

# ICT Update

a current awareness bulletin for ACP agriculture



<http://ictupdate.cta.int>

Broadcasters use ICTs to involve farmers in radio programmes for rural **Africa**

Regional information centres promote crop production in **Ethiopia**

Video, radio and TV supports agricultural extension work in the **Pacific**



## Livelihoods

## Contents

- 2** Editorial  
Encouraging feedback from farmers
- 3** Perspectives  
People at the centre of technology  
*Roxanna Samii*
- Feature**
- 4** Talking back to radio  
*Sheila Huggins-Rao and Mark Leclair*
- TechTip**
- 7** Data collection using mobile phones  
*Andi Friedman*
- Case studies**
- 8** The centre of information  
*Ermias Sehai*
- 10** Listening to farmers  
*Bernadette Masianini and Mereani Rokotuibau*
- Q&A**
- 12** ICTs grow in agriculture  
*Dr Michael C. Madukwe*

## Encouraging feedback from farmers

**F**arming methods are traditionally passed down from one generation to the next. Neighbouring farmers also help each other by passing on tips and hints on how to fatten livestock or get better crops. But over time the land changes. The soil washes away and loses its nutrients; one river dries up while another bursts its banks; the forest disappears and, over the years, more and more people have to live off the same piece of land.

Farmers, therefore, continually need information to get the best results from their hard work. Small-scale farmers especially need to work together to share ideas and resources. And many of them are using ICTs to keep in touch.

Radio has been a popular method of communicating and distributing agricultural information for many years. The medium is very effective in providing advice to farmers, even those living in remote areas, without cost to the listener. But it has always been difficult for listeners to interact with radio, to share their views over the airwaves.

A project run by Farm Radio International, called the African Farm Radio Research Initiative (AFRRI), is now looking at ways to involve farmers and rural communities in the process of making radio programmes. The project has been working with broadcasters in five African countries to test how they can use ICTs to gather information from farmers and agricultural experts.

With small, inexpensive MP3 players, the broadcasters record interviews with farmers, giving them the chance to discuss the issues that affect them or even describe successful growing or pest control techniques. The radio station then broadcasts these details to the wider community, enabling farmers to learn from those facing similar problems.

### Involvement

The participating broadcasters are investigating ways to address the concerns of farmers in their communities. After a particular issue has been raised, the programme maker calls an expert and, if necessary,

records the interview using the MP3 player. The expert's advice is then broadcast to all the farmers in the area. The AFRRI radio stations are also experimenting with various means of receiving feedback from listeners via mobile phone so that, for example, farmers can call or send SMS messages to dedicated low-cost numbers.

In Ethiopia, the Improving Productivity and Market Success (IPMS) project has had good results with locally produced video. The project has equipped 28 district information centres with computers, TVs and DVD players. Some of the centres also have video recording equipment, which they use to document local agricultural practices used by farmers. The recordings are then saved onto CDs or DVDs and distributed to the other centres.

Video has also proven very useful in the Pacific region where the Development of Sustainable Agriculture in the Pacific (DSAP) project has produced DVDs on topics such as low-cost irrigation systems, composting and the use of organic pesticides. Because of the huge distances between the 16 participating countries, internet, email and radio have also been important in supporting collaboration between the various extension and agricultural agencies.

One vital aspect that all these initiatives emphasize is the need to work together with rural communities, either to determine which farm practices are most successful, or to research problem areas. And each project tries to use the most efficient method to reach their audience.

Being involved in regular exchanges of information helps farmers to develop their businesses, grow new crops and get better results from existing ones, to access new markets and to learn about advanced methods of food processing and storage. All of which is invaluable to small-scale producers, as even a slight improvement in productivity can lead to a marked increase in income, giving a boost to the local economy and overall food security in rural areas. ■

### ICT Update



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had heard about on the radio, but did not fully understand the implications.

Dad explained, in the local dialect, what these additional reforms meant, how the farmers could benefit from them and what they had to watch out for. He suggested that they share this information with everyone in the village and that they form a village council to discuss the issues and take decisions. He also told them to ask the local authority for additional information if they needed it, and to

better informed these days about issues and rights, and proactively participate in decision making. Today's ICTs are interactive, have a global reach and are becoming increasingly accessible as prices fall.

I have to admit that I was initially sceptical about how ICTs could address the needs of poor rural people. Recently though, I've become convinced that they can play an important role in improving livelihoods, but only under the

## People at the centre of technology

In the mid-1960s, land reform in my country gave the land back to the farmers. This marked the end of feudalism, and although you might expect the farmers to have broken all ties with their former landlords, they did not. On the contrary, the farmers maintained a cordial relationship with the former landowners and continued to seek their views. At the time, most of the farmers were illiterate and had little or no access to education, credit or healthcare. But one thing they did have was a small radio.

