

Achievements and perspectives of plantain and banana (*Musa* spp.) innovation platforms in West and Central Africa

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Abstract

Innovation platforms easily lead to multiple effects since actors are given equal learning and teaching opportunities and their needs are easily incorporated in the process of production and diffusion of innovations, which leads to better adoption. The first plantain and banana innovation platforms in West and Central Africa (WCA) created in the framework of the 'plantain and banana varietal innovation' project (INNOBAP) covered four countries in the region: Gabon, Guinea, Benin and Cameroon. About eight categories of actors for a total of 164 associates were involved. The learning mechanism helped actors share their experiences, adjust their skills and activities according to new needs, test and adopt many plantain varieties according to their own preferences and observations, while having the opportunity to modify their choices by learning from others' experiences. The experience acquired so far currently guides through the management of 3 platforms created in 2009 in the framework of the regional project entitled «Platforms of partnership to develop and disseminate innovations for sustainable development of the plantain and banana in Central Africa». Partners' resolution to replace the *Musa* research network with an innovation platform constitutes a better perspective for ensuring sustainable development of the *Musa* sector in WCA.

Introduction

An innovation platform can be defined as a network of dialogue where actors of the value chain bring their viewpoints to a confrontation in order to be more constructive for a given action, especially when this is facilitated and built around an organized framework which feeds on these confrontations to adjust products and services, valorise indigenous knowledge and local expertise. Since 2005, the *Musa* sector in WCA started undergoing changes with the setting up of innovation platforms which involve many stakeholders and foster on diffusion. While analysing some achievements, this paper attempts to evaluate the effectiveness of this new approach as compared to the research-focus system.

Overview of the plantain sector

Plantain is a staple food in humid forest zones of West and Central Africa (WCA). It is an important component of food security and is produced mainly for local consumption, urban and regional markets. Not only plantain generates substantial income for farmers and traders (Tetang, 2006), but also it has

potentials for creating jobs in rural areas and alleviating poverty. In some countries like Cameroon, plantain is ranked as the highest value commodity (FAO, 2006). It is economically more valued than dessert banana and now stands as cash crop. Plantain production in WCA represents 33% of world production and 72% of African production, 70% of which is for local consumption, i.e. about 7.8Mt (FAO, 2009). Total production in six countries (Democratic Republic of Congo, Nigeria, Ghana, Côte D'Ivoire, Cameroon and Guinea) account for 90% of annual production. Plantain is generally grown by small holders without chemical inputs (Hauser, 2000). Consequently, yield remains very low: 4-7tons/ha/year as against 30 tons/ha/year on-station (Bikoï, 1999) and the gap between demand and production makes plantain to be affordable only to reach people in towns. Evidently plantain can highly contribute to the improvement of the global agricultural production in the sub-region if more attention was given to the sector.

Actors

Small holders grow plantain for their subsistence, without a market-oriented strategy. Food traders make more profits than farmers. Small-scale processors (SSP) process and sell various products as crisps, plantain flour, juice and alcoholic beverages in countries like Ghana, Cameroon and Nigeria, but in general, processing methods are still at the craft level as a whole and very few SSPs are capable to supply large orders (Tetang, 2006). Because of their importance, each country of the region has a *Musa* research programme. Until 2006, the *Musa* Research Network for West and Central (MUSACO) used to coordinate research at regional level. Following its adoption as Centre of Excellence by CORAF, CARBAP (Centre Africain de Recherches sur Bananiers et Plantains) now acts as the regional *Musa* research center. International organisations as CIRAD and Bioversity International provide input in sustaining the sector. Until recently few donors were interested in funding plantain development projects.

Linkages

During the consultative meeting held in November 2009 in Cameroon which involved the 5 major plantain producing countries in the sub region, the following constraints were recorded: policy makers' commitment to the sector was weak; there was need to reinforce regional partnership to make research to be more demand-focus, increase the impact of regional projects by including regional preoccupations (most projects were only thematic-base), harmonize the diffusion process to avoid the discrepancies observed so far in the co-production and diffusion of innovations (Tetang, 2006). In addition, isolation and weak interaction that existed among and between members were due to the non-existence of a good exchange mechanism and the network approach created a lot of parasites as some actors were not proactive. Furthermore the role of plantain as a distinctive food crop was not fully understood by the international community and the lobbying strategy deployed so far required improvements to increase awareness on this matter.

