

Promoting Local Innovation in Rural Agriculture: Experience and lessons for urban settings

Since agriculture began some 10,000 years ago, it has been shaped and spread almost exclusively by the farmers themselves, and for the most part without the help of scientific research or extension agencies.

Farmers came up with ideas, carried out experiments and arrived at their own conclusions. Innovation by farmers was the way forward: this local innovation, indeed, was the dynamic process that led to the development of farming traditions (Critchley 2007).



RECPA members, Uganda.

Currently, public agricultural research and extension is under criticism for failing to deliver new technological leaps. As a result, there is a crisis of confidence in conventional research, extension services and national and international 'innovation systems', and funding has decreased considerably. Several alternatives have been proposed: one of the current favourite options is semi-privatisation of services catering to 'common interest groups' of farmers. However, many observers doubt whether the poorest farmers will benefit from such arrangements. So it is vitally important to remember that farmers – the poor as well as the well-resourced – continue to experiment, and they still learn from each other. Evidence abounds of local initiatives that have provided answers to problems faced by farmers; and these initiatives are the results of farmer creativity.

FARMER INNOVATION OCCURS EVERYWHERE

An example of a local innovation that has taken off and changed the livelihoods of a whole region in Serbia is given in Box 2.

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Box 1: A community organising itself: the RECPA environmental association in Uganda

The Rwoho Environmental and Conservation and Protection Association (RECPA) in Ntungamo, Western Uganda, is a local group that was organised for environmental purposes. Thus, it can be characterised as a social, rather than a technical, innovation. Inspired by a charismatic leader, the association was formed – without any outside assistance – some years ago in order to protect a denuded hillside above the village of Rwoho. The government had previously cut down a plantation forest and left the land scarred and vulnerable to erosion. The formerly clear stream feeding the village had become sediment laden and the community was determined to take action. RECPA now has over 150 members, and it has started re-vegetating the hillside without any outside assistance. RECPA has been identified as a prime candidate for a new project entitled 'Stimulating Community Initiatives in Sustainable Land Management' (SCI-SLM). SCI-SLM, currently funded by the Government of Uganda, is eventually expected to receive funding from the Global Environmental Facility (GEF) and will then be active in Ghana, Morocco and South Africa as well as Uganda. The project will be working to stimulate efforts and share experience where there is spontaneous social innovation to control land degradation.

Source: Field notes (W. Critchley)

For every creative farmer – woman or man – the process of innovation is driven by an enquiring mind. Innovators commonly integrate locally available resources, such as by recycling organic 'waste' materials that others discard. In dry areas, where water is the limiting factor, innovators will tell you that they 'don't waste a drop'. They capture rainfall runoff and channel it to vegetable gardens and orchards. There are various examples of farmers who use

The process of innovation is driven by an enquiring mind

rainfall runoff to carry animal manure in their own, low-tech, version of what agronomists call 'fertigation'. Some farmers innovate in crop and livestock husbandry practices and breeding; some in developing pesticides from local plant materials; others focus on post-harvest processing of products; and yet others create tools and machines. Indeed, many innovators experiment in multiple ways, simultaneously. Groups may come up with innovative ways of marketing; this is a form of 'social innovation'. Another example of social innovation is when a community organises itself to deal with a common problem on community land. Box 1 describes such a locally formed environmental association in Uganda.

Box 2: The 'Arilje method' of raspberry cultivation: a local innovation from Serbia

In the 1970s and 1980s, Dobrilo Nenadic was working as an extension agronomist in Arilje, Serbia. By chance, he stumbled across an innovation – and he had the skill to uncover and develop its potential. The innovation, which simply comprises removal of young raspberry shoots (which are usually allowed to grow alongside the fruit-bearing branches), came to light when one of the farmers whom he regularly visited decided to abandon his plantation after the harvest and removed the young shoots so that fruit picking would be easier. The following year, when Mr Nenadic visited the farmer's field, the new shoots had re-emerged vigorously, and were carrying good quality fruit – and an unexpectedly high yield. Mr Nenadic undertook various experiments and eventually established the combination of measures that, together with shoot removal, provided the best combination of yield, quality and profit. This innovation spread rapidly and, interestingly, women played a key role in promoting its adoption by showing each other what they had been able to buy (washing machines, etc) as a result of the profits: this put subtle pressure on their husbands. Not only is income from raspberry production important for local people's livelihoods, but it also provides them with the financial means to set up private enterprises: it creates the conditions for economic growth. The 'Arilje method' has become the accepted practice amongst raspberry growers and, in only a few years, this location has become the epicentre of raspberry production in Serbia.