One of my most vivid childhood memories is when the lead farmer, Moktar, and other farmers paid a visit to my father, their former landlord. They had travelled for eight hours to come to the capital and wanted to talk with Dad about additional reforms they

demand that the information be disseminated in such a way that it would be easily understood by the villagers.

When the group left they were full of optimism. Moktar's parting words to my father were: 'Sir, I hope one day my children will be able to think and reason like you.'

Some decades later, I went to my father's birthplace and met Moktar's two sons. Unlike Moktar, they were educated. Both were successful rural entrepreneurs and members of the village and city councils. During the visit, their mobile phones kept ringing, and in each conversation they provided guidance and assistance to the caller in the local dialect. As I was listening to them, I remembered Moktar's parting words to my father all those years ago and thought, wow, Moktar had realized his dream!

### Conditions

While a lot of things have changed over the last four decades, others have remained the same. *Local context:* my father had used the local dialect to explain the proposed reform, as did Moktar's sons. *The use of ICTs:* Moktar found out about the additional reforms via radio, which ultimately led to improvements in his livelihood. His sons disseminated their knowledge via mobile phones, and their livelihoods also depended on those phones. *The role of mentors:* Dad's former tenants regarded him as a guide or mentor, just as Moktar's sons are for their constituents.

What has changed is that information is now more readily available. Moktar's sons do not need to travel for an entire day; everyone is just a phone call away. And people are

following conditions: *Ownership and appropriation:* communities must be involved from the outset so that they can own the entire process and take part in forming policies. *Development of local content:* relevant information must be provided in the local language, and farmers encouraged to develop their own demand-driven content that will increase their bargaining and purchasing power. *Language and cultural identity:* language is not only a vehicle that communities use to communicate, but is also the essence of their identity. *Appropriate technology:* efforts should be made to assess what the farmers require and to provide them with what they really need. If a mobile phone is what they need then give them that, and not an expensive computer.

Those of us working for agricultural development need to adopt an approach to using ICTs that focuses on people, understands the local reality and context, and listens to the needs of rural communities. In this way, communication technologies can help to reduce poverty, especially if farmers and rural communities participate in decision-making processes.

I hope my personal tale has managed to show both the central role of farmers, and also to highlight a few points about the use of ICTs, namely that they are tools for achieving social goals, for improving communication and for providing access to knowledge that can lead to reductions in the costs of agricultural production. Technology also has the potential to enhance opportunities, provide security and can play a vital role in the economic, social and political fabric of all societies. ■



**W**ith more than half of Africa's population dependent on agriculture for their livelihoods, there are growing demands for information about all aspects of farming. Farmers want to know where they can obtain new and improved seeds for the next planting season, where to market their crops, and what better farming practices will help to maintain soil fertility, conserve water and improve output.

Most African countries provide support to their farmers through extension officers - technical specialists who travel to rural areas to promote agricultural development. But in many areas, the number of farmers

in remote areas where electricity supplies are unreliable or even non-existent. Local radio also gives farmers a voice, enabling them to share their knowledge and experiences, and to acquire practical information that they can use to improve their livelihoods.

#### Availability

Traditionally, radio has been a one-way communication medium, where programme makers deliver information to their listeners. But in recent years the number of radio stations across Africa has grown rapidly - there are now more than 300 stations in Mali, 120 in Ghana and over 150 in Uganda - and new information technologies

smallholder farmers to improve their livelihoods, and how can new technologies such as mobile phones and MP3 players increase the value of radio as an interactive communication tool?

AFRRI works with radio stations in Ghana, Malawi, Mali, Tanzania and Uganda to strengthen their programming for farmers. The project team selected a total of 25 stations to participate in the project, five in each country, representing a mix of public, community and commercial stations. Through a series of research and training activities, AFRRI is helping broadcasters to make programmes with information that is useful to farmers, and give farmers a chance to provide

# Talking back to radio

Radio is often considered to be a one-way medium, but the African Farm Radio Research Initiative is investigating ways of combining radio and ICTs to gather content and to share information among farming communities throughout rural Africa.

who require this support far outweighs the number of extension officers available.

Farmers often share information among themselves via formal networks such as cooperatives or associations. Informal networks are also useful, although exchanges of information and resources are often limited to the immediate area, and important questions may remain unanswered. Although farmers are keen to learn about new ways to increase their productivity and maintain their land, access to information and opportunities for sharing knowledge are often limited.