From research to the innovation: factors that speeded up the process

In addition the above-mentioned constraints the following factors speeded up the process: poor improvement of the *Musa* sector; donors' exigencies; poor investment on the plantain sub-sector and the need to counter food insecurity.

1. Poor improvement of the *Musa* sector

Because of its low impact, the research focus system could not successfully achieve sustainable development of the *Musa* sector in WCA. This explains why some centers like CARBAP gradually shifted from research-focus to innovation system.

2. Donors' exigencies

Having realized that most of their research funded projects had little impact on rural people's livelihoods; many among them stopped or decreased their funding to research and gave priority to development projects, especially those that focus on diffusion.

3. Poor investment on the plantain sub-sector

Unlike many other food crops, plantain received less attention from the international community. Partners therefore felt the need to establish a suitable lobbying mechanism to increase awareness on the importance of plantain for food security.

4. Need to prevent food insecurity and improve the livelihood of rural population

Producing more plantains means reducing its cost thus making it affordable to consumers in urban areas. To achieve this, there is need to equip farmers so that they can improve their production systems, and this can be easily achieved with innovation platforms.

5. CTA Training of Trainers (TOT) workshops

The technical center for agricultural and rural cooperation (CTA) organized a number of TOT workshops to popularise the concept of 'Analysing and establishing agricultural, Scientific and Technical Innovation systems' (ASTI) in the ACP countries. Many *Musa* research workers in the sub-region were trained. As result, some ASTI studies have been conducted on the *Musa* sector in countries like Cameroon, Nigeria and Ghana.

Emergence of *Musa* innovation platforms in WCA

1. The plantain and banana Varietal Innovation Platform (2005-2008)

CARBAP plays a leading role in establishing *Musa* innovation platforms in WCA. Following its adoption as the regional research center by CORAF/WECARD in 2006, CARBAP has opted for a strategy which is more effective in reaching a wide range of actors across the sub region. The first ones were created in the framework of the 'plantain and banana varietal innovation' (INNOBAP), a DURAS¹ project jointly funded by the Global Forum of Agricultural Research (GFAR) and the French Ministry of Cooperation (CF). A total of eight platforms covering four countries (Gabon, Guinea, Benin and Cameroon) were created. A brief description of these platforms helps appreciate the effectiveness of the approach.

Methodology

The functioning of the INNOBAP platforms was based on a multi-stakeholder approach. As explained by Nkapnang & al. (2008, 2009), the methodology centered on management, sharing, training and exchange of knowledge and experiences through exchange mechanisms, communication tools developed and advised by the knowledge and extension system. It was agreed that all actors have something important to share, not just the research component alone. Participatory approach was used to disseminate the innovations. Instead of bringing the varieties directly to the farmers as research used to do before, the varieties were jointly selected by the actors during a consultation meeting and tested in a common reference plot. A memorandum of understanding (MoU) signed by all partners clearly stated the rights and obligations and each one. All actors of the value chain were involved in the process: farmers, nursery operators, processing businesses, consumers (for testing the organoleptic properties of the varieties) traders; government coordinating bodies, researchers, extensionists, NGOs, peasant's organisations.

The learning mechanism

The learning system consisted of an interactive mechanism made up of the following components:

1. Steering Committee (SC). Composed of the representatives of the principal partners of the sector, it acted as the coordinating body and made strategic decisions for the platforms;
2. eight (8) platforms, comprising the following elements each:

¹ DURAS : Promotion du Développement Durable dans les systèmes de Recherche Agricole du Sud

- Local Users and Expert Association (LUEA). Made up of all the actors of the value chain, the LUEA brought together the expertise of the actors at different stages in the evaluation. It was also a framework for testing the varieties to appreciate their organoleptic properties.
 - Common Reference Plot (CRP). Managed by the LUEA, each CRP comprised about 10 to 16 cultivars of plantain from the Congo Basin (Corne Type, Ekona No. 1, Elat Noir, Mbouroukou No.2, Bâtard, French Clair, Red Yade, Ekon Zok), 2 exotic varieties from Asia and the Pacific (Pelipita, Popoulou); 4 hybrids resistant to black sigatoka (FHIA 21, CRBP 832, CRBP 755, C244) and 2 local cultivars (Douala, Big Ebanga), to serve as control.
 - A network of 20 farmers, each one managing an Individual Evaluation Plots (IEP) comprising some varieties chosen from the CRP.
 - A facilitator acting as interface between researchers, farmers, and other stakeholders and enabling the process of information exchange and promoting discussions among and between the actors of the platform.
3. Training and sharing sessions helped partners to learn by hearing, doing and observing;
 4. extensionists informed actors and helped in mediating disputes among farmers;
 5. agro-economists worked to elicit, document and synthesize the intellectual capital and goodwill of project stakeholders;
 6. the knowledge and information manager enabled exchange through newsletter, e-resources, and reports and monitored the process of knowledge sharing among the actors.

