

New approaches to research – experiences from research organisations

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Introduction

For an integrated research system to contribute more effectively to change, new frameworks and processes are still required. The old, linear paradigm of basic to strategic to adaptive research leading to extension and diffusion of technologies and practices has had some successes, but does not address poverty effectively because it does not embrace the circumstances and realities of farmers and other private and public stakeholders (Romney and Minjauw, 2006). In many cases potential solutions have been shown to be poorly adapted to the complex situations for which they are intended. Involvement of farmers in participatory processes and on-farm experimentation has had considerable success locally and involvement of local farming communities can help identify other constraining factors such as the unreliability of essential inputs and effects of market failures (Jones, 2004). Recognition that scientists are not the only source of new ideas and knowledge is important and combining the intellectual rigour of scientific enquiry with the tacit knowledge of other actors having direct experience of the system complexities, such as farmers, service providers, market agents, NGOs, private sector means that alternative and effective solutions can be found.

The dominant model being proposed today is to view national agricultural research systems within an innovation systems framework (Jones, 2004). An innovation system can be defined simply as all the actors and their routines and habits that, in a given policy context produce, use, diffuse and adapt knowledge in socio-economically significant ways (Hall et al. 2004). Only recently has the innovation system concept been applied to agriculture in developing countries and its use to guide investments to support the development of agricultural technology been explored (World Bank 2006). However, it is increasingly being seen as an appropriate and useful framework to use to study processes of innovation and to understand how knowledge is generated and turned into use and is already playing an important role in changing the mind-set of researchers and policymakers by encouraging them to consider new and unconventional actors and relationships (Spielman 2005).

Nevertheless, for non social science researchers, innovation systems language often appears complex and inaccessible and many remain unclear as to how they can use the lessons learnt in their own work. Moving the next step from understanding how innovation takes place and applying lessons to improve the way research is implemented is needed. Some experiences are given below from two international research organisations where novel approaches have been used in addressing key issues or turning knowledge into innovation and where it could be said that innovation systems perspectives have been used, whether consciously or intuitively.

Consideration of a broader network of stakeholders

Farmer Participatory Research (FPTR) and Farmer Participatory Technology Development (FPTD) moved researchers forward to recognise that they were not the only source of new knowledge. Here the emphasis was on integrating researcher and farmer knowledge rather than that of a broader range of actors or stakeholders and although some practitioners of these approaches intuitively take a broader view and seek to identify and engage other actors important to the process, many do not. A good example of the need to engage with a broader range of actors is given by Prasad et al. (2006), which analyses an activity led by two CG centres (International Livestock Research Institute (ILRI) and International Centre for Research in Semi-Arid Tropics (ICRISAT)). The authors recognised that although Participatory Varietal Selection played a role, for the new varieties to be used to contribute to farmer livelihoods a whole range of different actors needed to change behaviour for the seed to be effectively produced and distributed and the crop marketed and processed (see Box 1).

Box 1: Need to look beyond farmers for innovation to take place

Prasad et al. (2006) report experiences from a DFID funded project in Ananthapur in India involving ILRI and ICRISAT. Here, farmers selected a variety of groundnut (ICGV 91114) that provided increased yields of both grain and fodder from a selection of groundnut varieties growing in farmer participatory varietal selection trials in farmers' fields. However, spread of the technology from on-farm trials was not immediate despite initial promotion of the varieties under the project and other activities conducted in associated projects. This was partly due to the insufficient quantities of seed available. Although it was technically feasible for farmers to use saved seed to facilitate scaling up, in practice their cash flow needs and difficulties of seed storage meant that the harvest was sold and new seed purchased each season. Although private sector actors were present, they were unable to contribute to the timely availability of seed of farmers' choice because they were priced out of the market by government provision of subsidized seed. Government seed was purchased in another district with decisions on variety and quantity being made at State or National level. Inadequate mechanisms existed to provide either the government or private sector with information on the varieties farmers were looking for. At the other end of the value chain (from input suppliers, through production, marketing and consumers of grain), an assured market of new seed could not be provided by traders unless their clients, the oil millers were confident the supply would be adequate to justify technical and operational modifications to the oil extraction process.