For many African farmers, the only source of information outside the community is the radio. Radio sets are relatively inexpensive and can be used

have become more accessible, providing many possibilities for developing more interactive, two-way radio communication for farmers.

At the same time, the use of mobile phones throughout Africa has surged, changing the way people communicate. Users can now easily receive and send information, images and even money anywhere in the world. Used in combination with radio, mobile technology has also brought a new dimension to radio programming. For starters, listeners can now call radio stations to request information or advice, question guest speakers or talk to other callers. Presenters may also encourage listeners to send in text messages with requests, to answer questions and even to participate in contests.

Since 2007, the African Farm Radio Research Initiative (AFRRI) has been studying the effectiveness of radio in supporting agricultural development and improved food production. Implemented by Farm Radio International, in partnership with World University Service of Canada, the project is investigating two main questions: how and in what ways is radio most effective in enabling

feedback on programme content. One component of the initiative involves working with the stations to test new technologies in the production of entertaining, informative and interactive programmes, in collaboration with the listening groups.

In Malawi in 2008, for example, AFRRI organized a training workshop on story-based agricultural programming, where staff from each of the stations were able to learn about community research methodologies, developing programme outlines and recording techniques, as well as how to elicit and make use of feedback from listeners.

#### Experiment

As part of the workshop, AFRRI distributed recordable MP3 players to the participants for use during the training and in their future programme making. The players had been carefully selected to match the needs of the participants. The most important criteria were affordability, accessibility, ease of use, compatibility with existing equipment and the willingness of the manufacturer to work with a development project.

With these MP3 players, the

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programme makers were able to record stories and store the audio files for broadcast.

During the training, the programme makers experimented with the MP3 players and discovered how to record a mobile phone call. By placing the call on speaker phone and holding the MP3 player close to the speaker, it is easy to record a phone interview, for example, which can be edited later and broadcast on air.

Since AFRRRI stations in Malawi do not have cable or wireless connections to link mobile phones to the broadcast consoles, this technique has become useful for interviewers who can now speak directly to experts in the capital and farmers in the field without having to travel to meet them in person.

Although mobile technology does not replace face-to-face interactions, being able to record a phone interview with an expert enhances the meetings and brings the expert closer to the farmers. The experience of Dzimwe Community Radio Station in Monkey Bay, in eastern Malawi, illustrates the advantages of using this type of technology.

The Dzimwe radio station was running a campaign to promote a new

hybrid maize variety whose high yields would benefit maize farmers in the area. As part of the campaign, the station broadcast a programme discussing the disadvantages of growing this type of maize. Many farmers, for example, preferred the taste of local maize varieties even though their yields were lower than that of the new hybrid variety.

Farmers who were already growing the new variety pointed out that highlighting its negative aspects could undermine the success of the campaign, since many listeners would focus on the disadvantages rather than the benefits. The station decided that one way to overcome this problem was to broadcast the views of an expert at the Ministry of Agriculture. But arranging an interview proved difficult, not only because of the long distance the reporter would have to travel to meet the specialist in the capital, Lilongwe. Protocol within the ministry and the specialist's busy schedule meant that he was not able to meet the reporter. Instead, the reporter called the specialist on his mobile phone and recorded the conversation. The specialist responded to the farmers' concerns, highlighting the advantages

of the new maize variety, while also addressing its disadvantages. Later, when the station broadcast the interview, the campaign regained some much-needed credibility and the farmers received the balanced information they needed to decide whether to plant the hybrid maize.

### Reaction

AFRRRI regularly receives feedback from farmers in all five countries. Smallholders often ask for copies of programmes for neighbours who missed the initial broadcast, or simply to be able to listen to them again in their own time. Women in particular have asked for this kind of flexible programming since they can only listen to the radio at certain times of the day, when they are not busy with family, farming and other work. MP3 players can potentially meet this need, since they can be used to play back recorded programmes to listening groups. AFRRRI will be testing various ways of doing this throughout 2009.

In Karagwe, in north-western Tanzania, the Family Alliance for Development and Cooperation (FADECO) community radio station is investigating ways to make use of

Dorice Kaunda interviews an extension officer in Mairowa, Tanzania

## Related links

Since 1979, Farm Radio International has been supporting African broadcasters to meet the needs of smallholder farmers and their families in rural communities, while helping broadcasters build the skills they need to develop content that responds to local needs. Based in Ottawa, Canada, the organization works with over 300 radio practitioners in 39 African countries.

→ [www.farmradio.org](http://www.farmradio.org)

available ICTs both for generating content and for obtaining feedback from listeners. Anyone living nearby can walk to the FADECO studio to ask questions or report problems related to farming. The radio station staff are often able to answer the questions themselves, especially if it is a familiar issue, but if not, they can call or email specialists to help with the more difficult issues.

