

# Learning from Covid-19 to improve food and nutrition security

By Vincent Mariadho, Prolinnova–Kenya coordinator



Farmer innovator Benigna Muumbua shows her fruitfly trap to visitors in her orchard in Makueni, Kenya.

*Credit: Chesha Wettasinha*

## Coronavirus and innovation

With the advent of the coronavirus disease Covid-19, local innovation may reveal itself to be the proverbial stone that builders rejected but became the cornerstone of agricultural development. As the world was subdued by the pandemic, local ingenuity came to the fore and is providing many needed innovations. Solar-powered ventilators, hand-washing equipment and application programmes (apps) to trace contacts are just some examples of homegrown solutions that people developed to keep life going during the pandemic. These innovations were key in addressing not only health issues but also socio-economic challenges as well as ‘erecting immune walls’ for both long- and short-term resilience of rural communities in the face of the pandemic.

Moredreck Chibi, the African Regional Innovation Advisor to the World Health Organization, stated that there is now a great need for investing in innovation as a fundamental shift in Africa’s conventional business model.<sup>1</sup> With studies indicating that Covid-19 is likely to have longer-term impacts on

food security, income, debt, education, poverty levels and health, Moredreck’s advice to invest in innovation is crucial. Even as we await the longer-term economic implications in Kenya and the wider world, these are already becoming obvious with the steady and rapid rise in the cost of living.

Homegrown solutions can be very effective not only in dealing with new challenges to human health, such as Covid-19, but also in dealing with other related challenges, such as how to achieve food and nutrition security under rapidly changing and unpredictable conditions. Even before Covid-19 appeared, food and nutrition insecurity was already a global challenge, especially among rural communities in developing countries; its effects have worsened the situation. The current conventional top-down research and development approaches are not well placed to respond adequately and quickly to these challenges. There is a dire need to rethink our approaches, especially in agricultural research and development (ARD) institutions, in order to deal with the additional shackles of Covid-19.

## Need to retool

ARD approaches must be retooled in a way that promotes the harnessing of small-scale farmers’ local knowledge, creativity, and ingenuity – and it is here that the Participatory Innovation Development (PID) approach to ARD reveals its great importance. The Prolinnova (Promoting local innovation in ecological agricultural and natural resource management) network has promoted this approach for over two decades. Prolinnova–Kenya<sup>2</sup> has been part of this international network since 2007.

The PID approach starts with identifying farmers’ local innovations and uses these as entry points to farmer-led joint research involving various other stakeholders and experts (e.g. formal scientists, agricultural advisors) guided by farmers’ aspirations and desires. It is thus farmer-led. This differs from ‘business-as-usual’ in ARD, in which various development interventions have been focused on ‘modernising’ agriculture using high levels of external inputs and proposing ‘blanket’ solutions to the challenges farmers face. This approach may increase agricultural productivity in the short term, but it is often unsustainable and may not succeed in slaying the dragon of food and nutrition insecurity because it is top-down and, in most instances, the inputs are in hardware form in the name of technology transfer and are costly to adopt. As a result, resource-constrained farmers often abandon these externally developed and introduced technological innovations (if they even try to adopt them), leaving behind so-called ‘white elephants’.

## Small-scale farmers’ response to costly ‘modern’ agricultural technologies

When small-scale farmers cannot meet the high cost of adopting the introduced technologies, they resort to their own innovations, which often prove to be more cost-effective, locally suited, and sustainable, than similar technologies introduced from outside. Unfortunately, despite the obvious contributions of these local innovations in agricultural development, the agricultural advisory

services have given them little attention in the past. Some advisors perceived these practices as being ineffective, too local and unmodern. The advent of the pandemic has led to a change in attitude about this among ARD actors as they learn from the use of homegrown innovations in the fight against the pandemic and, in this light, begin to review their conventional approach to ARD. There seems to be a growing appreciation that many of the challenges faced by small-scale farmers are area-specific, as the farmers innovate on a local scale to survive. The farmers should be actively recognised as co-creators of knowledge, building on both traditional knowledge and on ideas (not technology hardware) coming from elsewhere.

