

FARM RADIO INTERNATIONAL

Participatory Radio Campaigns and food security

How radio can help farmers make informed decisions

African Farm Radio
Research Initiative
2011

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Glossary of terms

AFRRI	African Farm Radio Research Initiative
ALC	Active listening community
CC	Control community
FADECO	Family Alliance for Development and Cooperation
FRI	Farm Radio International
ICT	Information and communication technology
KP	Knowledge partner
MLD	Ministry of Livestock Development
MAFS	Ministry of Agriculture and Food Security and Cooperatives
MTIM	Ministry of Trade Industries and Markets
NGO	Non-governmental organization
NAC	National Advisory Committee
PRC	Participatory radio campaign
PRC1	The first participatory radio campaign
PRC2	The second participatory radio campaign
PLC	Passive listening community
PRA	Participatory rural appraisal
SMS	Short message service
TBC	Tanzania Broadcasting Corporation
NSGRP	Tanzania's National Strategy for Growth and Reduction of Poverty
URT	United Republic of Tanzania

Executive summary

Participatory radio campaigns and food security

Proof that agricultural radio can improve food security among smallholder farmers in Africa

Report highlights

- Radio continues to have a broad reach in Africa. An estimated 40 million farmers in five different countries were served by the AFRRI partnership with 25 radio stations.
- Farmers engaged in the design and development of farm radio programming were almost 50 per cent more likely to take up agricultural practices deemed to improve their food security than passive listeners. Those in what AFRRI deemed "active listening communities" (ALCs) were 10 times more likely to adopt the practice than those farmers who had no access to the farm radio programs.
- Farmers demonstrated increased knowledge of agriculture innovations as a result of listening to AFRRI radio programs, with up to 96% of some radio listeners scoring at least 60% on a follow-up knowledge quiz about the promoted farm practices.

The African Farm Radio Initiative

The African Farm Radio Research Initiative (AFRRI) was a 42-month action research project implemented by Farm Radio International (FRI) in partnership with World University Service of Canada (WUSC), and with the support of the Bill & Melinda Gates Foundation.

AFRRI was created to fill a knowledge gap. Prior to AFRRI, there was little solid evidence to confirm that rural radio has the capacity to improve food security in Africa. AFRRI set out to test the effectiveness of a new type of radio campaign developed by FRI: the participatory radio campaign (PRC). Working with partner radio stations in five African countries – Tanzania, Uganda, Mali, Ghana, and Malawi – AFRRI created a series of farm radio programs designed to educate farmers, and enable them to improve their agricultural practices. Farmer listeners were central to the development and implementation of the radio campaigns. AFRRI's PRC model allowed farmers to participate at every level in the process. As a preliminary step, AFRRI identified active listening communities (ALCs) for each of its 25 partner radio stations. Farmers in the ALCs were surveyed about their local agricultural practices and unique needs, as well as their radio listening habits. They then became central players in the design of a series of radio programs geared to address a particular agricultural practice that farmers deemed would help to improve their livelihoods, and ultimately their food security.

AFRRI coordinated the development, broadcast, and evaluation of two "rounds" of PRCs, called PRC1 and PRC2 by each participating station. It is estimated these PRCs reached approximately 40 million farmers in five different countries. The first round of PRCs was completed in mid-2009 and the second round of PRCs concluded in June 2010.

The research was guided by the following two questions:

1. ***How effective is radio in enabling smallholder farmers in Africa to address food security challenges they face, with a particular focus on increasing/diversifying food production, improving land use management, and reducing post-harvest losses?***

2. ***How can new technologies, such as cell phones and MP3 players, increase the effectiveness of radio as a sustainable, interactive development communications tool?***

There were three key elements to the AFRRI project:

1. **ICT-enhanced radio**
   AFRRI wanted to test how new information and communications technologies (ICTs) could be integrated with radio to provide better two-way communication between radio stations and their farmer listeners. To this end, each partner radio station was equipped with one of eight customized ICT packages to enhance their PRCs. Some radio stations were provided with desktop computers and internet access, for example. Other stations were offered portable digital recording and editing equipment which enabled them to interview farmers and agricultural experts on location, rather than in studio. Other technologies included wireless networks, call-in and call-out facilities, and satellite terminals (VSATs).

2. **Radio-based MIS**
   Preliminary research in 75 communities indicated that smallholder farmers required and demanded better access to market information in order to enhance their individual food security. Approximately 80 per cent of farmers engaged in early participatory rural appraisals (PRAs) identified MIS as a need. Using the PRC model and with support from the ICT enhancements, AFRRI designed its MIS pilot project to better understand how radio could enhance traditional marketing information service (MIS). The project consisted of individual MIS radio campaigns in Mali, Uganda, Tanzania, and two in Ghana.

3. **Participatory radio campaigns**
   At the outset of the initiative, the AFRRI team reviewed many different approaches to agricultural radio in Africa. The radio campaign approach seemed suited to the research project because they take place over a defined period of time, and they have specific and measurable objectives. In order to make farmers central to the research process, however, AFFRI wanted to create a new model of campaigns that was participatory and bottom-up, rather than the top-down approach of traditional radio campaigns.

The concept of a participatory radio campaign (PRC) was developed. PRCs are farmer-centred radio programs. Farmers participate in selecting the focus – or topic -- of the radio campaign, choose the time of broadcast, and are intimately engaged in the ongoing development of the farm radio programming over a set number of weeks; including as central agents of the knowledge-sharing process. Lively and entertaining formats are designed to attract listeners.

The purpose of a PRC is to help farmers evaluate, and make informed decisions about, a new agricultural

practice or improvement. Throughout the multiple week radio series, farmers share information about the specific agricultural improvement on-air; they are supported in this process by the radio station staff. Staff provided participating farmers -- and all listeners-- with additional information on the agricultural practice, sometimes even sourcing the physical resources required to help them implement the agricultural improvement.

PRCs are implemented in stages with a number of key steps:

1) **Community rapid appraisals:** In AFRRI, participatory rapid appraisals (PRAs) were conducted in 100 communities, (four per participating radio station, each typical of the area served by the radio station). These appraisals gathered information about what farmers need and how farmers use radio.
2) **Improvement selection:** AFRRI engaged knowledge partners, including farmers, to help identify established agricultural practices that had been evaluated and found to have an impact on food and nutrition security for resource-poor, rural farmers. The project favoured agricultural improvements that were quite simple and could be implemented with available resources to better ensure uptake by smallholder farmers. Agricultural improvements were as varied as the farmers' needs, and included disease-resistant varieties of cassava, apiculture, animal enclosure, composting, mulching, intercropping, controlling pests with neem extract, improved varieties of upland rice, shea nut production and processing, and others.
3) **Formative research:** Through focus group discussions, information was gathered about the target audience's knowledge, attitude, and behaviour/practices (KAPs) regarding the agricultural improvement; their radio listening habits; and their preferences with regard to radio program style and treatment. Organizations that provide agricultural education and related products and services were identified as potential partners.
4) **Campaign design:** Workshops brought together radio staff, farmers, extension workers, local NGOs, and others, to design a four-to-six-month-long radio campaign for each partner radio station.
5) **Broadcast:** Radio campaigns were broadcast at a reliable, predictable time, a time that farmers had identified as convenient listening times. Each PRC included four stages, with farmers at the centre of each stage: 1) The radio campaign was launched by identifying the agricultural improvement for the listening audience; 2) The agricultural improvement was discussed on-air, in relation to the needs and practices of local farmers; 3) Radio programming encouraged farmers to make an informed decision about adopting the agricultural improvement; 4) The radio campaign continued with discussion on-air – among farmers, extension workers, and other specialists -- on how to implement the improvement, including troubleshooting of any problems encountered, and how to access required physical resources.
6) **Gathering Listener Feedback:** Through logs of each PRC episode, analysis of listener feedback (letters, SMS, e-mails, calls-in, etc.), focus group discussions (with adult men, women, and youth in listening communities), and detailed observations of "case farmers" (three per radio station), radio campaigns were assessed for their progress against objectives so that mid-course corrections could be made.

One of the hoped-for results of a successful PRC is increased knowledge among farmer listeners of the promoted agricultural practice by the end of the radio campaign; the optimum anticipated result is the adoption of the agricultural improvement by members of the listening audience, with the evidence-based expectation that the agricultural practice will improve their household food security.