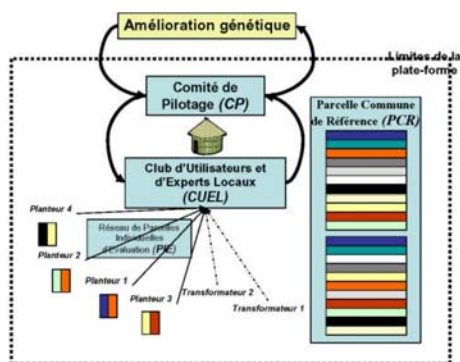


Figure 1. The INNOBAP learning mechanisms.

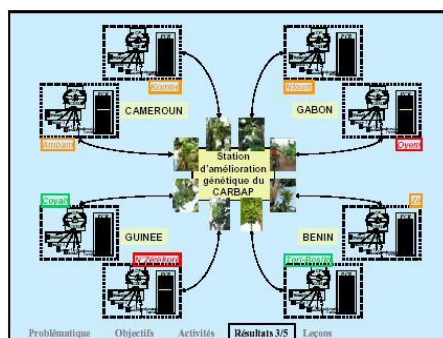


Figure 2. The INNOBAP platforms (2005-2008).

Results

As explained by Nkapnang & al. (2009), at the end of the project, farmers were able to adopt some varieties based on personal observations and own preferences and adjust their choices after learning from others' experiences; the exchange of knowledge and experiences was operated without regard for the education and socio-economic level of partners. The knowledge of other consumption modalities through national and regional exchanges increased the adoption of varieties which could allow for the reduction of post harvest losses. In parallel, peasants learned to organized themselves and work as groups. Some of them legalised their statutes. Each platform was formally legalized to operate as an independent entity.

Advantages of the approach

As recognized by Nkapnang & al. (2009) the approach developed by INNOBAP required low investment and simple techniques. Its easy replication made it very accessible to civil society organisations. The approach now constitutes a model which is being replicated in the framework of three regional platforms created in Central Africa in the framework of the Food Security Thematic Programme (2009-2012) of the European Union (EU).

Lessons learned

The following lessons were drawn from the pilot experimentation:

- to succeed, innovation platform require a good governance mechanism, which, when coupled with a multi-disciplinary approach to technology transfer, enables projects to achieve the set objectives (Christine K. & al, 2009);
- innovation platforms are learning systems, so to be effective, they need to be supported with a suitable communication and knowledge sharing mechanism;
- involving users in the testing of varieties creates ownership and facilitates their adoption;
- a strong commitment from policy leaders is one of the key points of the innovation process;
- Marketability is gradually becoming a common criterion for adopting innovations.
- In the innovation systems, all actors have something important to share, not research alone.

Impact of the INNOBAP platforms

- The project gave birth to a new support service to production known as nursery operator, since many were trained *in vivo* multiplication techniques called "PIF" perfected by CARBAP and disseminated across Africa and in Latin America.
- Many changes in knowledge, attitudes and skills were recorded as many actors resolved to invest more in plantain production.
- Researchers gained experience with how to propose varieties which correspond better to each category of users and understood better the value of genetic material evaluated and realized the value of the co-construction of innovations.
- There was emergence of a network of experimenting peasants.
- Peasants' organisations were organized and strengthened. Their legal registration led to their being able to get support from national extension services, which could help sustain the system.
- Improvement of problem identification through participative diagnosis/survey was notable.
- The INNOBAP project provided a framework for confronting scientific knowledge to the indigenous knowledge.

Constraints

It was noted however, that the approach suffered from poor formal communication among various management bodies, due to certain partners' inability to work in partnership with or accept lessons from farmers. Not surprising that some resisted to change. It was therefore advised to train researchers, extension agents, and local partners in participative approach techniques. Complementary training in the ASTI methodology can also be envisaged. The importance of developing a good communication and visibility strategy to enable current awareness and facilitate exchange among actors was noted.