Source: Treskic and Damljanovic 2007

Such local innovations – technical as well as socio-organisational – are the outcomes of a process through which people or individuals in a given locality discover or develop new and better ways of doing things, using locally available resources and their own initiative, without pressure or direct support from formal research or development agents.

If this local creativity is to be harnessed for agricultural research and development, then the scientific as well as the development communities need, firstly, to recognise and then become involved in improving and disseminating these improved practices, and – more importantly – to encourage the *process* of local innovation through 'participatory innovation development' (PID) (Wettasinha *et al.* 2006). In PID, all actors – farmers, development agents, research scientists and others – when they agree it is appropriate, come together in a process of 'joint experimentation' to further develop the local innova-

tions, integrating relevant information and ideas from other sources. Thus, the research and development agenda builds on local realities and initiatives.

SUPPORTING LOCAL INNOVATION IN RURAL SETTINGS

Two recent development programmes that focused on promoting and stimulating rural farmer innovation in Africa were 'Indigenous Soil and Water Conservation' and 'Promoting Farmer Innovation'.

Indigenous Soil and Water Conservation (ISWC) in Africa was an action-research programme supported by the Netherlands Directorate for International Cooperation (DGIS) which operated from 1997 to 2001 in seven countries – Burkina Faso, Cameroon, Ethiopia, Tanzania, Tunisia, Uganda and Zimbabwe. The programme recognised and celebrated local innovators – men and women (see Box 3) – who were developing new ideas in land husbandry on their own, and then used them as a source of inspiration for development. In each country, researchers and extension agents were trained in participatory research methods so that they could combine forces with these innovative farmers in a process of joint experimentation to improve the effectiveness of their innovations. The programme's achievements were substantial, not just in revealing the remarkable creative potential of smallholder African farmers, but in 'opening the eyes' of many researchers and extension agents to see – often for the first

time – this as a resource for development. The achievements of ISWC were published in the book *Farmer Innovation in Africa* (Reij & Waters-Bayer 2001) and in several magazines, journals and conference proceedings, as well as in various forms in the different countries. However, though some researchers, extension agents and farmers undertook experiments together, farmer-led participatory research as an alternative approach to agricultural research and development did not take firm hold among the institutions that were involved in the programme.

Box 3: Giving recognition to women's innovation in Tunisia

In Tunisia, one of the countries involved in ISWC, the local culture does not favour the idea of strange men going into a village and talking to women. Thus, it was a challenge for the ISWC country team, which was made up mostly of men, to identify women's innovations. The team therefore decided to invite a group of 15 women – mainly teachers and students from the city who were returning to their villages for the summer holidays – to help them out. The group was trained to conduct a study of women in their villages involved in farming and processing agricultural produce. Within two months, they had identified 31 women innovators. The women's innovations involved animal husbandry, cropping, handicrafts, use of medicinal plants, charcoal making and stoves, and processing milk from sheep and goats. This creative way of unearthing women's innovations helped many Tunisian researchers, development agents and policymakers recognise the innovative capacities of women.

Source: N Nour, B Chahbani and R Kamel, in: Reij and Waters-Bayer 2001.

Sanja Treskic



The innovator Mr Nenadic in between two members of the research team

Promoting Farmer Innovation (PFI), a project that ran from 1997 to 2000 in East Africa, was developed by the United Nations Development Programme (UNDP) and operated through host agencies in Kenya, Tanzania and Uganda. Focusing on soil and water management in dry areas, PFI was intended to be a pilot exercise within each country's National Action Programme under the Convention to Combat Desertification (CCD). PFI was very much a hands-on, action-oriented project, with the stated target of having 500 farmers – half of them women – adopt innovative technologies from other farmers within three years. It was favourably reviewed in October 1999, including two 'could do better' observations. These referred to a poor gender balance (too few women innovators had been identified) and lack of involvement of researchers in the overall programme. While gender balance was addressed with some success in the final year, PFI never managed to fully attract the interest and attention of researchers.

