

Methodological diversity and creativity in agricultural innovation systems

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Introduction

The challenge of supporting the diversity and dynamism within human and natural landscapes calls for a corresponding methodological diversity in agricultural research and development (R&D). The multi-faceted dimensions of communities and farmers' needs – and the multiple demands on their precious time – influences the choice of methods for situation analysis, technology development and resource management. Besides, it also affects ways of negotiation, communication and farmer education. A wide range of methods and of actors implementing them allows for greater responsiveness, flexibility and fine-tuning to the context and needs of specific client groups.

Diversity in R&D innovation systems can be assessed in terms of the:

- biophysical environment, including agricultural and natural resources;
- political, economic and institutional contexts;
- actors in the system, and their perspectives, historical background, ideas and opportunities; and
- research, extension and farmer education methods.

In this article, we focus on the diversity of R&D methods, the actors, and their interface, by examining the implications of diversity at the level of individual R&D actors and at the

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level of national and global innovation systems.

Multiple versus single methods at the level of R&D actors

Individuals and organisations need to continuously assess their expertise and capacity to better position themselves as R&D actors. Some actors may specialise in participatory rural appraisals (PRA), quantitative impact assessments, or assessing local knowledge. Others focus on conducting farmer field schools (FFS), or position themselves more broadly as managers or facilitators of agricultural knowledge and information systems. Focusing on a single method, or skilfully deploying a few methods, allows actors to develop specific expertise, while at the same time further improving the method. Some pros and cons of focusing on a single method or approach are given in Table 1.

Table 1: Pros and cons of focusing on a single method from the perspective of an R&D actor

Advantages	Disadvantages
Potential to develop expertise and take a strong position as an R&D actor.	Personal interests in careers may hamper a true partnership environment. Actors may become blind to innovations coming from perceived 'competitors'.
Efficient use can be made of human and financial capital.	High pressure to promote a single method globally, whereas priority and goodwill of donors may change over time.
Scope to learn and advance the method by applying it in different contexts.	Actors may demonstrate a low flexibility to adjust method to local contexts.

The need for diversity at the level of R&D innovation systems

While focusing on one or a few methodologies may have advantages for an individual R&D actor, the propagation of a single method at the national or global level has some important drawbacks.

Quality issues are likely to emerge when a single method is scaled up massively, as shown in an early review of the FFS experience (van de Fliert, 1993). This, however, does not mean that farmer education with a strong emphasis on participatory and experiential learning has no global significance, on the contrary (Röling and Wage-makers, 1998).

But methods that are strongly promoted globally may be perceived as imposed by those who implement them. They may be viewed as a damper on local methodological and institutional innovations. Just as the lack of local ownership of technologies may result in non-adoption, the same holds for methodologies and working philosophies, especially complex ones.

People and organisations may feel pressured to implement certain methodologies, without having internalised the true nature of participation. Especially with participatory methods such as PRA and FFS that rely heavily on the qualities of the facilitator, scaling-up may go at the expense of learning together: the very core objective of the method. Even well-trained facilitators may switch to a mode of mechanically implementing a method under pressure of donors (Barzman and Desilles, 2002).

Methodological flexibility is key to creativity and sustained motivation of those working in the field. When

people's job description mentions 'you develop a programme in the way that works best in your area' that creates responsibility and passion. When their job description says 'you visit farmers every week or every fourteen days' that kills passion (IIRR, 2000). But for people to act responsively and creatively they need to be familiar with a range of approaches and their environment needs to be supportive.

The promotion of a single blueprint approach or method is also risky when it ignores the economic, political and institutional context in which actors operate. A well-known example is the Training and Visit (T&V) system of extension, previously promoted by the World Bank and part of the Transfer-of-Technology or 'pipeline' model of innovation, which considered that research results originate only from specialised research institutes, and are disseminated to farmers through the extension service (Biggs, 1989). The failure of this methodological approach led to a wave of participatory approaches and a new cycle of learning from failures and successes.

In their opening paper on methodological complementarity, Abbot and Guijt (1997) stated that a key contribution of PRA methodologies lies in bringing together a greater diversity of perspectives. Yet this often led to complex, context-specific information, that could not be extrapolated, or which failed to unveil information that may not be expressed freely in groups. The authors continue by citing various cases in which PRA has been combined with more conventional research methods in various sequential orders, depending on the scale and objective of the work.

