



Using mobile technology to help farmers make better agricultural decisions

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Summary

Agriculture is the backbone of many developing nations' economies: the main source of income and nutrition for the majority of the population. However, smallholders are often unable to access information or public advisory services on a regular basis. Mobile technology provides an answer.

Across the developing world, around 40% of people now actively subscribe to mobile services, with 130 million new subscribers every year, and mobile (2G) coverage around 95% by population. This proliferation in mobile communication enables farmers in even the most remote locations to receive timely and targeted agricultural advice, bridging the information gap that conventional public extension services cannot span.

CABI understands the importance of this technology in reaching remote communities and, since 2009, has played a key role in developing knowledge-sharing systems that harness the power of this technology in agriculture. Across a number of projects in Africa and Asia, we work with farmers, mobile operators, content providers, extension services and industry bodies to provide mobile information services across the whole agricultural supply chain. In this case study, we highlight several of our mobile delivery projects and the impact we are beginning to see the projects are having on smallholder farmers in the target countries and regions.

Objectives

- Provide farmers in India and Kenya with practical advice and up-to-date information, thereby helping them to make better decisions and improve their farm productivity
- Harness the power of mobile technology to deliver and collect information, particularly serving smallholder farmers in remote communities who are not adequately reached by existing extension systems
- Connect farmers to a panel of crop and livestock experts via CABI's 'Direct2Farm' information database. Collect and disseminate information on diseases, pests, weather and market prices, in order to support real-time farmer decision making
- Provide a user-driven information service, responding to farmers' specific requests regarding the types of information available
- Boost production and diversity of agriculture, the main source of income and nutrition for the majority of the population
- Over time, extend the reach and usage of mobile agro-advice

Findings

The mobile advisory services that CABI provides together with partners have been embraced by thousands of smallholder farmers. Farmers view mobile delivery of agricultural information as beneficial, enabling them to access up-to-the-minute data in order to improve their food security and livelihoods. From CABI's point of view, we have found our growing programme of mobile advisory services has allowed us to be much more ambitious in the reach, frequency and impact of the knowledge we provide, creating synergies across our expertise and services.

The context for CABI's work developing mobile-based information and advisory services is best illustrated by the experience of farmers in one of the beneficiary districts — Gwalior in the North Indian state of Madhya Pradesh. In this arid area, farmers are highly dependent on irrigation where available, but rain-fed agriculture is more common, and suffers from poor productivity. Many farmers only harvest one crop per year. Land holdings are small and scattered and soils generally lack micronutrients and have low to medium levels of nitrogen and phosphorus.



Farmers largely lack knowledge on soil fertility improvement, using animal manure as a source of fuel rather than fertilizer and burning crop wastes after harvest. Where fertilizers are used, they are often applied too late or in the wrong combination, with farmers mixing seeds and fertilizers prior to planting, damaging the seed and reducing germination rates. Most farmers continue to use low yielding crop varieties and out-dated techniques and equipment. With a harsh farming environment, farmers are risk averse, and lack finance to pay for either high yielding seeds or the irrigation, fertilizers and pesticides that are needed to exploit their greater productivity.

In terms of agricultural information, there are many suppliers in Gwalior, including the state, civil society and private sector. However, the reach of these suppliers is uneven and access is frequently limited to peri-urban areas or to wealthier farmers, leaving out the section of the population most in need of information — smallholder farmers surviving on low incomes.

The mKisan information service, launched in January 2013 by CABI and its partners, is intended to fill this information gap and serve farmers who have been overlooked by existing providers and services. Drawing on CABI's expertise in processing large quantities of complex data and knowledge of agricultural best practice and sustainability, the service provides practical farming advice to

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subscribers in six Indian states: Andhra Pradesh, Bihar, Karnataka, Madhya Pradesh, Maharashtra and Uttar Pradesh. At the time of launch, it estimated a target market of 13.8 million rural customers.

CABI is the principal knowledge partner, providing content and quality assurance through our 'Direct2Farm' information database. This includes information and advice on crop agronomy, animal health, weather forecasts and market prices for major crops, which are delivered to subscribers through SMS and an interactive voice response (IVR) service. mKisan is operated by the mobile service provider Handygo, with further support from the International Livestock Research Institute (ILRI) and the communication company DigitalGreen.

The mKisan service is marketed by high volume SMS and outbound dialled messages, a method which is effective in reaching a large potential customer base and is cost-effective in acquiring new users. Targeted marketing is also carried out at agricultural fairs and markets. In Gwalior, for example, 2,500 new subscriptions were generated during a 30-day agricultural fair.

Access to the service is sold in packages of 10, 15, 20 or 30 rupees, each of which allows service access for a corresponding number of days. Having purchased a package, customers receive regular push SMS messages with agro-meteorological advice and market price information. 'Push' information is sent out by Handygo, based on the user's previous requests. The subscription plan also entitles the customer to access advisory services through the interactive voice response (IVR) service for the same period.

In March 2013, a baseline report on mKisan was carried out to provide recommendations for improvements to the service and a starting point for evaluation of progress. At this time, mKisan had 327, 338 registered users who had bought at least one subscription package. Of these, around 170,000 were regarded as active users of the service, having accessed the IVR service at least once. By March 2014, the numbers had increased to 1.9 million farmers having used the service, 300,000 being active users.

