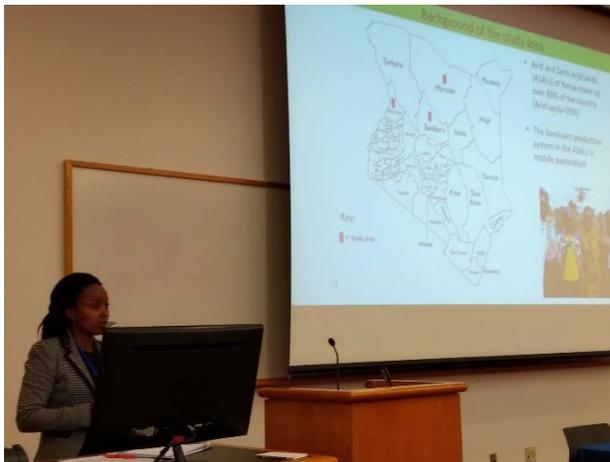


Agricultural extension, for example by radio: conference report*

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The 5th International Food Security Symposium at the University of Illinois took place in April 2019. My talk formed part of the section on information and communication technologies to strengthen institutions for food security. The final part of this report presents selected other sessions related to extension.



World population is expected to reach nine billion by 2050, and global food demand to increase by 60% over current levels. According to the FAO, smallholders account for 60 percent of global agriculture. They face many challenges. These include limited access to inputs and finance, inadequate infrastructure, uncompetitive market prices, climate change impacts such as floods and drought, and limited access to, and knowledge of, improved agricultural technologies and practices. Provision of extension services and agricultural information are key drivers in achieving food security among smallholder farming communities.

Agricultural extension services provide relevant, practical and timely information to farmers. However, public agricultural extension in Kenya is limited, leaving many farmers with few sources of useful and reliable information to increase their productivity. The ratio of extension officers to farmers in Kenya stands at 1:1800, far below the FAO recommendation of 1:400. Radio can help bridge the gap. With the advancement of ICT, it has evolved into an interactive medium.

Various studies across Africa have documented radio as the dominant or most widely used mass medium for disseminating information. Farm Radio International estimates radio ownership of rural communities in Africa at 76 percent. The 2015/2016 Kenya Integrated Household Budget Survey found that radio was the most popular ICT there, with 76 percent access in the rural population. Disseminating agricultural information through local radio increases extension officers' reach, particularly in remoter communities. Importantly, it does so in a language that smallholders understand, and very cost-efficiently.

Kilimo Media International (KiMI), in collaboration with Syngenta Foundation for Sustainable Agriculture and local language radio stations in Marsabit, West Pokot and Samburu as well as the County departments of Agriculture, Livestock and Fisheries, initially carried out a one-year project (2015 to 2016). This was extended in 2017 to include Isiolo and Garissa. The initiative aimed to increase agricultural productivity in these semi-arid counties by enhancing farmers' access to agricultural information.

Objectives

- i. Establish farmers' access to and use of agricultural information aired on radio in semi-arid areas of Kenya
- ii. Build the capacity of radio personnel and agricultural extension officers to package and broadcast information for farmers
- iii. Develop radio programs that respond to farmers' specific needs
- iv. Assess the impact of the programs on farmers

Study area

Arid and semi-Arid land (ASAL) forms 89 percent of Kenya's land mass. The dominant ASAL production system is semi-nomadic pastoralism. Droughts have led to loss of livestock and even human lives due to hunger and malnutrition. The Kenyan government has increased its efforts to encourage pastoralists to grow food crops in response. Some have diversified their sources of livelihood to include trade and 'agro-pastoralist' activities. Our map and Table 1 indicate the location and some characteristics of our study area.