Nevertheless, the project was very effective on the ground: for example, in Kenya, 50 farmer innovators (16 of them women) were identified and, within three years, over 4400 farmers (60% of them women) had been taken to visit farmer innovators. In Uganda – the only country where an impact assessment was carried out – 700 farmers (at least) had adopted/ adapted innovations from farmer innovators (Critchley *et al.* 1999; UNDP 2001). PFI is featured in a 27-minute broadcast-quality documentary (UNDP 1999) and its basic

methodology is described in a forthcoming publication *Working with Farmer Innovators* (Critchley 2007). Box 4 highlights one of the innovators identified by PFI.

NGO-FACILITATED PARTNERSHIPS TO PROMOTE LOCAL INNOVATION

The experience and lessons gained from these two programmes served as a springboard for an international partnership programme called PROLINNOVA (Promoting Local Innovation in ecologically oriented agriculture and natural resource management). The programme was launched – initially in three countries – with inception funding from the International Fund for Agricultural Development (IFAD). Since 2003, with increased funding from several sources (the largest being DGIS), the programme has expanded to include 16 countries in Africa, Asia and Latin America. PROLINNOVA seeks to enhance local innovation systems in agriculture and to integrate participatory approaches to research and development into national institutions of agricultural research, extension and education. In each case, a local NGO convenes the major stakeholder institutions to design and implement a country programme.

As in ISWC and PFI, most partners in the PROLINNOVA country programmes started by recognising and documenting local innovations. This has been done through diverse means, including surveys, interviews, observations and seminars. These innovations have then been documented in various forms: catalogues, posters, magazines, photographs, radio and video

clips, etc. Such documentation has not only created the opportunity for formally educated agricultural professionals to recognise the potential of local knowledge and creativity, but has also given a sense of pride and self-confidence to farmers about their achievements. Researchers and development agents within the country programmes are now embarking on PID – joining with farmers in a process of farmer-led participatory research.

Simultaneously, the country programmes are placing strong emphasis on partnership building and learning at all levels as a means of mainstreaming PID within the relevant institutions. A common strategy used in all countries is to set up a multi-stakeholder platform at national or sub-national level – in the form of a Steering Committee – and to get key people from research, education and development institutions on board. They are involved in a continuous process of reflection on the roles of different stakeholders in supporting the personal and institutional change required for farmer-led research. Action is being taken on all fronts – education, research, extension and policy – to bring about such change. Universities and colleges are moving beyond conventional teaching methods to enable students to have not only the knowledge, but also the attitudes and skills to facilitate participatory processes. Some researchers are breaking with tradition and publishing findings of joint experimentation with farmers as co-researchers, and thereby giving value to such research. In some cases, development workers are using farmer-led experimentation as an approach to extension. Events at which farmer innovators communicate directly with policymakers are being used to draw attention to issues around local innovation.

Box 4: Grace Bura: Turning gullies into cropland in Tanzania

Grace Bura's husband is a retired teacher – and it is Grace herself who is the farmer in the family. In 1982 she acquired, and decided to reclaim, some severely gullied land. Her technique, which she developed herself, was to pack the gullies with strips/ checkdams of trash and soil 'sandwiches'. On top of these strips, she planted tree-cassava (These became strong vegetative barriers in due course, and the gullies filled up with sediment. The gullies gradually disappeared. In the PFI video (see above reference), Grace tells the interviewer that she has 'created new land to plant crops'. Other farmers in the area, Grace is not certain how many, learnt this technique from her as a result of farmer-to-farmer exchanges organised by the project. Being modest but also a good communicator, Grace was an ideal farmer to work with.

Source: Critchley *et al.* 1999

Grace Bura created new land to plant crops

Will Critchley



LESSONS AND CHALLENGES

The two projects, PFI and ISWC, taught us a great deal about working with farmer innovators and other partners – particularly extension agents and researchers – on the ground. Practical lessons were learnt. PROLINNOVA, on the other hand, which evolved from these two projects, has yielded important experience regarding networks, platforms and partnerships, and about institutionalisation of new concepts and practices.