Scope and methodology of the action research

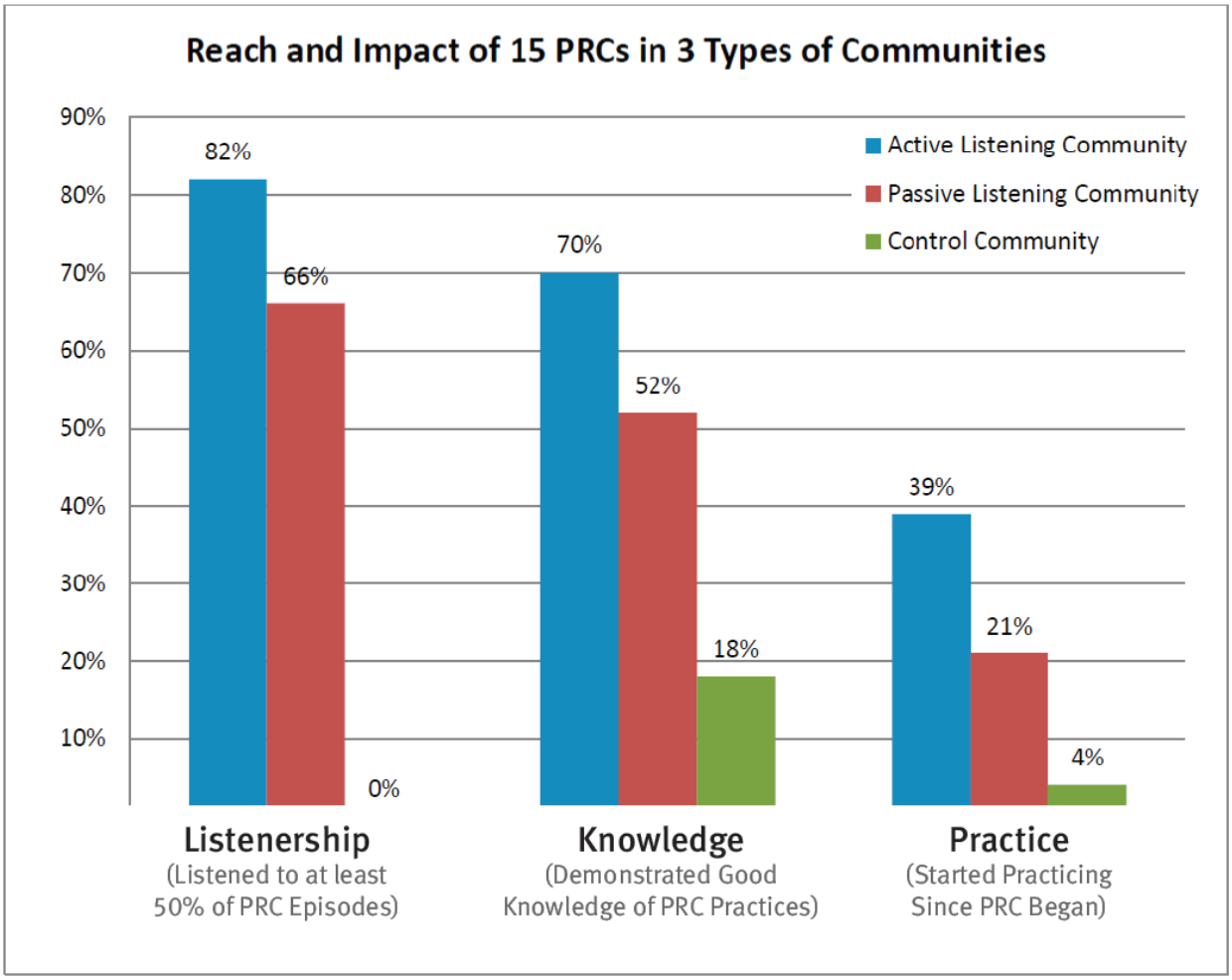
This report presents and discusses the key findings from an in-depth evaluation of 15 round-two PRCs – three PRCs in each of the five countries involved in AFRRI. AFRRI examined a mix of radio stations – community, associative, commercial, and state. Tools used for this evaluation included 4,500 household surveys (300 per radio station) in 90 communities, farm visits and field measurements, key informant interviews, and collection of secondary data (from other sources, such as national agricultural extension services). Through this evaluation, AFRRI sought to answer a number of key questions, including:

- The percent of rural communities that listen to the radio, their frequency of listening, where and with whom they listen;
- The frequency of listening to the PRC programs
- The level of knowledge of farmers about the specific agricultural improvement featured in the PRCs
- The percent of farmers practicing the promoted agricultural improvement, and when they started practicing, (before, during or after the PRC began)

The household survey included questions designed to provide the above information. It included a custom-made knowledge quiz created to test how much knowledge respondents had of the specific improvement featured in the PRC. It was conducted in three types of communities: *active listening communities (ALCs); passive listening communities (PLCs); and non-listening control communities (CCs).* An equal number of households were in each type of community.

Active listening communities (ALCs) were engaged in AFRRI and the PRCs from the beginning. They were consulted about the improvements to be featured in the PRC, were involved in monitoring and providing feedback, and members of these communities were often interviewed for the programs. It was anticipated that rates of PRC listening, knowledge gain, and uptake of new practices would be partly affected by the high level of participation, engagement and on-air presence of members of these communities. AFRRI also surveyed farmers in passive listening communities (PLCs) to determine whether PRCs affected farmer listeners in communities that were not engaged in the campaign's development. Finally, in order to verify that the PRCs were partly or largely responsible for the change in practice, AFRRI conducted the survey in non-listening control communities (CCs). These communities were similar to the surveyed ALCs and PLCs in size, agro-ecological and social characteristics, and had similar access to conventional extension services. But farmers in these communities were unable to listen to the PRCs, either because the radio station's signal did not reach them or because they did not understand the language of broadcast. Only those farmers that had no awareness at all of the PRC were interviewed. (Some control community members may have been able to listen to the PRC at the market or at friends' homes in neighbouring areas).

Key Findings



1. ***PRCs have unprecedented success in motivating smallholder farmers to take up improved farming practices.***

In communities where farmers were actively engaged in producing the PRC (ALCs), 39% of farmers adopted the improved farming practice featured in the PRC. Perhaps even more significant, however, is that in communities where farmers could simply listen to the PRC programs and had no active involvement with the broadcasters, 21% took up the improvement.

On average, only 4% of farmers in control communities took up the practice.

AFRRI proved that a campaign developed with the participation of a limited number of communities can result in a radio show that is popular and effective – even in communities with no direct involvement in planning, monitoring or contributing their voices to PRC programs. This has promising implications for scaling-up. A radio station that reaches a million farmers with a PRC may cause, on average, 200,000 of them

to adopt a new farming practice (even if the program encouraged the direct participation of only 60 farmers in two or three communities).

2. *PRCs encourage farmers to try something new, and help farmers become knowledgeable about improved farming practices*

The PRCs shared a great deal of information about new agricultural practices. Some of this information came from experts, but a lot of it was shared by knowledgeable and experienced smallholder farmers. A knowledge quiz was administered upon conclusion of the PRC. In ALCs, 70% of farmers scored well on the knowledge quiz and over one-third of farmers demonstrated detailed knowledge of the promoted improvement. PLCs, over half scored well on the quiz and 21% showed detailed knowledge. This was about three times higher than the number of farmers with comparable scores in non-listening control communities. Further, AFRRI learned that the more frequently farmers listen to PRC episodes, the more knowledge they gain.

3. *PRCs motivate men, women, young, old, poor and better-off smallholder farmers to adopt improved farming practices*

Gender

PRCs had considerable success in motivating women to adopt improved farming practices. In ALCs, 39% of female farmers adopted the promoted improvement (compared with 40% of male farmers in the same communities). Similarly, the improvement was taken up by 18% of female farmers in PLCs (compared with 22% of male farmers in the same communities). This shows that PRCs can be an effective strategy for meeting the communication and information needs of female farmers. Additionally, AFRRI found that PRCs are especially likely to influence the practices of women farmers when they focus on a practice of special interest to women, (such as shea nut production and processing), and when they are broadcast at a time when women are free to listen.

Age

AFRRI also demonstrated the effectiveness of PRCs to reach young farmers, reinforcing the ability of these campaigns to help farmers improve their food security throughout their lives. In ALCs, 44% of farmers under the age of 20 reported taking up the promoted improvement (compared with 42% of 20-40 year olds, and 34% of farmers over 40). In PLCs, 17% of farmers under 20 adopted the improvement (compared with 19% of 20-40 year olds, and 22% of farmers over 40).

Wealth

While AFRRI did not do a rigorous assessment of the income or wealth levels of survey respondents, it did ask about cell phone ownership. While not a sufficient proxy for wealth on its own, if non-cell phone owners do not listen to or benefit from PRCs, it may indicate that PRCs are of limited value in serving the poorest households. However, survey results show that in PLCs, 19% of males who did not own cell phones adopted the promoted improvement. This compares with 26% of male cell phone owners in these communities and an overall average of 22% of males in the communities.