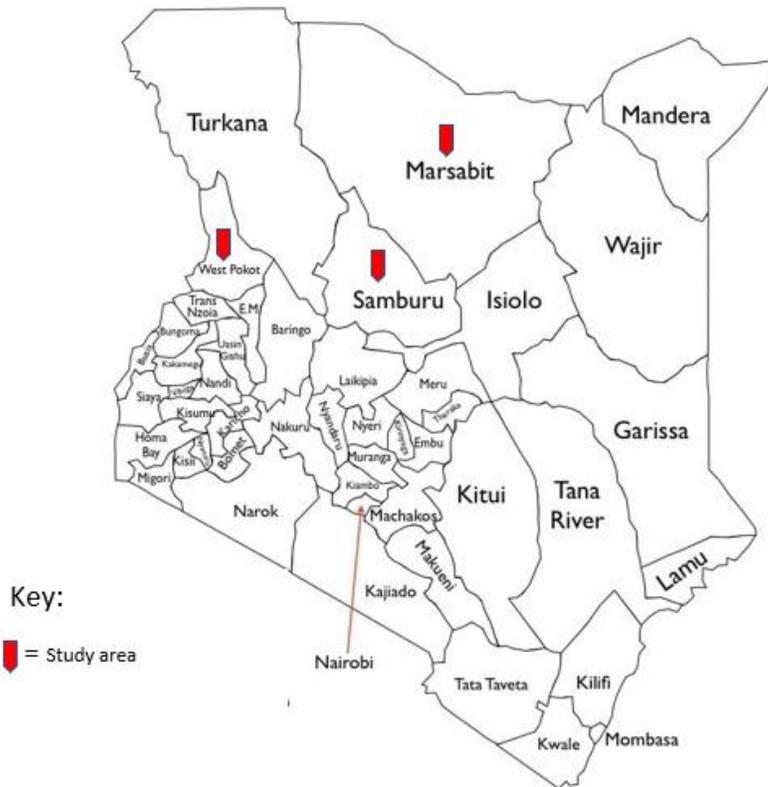


Table 1: Characteristics of the study area

County	Meters Above Sea Level	Rainfall mm/year	Temperature (°C)	Population* (M=Male F=Female)	Area (Km ²)
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Marsabit	300 to 900	200 to 1000	15 to 26	151,061M 140,011F Total=291,270	70,961.2
Samburu	600 to 2600	250 to 1250	24 to 33	112,007M 111,940F Total=223,947	21,022
West Pokot	900 to 3,370	600 to 1600	15 to 30	254,827M 257,863F Total= 512,690	9,169.4

*Kenya National Bureau of Statistics 2009 census
Source: County integrated plans (2013 -2017)

Methodology

Kilimo Media International (KiMI) is an agricultural extension service provider that uses radio and other ICTs to reach farmers. KiMI approached the County Executives of Agriculture, Livestock and Fisheries and local language radio station managers in the initial three counties. Our aim was to introducing the ‘radio for agriculture’ model and to get their support in the form of staff assigned to the project. Both parties signed corresponding MOUs with KiMI).

The assigned extension officers and radio staff together formed one production team per county. They jointly completed training on the use of radio for extension. Topics included audience segmentation, content packaging, program varieties, conducting interviews, general production skills and gender issues in agriculture. Each production team developed a first 13-week program schedule. This outlined the local content to be developed and broadcast per week, in line with the agricultural calendar.

After the training, KiMI ran a baseline survey to establish farmers’ radio listenership, existing access to agricultural information, related needs and challenges. Respondents were farmers aged at least 18 with access to a radio. We collected data through household interviews, focus group discussions and key informant interviews.

Radio programs were developed and broadcast to address farmers’ information needs identified in the survey. The programs were designed in local languages such as Rendile, Borana, Pokot and Samburu. Formats included agriculture tips, news, studio or field interviews, and drama. The studio expert on each show provided his or her mobile number for further contacts after the program. Kalya FM (West Pokot) aired its programs at 8.45pm every Wednesday, Star FM (Marsabit) at 8.00 pm on Saturdays, and Serian FM in Samburu on Saturdays at 11.00 am. Airing of programs was pro bono. KiMI and the Syngenta Foundation facilitated the collection of audio material for programming.

After the initial project, KiMI repeated the survey, as far as possible with the same participants (128 farmers, three focus groups, six key informants).

Study demography and results

A slight majority of farmers were females. 63 percent of interviewees belonged to households with five to nine members. 86 percent of the respondents were married; 73% were aged 29-49. 33 percent of respondents had no education, 38% had attended primary school and 20% secondary. Only nine percent reported college or undergraduate qualifications. 67% of those interviewed owned the land they occupied; 76% owned fewer than five acres.

At baseline, 65% reported using radio as their main source of agricultural information, followed by extension officers (29%). The majority preferred to listen after 8.00 p.m. Listenership for agricultural programs increased from 59% at baseline to 96% by the second survey. 33% of listeners reported having increased their agricultural knowledge. Of these, 84% reported implementing a practice about which they heard. Some respondents reported visiting agro-dealers to seek more information (Marsabit 54%, West Pokot 48%, Samburu 16%).

Some of the broadcast practices implemented by farmers were as follows:

- **Marsabit**
 - Soil conservation practices (terraces, crop rotation, mulching, etc.)
 - Use of herbicides and pesticides
 - Horticulture (pawpaw and oranges)
 - Growing green grams
- **Samburu**
 - Plant spacing and early planting
 - Mixed farming (maize and beans)
- **West Pokot**
 - Dairy farming (cows and goats, zero grazing)
 - Poultry-keeping
 - Tissue culture banana growing

Over 80% of farmers gave positive feedback on the programs. They reported that these were relevant to their information needs, and that the content was clear and concise. They added that the programs were well packaged, with a wide variety of content. Listeners now felt confident to seek extension services whenever the need arose. For some farmers, the radio broadcasts were their first access to information on better farming practices. Being interviewed on radio and sharing their experiences with other farmers gave them great satisfaction.

