

Policy Brief

Combining local innovative capacity with scientific research



Policy pointers

- Exposure of research and development staff to small-scale farmers' innovation makes them realise the importance and potential of local knowledge and initiative. Research and development managers should make ample space for such exposure.
- Contributions of scientists that engage meaningfully in joint experimentation processes should be recognised by the management of their organisations. Scientists should be encouraged to publish jointly with farmers.
- It remains difficult for farmer innovators to access funds for their own research and innovation, and to draw in scientific knowledge to support their efforts. Decentralised research funding should be made more accessible to farmers, in amounts that permit complex forms of farmer-led research that benefit from greater participation of scientists.
- Policymakers should recognise that building local adaptive capacity – though time-consuming – leads to resilience, which in turn enables communities to respond effectively to new challenges and opportunities.

Supporting small-scale farmers to build on their innovations through farmer-led joint research with scientists is one way to strengthen the resilience of rural communities and help them thrive in a fast-changing world.

Small-scale farmers and other land-users in Africa are confronted with rapid changes as they try to maintain and improve their livelihoods. Globalisation brings both opportunities and challenges. Increased competition for their products and degradation of their natural resource base threatens the sustainability of their efforts. Climate change is posing even more challenges and putting some of their age-old farming practices into question.

Experiences of PROLINNOVA partners and others show that small-scale farmers are persistent innovators in adapting to changing conditions. Women and men, individually and collectively, are finding new and better ways of doing things, using their own resources, on their own initiative and without direct support from external service providers. Such a process enables them to deal with change as they see it happening, and thereby to become more resilient.

Community resilience

PROLINNOVA partners in the Combining Local Innovative Capacity with Scientific Research (CLIC-SR) project in Eastern Africa defined resilience at local (community) level as the ability to use available resources to respond to, withstand and recover (“bounce back”) from change. It means being able to survive, adapt and thrive in an environment characterised by uncertainty and unpredictability. Some key elements of resilience at community level are diversity, avoiding unnecessary dependence, flexibility and dynamism with quick feedback loops to be able to respond to changes observed.

To be prepared for the unknown, communities need strong social capital or networks of people, including linkages with people outside the community, so that community members can share, learn and innovate continuously. Practising innovation is like developing muscles and constantly exercising them so that there is local strength to deal with a broad range of unpredictable forces.

Facilitating a participatory approach to developing local innovations in agriculture and natural resource management (NRM) can strengthen the adaptive capacities of farmers and communities to deal with change. Local people involved become more proactive and are better able to analyse their situation and the changes affecting them, including those with a longer-time

horizon. They are encouraged to collaborate and pool energies and knowledge, to experiment systematically with alternative options and to become better linked to other actors with whom they can continue to design and implement adaptive action to address newly emerging problems. They thus become more resilient to shocks and stresses in a constantly changing environment.

Farmer-led innovation & joint experimentation

The PROLINNOVA partners deliberately try to capture and enhance the creative energy that exists to a greater or lesser extent in all rural communities but is overlooked by most people and projects trying to intervene in local development processes. Participatory innovation development (PID) is a process of joint research, in which scientists and development practitioners join hands with small-scale farmers to further develop, test and adapt local ideas and initiatives, combining scientific and local knowledge.

PID brings experiences, knowledge and action together in a way that generates new solutions – as well as the ability to continue doing so. In the process, the insights and perceptions of all involved – farmers, scientists, extension staff, others – are treated equally and, where they seem to contradict, informed choices are made jointly on the

most feasible innovation pathways. Involvement of field extension staff in the process creates openings at local level for sharing results through the rural advisory system. Involving community members in assessing research results and sharing findings encourages farmer-to-farmer extension.

However, research funds to support such joint research based on local innovation are often absent. PROLINNOVA partners have pioneered Local Innovation Support Funds (LISFs) for this purpose. LISFs are financial resources co-managed by communities and used exclusively for supporting small-scale farmers and other land-users to engage in PID. LISFs are used for buying materials for experimentation, hiring in external resource persons, undertaking study visits to support the local research and enabling exchange in other ways.