4. *PRCs have a long-term impact, with promoted improvements being practiced by smallholder farmers at least a year after the radio campaign ends.*

One year after the airing of the final episode of the first round of PRCs, 42% of farmers in ALCs were still practicing the featured improvement. In PLCs, 27% of farmers continued the improved farming practice. FRI will continue monitoring the incidence of promoted improvements in research communities for at least three years, gathering further information about the long-term effectiveness of PRCs.

5. *All types of radio stations can produce effective PRCs, if they have the proper training and support.*

AFRRI partnered with different types of radio stations: community, commercial, associative, and public radio stations. The outcome evaluation survey found that all were able to carry out effective PRCs. The key is to work with stations that are trusted by smallholder farmers and willing to commit to the whole participatory, farmer-centered process.

Examples of PRCs:



Nkhotakhota Community Radio, Malawi
Topic: One-by-one maize planting. This method boosts per-hectare yield, cuts down on weeding requirements, and reduces soil erosion.
Formats: Included vox pops, mini dramas, phone-in and phone-out shows, community discussions and field interviews.
Results: In communities that had no engagement beyond listening to the PRC, 53% of farmers found the PRC on their radio dial and listened regularly. One out of three farmers in these communities introduced one-by-one maize planting.



Radio Ada, Ghana
Topic: PRC1 – penning small livestock (to protect vegetable gardens from roaming goats and pigs). PRC2 -- The production and sale of manure compost (to take advantage of resources made available by animal enclosures).
Formats: Included community discussions, airing of views by vegetable growers and livestock owners, and information on low-cost penning techniques.
Results: Over 80% of livestock owners in PRC ALCs constructed enclosures to pen their animals. In communities that had no engagement beyond listening to the PRC, 48% of livestock owners started producing manure compost. No respondents in the control communities had adopted this practice.

Conclusion

Approximately 40 million smallholder farmers were served by radio programs conducted as part of AFRRI's two rounds of PRCs. If the survey findings from the PLCs are applied across the potential audience, it is estimated that 20 million learned about the promoted agricultural improvement, and 10 million adopted one or more of a wide range of improved farming innovations as a result of these PRCs.

AFRRI was a research initiative, intended to gather and share data to fill a knowledge gap. The project demonstrated that participatory radio campaigns are widely listened to and have a significant and measurable impact on knowledge and practice in farming communities that can access them. They represent a proven methodology for taking agricultural innovations to scale at a very low cost per farmer.

While AFRRI answered many questions, many more remain to be investigated. It is important, for example, to track and measure the long-term impact of PRCs – something FRI will be able to do with the "AFRRI-2" grant from the Bill & Melinda Gates Foundation. Radio formats and methodologies other than PRCs can be implemented and monitored to determine the efficacy of different types of farm radio in improving food security; it may also help to determine why some PRCs in the AFRRI study proved to be more effective than others in this regard. PRCs can be used to scale-up agricultural initiatives, particularly those taking a value chain approach. This approach has the potential to enable millions of African smallholder farmers to understand, evaluate, make informed decisions about, and put into practice, innovations that advance their food security.

How to use links in this document:

This report is one in a series of publications created from the results of the African Farm Radio Research Initiative. The reports are available electronically via links.

There are two ways to access these other documents:

1. Type in the URL shown

We have provided a short URL which can simply be typed into your web browser.

2. Scan the QR Code



You will notice “QR Codes” throughout this document which will make it easier for you to access these companion pieces. Think of them as barcodes that can easily be scanned by your mobile phone’s camera. There are many free mobile applications available to support this type of function. We recommend “Google Goggles,” which is widely available for iPhone, Blackberry and Android phones. You will then be able to access the PDF version of the report or resource.

Companion reports:

This report is one in a series of publications created from the results of the African Farm Radio Research Initiative. For reference please see the other two companion papers below.

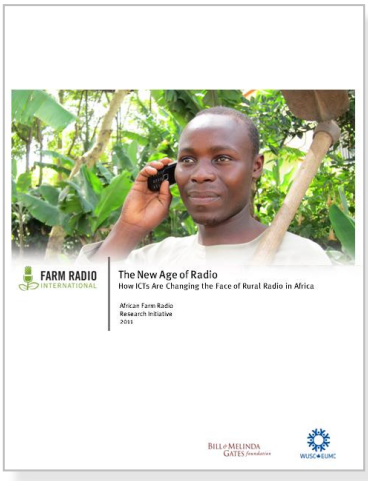
Did you know that Farm Radio conducted a thorough analysis of market information services in each of the AFRRI partner countries? *Marketing on the Airwaves: Marketing Information Services (MIS) and Radio*

http://bit.ly/farmradiomis



Did you know that Farm Radio has created a companion report on our use of ICTs in radio campaigns? *The new age of radio: How ICTs are changing rural radio in Africa.*

http://bit.ly/farmradioict



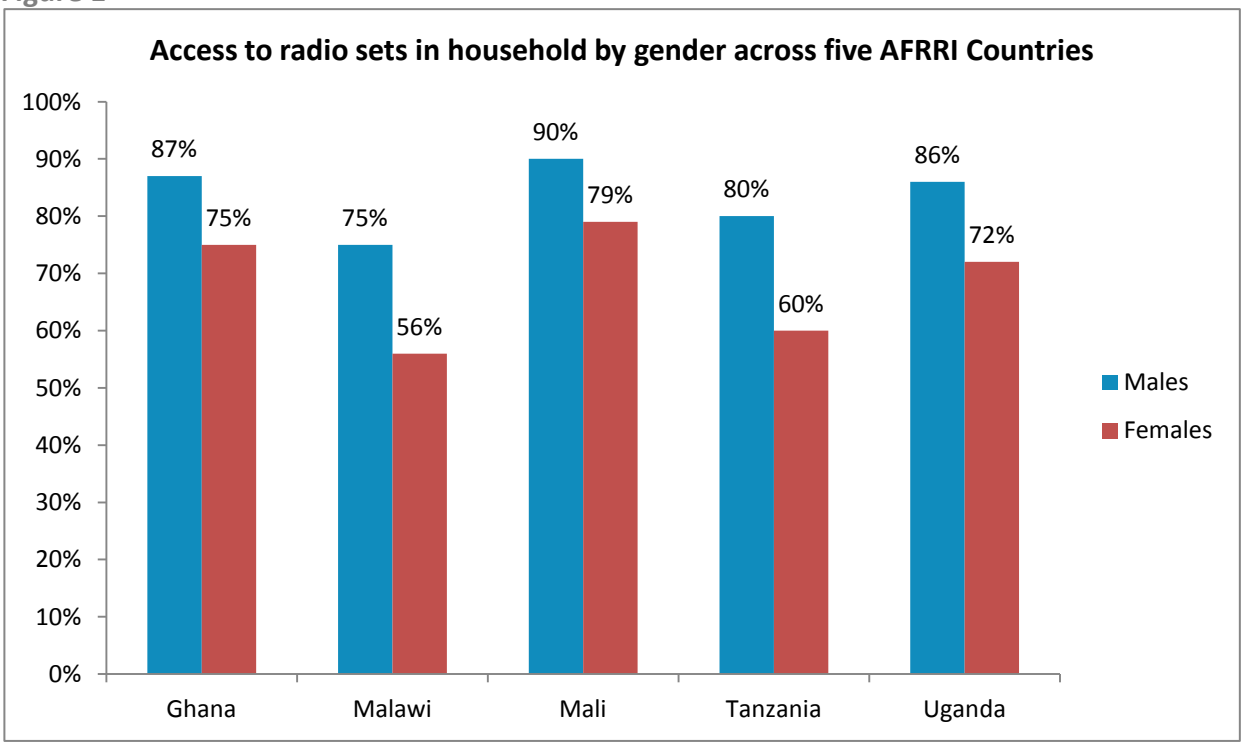
1.0 Introduction: Participatory radio campaigns and food security

In April 2007, Farm Radio International (FRI), with funding from the Bill & Melinda Gates Foundation and in partnership with World University Service Canada (WUSC), set out to conduct a 42-month action research project – the African Farm Radio Research Initiative (AFRRI). The main objective of AFRRI was to assess the effectiveness of farm radio to meet food security objectives of rural farming households in Africa. Central to the project was the development of a new model of radio programming designed by FRI – the participatory radio campaign (PRC). Within the PRC model, farmer listeners were engaged as central players to design, develop and implement a series of radio programs around an agricultural practice they deemed essential to their livelihoods and overall food security.

Radio in Africa

Radio is the most widely used medium for disseminating information to rural audiences across Africa. Radio can reach communities at the very end of the development road – people who live in areas without phones or electricity. Radio reaches people who cannot read or write. Even in very poor communities, radio penetration is vast. There are more than 800 million radios in developing countries. An average of one in ten people in Africa have access to a radio[1]; that translates into a major proportion of households that own radios, given that the average household size is 7.2 people. An AFRRI survey of 4581 households in rural listening communities in countries confirmed that approximately 76% of households own a radio.