Overall, our experience from working with farmer innovation in rural areas has been

very positive, although not without challenges, as discussed below. The main point is that farmer innovators were found to abound: nowhere did the programme partners fail to identify innovators with creative ideas: women and men, young and old, individuals and groups. Furthermore, the large majority of the innovators were very open and willing to share and learn from each other. Rather than simply copying the innovations of others, they were inspired to innovate further themselves. And most innovators responded well to the idea of organising themselves into groups for mutual support, although there were always a few who preferred to go it alone. Probably because the farmer innovators were receiving praise and recognition for the first time, they welcomed the agricultural extension agents much more cordially than previously, when the outsiders had come in only to instruct. Both sides were more ready to listen to each other and thus the door was opened for collaboration in continuing the process of innovation, integrating both the ideas of the farmers and the ideas that the extension agents were bringing from outside. Thus, recognising local innovation is one promising entry point to empowering farmers and laying the foundation for participatory innovation development and, ultimately, to improving farmers' livelihoods.

One challenge we have faced is in keeping the spotlight clearly on current, local innovation. While traditional practices can be good and worthwhile, it is the dynamic and adaptive process of innovation by individuals and groups that we are trying to recognise and to strengthen. Sustainability lies in the capacity of farmers to continue to innovate in the face of constant change, so it is this capacity that we are trying to promote.

Another key challenge is in building capacity and changing entrenched mindsets amongst both the scientific community and decision-makers. It is not so long ago that smallholder farmers' practices and knowledge were derided as being inefficient and obsolete. Therefore, pointing out the potential of local innovation represents a revolution in thinking. But many scientists still see this simply as going backwards instead of forwards and many find it difficult to accept a demand-driven farmers' agenda. But there are always some who warm to the idea of joint

experimentation. Capacity building and change in attitudes cannot be achieved simply through training and orientation seminars alone – but through positive on-the-job experience.

In working with local innovation, issues of intellectual property rights cannot be avoided. The need to patent local innovation may occasionally arise, notably if an innovator hopes to generate income from a particular niche. However, vibrant innovation systems thrive from open and frequent sharing among people with different experiences and ideas. Our efforts to promote rural innovation have focused on innovators who are eager to share with and learn from others. They do, however, expect to be given recognition for what they have achieved. It is therefore important to 'give credit where credit is due', by naming innovators and rewarding them with the chance to learn more.

OPPORTUNITIES TO PROMOTE LOCAL INNOVATION IN URBAN FARMING

Farmers in urban settings are also involved in looking for new and creative ways to improve their farming and other productive activities, perhaps even more so than their rural counterparts on account of the specific conditions in urban settings such as limited space, intensive competition for resources, increasing demand for fresh and safe food, and opportunities to recycle urban waste. Migrants from rural to urban areas often end up having to adapt and innovate simply to survive – and urban farming is one option. Recognising local innovation in urban farming, bringing different innovators together to learn from each other and working together in joint experimentation could lead to forms of farming that are better adapted to the urban conditions of the city, effective in the use of limited resources, contributory to environmental sustainability and acceptable to city authorities.

From our experience of working with local innovation in rural areas, we see the following opportunities and possible challenges for stimulating innovation in urban agriculture.

- Recognising and documenting local innovation would certainly be a good starting point also in urban areas. Such documentation could yield many benefits. Many different stakeholders

within the city will be exposed to what these innovators are actually doing and realise that they make a positive contribution to the city. By giving due recognition to the innovators, such documentation could help to overcome the common perception that urban farmers are more of a hazard than a help.

