

**Innovation platform as an approach to enhance food security in Rwanda:
Experiences from maize platform with Research into Use Project (2008-2010)**

Dusengemungu, L.¹ Kibwika, P.² & Kyazze, F.B.²

¹Rwanda Agricultural Board, P. O. Box , Kigali, Rwanda

²College of Agricultural and Environmental Sciences, Makerere University, P. O. Box 7062,
Kampala, Uganda

Corresponding author: leonidassusenge@yahoo.com

Abstract

In spite of the many efforts made by the government, different projects and several NGOs, adoption of maize agricultural technologies by smallholder farmers in Rwanda had not been very successful. It was hypothesised that inadequate co-operation between the key players in the agricultural sector limits the uptake of new knowledge and technologies by the farmers. The Research Into Use (RIU) programme addressed this gap through the establishment of Innovation Platform (IP) to create and facilitate the essential collaborative relationships between stakeholders including farmers, cooperatives, seeds multipliers, inputs suppliers, processors, traders, credits services, local leaders, research and extension, etc. This case study focuses on the experiences of the maize innovation platform, in Nyagatare District, to foster diffusion of maize technologies in Rwanda. Data collection used various instruments such as focus group discussions, participant observations and individual interviews with platform members. Farmers' challenges and solutions to priority issues alongside the maize value-chain were identified and translated into action plan through facilitation and research. Linkages with research institutions, NGOs, markets, micro-finance and banks were established for value addition and capacity building; while warrantee, credit and market links were done primarily to sustain production and income. Farmers were involved in crop management techniques, value addition and marketing of their products. The findings will be used by DFID, RIU managers, the Ministry of Agriculture and rural development agencies for scaling up and out the approach into Rwanda and/or other African countries.

Key words: Action plan, agricultural innovation platform, innovation, implementation, maize platform

Résumé

Malgré les efforts fournis par le Gouvernement Rwandais, différents projets de développement et les ONGs, l'adoption

des technologies culturelles du maïs par les petits fermiers au Rwanda n'a pas eu beaucoup de succès. L'hypothèse est qu'il y a une coopération inadéquate entre les grands acteurs dans le domaine agricole, ce qui enfreint l'adoption des nouvelles connaissances et techniques par les fermiers. Research Into Use programme voulait résoudre ce problème de non-coopération, en créant des plateformes d'innovations agricoles pour renforcer la collaboration et les relations entre différents acteurs de la chaîne de production-consommation du maïs: les fermiers, les coopératives, les multiplicateurs des semences, les vendeurs d'intrants agricoles, les transformateurs des produits agricoles, les commerçants, les services de crédits, les autorités locales, les chercheurs et les vulgarisateurs agricoles, etc. Cette étude montre les expériences vécues par le plateforme de production du maïs, dans le District de Nyagatare, qui s'était donné la mission de diffuser les technologies y relatives dans tout le Rwanda. Les données ont été collectées grâce aux instruments de recherche variés comme les groupes de discussions, les observations participantes et les interviews individuels avec les membres du plateforme initié. Les problèmes des fermiers et les solutions appropriées ont été identifiées tout au long de la chaîne de production (chaîne de valeur) et ont été traduit en un plan d'action pratique à travers la recherche et la vulgarisation. Les liens étroits ont été établis entre les institutions de recherche, les ONGs, les marchés, les micro-finances et les banques pour ajouter de la valeur à la production et renforcer les capacités des acteurs; pendant que le système de warrantage, le crédit et les marchés ont été les premières préoccupations pour soutenir la production et générer les revenus chez les petits producteurs. Les fermiers ont été pleinement impliqués dans la maîtrise de toutes les techniques de production, de transformation et de commercialisation du maïs et de ses sous produits. Les résultats de cette recherche seront utilisés par DFID, les dirigeants du programme RIU, le Ministère de l'agriculture et les agents du développement rural pour diffuser l'approche des plateformes d'innovations agricoles au Rwanda et ailleurs en Afrique.

Mots clés: innovation, mise en oeuvre, plan d'action, plateforme d'innovations agricoles, plateforme de maïs

Background

Despite the research successes registered in several agricultural projects implemented so far to improve food security, income and nutrition, poverty is yet to be significantly reduced. It is hypothesized that the nature of linear research approach in

addressing the interlinked productivity, natural resource management, market and policy challenges in isolation is one of the most critical causes underlying the agricultural under-performance. A new paradigm in agricultural research, technology, innovation and knowledge system is required to break the paradox, steer and accelerate the targeted agricultural development (RIU, 2007). Innovation platform is a new approach that holds promises to reverse the trend and enhance farmers' livelihoods and food security.