Radio station staff reported that the programs had wide reach. Listeners included some from neighboring countries (Uganda, Star FM / Ethiopia, Radio Jangwani), as well as other counties (Moyale / Baragoi, Jangwani). This reach became evident from the calls and text messages to the stations and extension officers with questions and comments. The stations reported that prior to the agricultural programs, there had been no evidence of such wide listenership. Station staff also reported increased post-program feedback from listeners, increased agriculture-related advertising, and improved ability to develop better programs.

Extension staff reported that radio gave them a platform to reach more farmers than they had anticipated at the beginning. They stated that they now had better understanding of how radio works and how they can use it to reach farmers better. All extension officers participating in the project reported that their credibility among farmers had grown.

The other presenters in this session were Simrin Makhija (International Food Policy Research Institute), Kristen Iverson and Rachel Mullen (AgReach). Makhija talked about accelerating technical change through video-mediated agricultural extension in Ethiopia. Iverson and Mullen presented on field experience with extension videos.

Symposium audience questions and presenters' responses

How viable is video as an agricultural extension tool in areas with no electricity?

Africa is blessed with a lot of sunshine. Solar energy can be used to power up the video playing devices. Power banks can also be used. Alternatively, farms can share and play videos on mobile phones via WhatsApp.

Have you strengthened the institutions you are working with? How?

Yes! For example, we have built the capacity of radio station staff to produce engaging and impactful programs that have increased listenership. Due to this, some stations reported increased agriculture-related advertising. Farmers also reported that information that addressed their information needs was more readily available over the radio. A number of them adopted some of the practices aired, increasing their productivity. Farmers also reported that they now have greater access to agricultural extension officers who provided their mobile number on air. Extension officers reported that they are now able to reach more farmers and provide them with useful information. This has diversified their farming and increased their productivity.

How are you mentoring institutions you work with?

Through capacity-building, regular contact with production teams and close monitoring and evaluation.

Is the video content sustainable over time? Some information may become obsolete.

One needs to continue developing content that is in line with the changing seasons, farmers' information needs and policy shifts. All the programs are aired in line with the agriculture calendar, making them relevant for a given season.

Has there been any comparative analysis of radio and video use in agricultural extension?

I haven't come across any studies that have compared the two. Radio and video both have their advantages and disadvantages. Radio is mobile and offers a cheap way of reaching many people quickly; videos are expensive to develop and hard to watch when working. However, as radio is not visual, it leaves a lot to listeners' imagination. Combined use of the two media could be further explored.

Selected highlights from other symposium sessions on extension

The keynote address was entitled “*Multum in Parvo* - Food security through research, one scholar at a time”. The presenter was Saweda Liverpool-Tasie, an associate professor in the department of Agricultural, Food and Resource Economics at Michigan State University. She argued that there are broken links between research and government, and research and extension. Poor identification of research questions and collection of data is a challenge in this area.

Liverpool-Tasie acknowledged that building capacity to address food security through research and extension in higher education is a slow process. The many steps require good coordination and long-term perspectives. *Multum in Parvo* (much in a little) is about building food security “one scholar at a time”. A mentoring program for young scholars uses strategies such as peer learning, mentoring and ‘train the trainer’ approaches. This program has trained 800 Nigerians on data collection and analysis, resulting in the publication of 31 articles.

Ashok Gulati (Indian Council for Research on International Economic Relations) presented the role of institutions and innovations in making India hunger-free. He described how these had turned the country into a major global exporter of several agricultural commodities. India, plagued by hunger only two generations ago, is today the world’s largest exporter of rice and second-largest of cotton. India has also lifted itself from acute milk shortages to being a leading producer. (For further Gulati views on these topics, see e.g. <https://www.syngentafoundation.org/news/recent-news/we-face-101-problems-im-confident>)

Peter Goldsmith shared experiences from the Soybean Innovation Lab (SIL) at the host University of Illinois. (SIL is a Syngenta Foundation partner). Goldsmith highlighted the unit’s capacity-building through ‘practitioner extension’: researchers directly serve the needs of development outreach practitioners. SIL achieves this through needs assessments, collaboration, service-orientation and a feedback model.

Ed Laws, senior research officer at the Overseas Development Institute, outlined common political/governance challenges in agricultural extension and capacity-building. He described these as low commitment by governments, poor coordination, “political/elite capture”, gender norms and expectations, and lack of collective action.

Simrin Makhija (*see presentation section above*) discussed internationally comparable metrics for agricultural extension. The data are often not accurate enough for cross-country comparisons, for example of adoption rates. Makhija emphasized the need for quality data, a standardized and universally accepted definition of ‘extension’, and caution when using indicators in policy-making.

In the five-minute “Lightning Talks”, Nicole Lee (University of Illinois) presented a study of extension officers’ numeracy. Some are unable to calculate correct crop protection quantities for application. Lee is testing strategies in response. Avelardo Rivera (AgReach) presented an app in development that uses a mobile or web-based dashboard to reduce extension officers’ reporting burden. It aims to replace handwritten reports and help supervisors track officers’ movements.

**Report abridged by the Syngenta Foundation for Sustainable Agriculture*