- As in rural settings, partnerships among diverse stakeholders will be vital to promote the process of innovation in urban settings. However, the range of stakeholders within an urban setting is likely to be far more diverse than in rural areas, involving public health workers, municipal authorities, consumer groups, housing associations, waste management entities and others. It is obvious that these stakeholders have conflicting agendas. Thus, such multi-stakeholder partnerships would be more complex to facilitate, and would certainly demand more facilitation skills.
- Supporting a process of innovation means looking beyond technologies and practices to new forms of social organisation; in the case of urban agriculture, this may include innovations in the legal sphere. Creative ways through which migrants have gained legal access to land or water. Contractual agreements made between urban and rural residents in order to stay within city laws are examples of the latter.
- Women play an often invisible but nevertheless important role in local innovation in rural settings, and may be equally or even more involved in innovation in urban agriculture; it would be necessary to take a close look at the gender roles in innovation and participatory research in cities and to ensure due recognition of women's contributions.
- Sharing local innovative practices with others who could benefit from and/or further adapt them is crucial in keeping the process of innovation going. Such sharing becomes easier in urban areas because people live in closer proximity, but ethnic and other social boundaries may still need to be overcome.
- As funding for agricultural research and development has almost exclusively been meant to benefit rural areas, there will inevitably be more difficulties in accessing funds for supporting research

and development in urban agriculture. Furthermore, this will be possible only where urban agriculture is legalised. However, there may be opportunities to access municipal funds for supporting local innovators in urban settings, especially if these innovators are at the same time helping to solve urban problems, such as waste disposal (see Van Beek and Rutt, this issue).

- Those supporting urban development generally have little or no background in agriculture and natural resource management, and will inevitably need relevant training – in addition to capacity building in recognising and supporting local innovativeness, just as it is also needed by rural development agents. Lobbying and policy advocacy will also be required so that promoting local innovation in agriculture is recognised as an approach to urban development.
- With many research institutes being located in or near cities, distance has made it difficult to get researchers to work together with local innovators in rural areas. With urban farmers being literally on the doorsteps of the researchers, it may be less of a challenge to get them involved in participatory innovation processes in urban farming.
- Cities are areas where many young people with relatively good education often find themselves without regular work. The energy and ideas of youth could be harnessed in programmes that stimulate people to search for creative ways of using the multitude of resources available in cities.
- In areas where programmes promoting rural innovation are in the vicinity of cities, there would be good opportunities to link emerging urban agriculture programmes to learn from the principles being applied in the rural settings.
- Currently, many donors are interested in supporting innovative approaches to creating ‘green cities’, so looking for, and building on, local innovation in urban agriculture is an opportunity not to be missed: the time is ripe.

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Training in Local Innovation for “Focus City” Researchers, Change Agents and Community Leaders

On the 29th and 30th November a course was held at Makerere University, Kampala, Uganda for Researchers, “Change Agents” and Community Leaders under the Focus City (or “Sustainable Neighbourhoods in Focus – Kampala”) project. The training was given by William Critchley, Ronald Lutalo and Sabina Di Prima under the PROLINNOVA programme. Attended by 10 men and 8 women, the course

was targeted at local innovation in urban agriculture, and focused on improving skills in the processes of identification, selection, characterization and joint experimentation. Dr Shuaib Lwasa, the project coordinator, expressed his satisfaction with the course, and looks forward to continued collaboration with PROLINNOVA.
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Future (CFF) and CIP’s Urban Harvest programmes, about ways to support urban producers engaged in innovation processes. Two articles in this issue are from the Urban Harvest programme.

Following these two introductory articles, this issue presents 19 case studies on agricultural innovation in cities around the world. This issue of the UA-Magazine takes stock of a broad range of experiences related to innovation by urban farmers and the efforts of other actors to support the farmers’ initiatives. It explains concepts and gives examples of farmers’ innovation and how it is being stimulated. Contributions are on technical innovations in vegetable farming for confined spaces (for example in Colombia and Sri Lanka), social innovation as in community based agriculture (as shown in examples from USA and South Africa) or innovation in marketing and entrepreneurial agriculture (as presented in the articles on USA (SPIN) and Ethiopia). Also technical innovations

in water use (from Ghana and China), in livestock production (from Democratic Republic of Congo and Peru), and waste recycling (Uganda and Ethiopia) are presented. These experiences show that technical innovations often have to go together with organisational or institutional innovations (as is argued by de Zeeuw and Prain in this issue and illustrated by the articles on the development of Farmer Field Schools in Peru and new ways of urban planning in the USA). Special emphasis in this issue is given to the use of participatory methodologies for promoting innovation in urban farming systems. Together, these articles cover a wide spectrum of experiences from a total of 18 countries in the North and the South.

We would appreciate your comments on the articles in this issue and welcome further reports on your own experiences in stimulating innovation in urban agriculture.