Responsive to needs and opportunities

Researchers also need to learn to respond to challenges and opportunities on the ground maintaining a degree of flexibility in projects that allows teams to adapt rapidly and address real issues. In many cases interaction with communities may reveal issues that had not earlier been considered and highlight the need to interact with a broader range of actors. A project implemented by CABI Africa which originally aimed to address disease issues

using Integrated Pest Management in small-scale horticulture systems growing kale observed an opportunity to address the disease constraint using a resistant variety rather than pesticides or other agricultural practices. The project team brought in additional actors to support change as described in Box 2.

Box 2: Flexibility to respond to real challenges and opportunities

In a project in Lari division of Kiambu district in Kenya, originally intended to address crop disease issues, it was observed that a particular landrace of kale very popular with farmers only flowered and produced seed in that district. Researchers from CAB International and KARI (Kenya Agricultural Research Institute), extension staff from the Ministry of Agriculture and farmers identified potential for an income generation activity for farmers to grow and sell seed to other areas as well as selling the vegetable itself. Work took place with farmers to develop a clean landrace however, despite farmers being trained in production of clean seed, this was not enough for them to be able to make profit from seed production as a business. It soon became clear that the farmer / research / extension coalition could not solve the problem alone. A number of key issues were identified, for example: in Kenya it is illegal to sell seed that has not been certified and registered; for farmers to operate a business they need to be registered and it was also clear that though they were interested in commercializing seed production they did not necessarily have the skills and capacity to operate such a business independently or the necessary networks or distribution capability. The project started to partner with other organizations and bodies to try and address these issues. The project engaged with KEPHIS (Kenya Plant Health Inspectorate Services), who worked closely with the original partners to develop seed characterization procedures for kale, provided inputs on seed regulatory procedures in training sessions and implemented the multi-locational trials required to register new varieties. Two out of five lines were registered in 2007 which means that they can now be traded legally. The community development authorities Ministry of Culture and Social Services were engaged to register the groups and the private sector Lagrotech gave insights into trading seeds and negotiated to contract farmers as seed out growers while they operate the commercial side, distributing and selling.

Translating research outputs into innovation

In a number of cases research outputs are produced that have been shown to work in pilot studies and to be technologically sound, but that are not automatically taken up by communities. Adoption studies often focus on socio-economic constraints at household level but don't always consider the other actors that are implicated if farmers are able to make choices about technology. In Ghibe valley (ILRI 2006) integrated trypanosomiasis and vector control was successfully developed by scientists working with farmers to field test practices. However, for communities to change to be able to effectively use the new approach in areas where access to veterinary drugs and assistance was limited and where farmers were not legally allowed to either source or apply drugs, further work had to be undertaken in consultations with a range of stakeholders locally (see Box 3). Without the additional initiative to explore ways in which the research outputs could be used without direct assistance of researchers, it is unlikely that change in Ghibe would be sustainable. The next step in this project will be to use an action research methodology to learn how to build, monitor and

sustain innovation processes within developing country livestock health systems
(pers. comm. Rose Kiggundu and Mulatu Woudyalew).