Literature Summary

Several innovations platforms exist in different domains: ICT, construction, vehicles production and commercialization and agricultural commodities (Lundvall, 1992). Hall *et al.* (2001) have done a lot to explain agricultural innovation systems. They argue that agricultural innovation system framework stresses the importance of including all stakeholders and making organizations and policies sensitive to stakeholder agendas and demands. On the basis of the above, since 2006, the Department for International Development (DFID) in the United Kingdom (UK) has been supporting a programme to enhance the uptake of relevant agricultural technologies through a project known as "Research Into Use" (RIU). RIU currently operates in 12 of the poorest countries of Africa and Asia. The African countries include Zambia, Malawi, Nigeria, Sierra-Leone, Tanzania and Rwanda while the Asian countries are Bangladesh, Cambodia, India, Nepal, Pakistan and Vietnam. In implementing the project, RIU established innovation coalitions and innovation platforms in all those countries (RIU, 2010). Since 2008, this project has initiated four local agricultural Innovations Platforms (IPs) to promote technology diffusion in Rwanda. These IPs were formed, in different districts of Rwanda, namely Gatsibo for cassava, Gicumbi for Solunum potato, Nyagatare for maize and Karongi for farmers associations. According to RIU, an agricultural Innovation Platform is a platform specific to agriculture. It has a wider spectrum of actors and refers to any network of various actors developed in the agricultural sector and related activities (RIU, 2007). Agricultural platforms are set-up for reflection, analysis and learning about promoting innovations in agriculture (Sanginga *et al.*, 2009). This research highlights key results in the "Maize Innovation platform" in Nyagatare district.

Study Description

The study was conducted in 2010 with maize innovation platform in Nyagatare District, Eastern province of Rwanda, and was done as part of MSc thesis work conducted at Makerere

University. The approach included one focus group discussion (FDG) with a total of 12 key informants, participant observations and individual interviews with 30 actors from 55 members of the maize IP . A feed-back meeting with the platform stakeholders was also conducted to validate the research findings. All questionnaires used were pre-coded and pre-tested before data collection. Recording and analysis of quantitative data was done using SPSS software. Social Network Analysis (SNA) tools were also used to highlight the relationships between the IP actors.

Findings

The findings include the maize IP modus operandi, the membership and representation, the Memorandum of Understanding, the activities planned, the achievements so far, the challenges and future plans.

The modus operandi. The maize platform was initiated in 2008 by the Research Into Use programme, in partnership with the Ministry of Agriculture (MINAGRI) and the Rwanda Development Organisation (RDO), a non-government organisation (NGO). Several sensitisation meetings to map out the stakeholder groups were conducted. The process was participatory and inclusive, involving; farmers, local leaders, researchers, extensionists, NGOs, and traders in the planning of platform activities.

The maize IP started with 55 members, the majority (70%) being farmers. For governance of the platform, a committee of six members was set-up. The committee comprised of a president (farmer), a vice/president (farmer), a secretary (local leader), a treasurer (an NGO extension worker), and two counsellors (one researcher and one farmer). Farmers who were the majority (70%) took on more positions in the committee composition. **Three types of Memorandums of Understanding (MoUs) were signed** between the platform members, RIU and the maize platform, RIU and local NGOs. Subsequently, several activities were planned to address production constraints and farmers needs primarily (Table 1).

Stakeholder agreement on sharing roles as indicated in this table is usually more easily stated on paper than in reality. It takes commitment for the platform members to undertake their assigned roles with commitment. From the above plan, farmers expected to further increase their production and subsequent income if they were able to access better quality seed and

Table 1. Activity schedules and responsible stakeholder groups in maize platform, Nyagatare district.

Activities	Responsible	Timeline
Land consolidation	Farmers and local leaders	June-August 2008
Trainings through farmer field schools and study tours organized on maize production	RIU, Researchers, extensionists and NGOs	July 2008
Use of oxen for ploughing	Farmers and progressive farmers and NGO	August 2008
Purchase of agricultural inputs including inorganic and organic fertilizers/ inorganic	RIU, IP committee and NGOs	August 2008
Planting improved ¹ varieties of maize and use of appropriate agronomic	Farmers, Researchers, extensionists and NGOs	September 2008, first planting practices season for the Maize IP
Promoting improved post harvest handling through the purchase of small shelling machines.	Traders and farmers	December 2008
MoU development and sharing of responsibilities	All actors involved	March 2009
Construction of maize driers	Farmers, IP committee and RIU	June 2009
Establishment of the Maize investment group (NYAMIG)	All stakeholders and RIU	August 2009
Increased access to credit through dialogue with financial institution to improve agricultural financing.	RIU and Financial Institutions	December 2009(Footnotes)

In collaboration with ISAR, RIU has supported the introduction and multiplication of M081 maize early maturing variety (7 ha) and 4,000 households benefited on this new variety.

improved farming practices. As a result of addressing the constraints and developing increased production, traders and processors also expected to increase their volume of business – hence profits. The NGOs, researchers and government agents also expected to increase their efficiency by working with organised and motivated clients.

Five achievements were revealed by the IP. They are briefly highlighted below.

Increased access to and use of improved and good quality maize. Quality Protein Maize (QPM) varieties were introduced through the platform. Increased yield of the maize crop was recorded and this led to the introduction of other support technologies such as maize driers to enhance value addition.