Figure 1



Over the years many development initiatives have demonstrated the power of radio to reach rural audiences, both as an instructional technology, and as a participatory development medium.

[1]Farm Radio International (2007). Our approach – Radio For Development Retrieved from: http://www.farmradio.org/english/donors/about/approach.asp

Radio is the most accessible of all information and knowledge-sharing sources and instruments on the African continent; yet the potential of radio as an effective development tool is often underestimated in policy formulation. For farming communities living on the periphery of information technologies and societies, radio is often the only window to global reality.[2]

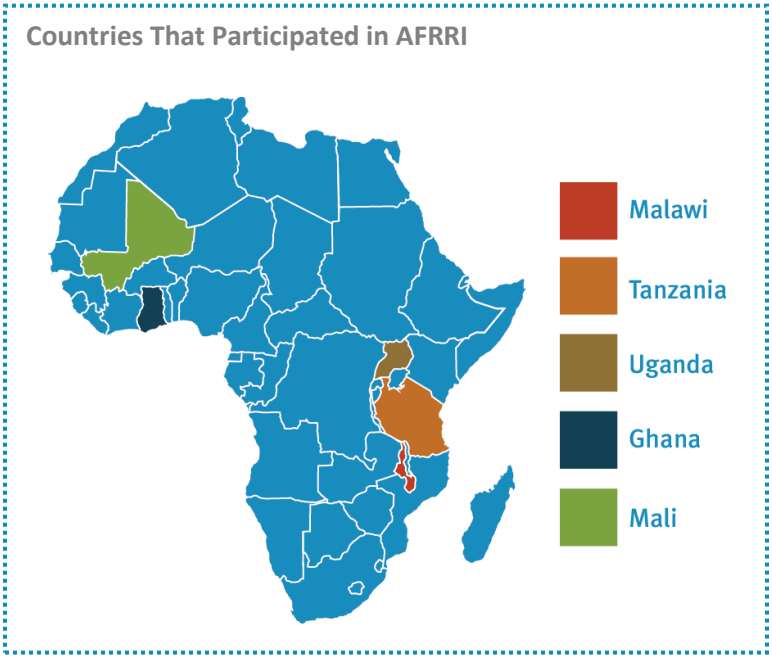
The African Farm Radio Research Initiative

AFRRI investigated the effectiveness of radio to address the food security and agricultural goals of resource-poor farmers in five African nations: Ghana, Mali, Uganda, Tanzania, and Malawi. The project started in 2007 and ended in September 2010.

AFRRI's research was guided by the following two questions:

1. *How effective is radio in enabling smallholder farmers in Africa to address food security challenges they face, with a particular focus on increasing/diversifying food production, improving land use management, and reducing post-harvest losses?*

2. *How can new technologies, such as cell phones and MP3 players, increase the effectiveness of radio as a sustainable, interactive development communications tool?*



There were three key elements to the project:

1.1 Participatory radio campaigns (PRCs)

Working with partner radio stations in five African countries – Tanzania, Uganda, Mali, Ghana, and Malawi – AFRRI created a series of farm radio programs designed to educate farmers, and to enable them to improve their agricultural practices. Farmer listeners were central to the development and implementation of the radio campaigns. AFRRI's new participatory radio campaign (PRC) model allowed farmers to participate at every level in the process. As a preliminary step, AFRRI identified active listening communities (ALCs) for each of its 25 partner radio stations. Farmers in the ALCs were surveyed about their local agricultural practices and unique needs, as well as their radio listening habits. They then became central players in the design of a series of radio programs geared to address a particular agricultural practice that farmers deemed would help to improve their livelihoods, and ultimately their food security.

1.2 Information and communication technology (ICT)

AFRRI wanted to test how new information and communications technologies (ICTs) could be integrated with radio to provide better two-way communication between radio stations and their farmer listeners. To this end, each partner radio station was equipped with one of eight customized

[2]Manyozo, L. (2007). *Communicating with Radio: What Do AFRRI Know?* Farm Radio International.

ICT packages to enhance their PRCs, which included a mix of communications mediums becoming increasingly accessible in Africa. Some radio stations were provided with desktop computers and internet access, for example. Other stations were offered portable digital recording and editing equipment which enabled them to interview farmers and agricultural experts on location, rather than in studio. Other technologies included wireless networks, call-in and call-out facilities, and satellite terminals (VSATs).

1.3 Marketing information service (MIS)

Five partner radio stations were selected to simultaneously participate in a pilot project using radio to enhance existing marketing information service (MIS). Marketing information service, which helps farmers to understand prices, markets, and supply-and-demand, is essential to farmer security in Africa. Traditionally, MIS has been implemented as a suite of projects financed by external donors and administered through national governments. AFFRI sought to create a radio-based MIS with the capacity to reach and influence a vast number of farmers, and could be sustained by the partner radio station in the wake of the formal project. Preliminary research suggested farmers required more than just commodity prices to make MIS effective. Farmers also require context. AFRRI's MIS project included regular discussions about market issues, and engaged radio stations, farmer listeners and extension experts on changes in local, district, national and international markets, and how these changes affect what farmers grow and how they distribute goods.

The roots of participatory radio campaigns (PRCs)

AFRRI coordinated the development, broadcast, and evaluation of two "rounds" of PRCs, PRC1 and PRC2. The first round of 24 campaigns was completed in mid-2009, and the second concluded in June 2010. Outcome evaluations were conducted in January 2010 and July 2010, respectively. It is estimated that the broadcasts reached 40 million farmers. This report reflects the findings of the outcome evaluation for the second round of PRCs.

It was purposeful that the radio campaigns took place over a defined period of time and had specific and measurable objectives. It was anticipated that the efficacy of radio campaigns could be more readily evaluated than other approaches to farm radio because they were time-bound and focused on particular, observable changes in behaviour that occurred as a result of the radio programming. AFRRI created a model that put the participation and dialogue with farmers at its centre; one that valued farmers as decision-makers, rather than as passive recipients of diffused information. It's for this reason the model is called a participatory radio campaign.

After reviewing traditional campaign approaches to radio campaigns, the AFRRI team and its partners agreed that a new model was needed. The traditional approach to radio campaigns did not seem well-suited to the particular challenge of helping farmers learn about and adopt new agricultural practices relevant to them. Historically, radio campaigns have been used to convince large numbers of people to adopt a new behaviour -- such as immunization or wearing a seat belt -- employing marketing principles that aim to sell a new practice to a target audience. The behaviour or practice that the target audience is encouraged to adopt, however, has not necessarily been one that the audience wants or needs. The messages are usually created and delivered in a top-down fashion from expert outsiders, and they are carefully crafted to persuade and convince.

AFRRI's PRC model, on the other hand, was developed on the principle that radio campaigns should be more participatory and bottom-up in nature, with a clear focus on helping farmers make informed decisions about farming practices that matter to them. This approach acknowledges that farmers understand and can express

their own needs; that if they have the right information, they can evaluate their options and make reasonable decisions to adopt – or not to adopt – a particular agricultural practice. The AFRRI PRC model is premised on farmers identifying and selecting the themes of the campaigns. Programs broadcast throughout the multi-week-long radio campaigns feature farmers' voices, perspectives, concerns and questions, and promote interaction and dialogue among farmers, and between farmers and experts of their choosing. With this in mind, the AFRRI PRC is defined as follows:

> ***A planned, radio-based activity, conducted over a specific period of time, in which a broad population of farmers is encouraged to make an informed decision about adopting a specific improvement selected by their peers, based upon the best available information, to improve the food security of their families. It then provides the adopting farmers with the information and other support they require to implement the improvement.***

PRCs have a useful role to play in farm radio: They are special tools for a special purpose. They can be used in conjunction with other forms of agricultural radio that smallholder farmers need such as marketing information service (MIS), weather forecasts, and weekly, regular, agriculture shows.

This report presents and discusses the key findings from an in-depth evaluation of 15, round-two PRCs – three PRCs in each of the five AFRRI partner countries.

Watch Asuo Dzigbordi explain how he went from being an extension officer to a radio presenter at Volta Star Radio in Ghana during AFRRI.



http://bit.ly/farmradiovideo1

2.0 Background and context

Food insecurity in Africa

Africa is in a food security crisis. The Food and Agriculture Organization of the United Nations (FAO) defines food security as follows:

> *…when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. Household food security is the application of this concept to the family level, with individuals within households as the focus of concern.*[3]

Food insecurity is when people do not have access to food as above. According to FAO's latest statistics, 239 million people in sub-Saharan Africa are hungry. Three quarters of those people live in rural areas and overwhelmingly depend on agriculture for their food. Half are farming families "surviving off marginal lands prone to natural disasters like drought or flood"[4]. Table 1, below, profiles the five AFRRI partner countries and summarizes several key indicators.

