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Joint learning to enhance innovation systems in African agriculture

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Introduction

Recognition is growing that strong and dynamic innovation systems are essential for adaptation to the rapid changes being experienced by smallholder farmers, including growing population pressure on limited natural resources and climate change. Yet relatively little is documented about how innovation processes unfold in small-scale agriculture. Most researchers, development practitioners and policymakers implicitly or explicitly work with a linear model of transfer of “innovations” from research via extension to farmers for adoption. This seldom reflects how innovation actually happens. Recent studies have revealed that effective innovation takes place within heterogeneous networks of researchers, farmers, entrepreneurs, NGOs, government and other stakeholders. They interact over time in a non-linear, iterative and non-predictable way to solve a pressing problem, adapt to new conditions or seize new opportunities. The outcome of such interactions usually consists of a mix of technical, organisational and institutional innovations developed and refined “on the go”, often quite different from what the initiators envisaged.

The EU-funded project JOLISAA (Joint Learning in Innovation Systems in African Agriculture) is assessing recent innovation experiences in smallholder farming in Benin, Kenya and South Africa to find out what conditions favour or impede innovation processes, as a basis for making recommendations for policy, research and practice. Three Africa-based and four Europe-based organisations made an inventory of innovation cases involving smallholders in the three countries to take stock of the diversity of multistakeholder experiences and assessed them broadly according to a common framework. From these cases, the partners selected some “lesson-rich” ones for deeper analysis together with the stakeholders: exploring how the innovation processes unfolded, the roles of the different actors and the linkages between them. Special attention is given to the contributions of smallholders to the innovation processes.

This paper provides insights into the initial results of the inventory and assessment of innovation cases. It highlights some challenges related to the methodology and draws some lessons regarding key features of the innovation cases, the way the inventory and assessment have been conducted and the conditions identified that are favouring or impeding innovation processes.

Methodology: highlights and challenges

Inventory of innovation experiences

The main criteria for considering cases for inclusion in the inventory of agricultural innovation experiences in Benin, Kenya and South Africa were: (1) smallholder and other resource-poor rural stakeholders actively

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involved; (2) at least three types of stakeholders involved; and (3) experience at least three years old and beyond the initial stages of innovation. Cases were sought through: literature search; interactions with resource persons in universities, research institutes and networks within the national agricultural innovation landscape; drawing on JOLISAA national team members' prior knowledge of innovation cases; and/or seeking innovation within a given region, area or farming system in each country. Field visits were made to supplement the available documentation.

For analysis across cases and countries, JOLISAA developed a common analytical framework, drawing on the innovation system concept (Hall 2003; World Bank 2006, 2012) and the actor-network theory (Latour 2005). The framework included innovation type, nature and domain; stakeholders, their roles and interactions; innovation triggers and drivers; innovation dynamics and scale; and results obtained.

During the inventory process, the national JOLISAA team members faced three main challenges:

1. Finding cases that meet the JOLISAA criteria – experiences identified were too recent, or did not involve enough stakeholders, or the innovation angle was too meagre or ambiguous;
2. Developing a common understanding of innovation-related concepts – people from different disciplines and professions who interacted in JOLISAA used concepts such as innovation processes and systems, stakeholders and enabling environment in different ways, which was reflected in the heterogeneous description of the innovation cases.
3. Accessing relevant information – some cases were not well documented, because they were outside a formal project setting or formal researchers (who typically document) were not involved. The available documentation usually contained little information about the innovation *process*. In some instances, intellectual property rights issues prevented documentation to proceed, linked to expectations that JOLISAA would pay for access to the information. Offering such vague future rewards as sharing results, joint learning or lobbying for favourable policies was not enough incentive for some “case-holders” to want to take part in the documentation.

Collaborative assessment of selected innovation cases

Out of the 57 inventorised cases in the three countries, the JOLISAA partners selected 13 for deeper analysis (called Collaborative Case Assessment or CCA) together with the stakeholders. Included in this phase were the cases that appeared most “rich” in terms of experiences, had been more dynamic in recent years and involved stakeholders most willing to take part. The CCAs delved deeper into the actual roles and contributions of the different actors, the nature of linkages between them, the dynamics of the innovation process over time in relation to external factors, and the role of local knowledge and creativity. This more detailed assessment should contribute to a better understanding of innovation systems and to development of a field-tested, realistic analytical framework for assessing them in a participatory manner.