Increased knowledge and skills in using improved maize production technologies. The maize platform adopted a Farmer Field School approach to farmer learning. Specifically, some of the knowledge and skills gained from the Farmer Field School training and Study tours were related to selection of good planting material/seed, spacing and planting, disease and pest management, and fertiliser application. For example, a study tour to Uganda by Rwandan maize farmers stimulated them to take on several initiatives among which was acquiring small machines for milling maize to add value. As one farmer put it: “*Akanyonikatagurutse ntikamenya iyo bweze*” which means: “A bird which doesn’t fly can’t know where food can be found”. This was an expression of the farmer benefits from tours with regard to accessing relevant information and technologies.

Strengthening social networks and farmers’ organisations. The maize innovation platform strengthened collaborative relationships between various stakeholders in a local maize value chain, namely: farmers and farmer co-operatives, researchers and extensionists, processors and input suppliers, financial service providers, local leaders and policy makers. The social networks of all the stakeholders involved was widened and further strengthened their mutual trust. For example, interaction among farmers resulted in seed exchanges and field visits among farmers to share knowledge and experiences.

Creation of new business deals for platform members. The maize platform has given birth to maize investment group

Nyagatare Maize Investment Group (NYAMIG) as the business arm of the innovation platform. NYAMIG is made up of about 30 farmers' associations. It is responsible for searching for markets and marketing maize on behalf of the maize platform. Through this, the platform has now established a voucher system, that enables farmers to get warrants (vouchers) so that they can safely store their produce for longer periods to access better market prices and avoid exploitation by maize traders and make business deals with input dealers to purchase seed and fertilisers.

Access to new maize markets. New markets for maize were accessed by farmers in Kigali (the capital of Rwanda) and other urban centres. This was an opportunity for farmers to increase their profits and overall benefits from their efforts. For example, one maize farmer in Nyagatare District, proudly asserted during a training session that: *“From the past two maize seasons, I was able to buy two motorcycles, build a new house and I am planning to acquire a computer for my children to use”*. Despite the fact that the farmer had been growing maize for many years, he had never achieved such tangible benefits by doing things differently. In addition, the Research Into Use programme facilitated the establishment of linking the farmers' association (NYAMIG) with the World Food Programme, thereby providing new market opportunities.

Some challenges were faced also faced including diversity of stakeholders whose expectations and needs differed, difficult management and co-ordination of platform activities, as well as capacity building for the different stakeholder groups, expensive and long pre-planning activities for establishing the maize platform, dropping out in the membership composition of the platform with new members joining, and attitude of dependency associated with development projects constraining empowerment and self-reliance. In spite of these challenges, some opportunities for maize IP development were offered: anticipated innovation centres now serve as learning sites in the process of scaling out products of the platform through demonstrations, and at the same time provide space for the farmers to interact and share lessons. The centres will likely develop into new platforms.

We anticipated that continuity of the platform activities would most likely be negatively when its RIU programme funding stops. This would likely slow down activities if alternative

funding is not found in time and if partners do not demonstrate commitment, including co-funding. The success of the process of implementation is largely dependent on the Ministry of Agriculture and other development partners taking ownership of the platform and commitment to support institutionalisation in other (national) organisations or programmes. At the same time, however, the Research Into Use programme has developed a strategy for putting the responsibility of the platform in the hands of public-private partners. This step is expected to enhance local ownership. Several partners, including NGOs and government parastatals, could support the work and/or champion the activities of the maize platform after the programme phases out support. In these process local ownership is critical to support the work or take the lead after phasing out support of a donor.

Research Development Application

Results show tremendous achievements by RIU project in establishing and developing maize IP in Nyagatare District. Since no similar study has been done in Rwanda, it has provided baseline information for subsequent research in the area of agricultural innovations. These results are being used by DFID and RIU managers to plan for continuity or replication of such Innovation Platforms. Information can also be used in future diffusion of innovations by rural developers (Ministries of Agriculture, NGOs, Private sector, various organizations, etc.) into Rwanda and other African countries.

Recommendations

Establishing an innovation platform requires the participation of a wide range of stakeholders from the private as well as the public sector, but also their commitment to actively participate. Capacity building for all stakeholder members is a critical element in developing platforms. The Research Into Use programme however emphasised building the capacity of the demand side (farmers) to participate in innovation platforms and probably over-estimated the capacity of other platform members. To comprehensively develop capacity of actors, a thorough capacity needs assessment is required. One of the flaws of this programme has been that it started without such a needs assessment. The strongest incentives to the platform members are those that have economic value. It is therefore important that the platform members specify their anticipated economic expectations prior to joining the platform. Memorandums of Understanding as an instrument for operationalisation of innovation platforms is a good starting point but not sufficient. Commitment of platform members is paramount to performing their respective roles. Capacity

building is essential for the various stakeholders to realise the potential opportunities in the platforms, to motivate them to continue engaging. However, the operationalisation of the IPs require establishment of functional and strong linkages where farmers' interests, needs and/or opportunities are core to the other participating actors in the forum [an innovation platform (IP)].

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