Farmers living farther away can send SMS (short message service) messages to the FADECO station's mobile phone number using specific codes in the text. The listener starts the message with 'FR[space]', then types a question and sends it to a dedicated number (in this case 15551), and the message is delivered directly to the organization's computer via a web-managed system. The caller immediately receives a reply on his/her mobile phone confirming that FADECO has received the message.

Due to the costs involved, the station does not call or text individual listeners with answers but may print out the messages and email them to an expert and address them in a later radio programme. This way the answers can benefit the farmer who asked the question and any other listeners tuned in at that time.

### Continuation

The AFRI project team expect the results of their research to be useful not only to broadcasters but to others working in rural development, to researchers on agriculture and organizations concerned with food security issues in Africa and other parts of the world. After the project officially ends in 2010, AFRI hopes that the participating stations will be able to continue broadcasting programmes for farmers to promote new business models and micro-enterprise initiatives.

For agricultural programming, the



Susuma Susuma uses a new MP3 recorder to interview a Maasai woman from Mairowa, Tanzania

costs of travel for field interviews and internet connectivity remain high in most African countries, but the use of new technologies such as MP3 players and mobile phones can help to support programming for, and with, farmers without increasing costs.

Farmers are already reaping the benefits of the programmes produced using these technologies and new techniques, and of having more interactive contact with the radio stations. In Soroti, Uganda, for example, the Voice of Teso radio station broadcast a series of programmes on a new variety of cassava. Farmers in the area had not grown cassava for many years because of the high labour intensity and low yields, but after listening to the series, more farmers were prepared to try out the new variety.

In Tanzania, after the Tanzania Broadcasting Corporation aired a series of programmes on collective marketing, increasing numbers of farmers began forming and organizing their own local cooperatives. Many farmers have reported that the information in the series enabled them to focus on generating income from the sale of their crops while minimizing the costs of marketing and transportation. Although in most agricultural research it can take at least two or three harvests to measure and assess long-term changes, it is clear that radio combined with ICTs can play an immediate role in improving farmers' access to relevant information.

While there is no shortage of new technologies that could improve the interactivity of radio in Africa, the main challenge for any development project is the management of the technologies at the radio stations, and how broadcasters apply them to reach the listening groups. Careful planning is needed in both the procurement and distribution of equipment and training activities, and communities need to be involved at every stage. This will ensure that both the stations and the communities make the best long-term use of and benefit from the equipment.

Radio stations also need to take into account that they will need local support to maintain the new equipment and to repair the mobile phones, MP3 players or playback devices used by listening groups when they malfunction. It is essential to ensure there is no break in programming due to faulty equipment or devices.

AFRI tries to address each of these issues by testing different ICTs to find the equipment that best suits the needs of the radio stations. Programme makers also receive a better understanding of how to use new technologies to make radio an even more effective means of communication. Through the project, radio broadcasters have been able to work more closely with farming communities than ever before, creating a firm foundation for using innovative and relevant technologies in order to reach even wider audiences and to hear more farmers' voices on the airwaves. ■

# Data collection using mobile phones

Many projects working to improve the livelihoods of farmers spend a lot of time gathering information from the communities. They need to conduct detailed studies in order to compile baseline data, develop plans and monitor progress. But collecting detailed information, and making sure it is accurate, can cost a lot of time and money. It is expensive for fieldworkers to travel regularly to every project site, and the technology involved in gathering the data – often small handheld computers – can take a lot out of a limited budget.

One solution is Mobile Researcher, a tiny application that can be installed on the mobile phones of project staff or even community members. The researcher then simply follows a step-by-step process to gather data, either by entering text numbers or by answering a series of questions designed to meet the specific needs of the project. The information can be sent instantly to the project office or stored on the mobile phone until it is back within the range of a cellular network.

## Equipment

### Mobile phone

Mobile Researcher can be installed on a wide variety of mobile phone handsets from most of the major manufacturers [see website for a complete list: [www.mobileresearcher.com](http://www.mobileresearcher.com)]. Phones costing under €50 can be used to conduct even long, complex surveys with the added advantage that fieldworkers and respondents are already familiar with the interface. Phones which have internet connectivity can be configured and connected to the system within a few minutes.

### Web browser and internet

To design a survey questionnaire and analyze the data, all that is required is a web browser, such as Internet Explorer or Mozilla Firefox, and an internet connection. A project team can design a survey on the web and send it to fieldworkers within minutes, almost anywhere in the world.

There is no need to download software or to install servers or other hardware. Mobile Researcher is hosted entirely by the developer but, if preferred, the data are available for download in a common format such as Microsoft Excel for later analysis and safekeeping.