Methods used for CCA include a mix of collective and individual semi-structured interviews and focus-group discussions with key stakeholders, multistakeholder assessment workshops, direct observations and bibliographic review of grey literature related to the innovation cases, among others.

As was the case for the inventory, some challenges were encountered in applying this approach:

- Building multistakeholder CCA teams (mix of researchers, local stakeholders and students) and making them work effectively so that the assessment could be participatory rather than external;
- Difficulties of CCA team members in taking a critical distance from their prior knowledge of the case and in digging rigorously and intensively into unknown details and ambiguities of the case;
- Capturing the dynamics of the case over a longer period, instead of capturing a static picture, as the CCA involved more intensive and sophisticated data collection, yet there was limited time to be able to interview stakeholders more than once.

Initial results from inventory and assessment

The 57 inventorised cases covered widely diverse experiences in terms of type (technical, organisational, institutional), domain (cropping, animal husbandry, fishery, processing, marketing), scale (local, regional, national) and duration of the innovation process (a few years to several decades). A comparison of the cases based on their main features confirmed the diversity of stakeholders in innovation, the diversity of innovation triggers and the frequent occurrence of market-driven innovation, including emergence of new value-chain arrangements. It also illustrated the typically long timeframes of innovation processes; the common occurrence of “innovation bundles” (a combination of different types of innovation); and often a close link between documented innovation processes and externally-funded projects.

The **stakeholders** in innovation typically included a mix of individual farmer-innovators, one or several community-based or farmer organisations, research, extension services, NGOs, entrepreneurs, government and externally funded projects. Depending on the case and phase of innovation, the leading and active stakeholders varied. For instance, researchers, an NGO or a project might be very active in initial stages (on-farm experimentation, building capacity etc), while farmers and their organisations or a business stakeholder become more active in later phases. Formal research did not initiate or play a leading role in many innovation cases; ideas and initiatives came from different sources, including farmers. Policymakers and private-sector actors were seldom among the active stakeholders. This may reflect the relative scarcity of specific pro-innovation public policies in the three countries, and the limited connections of national JOLISAA teams with non-conventional partners. Farmer-led cases of multistakeholder interaction in innovation were few, probably because such cases were less visible and less likely to be documented. In many cases, one of the stakeholders (typically a research institute or an NGO) played the role of intermediary (Klerkx & Leeuwis 2008) to facilitate interaction among the stakeholders.

Most cases had a mix of **innovation triggers** for innovation. Natural resource degradation (e.g. declining soil fertility, dwindling water supply, disappearing forest) was the most common trigger. Others included seizing a local or global market opportunity, or introduction of an improved technology or practice (e.g. new livestock breed, new way of parboiling rice). Policy change was rarely mentioned as a trigger.

For many cases, the relevant **timeframe** for understanding the innovation process easily spanned over 10 years or even several decades. The innovation processes often seemed to go through several phases at an uneven pace – sometimes very rapid, sometimes almost dormant – under the influence of constantly changing drivers in the overall environment. In Kenya for instance, the initial introduction of *Prosopis* sp. to restore degraded lands was considered a success until farmers found it to be an aggressively invasive species that had to be eradicated. Another innovation iteration then took place, leading to ways of managing *Prosopis* by using its pods for forage, burning it to produce charcoal and producing honey from *Prosopis* stands. Such changes in an innovation landscape over time raise doubts about the ability of many assessments based on short periods to predict the actual fate of “initial innovations”.

The concrete innovations emerging from an innovation process often had several **interwoven dimensions**: technical (e.g. a new variety), organisational (e.g. farmers jointly acquiring inputs or selling their produce) and institutional (e.g. new coordination mechanism). These dimensions emerged over time as the process unfolded from a specific entry point (often a new technology) into “innovation bundles”. New dimensions may result from new stakeholders coming on board, or from stakeholders starting to change their practices and, in so doing, transforming or taking advantage of the environment in which they operate.

Many well-known innovation cases had a strong **link with externally funded projects**. The abundance of “projects” to stimulate innovation is typical of developing countries. As national public funding for innovation is scarce, public institutions and NGOs depend on external support to carry out innovation-related activities, while smallholders are usually too poor to pursue innovation at a significant scale on their own. Projects can be important for creating innovation dynamics in a temporary favourable environment, shielding the process from usual inhibiting factors, and allowing a minimum critical mass to be reached or initial bottlenecks to be overcome. However, projects often artificially promote short-term uses of technologies that may be non-sustainable, trigger opportunistic behaviour from some stakeholders, lead to an aid mentality and overlook endogenous, low-cost and potentially more sustainable innovation pathways and outcomes.