Analysing a random sample of 975 customers, the baseline report found that around 20% fell below the international poverty line of US\$1.25 per day; thus the service had achieved some success in reaching the poorest farmers in the regions. Most mKisan customers were young — 67% were under 29 years old, suggesting that early adopters of mobile agriculture services come from the younger generation of farmers. Over a third of users were smallholder farmers with less than two hectares of land, and around 30% had no land at all. These customers include traders and students, and might include agricultural labourers who do not own land.

In July 2013, the mKisan Farmer Helpline was launched in four states, in response to user feedback which stated that without proper exchange of information (not just automated responses) effective learning was difficult. Between October and December 2013, 1,539 calls were received by the helpline, reaching a peak in November — the main growth season for most winter crops in India when pest attacks are highest. The most popular topic area for calls was livestock (609 calls), followed by plant pathology (409), entomology (284) and agronomy (236).

Meanwhile, in August 2013, the Café Movel initiative was launched in Southern India. Focussing on better trade practices, Café Movel (meaning 'mobile coffee' in Portuguese) is a mobile-enabled extension service which, like mKisan, is based on CABI's Direct2Farm database. Supplementing existing face-to-face support, the service provides information needed by coffee producers in order to boost the quality and yield of their crop and, ultimately, get a better market price. Café Movel aims to advise and support 150,000 coffee farmers in Southern India by 2015. In the future, CABI aims to include coffee processing and marketing support in order to provide a direct field-processing-market resource for coffee farmers.



Further afield, in Eastern Kenya, Airtel Kilimo was launched in April 2013 to supplement the work being done by agricultural extension officers. Over 70% of Kenyans own a mobile phone, making it an ideal means to reach farmers in isolated communities with limited access to other sources of information.

Airtel Kilimo provides information through both voice and text, and covers practical farm – land preparation, planting, pest management and harvesting – as well as marketing and climate and weather information. Focussing on five commonly grown crops, advisory messages offer detailed content on a wide range of issues, including where farmers can buy inputs, timing of activities, such as weeding and fertilizer application, and how to reduce costs and environmental impact.

By October 2013, the service had 4,250 active subscribers to its SMS service and voice content, prompting its extension to Western Kenya in November 2013, with the intention to roll it out to central regions during 2014.

Impact

The above mentioned projects are in their early stages of development and, as such, in their early stages of reporting on impact. However, initial indicators show that mobile advisory services are beginning to have a positive impact on farmers' livelihoods.

In the case of mKisan, improved access to information does appear to be having an impact. A number of smallholder farmers using the mKisan service in 2013 were asked for feedback. Sanjay Yahulla, a livestock farmer from Uttar Pradesh talks about how he has benefitted. "I keep goats and I get to know much information about goats, such as good breeds, feeding and diseases, from mKisan service," he says. "My milk production has increased by 35% and now I can earn INR 150-200 (US\$2.50—3.30) per day. The main good thing about this service is that we can get any information right from home, any time."

Other farmers have also shared positive stories of using the service. "I am using mKisan since April this year," says Yogesh Rameshwar Lulle, from Maharashtra. "I got good advice on turmeric farming and this year I have earned INR 30,000 (US\$492) from my one acre plot. I am very happy; mKisan is a real friend of Kisan." Arjun Aharwal from Madhya Pradesh comments, "Because of timely tips, I got from mKisan, I could increase yield of my gram crop by 25% this year and earned additional INR 50,000 (US\$821). Mobile advisory service is a boon for us, the farmers; more of us should take benefit of this."

Our mobile projects have reached good numbers of farmers over the past five years. Over the coming months and years, we intend to measure the effect of the forthcoming scale up projects, including the extent to which farmers are adapting their agricultural practices according to the mobile advisory information they receive. Are they adopting good practices and changing their behaviours and the way that they farm, even if only in a small way? Are they growing better quality produce and gaining higher yields? Ultimately these are the kinds of questions we will use as an indication of impact.

The wider context

As mentioned, from CABI's Joint of view, we have found our growing programme of mobile advisory services has allowed us to be much more ambitious in the reach, frequency and impact of the knowledge we provide, creating synergies across our expertise and services. Mobile technology is allowing us to take our world-class agricultural database of information and use it to tackle agricultural problems in a modern way.

Looking at the wider picture, we see opportunities for linking our work in mobile technology with other CABI projects and existing on-the-ground extension services, for example, helping farmers using mobile services to escalate their problems from the phone to face-to-face extension. We are currently moving towards integrating other complementary services such as access to finance (crop insurance and micro-finance, for example) and input providers. What we are starting to see is the development of the whole agri-ecosystem delivered through the mobile phone. Provision of services like mKisan, Airtel Kilimo and Café Movel is an important step towards that destination.

Mobile technology is the way that extension services are moving. CABI intends to continue harnessing this technology and applying it in an increasingly joined up manner, in order to tackle wider issues of nutrition, food security and improving people's livelihoods.

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Donors and partners

mKisan Donors:

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mKisan Partners:

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