

Research and innovation

The Global Forum on Agricultural Research (GFAR) brings together all those working to strengthen and transform agricultural research for development around the world. As part of this role, GFAR is working with New Agriculturist to showcase and raise awareness of important initiatives and their outcomes, to update and inspire others.



Extension

Revitalising extension and advisory services, and strengthening their linkage with other actors in agricultural value chains, are fundamental to the future of agricultural and rural development, helping smallholder farmers to increase productivity and improve their livelihoods and address climate changes and environmental degradation. In this edition, GFAR highlights some alternative and innovative approaches to extension that have strengthened the capabilities of smallholder farmers in West Africa, the Caribbean and South Asia.

Virtual outreach: connecting farmers in the Caribbean

Small farmers dominate farming in the Caribbean, where state extension and advisory services are financially stretched. To help small farmers in the region, a team of researchers has made use of mobile 'smart' phones to improve the accessibility of relevant agricultural knowledge and information.

Extension approaches for small farms in Bhutan

Varying environmental conditions and isolated farming communities scattered across Bhutan's valleys, ridges and slopes has made the provision of extension services a serious challenge. But the community of Salamjee has changed its farming landscape by introducing sustainable land management technologies.

Farmers on film in the fight against striga

In West Africa, ICRISAT has built on experiences gained by AfricaRice in developing a series of ten farmer-to-farmer videos. The ten films are now being widely shown to support rural learning on practical and affordable ways to control one of Africa's most serious weeds - striga.

Farmers on film in the fight against striga



Juliana Toboyee from Ghana, gives the go ahead sign for action
©Marcella Vrolijk

With the widespread scaling back of agricultural extension services in Africa, those with a responsibility to deliver information to rural communities are learning to follow new channels. In West Africa, the International Crops Research Institute for the Semi Arid Tropics (ICRISAT) has built on experiences gained by the Africa Rice Center (AfricaRice) in developing a series of ten farmer-to-farmer videos. The ten films are now being widely shown to support rural learning on practical and affordable ways to control one of Africa's most serious weeds - striga.

Strong participation of farmers has been key to the film making process. First and foremost, the knowledge and farming techniques shared in the videos have been developed over a number of years within farmer field schools. ICRISAT and partners established the schools, starting in the early 2000s, to support farmer experiments on a wide range of striga control options. The result was the development of an integrated set of striga and soil fertility management practices (ISSFM) for use in sorghum and pearl millet cultivation.

Production process

In 2010, inspired by AfricaRice's rural learning initiative, which managed to reach over 1 million farmers through farmer-centred videos, ICRISAT commissioned the former coordinator of this initiative, Paul Van Mele, to train staff from its own offices and partner organisations in farmer-to-farmer video production. Working with farmer field school groups in Niger, Nigeria, Ghana and Mali, a comprehensive series of ten gender-sensitive films was made under the name 'Fighting Striga'. Each video focusses on a different aspect of ISSFM, including variety testing, composting, intercropping cereals and legumes, crop-livestock interactions, cowpea seed storage and cost-benefit analysis.

For the past 40 years, scientists from international research organisations have invested heavily in finding solutions to striga, one of the world's most troublesome weeds, also known as witchweed. Of great concern to African farmers, this parasite seriously damages maize, sorghum, millet, rice and fonio. While developing striga-resistant varieties has been a key area of research for striga control, researchers have also developed insights in how soil fertility management and other options can help to reduce striga.



Joel Aiki from Nigeria films a woman drying cowpea seed
©Marcella Vrolijk

Building on the experiences of AfricaRice was crucial in enabling the videos to be effectively planned and produced within a short timeframe. As a result, all ten were completed in both English and French and ready for wide-scale dissemination within a year. But Van Mele acknowledges that developing effective videos requires careful planning and coordination of mixed video teams that include members of national research institutes, NGOs and farmer organisations. Engaging senior management of all these organisations to understand the specific challenges of producing farmer-to-farmer videos has proved essential in getting the full involvement of their staff in the process.

Reaching the audience

Disseminating the videos for widespread viewing has been another challenge. Initially, ICRISAT and its partners used the videos during farmer exchange visits, and several were shown and discussed at community open air viewings. Held in the evenings, these attracted large crowds of children, women and men. Christine Keita, a Malian farmer who features in the video on composting, was excited about how the audiences have responded. "Farmers from different regions came together to learn how we controlled striga," she recalls. "Although our crops were close to harvest we could show them on the video all the different steps needed to make good compost and how to apply it. They were all very excited; they asked me lots of questions. As I had learnt so many things at the farmer field school, I felt really proud and confident to answer them."

To further promote the videos, the project has sought to inform and enthuse a large number of agriculture-oriented organisations to share and show the videos in communities where they operate. A key success has been the inclusion of farmer training videos in the communication strategy of the Network of Farmers' and Agricultural Producers' Organisations of West Africa (ROPPA). Early dissemination efforts led to a strong demand for the videos to be translated into local languages. With support from language experts, extension officers and radio broadcasters, this has recently been completed, with the videos now available on multi-language DVDs that include six major West African languages (Bambara, Bomu, Hausa, Mooré, Peulh and Zarma).