Table 1 – Key indicators for countries in this project[5]

	Ghana	Malawi	Mali	Tanzania	Uganda
Population (2010)	24.3 million	14.9 million	15.3 million	45 million	33.7 million
Official languages	English	English and Chichewa	French	English and Swahili	English and Swahili
Region	West Africa	Southern Africa	West Africa	East Africa	East Africa
% of Population Living in Rural Areas (2009)	49%	81%	67%	74%	87%
Literacy (2009)	67%	74%	26%	73%	73%
% of Land Under Agricultural Use (2008)	69%	58%	33%	40%	66%
% of People Living Below National Rural Poverty Line (2006)	39%	56%	58%	37%	27%
# of Mobile Phone Users (out of 100) (2009)	63	16	29	40	29

[3] (2003)Trade Reforms and Food Security: Conceptualizing the linkages. FAO
[4] (2011) Hunger: Who are the hungry. World Food Programme
[5] Taken from http://data.worldbank.org

PRC themes and food security

The PRCs focused on contributing to three important elements of smallholder food security: diversification of production by introducing new crops, varieties, or livestock; improving soil health; and reducing post-harvest losses. These food security themes are reflected in the campaign topics chosen by radio stations and their listening communities, indicated in Table 2, below.

Table 2, below, profiles 15 of the partner radio stations featured in AFFRI's research. They are categorized by the typology of radio station (public/national, private or community), the major language groups served, the districts served/reached by transmissions and the campaign topics broadcast during PRC2[6].

Table 2 – 15 partner radio stations and their campaign topics

Country	Station name	Typology	Language(s)	Region/District[7]	Campaign topics
Ghana	Classic FM	Commercial	Akan (Twi)	Brong Ahafo	Use of mulch
	Radio Ada	Community	Dangme	Greater Accra	Manure & mulching
	Volta Star	Public	Eww/Akan(Twi)	Volta	Mulching & min tillage
Malawi	Nkhotakota	Community	Chichewa	Nkhotakota	1 to 1 maize planting
	Mudziwathu	Community		Mchinji	Use of inputs for Maize
	Zodiak	Commercial		Nationwide	Timely use of manure
Mali	Banjo Kayes	Commercial	Bamanankan	Kayes	Compost (Marie Noko)
	Radio Fanaka	Community		Greater Bamako	Compost (Seydou Noko)
	Radio Jigiya	Community		Sikasso	Modernized Shea butter
Tanzania	Radio Maria	Religious	Swahili	Nationwide	Improved local chickens
	Sibuka FM	Private		Shinyanga	Use of Manure
	TBC	Public		Dodoma	Group Marketing
Uganda	KKCR	Community	Rugiga	Kabaale	Use of compost
	UBC	Public	Sabiny	Kapchorwa	Highland Irish Potatoes
	Mega	Community	Acholi	Gulu	Fruit trees for honey

About the listeners[8]

The radio stations' listening communities that participated in the research are profiled below in Figures 2, 3 and 4.

Figure 2 shows that the majority of farmers surveyed were between 20 and 40 years old. This is consistent across all countries. Figure 9 shows the gender difference between farmers surveyed. With the exception of Ghana and Uganda (59% male), the sampling was close to half female and half male. Figure 10 shows the average number of people living in a household per country. Mali indicates a much higher average number, mostly due to the differences in marital status and cultural definition of family size.

[6] For a more detailed report about the PRCs and AFRRI see Farm Radio International. (2011) Participatory Radio Campaigns and Food Security: How radio can help farmers make informed decisions http://bit.ly/farmradioprc

[7] Some countries had a nationwide campaign where a single language is spoken by almost everyone (Malawi & Tanzania)

[8] The decision to not measure income levels of farmers in the household survey was made due to the challenge of identifying a wealth proxy like mobile phone, land or livestock ownership that could be applied across all countries and communities.

Figure 2

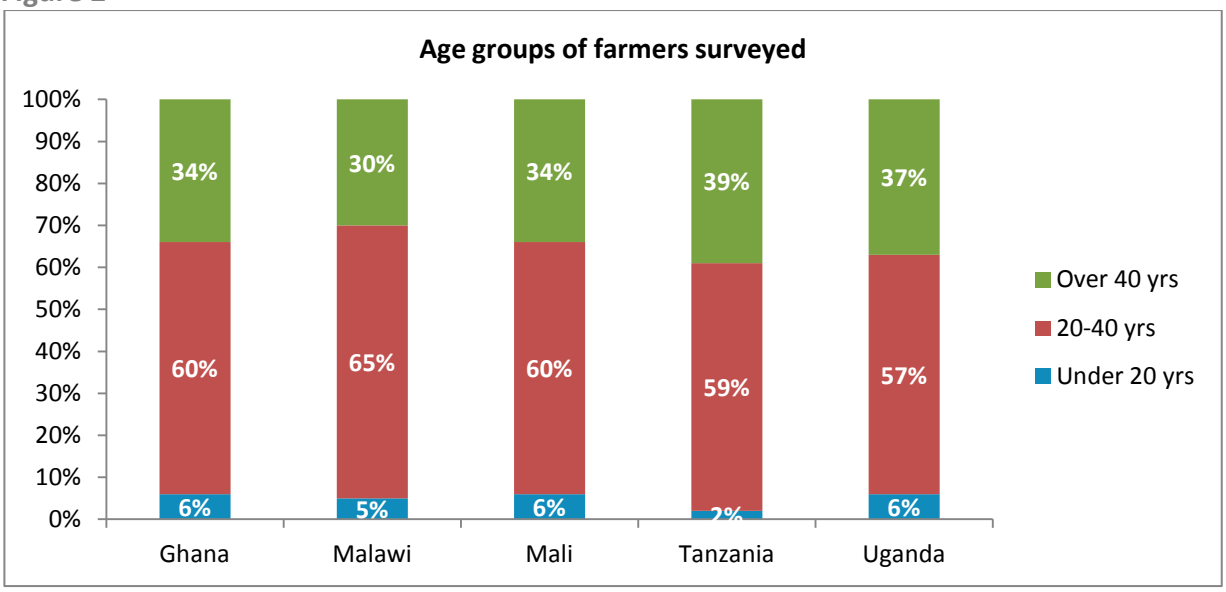


Figure 3

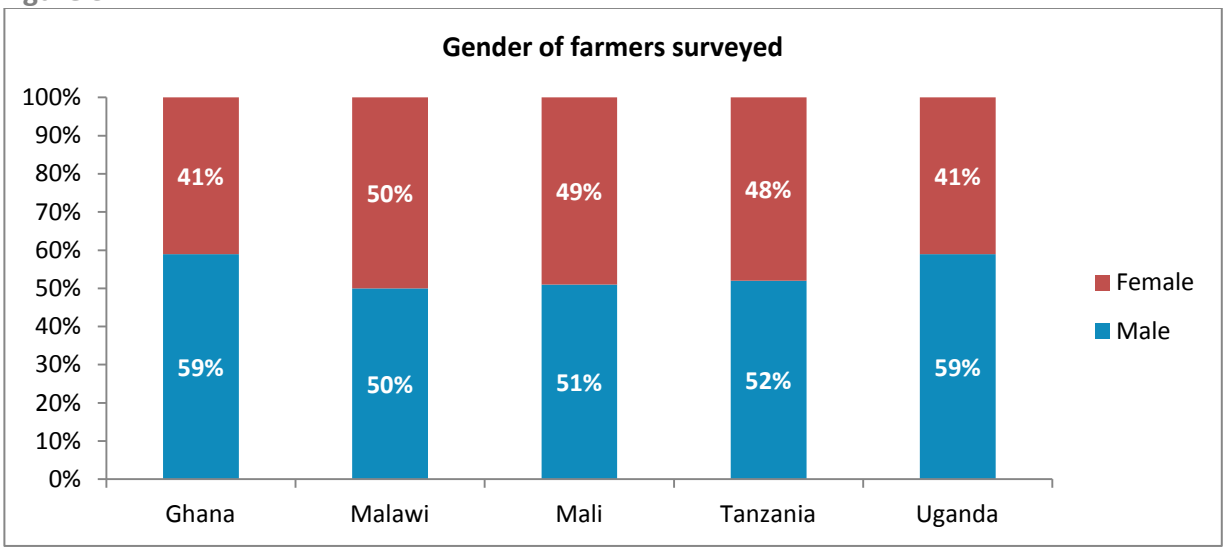
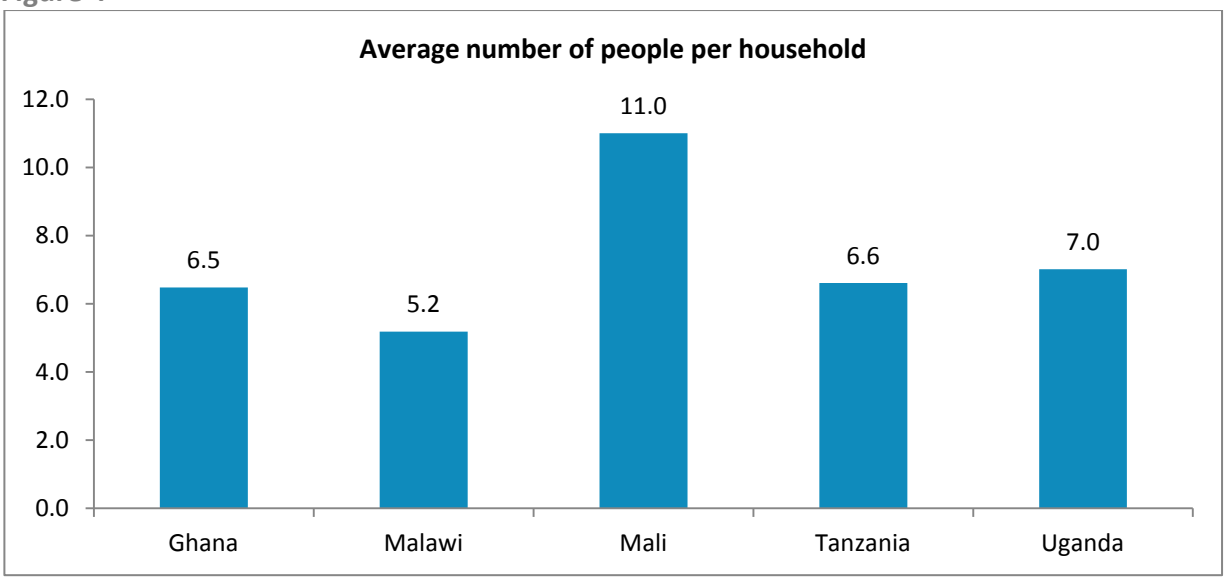