Recent critiques of participatory approaches (Guijt and Shah, 1998; Cooke and Kothari, 2001) further emphasised that development-oriented research processes need to be tailored to particular circumstances. Research has multiple objectives and dimensions, each opening up a spectrum of possibilities. Conventional and participatory types of research are not independent or discrete activities. To ensure quality, researchers are encouraged to focus on skilfully combining elements from the different dimensions in order to tailor research to specific circumstances (McDougall and Braun, 2003).

Methodological diversity in the system allows R&D actors to tap into their own organisational strengths and explore what works best for them under which conditions. Diversity also enables them to play the card of complementarity. Partnerships built on the strengths of the individual actors pave the way for combining various methods available in the system. This moves away from the idea of a one-size-fits-all

The Africa Rice Centre (WARDA) combines innovative scaling-up approaches, such as video, with their expertise in participatory technology development.



Photo: Josephine Rodgers

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technology or an ideal blueprint methodology. We will illustrate this with a few examples.

Evolving methods and the organisational learning culture

Recently, the intergovernmental organisation CABI *Bioscience*, with an expertise in sustainable agriculture, has given rise to creative farmer support services such as community plant health clinics (www.globalplantclinic.org) and Going Public (see Box 1).

CABI also collaborated with a UK-based private company, called Countrywise Communication, to build competency in developing learner-centred videos for farmer training. Together with the Rural Development Academy and

Box 1: Going Public

Going Public is a novel method that makes use of places where farmers meet spontaneously, such as markets, bus terminals and other public places, to create a two-way learning channel. Going Public allows scientists, agricultural extension workers and farmer experts to show things to people, answer questions, run short experiential learning exercises and potentially to distribute material, as in any other face-to-face method. But this is quick and it allows contact with people from many areas at once. It also allows scientists to gather feedback from farmers in a social setting where the farmers are comfortable, surrounded by their friends and neighbours, but where they are also free to come and go (Bentley *et al.*, 2003). More recently, Going Public was used to learn about the range of local names and management practices farmers use for *bakanae*, a major rice disease (Nash and Van Mele, 2005).

Box 2: Historical trends in participatory R&D at CABI

CAB *International* (CABI) was established in the early 20th century to foster the international sharing of knowledge from agricultural science and to help tackle specific agricultural constraints. While the users of this information were originally the National Agricultural Research System (NARS), in recent years greater emphasis has been placed on how this pool of knowledge can be more effectively accessed and used by communities themselves.

In the early 1990s, the formerly independent institutes of CABI *Bioscience*, the scientific division of CAB *International*, had little experience of participatory R&D though many years experience of working in developing countries and with tropical agriculture. A new role began to emerge for them, as a provider of technical backstopping to the Food and Agriculture Organization (FAO) farmer field school programmes in Asia.

Since the late 1980s, CABI has supported farmer field schools across the globe, helped to expand the training curriculum from insect to disease management, and adapted the method for use in perennial crops such as cocoa, coffee and fruit. CABI's ecologists, taxonomists, biotechnologists and senior management all became familiar with the concept of farmer field schools. New staff were hired with broader field experience, new types of partnerships emerged with commercial companies, and interest grew in developing a 'new' sustainable, organic, equitable and fair agriculture.

More recently, collaboration with anthropologists and communication specialists from outside the organisation has given rise to innovations such as the community plant health clinics, Going Public, and the use of videos in farmer education. It is difficult to see how such innovations might have arisen in a research institute or university, where staff advancement depends on academic publications. CABI *Bioscience* has a more flexible approach, using the pro-active development of initiatives and project achievements to reward staff achievements. Operating as a learning organisation and driven by demands from its member countries, CABI has been able to respond to emerging international needs through multiple innovations and as part of larger learning networks.

a Bangladeshi women's NGO called Thengamara Mahila Sabuj Sangha (TMSS), they produced videos on on-farm rice seed management. The videos proved more efficient in training rural women than face-to-face extension (Van Mele et al., 2005a). Likewise, the Africa Rice Centre (WARDA) is developing innovative scaling-up approaches such as video, adding to their expertise of participatory variety selection and participatory learning and action research (see photo 1).

Although the senior author currently works for WARDA, we thought it appropriate to present a historical perspective of CABI, his previous employer, and show how it developed and advanced its expertise in innovative farmer support methods over the past century (Box 2).