## Sign-up and support

First, complete the short 'contact us' form on the Mobile Researcher website ([www.mobileresearcher.com](http://www.mobileresearcher.com)), briefly outlining your requirements and the purpose of the research. Installing the application on a mobile phone can be quite difficult the first time, so the developers usually provide assistance with the initial survey and handset setup. Most users become proficient in a short span of time.

The developers of Mobile Researcher offer onsite training within South Africa and provide free email support to all other active clients.

## Cost

Users of Mobile Researcher are not required to make a long-term commitment or pay a subscription, but pay for use of the application on a 'pay-as-you-go' basis. Since cost of the system depends only on how often it is used, even small organizations that need to conduct occasional surveys can afford to use it.

## Online Research Console

Each user receives a web-based 'Research Console' that supports many of the processes related to field research and data collection, including:

- *Survey design:* you can create surveys tailored to your specific needs within your web browser. You can also save your survey templates and questions so that they can be used again in the future.
- *Fieldworker management:* you can supervise fieldworkers from a single project office as the system can also gather and present information relating to their performance and activities. You can configure the phones of new fieldworkers and link their handsets to the system from the web browser.
- *Communications:* you can send SMS messages directly to fieldworkers through the system, which also logs all communications.
- *Data management:* you can view survey responses from the moment they are uploaded from a handset into the system. You can then export the data in any standard format or generate graphic reports online.

The developers of Mobile Researcher have made the Application Programming Interface (API) freely available so that it

is easy to access to incorporate the data collected in other systems. Surveys can be designed to access dynamic information from external sources, thus providing even greater possibilities for integrating data. ■

## Using Mobile Researcher

1. The main screen shows that there are data from two surveys that still need to be uploaded as soon as the mobile phone is connected to a cellular network ('pending upload: 2'). The fieldworker can then choose whether to start a new survey ('conduct survey'), check for updates ('check for updates' – either to the questions in a survey or new assignments) or exit the application ('exit').
2. The fieldworker can choose from a number of surveys. In this example, they are surveys of 'farm infrastructure', 'farmer's yield' and 'soil health'.
3. Multiple selection option lists are one of the many types of question available. Here a fieldworker conducting a survey of farmer's yields can answer the question, 'Which of the following are used on this farm?' by choosing one or more of the options 'herbicides', 'insecticides' and 'fertilizers'.
4. The option lists can be defined online by project staff through the 'research console', or they could be linked to a list of options from an external source on the internet.
5. Questions in the survey can follow directly from the data entered in answer to the previous question, and allow the possibility to add specific information such as a date. In this example, the question, 'What date was the last Maize crop planted?' refers to the answer to the previous question, 'What is the main type of crop being grown?'



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HELDUR NETOCVA/LINEAR

# The centre of information

Regional information centres, equipped with a variety of ICTs, promote crop production by documenting and sharing good agricultural practises among farmers in Ethiopia.

## Case study

**O**n the markets around the district of Metema, in northwest Ethiopia, traders are selling a variety of banana called the Dwarf Cavendish. Until recently, they had to import the variety from Arba Mincha, nearly 1500 km to the south. Although the soils and climate in Metema are suitable, none of the farmers in the area were growing this variety of banana. There were limited local supplies of the rhizomes with suckers needed to propagate the plants, and the farmers didn't know

how to grow this particular type of banana.

In 2005, the Improving Productivity and Market Success (IPMS) project, which is run by the International Livestock Research Institute, set up a series of information centres throughout Ethiopia. The centres, equipped with a variety of information and communication technologies, provide farmers with information they need to develop new products and increase the yields of existing crops. The project is also attempting to improve the links between farmers and traders, creating opportunities for small-scale producers to sell to new markets, thereby increasing their incomes and helping to reduce poverty in the area.

The IPMS project works in ten districts, called *woredas*, which were selected by the respective regional governments after discussions with local farmers, NGOs, government departments and other interested groups. Each district has its own specific challenges and problems. Some have access to electricity, clean water and healthcare facilities, while others have only limited access to just one of these services. But they all produce at least a few marketable commodities.

## Cooperation

The IPMS project supports individual and organized groups of farmers to improve their negotiating power, food processing skills and access to market information, all of which could help to

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raise their incomes. In each district, therefore, the project set up a *woreda* knowledge centre (WKC), where the farmers can access information on how to grow a new crop or simply the contact details of other farmers or traders. Each centre is equipped with five computers, a television, DVD players and a library containing books, manuals and training guides in printed form and on CD or DVD.