Figure 4



About the broadcasters

The broadcasters played a pivotal role in this research and report. They were behind the research, design, recording, production and broadcasting of the radio campaigns, as well as being the users of the ICT tools at the radio station.

AFRRI surveyed broadcasters about the furthest level of education and training they had completed. Figure 5 shows that in Ghana and Malawi, the majority of broadcasters had completed a secondary- level education. By contrast, in Tanzania and Uganda, the majority of broadcasters had completed a diploma-level education.

Figure 5

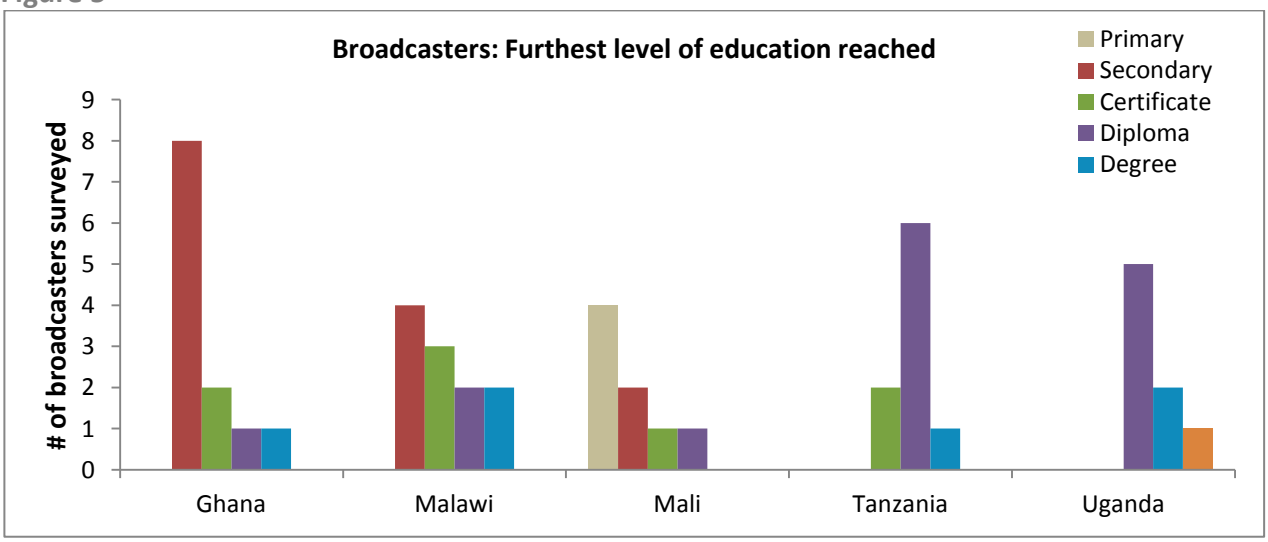


Figure 6 shows that in Ghana, Malawi, Mali and Uganda – the majority of broadcasters who participated in the survey were men[9]. Tanzania was the country with the highest percentage of female broadcasters in the five project countries.

Figure 6

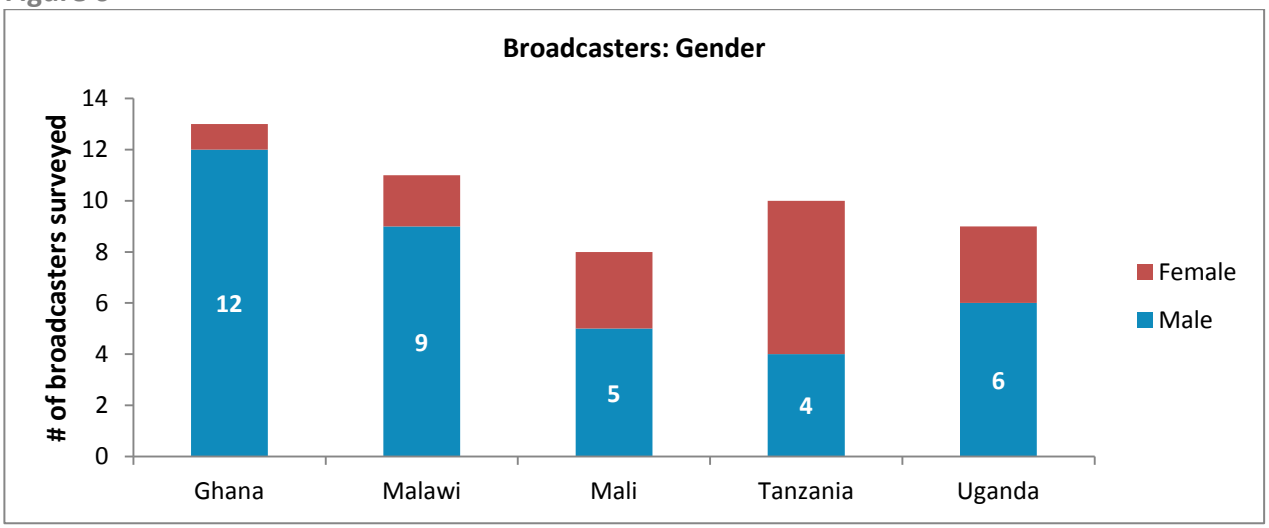
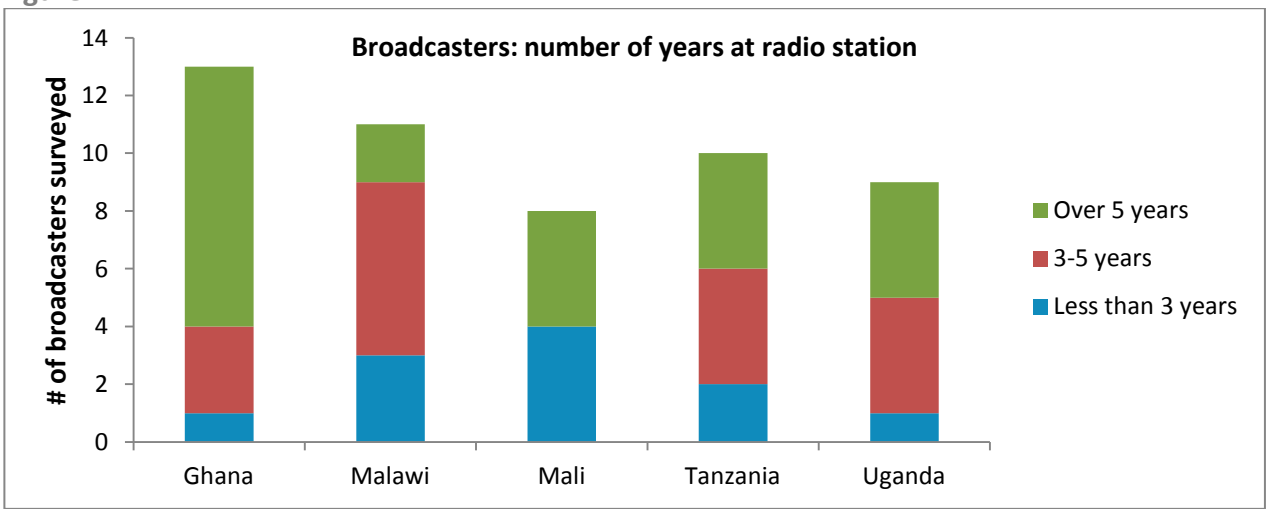


Figure 7 shows the number of years each broadcaster who participated in the survey has spent working or volunteering at their respective radio stations where the AFRRI project was implemented. Broadcasters in Ghana had the highest level of experience, whereas those in Mali showed the lowest number of years at the AFRRI partner station.

