

## EFFICIENT LINKS BETWEEN FARMERS AND RESEARCH AND EXTENSION SYSTEMS: SOME LESSONS FROM THE FAO PUBLICATION *GOOD PRACTICES IN BUILDING INNOVATIVE RURAL INSTITUTIONS TO INCREASE FOOD SECURITY*

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### ABSTRACT

By acting collectively, small-scale producers can build operational and sustainable linkages with research and extension providers at various levels from local to national. Effective partnerships between research and extension providers and small-scale producers must rely on strong producer organisations, which, in turn, must result from strong bonds among farmers as well as close linkages between farmers' organisations. One key challenge for policy-makers is to build upon existing knowledge of small-scale production to formulate and design better innovation policies.

**KEY WORDS:** OPERATIONAL, EFFECTIVE, BONDS



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## INTRODUCTION

The technological challenges facing small-scale producers in crop, soil, water, forest, fisheries and livestock management are probably greater today than ever before. In a context of climate variability and strained natural resources (land and water), it is necessary to develop sustainable agriculture to satisfy increasing demands for food and agricultural products in the coming decades. To cope with these constraints, small-scale producers need to continually innovate to adapt to the changing environment and markets. Production systems will have to become more resilient to cope with climate change and economic shocks. Therefore, innovation, in particular in rural organisational arrangements, is needed to achieve more productive, equitable, sustainable and resilient agricultural systems.

To be driven by demand, effective innovation systems in agriculture require collective action among a broad set of actors. The needs of small-scale producers must be considered and meshed with other stakeholders' concerns. Numerous multi-stakeholder arrangements have been developed in the last two decades (Herbel *et al.*, 2012) to improve the way research responds to, and fits with, the needs of small-scale producers.

In Central and West Africa, the *Centre Africain de Recherches sur Bananiers et Plantains* (CARBAP) conducts research and development on banana and plantain, which are key food staples in

those subregions. In 2006, CARBAP created a network of regional stakeholder platforms, the '*Innovation variétale chez le bananier plantain – réseau de plateformes régionales*' (INNOBAP), to improve information exchange and understanding about the needs of planters and other value-chain actors. The network brings together research institutes<sup>2</sup>, producer organisations (POs), nursery gardener organisations, processors, storekeepers, non-governmental organisations (NGOs) and agricultural development institutions from Benin, Cameroon, Gabon and Guinea. INNOBAP plays a 'brokerage role' among the different and sometimes competing players by building mutual trust and improving communication and information flow. Thus, diverse players have learned to combine, collaborate and agree on joint plantain market development strategies. Surveys carried out show that stakeholders have already adopted and are marketing the new varieties introduced by the initiative (Herbel *et al.*, 2012). This observation applies particularly to women's groups that have adopted a variety with new characteristics to make chips (the very popular Popoulou variety, with large fruit and an orange pulp). A value chain has appeared in Cameroon for this variety, involving farmer groups, collectors, wholesale and retail buyers and resellers. Bunches of Popoulou fetch a higher price than traditional plantains. The targeted purchasers are female caterers (modern-style restaurants and street stalls)

and hotels, which use these plantains to make *pile*, which is eaten with sauce, but especially to make large, crunchy chips. The variety has thus led to the appearance of small groups, including dozens of women's groups, who produce and sell bunches, and process the plantains into chips. The price per bunch ranges from US\$3.2 to 4.3 in local markets, but can reach US\$10.7 in markets in Douala, especially during periods of shortage.

Similar initiatives have been undertaken in the Andean zone of Peru, where potato stakeholder platforms evolved into a more elaborate mechanism, combining collective action and market-chain innovation (Devaux *et al.*, 2009). This mechanism is called 'participative market chain assessment' (PMCA). The first PMCA was conducted among Peruvian potato sector stakeholders and resulted in the selection of potato varieties. This initial experience was replicated elsewhere in Peru and Bolivia, where farmers became successfully linked to commercial supply-

<sup>2</sup> Research institutions include: CARBAP, *Centre de coopération internationale en recherche agronomique pour le développement* (CIRAD), *Institut National des Recherches Agricoles du Benin* (INRAB), *Centre National de la Recherche Scientifique et Technologique du Gabon* (CENAREST) and *Institut de recherche agronomique de Guinée* (IRAG).