Hundreds of people attended an open air video show in Koutiala, Mali
©Tom van Mourik

Online streaming



Strong participation of farmers has been key to the film making process
©Paul Van Mele

The most recent development in sharing the videos has been through the internet. Using advanced video-streaming technology, anyone can now download and watch the videos from a dedicated site, established by Access Agriculture, an international NGO. Access Agriculture also aims to support new productions and more local language translations. For those without internet access and to ensure the DVDs end up in the villages where farmers can organise themselves to watch the videos whenever they like, major distribution of the hard-copy DVDs is planned through a wide variety of outlets: rural radio networks, research and extension agencies, farmers' organisations, development organisations and Chambers of Agriculture.

Meanwhile, ICRISAT is continuing to work with the trained teams to develop more videos. Improving scripting skills is, for Van Mele, a major priority. "Many people can be taught to use a video camera and editing software," he says. "More training is now required in the development of video scripts that respectfully show farmers' realities and that present scientific and local knowledge in ways that capture farmers' attention and encourage them to experiment. For this to be effective, a passion for agriculture is a prerequisite."

Links

- Access Agriculture (<http://www.accessagriculture.org>)
- Agro-Insight (<http://www.agroinsight.com>)

Virtual outreach: connecting farmers in the Caribbean

Small farmers dominate farming in the Caribbean, where state extension and advisory services are financially stretched and consequently, the provision of timely, accurate advice, is less than adequate. To help small farmers in the region, a team from the University of the West Indies, in collaboration with a University of Greenwich graduate, made use of mobile 'smart' phones to improve the accessibility of relevant agricultural knowledge and information.



Small farmers dominate farming in the Caribbean
©FAO/Giuseppe Bizzarri

The use of mobile phones is widespread across the Caribbean, recent statistics showing that in some countries there are up to 1.5 mobile phones per person. With vibrant competition among mobile service providers, prices have dropped and some countries boast 99 per cent coverage. Developed in September 2011, a virtual extension outreach pilot project was tested in St Vincent and the Grenadines between October 2011 and January 2012, allowing for modifications to meet farmers' specific needs.

The project began by assessing the information and communication technology (ICT) needs of farmers using a focus group made up of six female and three male farmers from Langley Park. Two mobile phones with internet were provided to Langley Park community centre, which served as a hub. The focus group, together with the researchers, then agreed on two projects for testing.

Two projects for testing

The first project was a question and answer service which involved sending queries, including photos taken on a mobile phone, via SMS and uploading these on to the virtual outreach system. These were then routed by a service manager to one or more experts. Major pest and disease problems, including leaf spot in banana and tomato, along with cases of nematodes and bacterial wilt were among queries sent for identification.



The virtual outreach system has been designed to keep farmers abreast of the latest means of crop protection
©Luca Tommasini/FAO

During the four month trial, all queries were answered within 24 hours. Farmers initially sent only questions, but subsequently began to include photos of diseased crops for identification. During the trial the role of the manager was filled by the system's developer, Mr Anton Robinson, but the aim is to use local extension officers.

The second project comprised a virtual training programme, consisting of e-courses on low-cost greenhouses and composting field waste by a team from the University of the West Indies, St. Augustine, Trinidad. Farmers were provided with a laptop and projector and trained to set up, use and maintain the equipment. Using Skype and YouTube, nine farmers received training from Dr Wayne Ganpat, lecturer in agriculture economics and extension at St. Augustine. The students were also able

to 'share' Dr Ganpat's desktop, enabling them to see and follow his presentation.

Improving on the past

Previously, much of farmers' agricultural knowledge was obtained from extension officers or other farmers. "There are limits to the knowledge disseminated because pests and diseases have the ability to express themselves differently in cropping systems, resulting in disease complexes which may be overlooked or misdiagnosed by the extension officers and farmers," says Ms. Kenia-Rosa Campo, graduate student of the University of the West Indies.

The virtual outreach system has been designed to keep farmers abreast of the latest means of crop protection and reinforce the use of integrated pest management. "The experts are able to explain to farmers on a one-to-one basis their recommendations with reasoning, thereby functioning as a virtual extension officer," adds, Mr. Anton Robinson, system developer. "Farmers are not only more aware of pest control methods and impacts but the system also has the ability to capture knowledge on its database, building on farmers' and extension officers' bodies of knowledge."

Assessing impact

While no formal evaluation was conducted on the impact of this training, the Langley Park farmers in St.

Vincent have been pressing for further training using the virtual system and have identified several areas for short-term training to build their knowledge and skills. A schedule of training has been developed, including compost making, to enable the farmers to pursue organic farming.

Whilst the response to the virtual outreach system has been positive, farmers have highlighted the need for further training to use the system and for financial resources to purchase smart phones. "While this is an increased cost, the farmers understand the benefits of having issues resolved in a much shorter time and in receiving specialised training from experts," says Dr. Ganpat.