Drawing on its experiences in promoting farmer-led joint innovation that builds on the creativity of local people, the international PROLINNOVA network applied this approach in building local adaptive capacities and strengthening community resilience to various types of change, including climate change, in the 4-year project CLIC-SR, which ran from 2012 to 2016. It built the capacity

Farmer–scientist interaction in PID in Kenya

Having observed that the rains had become shorter and more erratic, Simon Masila, a small-scale farmer in Machakos County, Kenya, came up with an innovative way to grow finger millet. He sowed it in small hand-watered nurseries near his home and, after the onset of the rains, he transplanted the seedlings into his main field. Despite low rainfall, his crop flourished compared to fields of his neighbours, who had broadcast the seed directly – their crops failed completely. Moreover, the transplanted finger millet developed multiple tillers per plant. This innovation helps to save seed while increasing yield. Simon was awarded funds from the community-managed LISF to support further experimentation on timing of nursery establishment.



Finger millet transplanted from the nursery growing with several tillers (Photo: Geoffrey Kamau).

This attracted the attention of researchers in the Kenya Agricultural and Livestock Research Organisation (KALRO), who negotiated a PID process with farmer groups in Machakos to validate this local innovation and to assess different nursery sizes and management methods for the nursery and the transplanting. The joint experimentation was done on a common plot as well as on the land of individual farmers, which included Simon's own experiment. The experimenting farmers recorded the data and the scientists helped analyse them. The farmers and scientists confirmed that finger millet raised in nurseries gave higher yields than when the seed is broadcast in the field. Women also noted that the transplanted millet is easier to harvest, as the plants are taller (so no need to bend) and grow in rows.

Farmers who were not part of the PID established their own nurseries the following season. Some farmers applied the innovation to other crops such as watermelon, maize and butternut. The innovation led to a resurgence of finger millet production – welcomed by women who use this nutritious grain to make cakes, porridge and local dishes such as ugali and chapatti. This innovation is enhancing food security in Machakos by stabilising crop production by small-scale farmers. The PID process stimulated more farmers to innovate and thus enhanced capacity in the community to solve other challenges they face.

Karanja *et al* in Letty *et al* 2016¹

¹Letty B, Wettasinha C & Waters-Bayer A. . 2016. A compilation of cases of joint experimentation from Ethiopia, Kenya, Tanzania and Uganda (http://www.prolinnova.net/sites/default/files/documents/thematic_pages/clic_sr/compilation_of_cases_of_je_070916.pdf)

Development of an improved beehive design in Moyo District, Uganda

Fred Matalocu, who has been a beekeeper for 20 years, developed a transitional beehive. His motivation for coming up with this innovation was his long-standing interest in bees and his wish to increase his household income through beekeeping activities. He also found the conventional hives to be unaffordable, and he felt that the colonisation rate for both conventional and traditional beehives was low, reducing net honey productivity. Because of these limitations, he decided to construct through a trial-and-error approach a new beehive using locally available materials.



Farmer Fred Matalocu displays his transitional beehive during a honey exhibition in Kampala (Photo: Noel Alabi).

Fred was identified by the PROLINNOVA–Uganda coordinating organisation Environmental Alert. He responded to a call for applications to the LISF, and his innovation was selected to receive funds to support farmer-led joint experimentation. Using these funds, Fred set up the experiments at his farm. He used locally available materials such as bamboo, timber, old iron sheets, cow dung, reinforced polythene sheet and nails. He developed a new design for the hive which reduced the size. He selected local trees that produced timber with a good smell, which attracted bees to colonise the hive. The PID process was undertaken together with Environmental Alert, Moyo District Production Department, Abi Zonal Agricultural Research and Development Institute and the political leadership in Metu Sub-county.

With the aim of promoting the innovation beyond the locality where it was developed, Fred has been supported to attend various fora and events at district (e.g. World Food Day and World Environment Day celebrations) and national level (e.g. National Honey Week), where he exhibited and shared experiences and challenges about his innovation among fellow farmers as well as with policy- and decision-makers.

Further development of his transitional beehive is ongoing. Additional evaluation will be conducted by members of the innovator's farmer group. Transitional beehives were distributed to 13 farmer groups (each with 25–30 members) within the region for further testing and assessment. Fred will be working closely with the groups in this process.

Sekate & Zake in Letty *et al* 2016

of local organisations working in agriculture and NRM to support smallholder communities in their efforts to adapt to change. By sharing the lessons about farmer-led adaptation and the relevance of PID in this process, it sought to mainstream PID as an accepted approach in national policies and programmes related to agricultural development, NRM and climate-change adaptation.

The activities in the CLIC–SR project were carried out in two districts in each of four countries in eastern Africa: Ethiopia, Kenya, Tanzania and Uganda. Field studies were made to assess how communities try to respond to changes in their environment and adapt on their own initiative. Farmer-led joint innovation involving interested scientists and building on a number of local initiatives identified through the field studies were implemented and documented. Community groups as well as local government organisations and civil-society organisations (CSOs) that are supporting them were trained in implementing PID to address effects of change.