One example of this type of local innovation is Maurice Agembo's locally fabricated chicken-egg incubator. This innovative farmer and welder in Kisumu County on Lake Victoria embarked on his innovation after being frustrated by the frequent power outages in his rural area, which left him with abortion of chicken eggs (and thus loss of his investment in an electricity-powered incubator) during every hatching cycle.

The incubator that he then developed on his own has both AC/DC options and can be powered by solar energy that stores the charge for about six hours if the main electricity supply goes off. Using his innovation, Agembo has been able to reduce the rate of abortion resulting from power outage to zero. Indeed, he now hatches chicks for community members at a cost of 0.25US\$ per egg. In addition, he buys eggs from local farmers at a cost of 0.1US\$ per egg, hatches them and then sells chicks at 0.5US\$ per day-old chick, 1.5US\$ per three-week-old chick and 2.5US\$ per one-month-old chick. Even in the midst of the pandemic, he continued to increase the supply of local chicks.

#### **Dire need for a shift in intervention**

Shifting towards interventions that involve recognising and building on farmers' experiences and accumulated knowledge as well as their local technological and socio-organisational skills



Maurice Agembo, farmer innovator in Kisumu, Kenya, showing his chicken-egg incubator.

*Credit: Vincent Mariadho*

rather than high-external-input 'modernisation' is a sure deal for decentralised rural development, which has higher chances of sustainability when crises such as a pandemic hit. This is because most local innovations result from farmers' curiosity and ingenuity in using locally available resources in more effective ways, often in site-specific responses to various changes in climatic conditions, the state of natural resources and market demands. Some local innovations emerge out of farmers' informal experimentation (trying out different ways of doing things) in the face of new challenges – and are very specific to the prevailing issues in their environment and society. It is easier for nearby farmers to try out and adapt these innovations on their own farms, as they fit well into local practices and agroecological conditions and most or all of the resources and materials are locally sourced.

An example is Ms Benigna Muumbua's organic fruit-fly trap. Benigna is an innovator in Makueni County in Eastern Kenya, where fruit production is the predominant form of farming. She continually faced the challenge of fruit-fly invasion in her orchard. When she purchased conventional external inputs to control the fruit flies, this made her costs of production very high. She therefore decided to make a concoction of local ingredients

to make a fruit-fly trap.

The concoction was improved in farmer-led joint experimentation involving stakeholders from the Ministry of Agriculture, research organisations, NGOs, the County Administration and extension service, farmer organisations, community members and the ProInnova-Kenya network coordinator. Benigna's innovation is paying off, as she no longer needs to worry about fruit-fly damage and she need not make expenditures for agrochemicals. Covid-19 did not affect her fruit production system.

#### **Sustainability of local innovation processes**

Local innovation is not a theory, but it has taken the coronavirus pandemic to open people's eyes to recognise its existence and efficacy. The pandemic is making ARD actors in government institutions see the opportunity in seeking local solutions – also to the problems brought about by the pandemic – in the many homegrown innovations that small-scale farmers are developing on their own initiative. Building on these local capacities is what needs to be scaled up through wider application of the PID approach. Achieving the sustainability offered by local innovation processes calls for integrating experiential and participatory learning methods within the rank and file of all

institutions of ARD, such as agricultural research organisations and advisory services, farmers' groups and all other actors concerned with food and nutrition security.

It also calls for collaboration between learning institutions at all levels with communities of practice and other development partners to establish linkages between students and farmer innovators, as a way of moulding future development professionals who are open to engaging with small-scale farmers in PID. This would also contribute toward greater recognition by academics and formal researchers of the important role played by small-scale farmers in co-creating agricultural knowledge.

These ARD actors should also encourage and support initiatives aimed at documenting, sharing and spreading local innovations, innovativeness and PID processes to show appreciation of the invaluable contributions of small-scale farmers in keeping the country well fed and healthy. Within Prolinnova–



Benigna Muumbua with her fruitfly trap; looking on are (from the right) her husband John Musumbi, Prolinnova-Kenya coordinator Vincent Mariadho and Makueni Local Steering Committee Chair Daniel Muia.

Kenya, we have found that such initiatives can easily continue despite the Covid-19 pandemic, especially by using mobile phones in the documentation of local innovation and PID processes.