Extending experience gained

According to Mr Ashton Stanley, Permanent Secretary at the Ministry of Agriculture, St Kitts and Nevis, the virtual outreach system could be a solution to the shortcomings of current extension services: "The system is something we can benefit tremendously from. I would welcome its development in St. Kitts and Nevis, as we are an economy in transition with limited human resources; a network like this could facilitate the process in terms of information gathering."

Although the pilot project has ended, the Q&A service has continued and is building momentum as farmers in St Vincent continue to send in queries. The system is also being tested in Belize, St Lucia and St Kitts and Nevis. The overall plan is to eventually introduce the virtual outreach system to all Caribbean islands and to assist them in establishing their own virtual extension training.



Farmers in St Vincent continue to send in queries to the Q&A service
©Saul Palma/FAO

Written by Anton Robinson, Kenia-Rosa Campo, Wendy-ann Isaac, Wayne Ganpat and Terry Sampson

Extension approaches for small farms in Bhutan

Located at the eastern end of the Himalayas, Bhutan has a landscape that ranges from subtropical plains in the south to 7,000 metre high mountains in the north. The geographical diversity, combined with equally diverse climate conditions, makes the country ideally suited to growing a wide range of cereals (rice, maize and wheat) and fruit crops (apple, pear and oranges) throughout the year. But varying environmental conditions and isolated farming communities scattered across valleys, ridges and slopes has made the provision of extension services a serious challenge.



Salamjee has changed its farming landscape by introducing sustainable land management technologies
©Chencho Norbu

From Farmer Field Schools to Participatory Rural Appraisals, a number of extension approaches have been introduced in the past, but according to Chencho Norbu, director of agriculture at the Ministry of Agriculture and Forests, most have failed. "Many communities have strong social bonds and are not very receptive to new ideas and technologies," Norbu explains. But the community of Salamjee, in Dagana Dzongkhag district, has changed its farming landscape by introducing sustainable land management technologies.

Fighting soil fertility loss

Landslides, gullies, sheet and rill erosion, declining soil fertility, exposed bed rock and shallow top soil were just some of the problems Salamjee's farmers faced as a result of severe land degradation, undermining the sustainability of farming as a livelihood. Steep slopes, high rainfall, and a lack of mechanisms to prevent erosion were identified as causes of land degradation by a group of experts from the Renewable Natural Resources Research and Development Centre (RNR-RDC) in Bajo.

With financial backing from the UN's Development Programme's GEF Small Grants Programme, the RNR-RDC adopted Salamjee as a pilot village. In consultation with the farmers, the project gradually built on local practices rather than implementing brand new approaches. By evolving local practices, the project was aiming to institutionalise sustainable land management techniques into the local farming system.



The project gradually built on local practices rather than implementing brand new approaches
©Chencho Norbu

Steep farmland was contoured and stone risers were added, hedge rows were planted with fruit crops including litchi, citrus, guava and mango, a water diversion channel was constructed, and a multi-purpose tree species nursery was established. Frequent visits to the village to monitor activities and provide advice by scientists and extension agents from the RNR-RDC played a key role in changing the mindset of the community. The impacts are visible: steep, degraded farmland with gullies and rills has turned into terraced fields with stone risers and grass slips with edible bamboo plants and fruit trees along the contours.

Building community capacity

To build community capacity in farmland management and ensure that sustainable land management techniques continue to be implemented, the Salamjee Phashing Zingchoung Tshogpa group was formed. The RNR-RDC is also working to replicate the same approach in several other villages.

In eastern Bhutan, farmers are growing increasing amounts of fruit and vegetables, increasing incomes and diversifying and enriching diets. "Over the past couple of decades, farmers have been growing and consuming more varieties of vegetables compared to a couple of decades ago when there were only a few popular ones, such as radish, chilli and turnip," Norbu explains. "This owes much to the efforts of horticulture development initiatives of the government, which have introduced, evaluated and released many new crops for cultivation by farmers."

Pear, persimmon, broccoli, cauliflower, carrot, green mustard, cabbage, onion and improved varieties of citrus and walnut, are among the new fruits and vegetable varieties that have been introduced. Supported by the Japan International Corporation Association (JICA), experts from the Wyengkhar RNR-RDC, under the Horticulture Research and Development Project, provide 'lead' farmers with practical training sessions on grafting, pruning, thinning, nursery raising, mother plant selection and roguing (removing inferior or defective plants from a crop). These farmers then go back to their farms and establish orchards and seed production

sites, with assistance from RNR-RDC experts. "The sites are regularly visited to provide farmers with advice as it is needed," Norbu adds.

Building on success

The project has proved so popular that more than 290 farmers have requested similar support in the last two years. "As of now, about ten different vegetable crop species are being popularly cultivated and sold in local markets," says Norbu. "This is excluding many indigenous vegetables that are being grown or collected from the wild."

Across the globe there are numerous approaches and models of extension. According to Norbu, most of these are location specific and require a lot of time and resources. "It is important to understand the geographical limitations of farms," he explains, "and be sensitive to the social and cultural values of a farming community before new approaches are introduced. In order to effectively deliver extension services, I personally believe in blending a professional and multi-disciplinary top-down approach with participation of farming communities."

Written by Chencho Norbu, Director of Agriculture, Ministry of Agriculture and Forests, Bhutan