Box 3: Uptake of research outputs through engagement with relevant stakeholders

In Ghibe Valley in Ethiopia, successful control of trypanosomiasis was achieved through integrated control of the parasite and vector (ILRI, 2006). Successful field trials resulted in farmers being able to keep larger numbers of cattle providing increased availability of animal traction and expansion of the area of land that the farmers were able to cultivate. Initially, ILRI provided the treatment free of charge as part of the research, although once the approach was accepted by the community, farmers started paying the cost of treatment themselves. However for the community to effectively manage the control programmes, two key constraints needed to be overcome including: a) sourcing good quality veterinary drugs (pour-on, trypanocidals etc.) and; b) applying the pour-on and trypanocidals in areas where availability of veterinary services are limited, but where it is illegal for anyone other than a veterinarian to apply the drugs. ILRI worked together with various stakeholders including: farmers; representatives from departments of veterinary services, micro-credit services and the cooperative promotion desk at the Woreda Bureau of Agriculture (WBoA); input suppliers; private veterinary practitioners and; private veterinary drugs importers working in and around the area to identify suitable options for sustainable animal health service delivery. As a result, Cooperatives were established in four villages. Executive members of the cooperative were trained by professionals from the local BoA in managerial and organisational skills while two member farmers from each cooperative were trained to apply the treatment and provide other basic animal health care services under local agreements to modify policies, possible as a result of de-centralisation of government legislative powers. Under the auspices of the local BoA each trained farmer was provided with a certificate authorizing them to provide specific services to farmers in their villages, supervised by the local designate veterinarians. Through these registered cooperatives, member farmers are more likely to receive credit from private suppliers of the drugs who would be unlikely to serve individuals. (ILRI 2006 and Pers. Comm. Mulatu Woudyalew)

Learning lessons

Chambers (2003) describes Institutional Learning and Change as requiring continuous learning, unlearning and learning-about-learning. Sharing case studies to understand how research processes contribute to change as well as institutionalizing processes such as outcome mapping to monitor influencing strategies and behavioural changes alongside technical project outcomes may contribute to a new work culture and practices. A Rapid Outcome Assessment (ROA) method based on outcome mapping developed by ODI (ODI, 2004) was used to identify key factors that contributed to observed policy change in a smallholder dairy development (Leksmono et al. 2006, see box 4). At ILRI, studies have reflected on project processes to answer the question “what kinds of approaches and institutions, under what sorts of conditions are most effective for harnessing scientific knowledge in support of strategies for environmentally

sustainable development and poverty alleviation (Kristjanson et al. 2007). Outcome mapping to describe how projects moved from outputs to outcomes (Nyangaga et al. 2007) were also used to learn lessons about mechanisms that influence outputs leading to outcomes.

Box 4: Factors contributing to evidence-based policy change

In a DFID funded dairy project in Kenya led by the Ministry of Livestock, Fisheries and Development (MoLFD) in collaboration with the Kenyan Agricultural Research Institute and ILRI, policy change related to the informal milk trade was attributed to a variety of factors related to the approaches used in the project. Amongst these included: a) a steering committee with representatives of major stakeholders in the dairy sub-sector that met quarterly, contributed to the direction of the project and received evidence as it was produced; b) linking with and providing information to advocacy CSOs able to engage in active policy debate without following established bureaucratic procedures enabled evidence to be presented more easily, even if it contradicted government views; c) presentation of evidence in different formats, media and fora, including use of video in a high profile policy forum to allow small-scale traders to 'speak' to policy makers; d) having a project staff member responsible for maintaining relationships and supporting activities to influence policy change; e) involvement of senior government staff in managing the project, for example the MoLFD project manager had direct access to decision makers and sat on various dairy committees in the ministry and; f) considering the incentives of key players, using evidence to show how change addressed popular interests that helped balance the pressure on politicians from private interests. (Source Leksmono et al. 2006)

Discussion

As pressure on scientists to show development impact of their work increases, organisations are increasingly seeking ways to change the way of implementing research. Examples such as those indicated above exist. However, these may represent individual interests and project histories rather than an agreed strategy that operates across an organization. Support for novel approaches are mixed, especially where incentives for scientists are focused on production of peer-reviewed journals rather than indicators that are more difficult to measure such as establishment of partnerships and achievement of impact. Learning lessons can help organizations to learn, but to do this effectively requires additional inputs of time that may not fit a research mandate unless the lessons are learnt through elaboration and testing of formal research questions. It should also be noted that the onus for new ways of doing things does not rest only with researchers, all the examples given above highlight the importance of involvement of multiple actors. While researchers may take the lead in developing partnerships, there is no reason why other actors may not take the initiative.

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