that the crop was too sophisticated and the cropping environments unsuitable.

Large scale farmers assist smallholders

We approached the large scale Commercial Farmers Union (CFU), and persuaded them to come onboard. Our argument was that if smallholders also go into soyabean production, local volumes would be large enough for government to grant export permits for large-scale producers to export their crop to earn much-needed foreign currency. The CFU bought into the idea and proceeded to use their links with agro-industrial firms to solicit for donations of seed fertilizer, lime and chemicals to constitute the soyabean production 'starter packs' for the pilot phase. Each pack had enough seed, fertilizer, lime and Rhizobium inoculants to plant one tenth of a hectare. All starter packs were sold at market value.

Input suppliers

As more smallholders adopted soyabean and expanded areas planted, input suppliers willingly came on the innovation platform. Their motivation: an expanded market for their seed, fertilizer, chemicals and inoculants. They sent their experts to contribute to the training of extension agents and farmers in the use of the materials that they marketed. This benefited both farmers and extension agents who received first hand information from company experts.

Soyabean processors and commodity brokers

We approached the processors and commodity brokers after the pilot season of 1996/97, urging them to purchase the small volumes of soyabeans from the smallholder sector. They accepted partly as a corporate social responsibility function and also to diversify their raw material sources as they often had to import soyabeans due to insufficient local production. Their only conditions were that the volumes be large enough to be economic and that the crop meets commercial grading standards. By consolidating the small volumes from many farmers, 30 metric ton loads were created. The hand-cleaned soyabean from smallholders easily surpassed the minimum commercial grading standards and fetched competitive prices on the open market. The university coordinating team worked with the farmers union and extension agents to organize farmers' groups to facilitate training, inputs distribution and produce marketing.

Banks on the innovation platform

As the market for soyabean proved lucrative, more farmers opted to take up soyabean as a cash crop. We linked up with the banks who agreed to loan farmers funds to purchase inputs. Loans were recovered at marketing time. Later on, due to a severe shortage of soyabean on the Zimbabwean market, the central bank of Zimbabwe, agreed to loan farmers funds for soyabean production. The bank went further to retain the University researchers as technical support partners to provide training and back-up to the farmers that they financed.

Extension

A critical component of this broad innovation platform was extension services provided by the AGRITEX extension agents dotted across the villages. The research team trained trainers who then cascaded the knowledge to other extension agents and to farmers. Soyabean agronomy and the correct use of the Rhizobium inoculants were the main topics for training, so that they could provide the technical and advisory support to the smallholder farmers.

Home processing and utilization

Early in the program we had recognized that adoption of new crops was easier if they were part of the family food basket. Food scientists were invited on the innovation platform to develop simple home-based processing methods for soyabean. Graduates of a home processing train-the-trainer program in turn trained hundreds of other women in the process developing new exciting recipes that are now displayed at agricultural shows. Training in food processing was the main driver for adoption of soyabean by smallholder farmers.

Transporters

During the second season of promotion (1997/98), volumes of soyabean increased dramatically with hundreds of metric tons of soyabeans being sourced from many smallholder farming areas in Mashonaland West, Central and East. Transport became an issue. We approached transporters who accepted to ferry the smallholders crop to market after processors and commodity brokers agreed to deduct transport charges at source.

Non-Governmental Organizations

The innovation platform would not be complete without the participation of many community based organization and non-governmental organizations including World Vision, Africare and Lutheran World Services. We formed technical partnerships with the NGOs where we trained the farmers while the NGOs undertook to mobilize the communities.

Conclusion

We have described how public and private sector players came onto the innovation platform created to research, develop and promote soyabean technologies among Zimbabwe's smallholder farmers. In all cases each participant saw commercial benefits for their involvement. From the public sector, the Ministry of Agriculture adopted a policy to support the promotion, officially launching the program in 1997. They viewed the program as an important crop diversification and food security-enhancing initiative.

We conclude from our experience that university scientists can create functional innovation platforms with broad stakeholder participation provided profitable technologies are being researched and promoted.

And we end with the insightful words of Carl Eicher (2003): “The success or failure of many community projects and farmer associations that are being formed in Africa will depend on the availability of profitable technology for the small scale farmers.”

Reference

Eicher, C.K. 2003. Agriculture in the global economy. In: Hunger: 13th Annual Report of the State of World Hunger. Prepared for the World Resources Institute (WRI). Washington DC, USA. 164pp.