There are also ten other centres scattered across the districts, plus eight more based in the regional government bureaus of agriculture and agricultural research institutes, making a total of 28 information centres. All of the centres provide regularly updated market information and are seen as hubs to promote a culture of sharing knowledge and encouraging collaboration among farmers and extension workers.

The TVs and DVD players are used to show training videos and recordings of farmers demonstrating crop management techniques. But sometimes the centres show entertaining films to draw in audiences of farmers, their families and others involved in agriculture.

In addition to developing the knowledge centres, the project is also upgrading some of the 15,000 farmer training centres (FTCs) set up by the government across the country, equipping 40 of them with computers, printers, TV sets and DVD players. For centres located in areas where there is no electricity, the project will provide a generator and, later in 2009, a digital camera so that local staff will be able to photograph and document environmental changes, and to record videos of successful practices that offer good learning or teaching points.

## Production

Each of the 28 knowledge centres has a dial-up internet connection, as do around half of the training centres where there is a wired or fixed wireless telephone. At all the centres, routine internet access is limited, as the user fees are very high. While this is a major drawback, extension officers and other development staff make the best use of what is available. In the future, connections are likely to improve once government projects to increase the coverage and bandwidth of mobile phone networks and the national internet infrastructure are completed.

Early indications of the success of the project vary from district to district,

but it seems that the communities greatly appreciate the opportunity to use the libraries, the computers and the internet. But it is the use of video and DVDs that is proving to be especially popular and effective.

Every so often, a new tool, method or process (either indigenous or introduced) comes along that seems to work particularly well for Ethiopian farmers. Project staff have made good use of the video recording and editing facilities at the WKC and the selected FTCs where the equipment is available. The team in Ada'a Liben district, for example, has produced a number of videos on innovations introduced by local farmers in areas such as beekeeping and fruit nursery management, as well as on the progress and successes of Ada'a farmers.

Other *woreda* knowledge centres have started producing their own videos on selected local technologies for use in farmer training courses, including demonstrations of onion production and marketing techniques, conservation agriculture and rice cultivation. The recordings are transferred to CDs or DVDs, and are distributed to other centres where they are used as training and motivational materials.

## Expansion

But IPMS is also interested in documenting local knowledge of agricultural techniques and making it available to professionals working in the sector. The project has therefore developed the Ethiopian Agriculture Portal (EAP), a website that provides information for experts, extension officers, researchers, policy makers, NGOs and community-based organizations.

A team of content managers selects, reviews and uploads content from a variety of sources, including the latest publications from the Ministry of Agriculture. The success of the portal, however, will depend greatly on the improved accessibility of the internet in Ethiopia.

For the regional agricultural offices that have limited internet access, the project team has developed an offline version of the website, which is loaded onto the computers in each of the 28 knowledge centres. The project also distributes material, in printed and digital form, obtained from organizations such as the Food and Agriculture Organization and the

International Fund for Agricultural Development, to all of the knowledge centres.

Since the launch of the IPMS project in 2005 there have been some encouraging signs of success. Partner organizations are making the effort to promote knowledge sharing. Farmers are gaining new knowledge by learning from other farmers, and then go on to apply that knowledge to improve their production and productivity.

As for the farmers in Metema district, more than 100 of them are now growing the Dwarf Cavendish variety of banana, with some producers earning around US\$ 1000 in a single season from the sale of suckers alone. Output has increased to the extent that the farmers should soon be able to supply market traders with enough bananas to meet demand in the two nearest cities, Gondar and Bahir Dar. Several farmers are now also using the waste material from the banana plants, including leaves, shoots, peel and damaged fruit, to fatten their livestock, while others have branched out into new areas of farming, such as introducing both modern and traditional beehives on their land.

The IPMS project has certainly helped to improve the situation for many farmers in the ten districts in just a few years. The team now expects to extend their efforts to other parts of the country, and hopes that their approach can be replicated in other countries. Using ICTs has certainly contributed to the success of the project. And while the farmers benefit, the fact that their sons and daughters, living in very remote parts of Ethiopia, will grow up knowing how to use a computer, makes the project all the more worthwhile. ■

### Related resources

#### Ethiopian Agriculture Portal

Developed by the IPMS project, the Ethiopian Agriculture Portal (EAP) provides information on a broad range of subjects related to agriculture in Ethiopia. Many of the documents on the site were previously only available in printed form, and had not been widely circulated. The website now also contains many articles, reports, guides and other publications that are available to extension officers, researchers and education institutions involved with agriculture in Ethiopia.