Figure 7



[9] This sample accurately represents the more than 50 broadcasters who participated in AFRRI

3.0 PRCs: The methodology

PRCs involve a number of key elements designed to meet the following objectives: respond to community priorities; suited to listener preferences; feature appropriate and farmer-demanded agricultural improvements; feature farmers' voices, dialogue, interaction, and the provision of accurate information; and the use of audience feedback to make improvements.

3.1 Preliminary research and agricultural improvement selection

3.11 Community rapid appraisals

AFRRI's action research agenda began with community rapid appraisals (CRAs), which gathered preliminary information from a selection of communities typical of the area served by the radio stations' broadcasts. Using participatory rapid appraisal (PRA) methods like focus group discussions, resource rankings, and transect walks and others, these appraisals identified some of the specific needs and preferences of targeted communities. They studied the needs of farmers on their land, how they use radio, and what information they require. These appraisals were conducted in a total of 100 communities across the five countries – four for each of the 25 participating radio stations (five in each country).

3.12 Agricultural Improvement selection

The ultimate aim of the PRCs was to improve household food security in rural communities. The purpose was not to discover which types of agricultural innovations would have the greatest impact on food security; rather, the research focused on the role of radio in improving food security. AFRRI relied on knowledge partners to help identify established agricultural improvements that have been evaluated and found to have a significant, measurable impact on food and nutrition security for resource-poor rural families when adopted widely. Improvements that were relatively simple, "low tech," sustainable, affordable, and could be implemented using readily available resources were prioritized. AFRRI developed a more systematic set of criteria for selecting agricultural improvements, and engaged a range of stakeholders, particularly farmers, in deciding on a focus for each PRC. The improvements had to meet the following criteria:

- ***Be farmer approved***
- ***Balance farmers' needs with government recommendations/policies***
- ***Have inputs/extension services available to support implementation of the improvement***
- ***Have an accessible market available for the resulting farm produce – unless it is strictly for household or community consumption***
- ***Be proven effective as a food security improvement***
- ***Offer opportunities for on-farm demonstration***
- ***Benefit a majority of farmers***
- ***Be relevant to farmers in most or all areas reached by the radio station***
- ***Give consideration to improvements addressed by other projects in the region***
- ***Ensure that some improvements are of primary and/or specific benefit to women farmers and young farmers***



A farmer/community member and her children listening to the radio during a field visit during the second round of participatory radio campaigns in Ghana

Photo credit: Ben Fiafor

The improvement selection process included the following steps:

- Consultation with farmers in the impact areas during the summative evaluation of the first PRC.
- Consultation with district stakeholders, especially the district or sub-regional agricultural development authority and subject matter specialists.
- National consultation with key stakeholders in the improvements, especially the Ministry of Agriculture's various departments and research institutions
- Continuous literature review and engagement with researchers and development communication specialists on the suitability of the prospective improvement in terms of its campaign qualities.

3.13 Formative research

Formative research is a preliminary research process that seeks to identify existing behaviours of a target population, in order to better formulate communication strategies that will influence an eventual change in behaviour. It leads to a greater understanding of the interests, attributes, and needs of different populations and persons in the community. It normally occurs before a program is designed and implemented. In communication planning, formative research can help to do the following:

- define and understand the information needs and preferences of the population being served
- create programs that are specific to those needs and preferences

• ensure programs are acceptable and feasible for the target audience before launching
• improve the relationship between the audience and, in this case, the radio broadcaster

AFRRI designed and implemented a formative research process to inform the design of each PRC, and that sought to identify the following:

1. The target audience, especially their knowledge, attitudes/perceptions and behaviour/practices (KAPs) concerning the selected agricultural improvements. This included subjects such as the hopes and desires, objections and misconceptions (taboos, fears, prejudices), and current practices of community members, and barriers that had prevented farmers from implementing specific improvements.

2. Listenership and broadcasting patterns, including who listens to what and when, (day of the week and time of day). This also considered issues of radio ownership, listenership patterns, reception range, quality, and the extent of press freedom in the area.

3. The target audience's preferences for programming style and treatment, disaggregated by sex and age. AFRRI gathered information about trusted community leaders or role models -- chiefs, "best farmers of the year", and teachers, for example - the types of things they like to hear on the radio (music, stories, jokes, poems, hard facts, phone-in programs), and looked at the target audience's opinion of radio as a source of agricultural information.

4. Other organizations providing agricultural education and related products and services.

The main method used in the formative research process was focus group discussions. Three were held in each community – one with men, one with women, and one with youth. Between 12 and 14 people were assembled in each group. Each discussion took approximately 20-30 minutes totalling 1.5– 2 hours per community. The researchers also conducted key informant interviews with local leaders and subject matter specialists.

> ***Working with others for a common goal is so important. We usually did our programming without engaging other partners; now we know how important that is. Participatory campaigning needs engagement with other partners, such as farmers -- who are the majority of listeners -- extension staff, government leaders, input suppliers and other development actors.***
>
> **Gloria Kiwia**
> **of Sibuka FM, Tanzania**

A Closer Look: Local interests, local solutions

The formative research process undertaken during AFRRI



Prior to designing a PRC on apiculture in the Gulu District of Uganda, a formative research exercise was completed to ensure that community interests, concerns, radio listening preferences and other issues were taken into account.

The research process followed guidelines developed for all PRCs by FRI's senior research manager. Research teams, made up of broadcasters from the radio station, extension workers, and AFRRI staff, participated in a training research day to orient themselves to the objectives, methods and tools used in the formative research process. Research activities took place in three communities within the broadcast catchment area of the participating radio station. At least three key informant interviews were conducted and three focus group discussions, each with 10-15 participants, were held each community. One group was entirely female, another entirely male, and the third was made up of youth.

In Gulu, the research team learned that community members were interested in, and valued, honey production, particularly because of the perceived "medicinal benefits of honey in treatment of cough, stomach pains, wounds," and because they were aware of the high marketability of honey. They were also drawn to the relatively low labour requirements of honey production. They did not, however, know very much about modern or improved honey production methods, and wanted more information about them. They also expressed a number of reservations and concerns about apiculture, often based on misconceptions. Many believed, for example, that if honey is not harvested "at the right time", it becomes bitter because the queen urinates on it. They also thought that honey could only be harvested at night, and that hives needed to be placed high in trees. Both factors meant that women could not practice beekeeping: It is not safe for women to be out at night, and it is taboo for women to climb trees. There was also concern that bees could be very aggressive, leading to many stings and "high medical bills". Community members explained that they harvested honey by using fire to kill the bees, even though they knew this lowered the quality of the honey, but they weren't aware of an alternative.

The formative research process also revealed the names of important and trusted opinion leaders in the community that could be engaged in the PRCs. Further, it provided critical information about when women and men are best able to listen to the radio, and what kind of music they want to hear ("traditional music like Lapu Petur, Obang Silve per, Ojang, Lingala of Mukale and other local music by local artists").

This important information was used to design a PRC which benefited farmers, advised them on areas of concern, featured music that listeners wanted to hear, and profiled the opinions and experiences of trusted community members. The advance research and planning paid off: Two years later, 38% of community members surveyed were practicing improved beekeeping methods as a result of what they learned through the PRC, compared to only 15% of non-listening control community respondents.