chain partners. The PMCA methodology was implemented in Uganda in 2005 in the potato and sweet potato tuber markets and in the tomato and hot pepper chains (Poole, 2010). In each case, the assessment resulted in innovative products and business arrangements, and has been extended to the dairy and coffee sectors. Creating and exploiting new opportunities has led to immediate economic returns for producers. In Peru, the results of the PMCA in the potato sector have led to improvement in the livelihoods of small-scale farmers, and benefits for consumers. New products have been developed and launched onto new markets for high-value-added staple foods. Selected traditional potato varieties have also been processed, presented in attractive packaging and distributed through multiple retail chains under the brand ‘Tikapapa’.

Bottom-up and top-down relationships between producers and researchers–extensionists, providing a two-way information flow, are critical for effective linking. They help build transparency and accountability in decision-making, as well as a shared understanding among member organisations. Conversely, conventional sequential approaches (by which the results of agricultural research are disseminated through extension services to small-scale producers) can stifle the active involvement of rural small-scale producers in thinking, deciding, choosing, agreeing and innovating. All they need to do is follow. This

**TABLE 1: RELATIONSHIPS AMONG RESEARCHERS, EXTENSION AGENTS AND FARMERS**

Traditional approach	New approach
<b>Research supply-driven system</b>	Demand-led system (small-scale producers and consumers)
<b>Researchers provide answers and solutions through extension staff to small-scale producers</b>	Researchers and extension staff coach small-scale producers by facilitating the teaching–learning process.
<b>Prescriptive</b>	Counselling
<b>Linear innovation transfer</b>	A non-linear process with iterations
<b>Small-scale producers follow the directives given by extension staff (farmers passive)</b>	Small-scale producer members of grassroots groups discover answers and solutions. Small-scale producers’ active involvement
<b>Information flows one way from researchers to small-scale producers</b>	Information flows two ways. Both researchers and extension agents give feedback in the form of advice and coaching. Producer organisations give feedback about what they are learning from doing their activities
<b>Removes small-scale producers’ sense of responsibility</b>	Small-scale producers have ownership of the process

rigid approach tends to remove small-scale producers’ sense of responsibility. New economic and environmental challenges require reactivity and flexibility with innovative systems that are driven by users (demand side) rather than by researchers (supply side). Such demand-driven approaches stress the power of users – men and women farmers and consumers – in setting the research and development agenda, and the importance of research in adding value to the chain ‘from farm to plate’.

### Conditions for success

In order to perform efficiently, this innovative partnership between small-scale producers and

researchers–extensionists needs to build strong POs capable of acting as facilitators between the two communities. The FAO–IFAD<sup>3</sup> publication *Good Practices in Building Innovative Rural Institutions to Increase Food Security* (Herbel *et al.*, 2012) suggests that, to be sustainable, the links between small-scale POs and research and extension services have to be embedded in two interdependent types of relationships that small-scale producers develop:

<sup>3</sup> FAO, Food and Agriculture Organization of the United Nations; IFAD, International Fund for Agricultural Development.



- *bonding or intra-group relationships* among small-scale producers within their organisations;
- *bridging or inter-group relationships* between small-scale POs to create apex organisations.

### **Bonding relationships**

The good practice cases highlight that the pre-existence of close bonds among men and women farmers is a critical precondition for building sustainable and efficient links with research and extension services. To become fully engaged in an innovative process, farmers need to organise themselves within groups, voluntarily collaborating in pursuit of a common goal. A small-scale farmer group's capacity to act collectively is a critical element. When successful, this in turn builds the self-confidence of small-scale producers and helps ensure that they control or 'own' innovations.