Credit: Pas Negesa

- 1 <https://www.scidev.net/sub-saharan-africa/news/covid-19-could-be-springboard-for-african-innovations/>
- 2 [www.prolinnova.net/kenya](http://www.prolinnova.net/kenya)

## Recognising farmer innovation in water management in northern Senegal

By Oumy Ndiaye, Project Officer, AgriBio Services/Prolinnova–Sénégal & Abdel-Karim Ali Mahamane, Prolinnova Subregional Coordinator for West & Central Africa.

Under the umbrella of Prolinnova–Senegal, the NGO AgriBio Services, based in Thiès, organised a day of experience sharing as part of the celebration of Prolinnova's "International Farmer Innovation Day" (IFID) on 29 November 2021. It brought together 11 male and 8 female innovators active in Proli-GEAFaSa (French acronym for “Promoting local innovation in water management in family farming in the Sahel”), a 3-year project funded by Misereor (Germany) and implemented in Burkina Faso and Senegal. This project promotes innovation and participatory innovation development in water management led by family farmers in a context of climate change and water scarcity.

The event was hosted by the municipality of Ross Béthio in the Saint Louis

Region in northern Senegal and was held on the grounds of the Dagana Departmental Delegation of SAED (*Société Nationale d'Aménagement et d'Exploitation des Terres du Delta du Fleuve Sénégal et des Vallées du Rivière Sénégal et de la Falémé*). This is a state company with the mandate to promote development of irrigated farming on the southern bank of the Senegal River and in the Falémé Valley.

The IFID celebration attracted diverse stakeholders in agriculture: people from farmer organisations, local authorities, agricultural advisory services and governmental institutions of agricultural research and education. A highly participatory approach was taken to make it possible for innovative farmers to meet on the same level with the other stakeholders and to explain

their innovations and challenges in terms of managing water for farming.

### Innovation Fair

The farmers presented their innovations through posters at individual stands in a small innovation fair. All 19 innovations were somehow related to water management in agriculture. They included an innovation by the Dieuleuss Thiagar Farmer Group, which grows rice in an irrigation system set up by SAED, using pumps run on electricity. The farmers saw that the irrigation water drained from the plots was diverted to the ocean and thus wasted. They therefore suggested using a diesel pump to re-introduce the drainage water into the main irrigation canal so that the water could be re-used and energy costs could be reduced. SAED welcomed this

idea and provided a diesel pump for the group.

This reduced the need to pump so much water for the rice plots using electricity. As a result, the time using the electric pump could be reduced from 8 to 5 hours per day and the group's electricity bill for a cropping season went down from 5 to 3 million FCFA. After calculating the costs for the diesel for the season (393,000 FCFA), the farmer group found that its innovation had reduced the total costs of energy by 1,607,000 FCFA (about 2450 Euro or 2050 GBP).

Some other local innovations presented during the small fair were fish farming, a nursery for producing okra and various technologies to produce onions and other vegetables and fruits. For example, the innovation in onion production is the use of 50mm PVC pipes buried as an irrigation system in the onion beds.

Seven of the other (non-farmer) participants spoke about the importance of farmer innovation – above all, the



Woman innovator receiving a certificate of participation.

Credit: Abdoulaye Watara

need to recognise these farmer-led processes as providing entry points for collaboration to make Senegalese agriculture more efficient and more resilient. These participants also addressed the issue of the cost of

irrigation for agricultural producers and highlighted the importance of farmers' groups and unions in order to reduce some of their expenses. The president of the federation of self-managed irrigated perimeters (with the French acronym FPA) spoke about the contribution of projects such as ProliGEAFaSa in reducing rice production costs.

#### Wide coverage

The presence of national and local mass media (TV, radio, newspapers) permitted wide media coverage of the event, thus creating a strong advocacy platform for the farmers, directed to the highest authorities, in their call for recognising local innovation as a lever for agricultural development by family farmers. This was also highlighted in interviews given to the media by Djibril Thiam, the coordinator of the ProInnova–Senegal multistakeholder platform, and by Abdel-Karim Ali Mahamane, the coordinator of ProInnova activities in West and Central Africa.

*Footnote: ProInnova (Promoting Local Innovation in ecologically oriented agriculture and natural resource management) is an international multi-stakeholder community of practice that promotes small-scale farmers' innovation in agroecology and their leadership in participatory research.*



Farmer group develops way to reduce irrigation costs.

Credit: Abdoulaye Watara