Engaging with policymakers to facilitate change

An enabling policy environment is essential for bolstering resilience to change among small-scale farmers and their communities. Policymakers need to recognise that

building local adaptive capacity leads to resilience, which in turn enables communities to respond effectively to new challenges and opportunities. Farmers themselves can be particularly effective in influencing policymakers, based on what the farmers have created themselves. During the course of the CLIC–SR project, farmers have been speakers and exhibitors of their innovations at high-profile events related to strengthening community resilience through farmer-led joint innovation and adaptation. A notable highlight was the Eastern African Farmer Innovation Fair held in 2013 in Nairobi, Kenya, where 50 farmer innovators from the four Eastern African countries involved in CLIC–SR displayed their newly identified innovations with key policymakers, research and extension managers, students and the general public.

Through CLIC–SR, PROLINNOVA partners in the four countries engaged in policy dialogue in order to influence national and regional policies to recognise the importance of strengthening community resilience by building local adaptive capacities through PID. They made inputs into numerous policy processes, based on the evidence generated through the project on the ground, and organised events such as innovation fairs and conferences.

Lessons learnt for practice

- Small-scale farmers are creative, but scientists can contribute their knowledge to build on farmers' ideas about how to respond to climate change and other challenges they face. Farmers can bring in their knowledge when the research idea is formulated and they can collect data that they regard as relevant and bring their insights into analysing the results.
- It is often only when scientists show interest in what small-scale farmers are doing that the farmers begin to realise the potential of their innovations. This raises the farmers' self-esteem and confidence and encourages them to seek closer contact with formal researchers to support farmer-led joint experimentation and documentation of local innovations. The farmers also become keener to seek information from scientists.
- Scientists can support farmer-led innovation and development by formally verifying that local innovations are effective and safe for other farmers to apply. This farmer–scientist interaction not only serves to validate or improve local innovations but can also support farmers in certifying their products (e.g. by the National Bureau of Standards), which leads to higher consumer safety and satisfaction as well as higher income for the farmers.
- Farmer-led joint research based on local innovation involves complex dynamics and requires long timeframes. The scientists, agricultural advisors and others engaged in the process need to maintain persistence and consistency to be able to produce results appreciated by all involved, and the multistakeholder interaction needs to be facilitated with sensitivity. The process needs continuous attention to inclusiveness, from framing the questions and designing the experiment through implementation of the experiment and analysis of results, and on to applying and sharing the results to solve problems and meet needs of others in the community and beyond.

- For wider dissemination of results from farmer-led joint experiments with scientists, it is important that people from local governments, media, CSOs and extension workers also take part in the process and are given recognition for their contributions.
- Formal research becomes more relevant for small-scale farmers if it builds on local knowledge and innovation.

Eastern African Farmer Innovation Fair (EAFIF)

The EAFIF took place in May 2013 in Nairobi, Kenya. Fifty farmer innovators from Ethiopia, Kenya, Tanzania and Uganda came together to showcase their innovations to a wider audience. The fair was not only a celebration of farmers' creativity but also gave them public recognition. The fair was opened by a delegation of special invitees from different stakeholder groups, ranging from government research institutions to CSOs and the private sector. Thereafter, it was open to the general public and attracted nearly 1500 visitors. There were daily panel discussions between experts and farmer innovators as well as media coverage through Kenyan TV and newspapers, Facebook and Twitter. The farmers were encouraged and enthused by the opportunity to discuss their ideas and concerns directly with policymakers and practitioners in agricultural research and development, and these equally appreciated being able to hear first-hand about the farmer innovators' experiences. This and other similar encounters create the backdrop for bringing about much-required policy change to support local innovation and PID as a way to strengthen community resilience.

(Source: www.prolinnova.net/content/eastern-african-farmer-innovation-fair-kenya-2013)

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PROMoting Local INNOVation in ecologically oriented agriculture and natural resource management is a community of practice involving partners in several countries in Africa, Asia and Latin America. Initiated by CSOs, this Global Partnership Programme under the umbrella of the Global Forum on Agricultural Research (GFAR) embraces both state and non-state organisations. It promotes recognition of local innovation by women and men farmers as an entry point to farmer-led participatory research and development. The ultimate aim is to integrate this approach into institutions of agricultural research, extension and education. Funding has come mainly from the Netherlands and French Governments, the Rockefeller Foundation, GFAR, Misereor and partners' own contributions.

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