Close bonds of solidarity among small-scale farmers, fishers, livestock-keepers and forest-users, within grass roots and self-help groups, local associations and co-operatives, are the basis for the development of strong rural organisations. Through bonding relationships, small-scale producers gain self-confidence and knowledge to analyse their own problems, make informed decisions and act collectively. Farmer field and business schools help small-scale farmers to improve their understanding of 'how things work' through trial-and-error experimentation. Bonding relationships enable small-scale producers to

identify solutions collectively and build strategies to cope with change. In many of the good practices illustrated in the FAO–IFAD publication, small-scale producers shaped and created their own capacity to design and implement solutions within groups. Farmer field schools (FFS) in West Africa are a good illustration of how close bonding relationships among farmers helped improve their capacities to make informed choices and to act on them (Settle and Garba, 2011). Farmers chose to form grass roots groups to control pests more effectively, thereby obtaining higher yields. Through FFS, 'farmers work together in small groups to collect data from the field, generate analysis through discussion, present results, conduct experiments, and make group decisions for field management' related to integrated pest management (IPM) activities (Dilts, 2001). These activities helped farmers gain the self-confidence and knowledge needed to carry out their own problem analysis, make informed decisions and organise their field activities. In some contexts, such group competencies evolve over time, enabling them to solve problems in new areas. In Colombia, Ethiopia and Malawi, for example, the FFS, which were initially created to solve agronomic problems, evolved into farmer business schools (FBS) capable of overcoming marketing bottlenecks. 'The processes used for analysing social reality are in essence the same as those employed in "discovering" ecological realities in the fields' (Dilts,

2001). By identifying income-generating opportunities and developing members' entrepreneurial skills, FFS and similar organisations help develop a culture of learning-by-doing through experimentation and local adaptation. The pursuit of a common goal using a problem-solving approach enables groups of small-scale producers to develop a greater sense of competence and control over their futures, thus increasing their self-confidence. Small-scale producers' capacities for effective collective action are critically important for coping with market risks and climate volatility. Bandura (1995) notes that 'People's beliefs in their collective efficacy influence the type of social future they seek to achieve, how much effort they put into it, and their endurance when collective efforts fail to produce quick results'. Ultimately, this problem-solving approach, which greatly determines how well small-scale producers capitalise upon opportunities, is the first milestone in building small-scale producers' self-confidence and autonomous capacity to drive their own development.

The FFS approach represents a shift in roles, responsibilities and mindsets of rural actors. The most obvious change is that field staff become facilitators rather than implementers. Rather than solving problems on behalf of small-scale producers by supplying them with solutions through templates or recipes, extension field staff support group dynamics. They coach small-scale



producers, facilitate consensus-building, guide their reflection and enable experience sharing. This approach shows how small-scale producers can independently improve their capacity for organisational and collective action and for innovation development.

FFS are ‘schools without walls’, where farmers come together to learn as part of a group. This method emphasises ‘learning by doing’, where the extension worker is primarily a facilitator of small-scale producer learning processes. The first IPM FFS was designed and managed by FAO in 1989 in Indonesia to reduce farmer reliance on pesticides in rice (Bartlett, 2004). Since then this participatory approach to farmer education has spread and is increasingly spreading worldwide. Since 1990, several million farmers have graduated from FFS (more than one million farmers have been trained in Indonesia and half a million in Bangladesh [Dilts, 2001; Bartlett, 2004]). The aim of FFS is to build small-scale farmers’ capacities to analyse their production systems, identify their problems, test possible solutions and eventually adopt the practices and technologies most suited to their farming systems. In Benin, Burkina Faso, Mali and Senegal, FFS have focused on improving agronomic management techniques, such as optimisation of inputs, increasing soil fertility and diversifying cropping systems. The success of the approach in raising yields while reducing toxic inputs has led many of those participating in the

schools to adopt these techniques. The West African programme, for example, targeted 130,000 farmers in over 5,000 field schools in seven Sahelian countries over a 6-year period. Estimates show that participating farmers decreased their use of pesticides by 75%. They increased their yields across all cropping systems by 23% and their net farm profits by an average of 42%. In Mali, cotton farmers increased their yields by 20.8%, while reducing their production costs by 9.9%, thereby increasing their net returns by 58%. In Kenya, Tanzania and Uganda, FFS results are even more impressive. Participation in FFS increased their income by 61% on average across the three countries, and production and productivity improved in nearly all cases observed at the country level. The most significant change was seen in Kenya for crops, with an 80% increase, and in Tanzania where agricultural incomes increased more than 100%. When disaggregating by gender, female-headed households benefited significantly more than male-headed households in Uganda (Davis *et al.*, 2010).

In Colombia, FFS focused on organisational and enterprise management skills. Small-scale farmers developed and implemented effective marketing strategies for their products, for example, by developing a ‘label of origin’ for their products (*Cosechas del Campo*) and creating commercial linkages with private enterprises. They also developed ‘family gardens for food security’.