→ [www.eap.gov.et](http://www.eap.gov.et)

## Case study

Farming in the Pacific region is under pressure from rapid population growth and intensive land use. The damage to landscapes is evident from the increasing deforestation, soil erosion and falling crop yields, all of which threaten the fragile ecosystems of many island nations. There is a shortage of skilled researchers and extension officers with access to ICTs, and information in general, that are needed to deal with such complex issues. In the face of such challenges, many rural communities have missed out on opportunities to adapt and improve their livelihoods.

In an effort to provide better support to farmers and the agricultural extension services in the region, the

that they would prefer face-to-face communication with extension officers who should visit regularly to give workshops and practical demonstrations. When the officers leave, they should distribute printed materials, written in the local language, based on the information they had just shared. If such personal visits were not possible, then radio and TV programmes or DVDs should be used to support the work of extension officers.

The project put these ideas into practice and now, between extension visits, farmers are encouraged to try out the suggested methods, technologies and solutions for themselves. They are assisted by local extension staff who record the

farmers, however, share the same need for information that will help them address their concerns about declining soil fertility, about the pests and diseases that affect particular crops and vegetables, and about the safe use of chemical fertilizers. So the information produced by the project is shared with all countries and, depending on the technology used, the individual extension services adapt the information to their own specific needs.

Because communities requested their information in a variety of media, the project had to train the extension officers in each country to produce high-quality material in formats that could be easily used. Staff from the various extension services attended a

# Listening to farmers

Extension officers in the Pacific are working with farmers to produce DVDs, printed guides and radio and TV programmes in order strengthen rural economies.

Secretariat of the Pacific Community (SPC) recently launched the Development of Sustainable Agriculture in the Pacific (DSAP) project. The project works directly with farmers to identify and test methods for increasing farm production, and trains extension workers to use ICTs to record, document and replicate successful practices used throughout Micronesia, Melanesia and Polynesia.

An important component of the DSAP project is the continual involvement and participation of farming communities. In early consultations, the project team asked groups of farmers to identify what specific information they needed and how they would like to receive it. Communities across the region said

feedback and new information, often using a digital video camera, which is then compiled and incorporated into future extension materials.

### Adaptable

By involving farmers at all stages in the process, the DSAP project hopes to be able to deliver the right information in the right way. If, for example, a community identifies pest and diseases in watermelons as a pressing issue, the project provides relevant materials that the extension officers can distribute during their next visit. But the team is careful not to produce new material on all issues raised by the communities. They first check with the information departments in the region's agriculture ministries to see if printed materials are already available, and update and reprint them if necessary.

But physical and environmental conditions vary enormously across the Pacific region, so that one single publication, radio or TV programme will not suit every situation. What is relevant for farmers in the mountains of Papua New Guinea will not necessarily work for those in the low-lying coral atolls of Kiribati. All

range of courses to develop their skills, including how to use computers and digital cameras, as well as effective communication techniques. They learned how to produce printed publications using desktop publishing software, produce videos and how to make use of more traditional media – radio, TV and newspapers – as tools for communication.

Project staff have now produced several promotional DVDs demonstrating how to set up low-cost irrigation systems and composting processes, and advocating the use of organic pesticides. Individual country teams are also encouraged to work with local broadcasters in order to reach larger audiences. DSAP Tonga, for example, hired a film crew from the Tonga Broadcasting Commission to produce a TV programme on the benefits of velvet bean and simple irrigation systems, which has been broadcast twice on national television. Project staff in Wallis and Futuna have also been involved in producing TV programmes on market gardening, while other country offices are producing weekly radio programmes on agricultural topics. All

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PETER MENZEL/HOLLANDESE HOOPTE

The DSAP project has also established eight resource centres across the region. Although they vary in size, ranging from a desk in the corner of an office to an entire room within the agriculture ministry, all the centres are based in rural areas. They are equipped with computers and printers, and employ local staff who have received specialized training on how to access information and produce new printed materials. The centres are open to farmers and extension officers, and so offer another opportunity for community members to interact with project staff.

### Motivation

The results of the project so far have been very encouraging. In Tonga, for example, farmers identified a shortage of water as a major factor that was limiting crop production. Using video and other materials produced by the project, extension officers were able to demonstrate a low-cost bucket drip irrigation system that minimizes the use of water. The farmers were impressed with the results and have since adapted the system to irrigate their land more effectively.

In Morobe province, Papua New

Guinea, the project is promoting the commercialization of taro, a vegetable that has long been grown as a subsistence crop. In Fiji, farmers from Tilivalevu village got together to revive traditional communal group-planting techniques and made FJ\$ 22,000 (US\$ 10,000) from their first taro harvest. There are now 21 semi-commercial taro plots around the village, a significant increase on the three that existed at the start of the project.