Initial CCA results (most will be available only in 2013) show that innovation stories tend to be more complex than uncovered by the inventory, and different stakeholders have different perceptions of what happened and why. For example, what intervening institutions presented as a success story often turned out to be regarded more critically by the farmers, and researchers and other institutional actors tended to be relatively blind to innovations happening outside of formal projects and arrangements. Yet such innovations might be essential for understanding the eventual success of an innovation process and for sustaining its momentum; an example is the informal trade in aloe products in Baringo District of Kenya.

Initial lessons drawn from the inventory and assessment process

The inventory and collaborative assessment are meant to provide lessons not only for the people directly involved in the cases but also more generally for policymakers, researchers and development practitioners, about how to support effective innovation processes that strengthen the knowledge, creativity and linkages of smallholders. This should render smallholders more resilient to rapid and even sudden changes. Some initial lessons drawn from the assessment of innovation cases thus far include:

- African agriculture is advancing in manifold ways: numerous ongoing innovation initiatives, often unacknowledged by formal institutions, show the capacity of African stakeholders to seize opportunities, to access or create markets, to manage natural resources in a responsible manner etc.
- Ultimate success of an innovation process cannot be predicted. The probability of achieving success can be increased by avoiding rigid and prescriptive schemes and by supporting innovation processes “en route” over an extended period in a dynamic, iterative and flexible manner adapted to the specificities of the context, the stakeholders, the evolving opportunities and the existing constraints.
- To achieve success, the many complementary dimensions of innovation – technological, organizational and institutional – need to be tackled; focusing only on technical innovation is clearly insufficient.
- Innovation processes can be boosted through appropriate policies and investments (e.g. policies to facilitate the informal aloe harvesting and trade in Kenya, or to create a framework for negotiating contracts between industry and farmers in Benin and Kenya), and by creating missing linkages or strengthening existing linkages among stakeholders.
- All relevant stakeholders need to be actively involved in innovation processes, including smallholders, researchers, extension, private sector, government administration etc. Each stakeholder contributes to the process by expressing needs and demands, formulating goals and vision, offering skills in playing their unique roles, and sharing resources and responsibilities. Each stakeholder group requires different types of support, training and incentives to be able to contribute effectively. This is well illustrated by the aloe case: failure to integrate the informal aloe traders made the process of domesticating aloe and producing aloe sap much slower and less efficient than would otherwise had happened.
- Smallholders’ knowledge, experience and creativity make a vital contribution in innovation processes that can improve the livelihoods of millions of rural and urban households in a sustainable way.

Conclusions and perspectives

In Benin, Kenya and South Africa, JOLISAA partners discovered many multistakeholder innovation initiatives either recent or ongoing. By engaging actively with other actors beyond the conventional ones in research and extension, smallholders acquire new capacities and skills and receive stimulation and support to pursue innovation. Many of the actors which whom they collaborate seem aware of the need for, and benefit from, collaboration with farmers and their organisations, as well as with each other, to be able to tackle complex problems and challenges that they cannot handle on their own.

Greater recognition of the existing and potential role of smallholders in innovation provides a better basis for their partnership with other stakeholders in innovation. It puts rural communities in a better position to adapt to change and to address new challenges. Showing ways to take into account local initiatives and to more consciously involve smallholders and other local stakeholders in externally led and funded initiatives renders all actors better able to pool their energies and knowledge in a continuing process of innovation.

The JOLISAA inventory and assessment, among other similar efforts (e.g. Adekunle *et al* 2012), shows that African agriculture is responding actively to the many challenges it faces in reducing poverty, increasing food security and managing natural resources in a sustainable way. This may help counter some of the deep-seated pessimism and periodic negative publicity about African agriculture. The inventory and assessment may also have a strong motivational value: other institutions across Africa may want to emulate JOLISAA by documenting other innovation cases on their own. This would greatly expand the fragmented existing knowledge about what’s new in African agriculture and would help change perceptions and increase the motivation of many to keep innovation happening across Africa.

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