2. Platforms of partnership to develop and disseminate innovations for sustainable development of plantains and bananas in Central Africa (2009-2012)

In 2009, CARBAP, in collaboration with national partners, launched three new platforms in Central Africa, in the framework of an EU-funded project. They are the following:

1. Sub-regional plantain and banana platform NTEM (3 countries): Cameroon, Guinea Equatorial and Gabon.
2. Sub-regional plantain and banana platform CONGO (3 countries): Congo (BZV), DRC and Cabinda (Angola).
3. Sub-regional plantain and banana platform OUBANGI (2 countries): Central African Republic and DRC.

Each platform constitutes an experimental design intended to create a local-base model that will be extended at national level. Emphasis is being laid on lobbying to get policy makers committed to the sector. Preliminary surveys have been done to identify end-users' need and set priorities. The following three platforms have been successfully launched:

Functioning of the platforms

In addition to the steering committee (SC), each platform has an animator who enables linkages among the actors and acts as secretary to the SC. A regional coordination unit takes strategic decisions for the 3 platforms. Priority actions are defined by each SC. Like with INNOBAP, all actors of the value chain are involved, but a financial contribution is required to get registered as member. Arrangements are underway to register each platform as a legal entity.

Activities

Activities performed in 2009 include launching ceremonies presided over by the ministers in charge of agriculture or scientific research; preliminary surveys conducted to identify urgent needs and set priorities; training sessions on *in vivo* horticultural multiplication (PIF technique) and pest and disease management; the establishment of a field collection to serve as *in vivo* national genebank in the CAR; the establishment of market observatories to record market data on the value chain in two platforms (OUBANGUI and NTEM). In 2010, CRPs and IEPs will be established in each platform.

Adjustments

The INNOBAP model is being replicated but with some improvements. For example, CARBAP recruited an information and communications rather than hiring a consultant; lobbying for policy is among the key actions of the project. Targeted groups include governmental authorities; Sub regional and international organisations. The purpose of the campaign is to make to increase awareness on the role of plantain he in improving peoples' livelihoods in the sub region.

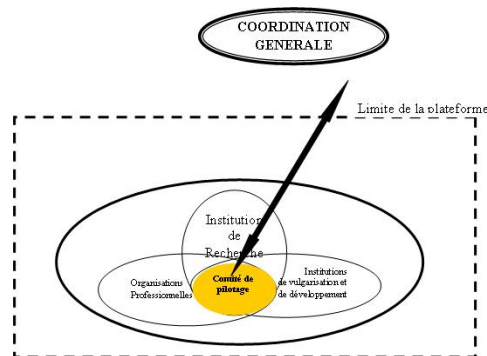


Figure 3. Components of FSTP platforms.

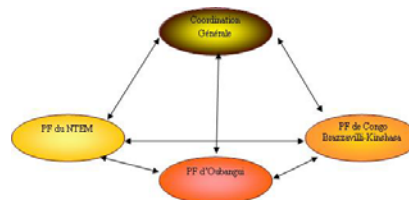


Figure 4. Governance of FSTP platforms.

3. Towards the establishment of the plantain innovation platform for WCA

In 2009, the key actors of the plantain sub sector in WCA took a new step by changing the mode of governance of *MUSACO* which will become the plantain innovation platform. In view of the context, this decision was necessary to strengthen regional partnership and develop a new strategy. As noted, this new system lays focus on plantain as a staple food. Therefore, empowering farmers to increase production will surely reinforce food security in the sub region. Partners expected to support this new

mechanism include CORAF as the sub regional organisation, CARBAP as the regional *Musa* research center; international centers like CIRAD (Centre de Coopération internationale en recherche agricole pour le développement) and CG centers like IITA (International Institute of tropical Agriculture (IITA) and Bioversity International². There is hope that donors will give more attention to the plantain sub sector, by providing funding to achieve global food security in the sub region.

Conclusion

After five years experience on innovation, it is understood that although innovation has some basic guiding principles, there isn't any strict mythology that blindly applies to all cases. Surveys and consultation meetings are required at the beginning of each process to set priorities based on the resources available. The process is greatly influenced by end-users' needs, climatic conditions, crop type, policy environment, etc. Above all, it can be noted that the following principles can apply to all contexts: a multi-disciplinary approach to co-production and dissemination of technology and innovation with good coordination (good governance) enables innovation systems to achieve the set objectives; innovation platforms are learning systems, so to be effective, they need to be supported with an appropriate knowledge sharing mechanism. Research plays a key role in the process since it has more potentials for producing innovations to meet pre-identified end-users' needs. For this reason, innovation-oriented funding grants should allow for substantial funding to the research system.

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