Twenty-eight FFS in 21 communities of Antioquia Province, in collaboration with 28 POs, focused on four products of major economic and social importance (beans, tomatoes, sugarcane and livestock).

In Ethiopia, Malawi and Nigeria, FFS evolved into FBS to help farmers become competitive in the market, by improving farm management and marketing skills. Farmer business schools concentrate on the economic and financial aspects of farming, to ensure that production is market-orientated and that farmers get the best return for their produce.

### **Bridging relationships**

Development and research agendas address small-scale producers’ priorities when the latter can voice their concerns and have a say in shaping the research agenda. Given their dispersion in fragmented and distant units, self-help and grass roots groups, local associations and co-operatives, POs often encounter difficulties in influencing policy-making processes. Small-scale farmers and rural communities are often unable to articulate their demands in a united, coherent and compelling way. When they do, they are frequently disregarded by policy-makers. At the same time, groups located in urban areas can exert influence and pressure on governments to protect their interests. This has contributed to public policies that favour urban over rural areas, the well-known ‘urban bias’ (Bates,



1993; Corbridge and Jones, 2009). To be collectively involved in research agenda-setting, small-scale POs must build bridging (inter-group) relationships by connecting similar small-scale producer groups together to form larger and more powerful organisations in the form of producer unions, federations and networks. By acting collectively through their apex organisations, rural producers can increase their negotiating power in policy-making processes at local, national and regional levels.

Community-centred approaches led by users, such as rural producers and consumers, can ensure that research responds to producers' needs and emerging markets. In Niger, from 2007 to 2009, within the framework of its rural development strategy and with FAO support, the government (with various stakeholders) designed a pluralistic, demand-led and market-orientated advisory system. This formulation process offers a good illustration of how apex organisations (unions and federations) can contribute to the design of a future advisory system. Farmers participated in all the steps of the process through their unions. From the very beginning they contributed to the terms of reference of an advisory system. They then participated in the assessment of the existing extension system. Farmer organisations defined their capacity development needs to elaborate the demand for research and extension services and developed a mechanism for the expression of

demand at community, departmental and regional levels. The *Réseau des organisations paysannes et des producteurs agricoles de l'Afrique de l'Ouest* (ROPPA), a West African network of national apex farmer organisations from 10 countries (Benin, Burkina Faso, Côte d'Ivoire, The Gambia, Guinea, Guinea-Bissau, Mali, Niger, Senegal and Togo) supported the process. As a result, the new extension policy was designed to fit both market-orientated and subsistence agriculture systems, for different agro-ecological zones and adapted to the real financial capacities of the target population. The involvement of farmers' unions and the support they received throughout the process were crucial in translating the idea of a demand-led system into an operational reality. Although it was a tremendous challenge, throughout the formulation process, with the strong support of ROPPA, Nigerien apex farmer organisations demonstrated their capacity as a partner in the process (Blum and Mbaye, 2010).

## **CONCLUSIONS, RECOMMENDATIONS AND IMPLICATIONS**

When seeking to improve agricultural research and advisory service efficiency and sustainability, development practitioners have to consider the extent and quality of:

- the linking relationships between farmers and agricultural research and advisory services;
- bonding among small-scale producers within

their organisations (intra-group small-scale producer relationships);

- bridging relationships between small POs to create apex organisations (inter-group small-scale producer relationships).
- These three types of intertwined relationships are critical for the performance of agricultural research and advisory services, and their contribution to achieving food security, and improving rural livelihoods and natural-resource-use sustainability. New forms of collaboration, such as a new social contract, must be set up between small-scale producers and the other actors, clarifying the rights and duties as well as the roles and responsibilities for each stakeholder. Within new forms of collaboration, one key challenge for policy-makers is to build upon existing small-scale producer knowledge, capacity, skills and organisations, and to formulate and design better innovation policies that respond to their needs, rather than direct them. Support organisations may need to facilitate existing organisational development processes in order to encourage small-scale producers to become actively engaged in innovation development. While benefiting from these new forms of collaboration, small-scale producers must maintain their autonomy of action and ensure that they drive the changes within their organisations and in their long-term relationships with government, economic and civil society actors.



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