Box 3: PROINPA's decision criteria for applying complementary methods

Apply CIALs when....	Apply FFS when...
Farmers give high priority to solving specific problems or constraints in the production system.	There is community interest in initiating collective action.
There is strong leadership in the community or an interest group with the organisational capacity to form a CIAL.	There is local demand for training on specific issues of recognised importance.
A community has experience with participatory approaches and collective action (CIALs are formed more easily in communities that had an FFS).	Appropriate technology and knowledge is available that can be incorporated in the training process.
There is some financial support and commitment to follow-up from seed money provided by an R&D organisation or from local government.	There are sufficient financial and human resources to operate FFS.

Source: Oscar Barea, PROINPA, Bolivia

The second example we describe here illustrates how two farmer education methods, each pioneered by a different international organisation, found fertile ground in one and the same national implementation agency. The Bolivian non-profit foundation PROINPA saw complementarity in local agricultural research committees (CIALs) and farmer field schools (FFS) and consciously decided to work with them in an integrated manner. Through several cycles of fieldwork, PROINPA learnt how to coordinate the complementary use of these methods (see Box 3). Where simple knowledge is sufficient to address a specific problem, they use workshops and presentations at local markets, (the new Going Public method) which they developed with CABI *Bioscience*.

A third example reflects on historical trends within the United Nations Food and Agriculture Organization (FAO). Over the past two to three decades, FAO has spearheaded two major development initiatives: farmer field schools and rural communication systems, including radio and video. But how can one explain that hardly any crossover has taken place between those two developments? Surely there must have been individuals working within the organisation who looked 'over the fence' and were attracted by what 'their neighbours' were doing?

Blacksmiths inject new ideas and join hands with researchers and NGO staff to improve a rice parboiler in Benin.



Photo: Marcella Vrolijk

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These examples illustrate the need for R&D organisations to become more familiar with existing methods, to assess their appropriateness, to innovate when necessary, and to build synergies with their own methodological expertise if possible.

Promoting diversity in innovation systems

Clearly, the strength of an innovation system depends on the strengths of its components and the management of its linkages. Policy makers may be put under pressure to promote a single method, at the expense of overall system adaptability and robustness. While developing national research and extension policies, decision makers need to be aware of the human dimensions of R&D. The impetus for methodological monocultures is often associated with strong lobbyist groups

and personalities. Decision makers need to ensure that the promotion of a method builds on local social capital and on previous methodological experiences. This can be done by shaping an environment where creativity can flourish, and multiple methods and partnerships can be assessed objectively in response to new emerging needs.

As innovations come from multiple sources (Biggs, 1989), including the farmer community, the education system and the private sector, research policies need to be better coordinated with rural development, education and trade policies, as these directly or indirectly shape the innovation system. Policy makers and donors can facilitate the testing and fostering of partnerships between R&D and private businesses (see Photo 2), or between R&D and the education system.

Box 4: RRI promotes methodological diversity in Bangladesh

Funded by the UK Department for International Development (DFID), The Poverty Elimination Through Rice Research Assistance (PETRRA) project approved and supported 45 sub-projects between 1999 and 2004. These had a focus on pro-poor policy, technology development, or on uptake and extension. Sub-projects were approved at different stages through a competitive bidding mechanism. More than 50 partner organisations, including NGOs, government organisations and the private sector, worked in partnership, some in turn involving a broad range of local NGOs and community-based organisations.

Many innovations emerged from building on the organisations' own strengths and enabling cross-fertilisation between sub-projects. Innovations ranged from partnerships to develop a pro-poor market for mobile pumps, to 'picture-songs', which combine large paintings of insect pests of rice and their natural enemies for example, with song and dance, to pro-poor seed systems. Flexibility and ownership are the keys to mainstreaming methods. Both at management and sub-project levels, PETRRA linked underlying values of the learning organisation – empowerment of its members, rewards and structures fostering initiatives, and experimentation – with values required to address gender and poverty in rural development (Van Mele *et al.*, 2005b).

Identifying champions with expertise in one method may not be too difficult. But finding facilitating actors or setting up structures that can bring multiple sources of expertise together in an open learning environment is more challenging. Mapping out actors, assessing their organisational cultures, and creating early opportunities for them to interact, share experiences and build trust may be a first step in the right direction to boost methodological and institutional innovations (Van Mele *et al.*, 2005b; see also Matsuert *et al.*, 2005). A successful approach tested and managed by the International Rice Research Institute (IRRI) from 1999-2004 is described in Box 4.

We hope this article has illustrated the need for an innovation systems perspective at the level of individual actors, and among national and international policy makers. Innovations are more likely to emerge in an environment that builds on perspectives of multiple actors, that taps into a broad range of R&D methods, and that stimulates and sustains creativity.

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