But it is often the small success stories that provide the greatest inspiration for the project staff. One such story involved Atanasia, the mother of 12 children, from Wallis and Futuna. After applying advice from extension officers she started growing some extra vegetables for sale, and with the money she made she was finally able to buy her first refrigerator.

Much of the success of the DSAP project, however, has come from the improved cooperation between the extension services of the participating countries and their collaboration with NGOs supporting rural development in the Pacific. The project has supplied equipment and ICT training to

encourage colleagues to keep in touch, and the staff now regularly use email, phones, faxes and, of course, face-to-face meetings to communicate their stories and share experiences. Technology has helped to strengthen the links between country offices, as well as

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*By involving farmers at all stages in the process, DSAP hopes to deliver the right information in the right way*

to build networks linking community groups, farmer groups and other information providers, including local health centres and schools.

In the process of expanding these efforts to deliver information to farming communities across the region, the DSAP project will continue to develop the skills of regional and national project staff and extension officers. The continued use of a wide range of ICTs, as well as radio, TV and printed media, is vital to the success of the project in promoting sustainable agriculture among farmers in the Pacific region. ■



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did not last long, but their impact was tremendous. Today, radio stations broadcast information aimed at farmers on specific days and times, and some of the airtime is paid for by the government and NGOs. The use of mobile phones is a more recent phenomenon that has grown rapidly over the last five years. Gradually, however, the use of the internet is growing through initiatives such as the Fadama project which is supported by the World Bank.

agricultural extension workers by enabling both one-way and two-way communication. Radio, TV and video can reach many farmers simultaneously, thereby reducing costs per capita. The mobile phone is already gaining ground as a cheap and powerful tool for extension workers to reach more farmers, particularly those living in difficult or remote regions.

**How can ICTs be used to gather data from farmers so that future information services meet the needs of farmers?**

→ It is now common practice for extension workers and data gathering agents to collect information from farmers via mobile phone. Many farmers' groups, after some training, collect data over a specified period, complete data sheets, scan them and submit them as email attachments. The farmers are requested to send the completed forms to a designated cybercafé, which then completes the sending process. This practice is expanding as researchers use it to link up with farmers who are part of the research.

**The use of mobile phones is growing rapidly in many ACP countries, but can they provide all the information farmers need? Does more need to be done to bring other ICTs, including the internet, to rural areas?**

→ Despite the increase in the use of mobile phones for disseminating information, they do have some limitations. Their information storage and retrieval capacity is small, particularly in relation to the large size of files in video format. The internet will remain a cheaper and more reliable option for the foreseeable future, as it allows the transmission, storage and retrieval of large volumes of information. Governments should therefore do more to directly encourage private operators to provide reliable internet facilities in rural areas.

**Are you optimistic that ICTs can help farmers to improve their livelihoods in the long term?**

→ Expectations are high that ICTs will indeed have a positive impact on farmers' livelihoods. The available evidence suggests that the use of ICTs to access information is a major determinant of the level of farmers' incomes. But as useful as ICTs are in getting information to farmers, they do have one drawback: Face-to-face interactions between extension agents and farmers, and the associated empathy that is needed to understand and explain new ideas and concepts under farm conditions, will be very difficult to replace. ■

## ICTs grow in agriculture

**What was your first experience of ICTs being used to improve the livelihoods of farmers?**

→ In Nigeria the use of radio to broadcast agricultural information dates back to independence. In the 1980s several radio and TV stations were devoted to broadcasting agricultural information. They

**How do farmers usually get the information they need?**

→ Most smallholder farmers get the information they need through farmer-to-farmer contacts. However, this situation is changing in areas where there are agricultural programmes with built-in funding and support for extension activities. The Fadama project, for example, includes a fund to enable farmers to pay for extension services.

Information on how to raise productivity is readily available. What farmers lack is information on matters such as farm inputs, food processing and preservation, product packaging and marketing. Market information is the most critical, as farmers are more willing to accept productivity-enhancing measures if they are sure of the market and the price. The implication is that extension agents who are unable to provide such information need assistance and support.

**Do most farmers now get at least some agriculture-related information via ICTs?**

→ Yes, most farmers can obtain information related to subsidies, credit facilities and market prices via radio, TV or mobile phone. The trend is that in non-government funded programmes, extension agents and facilitators who communicate agricultural information to farmers now receive a monthly allowance for recharging their mobile phones.

In the coming years, ICTs will be the major source of information not only for farmers, but also for extension agents and research institutes. In many areas farmers and middlemen use their mobile phones to check prices at different markets before deciding on a price or whether to conclude a deal.

**How can ICTs help extension workers deliver information to farmers?**

→ ICTs can enhance the outreach of



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