3.2 Campaign design

3.21 Overview of the campaign

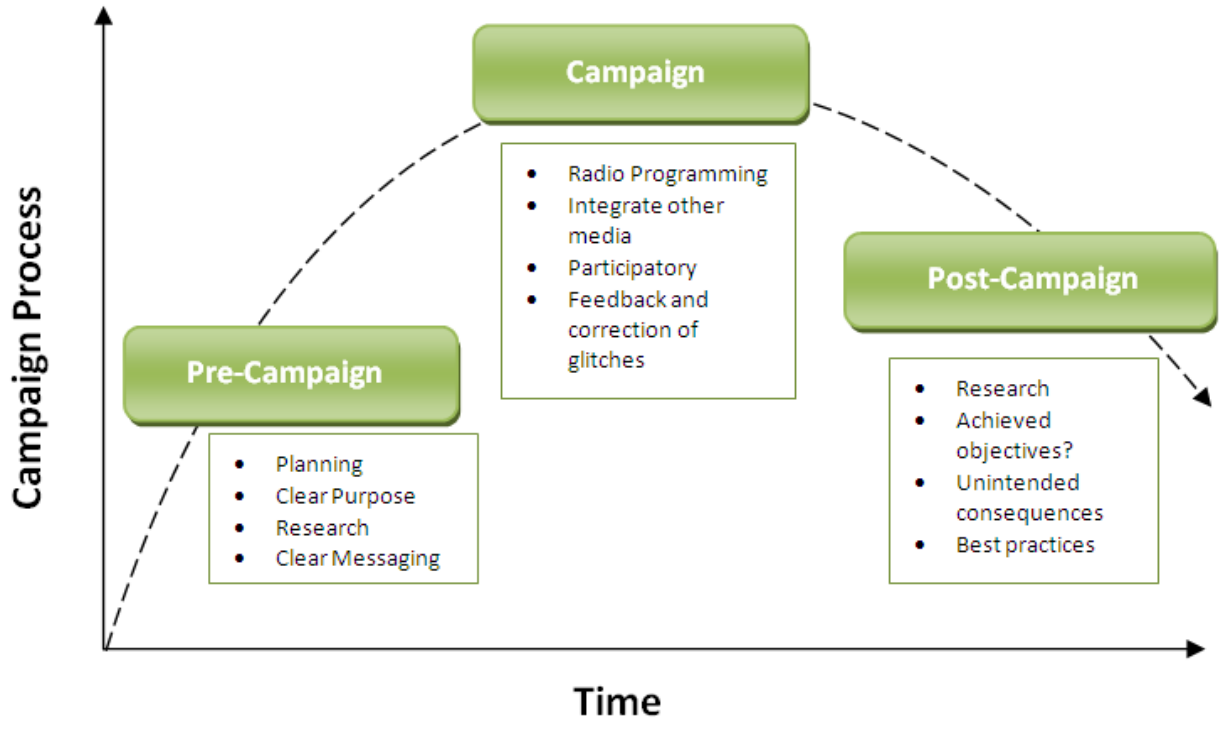
Building on findings from the rapid appraisals and formative research, radio broadcasters and managers involved in the project designed a PRC that was four-to-six-months long. During campaign design workshops, radio producers, presenters, farmers, extension workers, local NGOs and others, contributed to campaign outlines, which summarized the key elements of the campaign, including the following: the specific improvements chosen, key audiences, key messages, ideal broadcast times, potential measures of success, links with extension workers in the region, use of other ICTs in the campaign, and potential feedback mechanisms (phone-ins, call-outs, SMS, letters, etc.).

The "Manual for Participatory Radio Campaigns," written by Farm Radio International's Doug Ward, a seasoned radio producer, guided the campaign design.

The manual has been written to help broadcasters develop a plan for all three phases of a successful campaign, including pre-campaign preparations, campaign implementation, and post-campaign assessment and learning.

Figure 8

The stages of a PRC strategy



3.22 Key elements of a PRC

The PRC is a series of weekly radio programs that takes place over a four to six months, centred on a single agricultural improvement chosen in advance by farmers/listeners. The agricultural improvement is the focus of each radio program in the series; the subject develops in four stages:

Table 3

Stage 1:	Farmers and others launch the radio campaign, identifying and explaining the improvement to their peers/listeners.
Stage 2:	Farmers and others discuss the improvement on air in more depth; for example, how it relates to the needs and practices of local farmers.
Stage 3:	Farmers are encouraged on air to make an informed decision about adopting the improved agricultural practice.
Stage 4:	Farmers and others discuss on the radio program how to implement the improvement and troubleshoot any problems encountered. Successes are highlighted, and lessons learned are discussed and shared on-air.

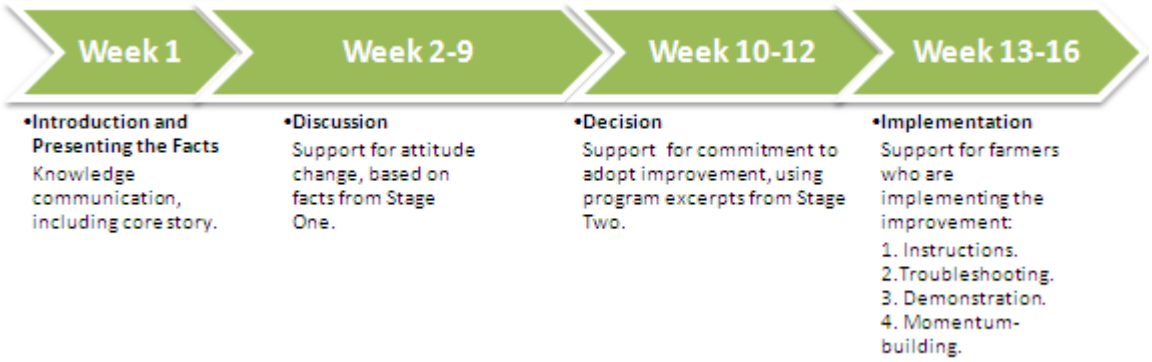
Often, these stages overlap. For example, elements of stages two and three might be included in the same radio episode within the campaign.

A PRC includes several key features:

- It focuses on one improvement.
- The improvement is featured in a weekly, 30-minute program (aired twice a week) for the entire period of the campaign.
- It is broadcast at a time when farmers can hear it.
- It is broadcast in the farmers' language.
- It features farmers' voices whenever possible.
- Each radio program includes a number of features, including but not limited to:
  - A sympathetic, well-liked and recognized, host
  - Studio and field interviews and phone-outs to farmers and extension workers (when the show's host makes a phone call to a specific person to interview her/him)
  - Studio interviews and phone-outs to other knowledgeable people and to people with authority and responsibility whose input will be respected by listeners
  - Phone-ins by farmers
  - Local music
  - Dramatic elements
  - Competitions, such as quizzes, poems, songs

Figure 9

Timing and duration of a four-month PRC



3.23 Broadcast times

The broadcast of the campaign was done at a predictable and reliable time for smallholder farmers. Usually a half hour program, to a maximum of one hour, the PRC information was delivered in an entertaining and engaging way. One of the major criticisms of rural radio in the past has been the lack of interesting content for the listener. Content that engages the listener in a discourse and that features the real experiences of sympathetic farmers makes for much more entertaining radio than the voice of lecturing experts and government officials. Radio stations were encouraged to use FRI's "V.O.I.C.E." standards of farm radio broadcasting in all of their PRC programming (see the box on next page):

> ***The way this program was done, in terms of presentation and our voices being heard on air, have made it to be a favourite program for most people.Of course, we used to listen to Dzimwe, but their farm radio program was not popular as it is now.***
>
> Rhoda Chatama, a farmer,
> Mangochi District, Malawi

Figure 10



V.O.I.C.E. – Broadcaster standards for effective farm radio

Value. We value farmers. We respect them for their hard work in producing food for their families and the markets, often in the face of major challenges. We talk in-depth with farmers to understand their lives and to learn how radio can be of service to them.

Opportunity. We provide farmers with the opportunity to use radio in ways that help them to be active participants in development. We help them to:

- bring their voices to radio
- identify issues of concern to them
- discuss those issues
- organize, to improve their situation (if required)

Information. We provide the information farmers need to safeguard and improve farming and the quality of rural life. We present the information in ways that help farmers understand it and use it.

Consistency. Farmers can count on us. We broadcast to them on a reliable, regular basis, at least weekly, at a time when they say they are available to listen. Where necessary, we broadcast at two different times for the convenience of both women farmers and men farmers.

Entertainment. We take great effort to broadcast programs that farmers find irresistibly attractive as well as useful. There is no excuse for boring farm radio programs!

3.3 Monitoring and evaluation

3.31 Monitoring methods during the campaigns

AFRRI's monitoring and evaluation (M&E) framework was designed to assess whether AFRRI PRCs were consistent with their objectives, to gather feedback from listeners, and to make mid-course corrections. The AFRRI model involved the following M&E tools:

1) *A record or "log" of each episode* broadcast in the campaign. Using logbooks, broadcasters recorded the timing of the broadcasts, their duration, the number and type of interviews and panel discussions, phone-calls received and phone calls made during the program, and other program formats used, such as vox pop and mini-dramas.
2) *Analysis of listener feedback, including the following*:
    a. Letters
    b. SMS
    c. Emails
    d. Call-ins
    e. Groups' comments – with one active (AFRRI) listener group per ALC, where feasible
    f. Suggestions from the radio stations' suggestion boxes

Figure 11

AFRRI PROGRAM'S LOGBOOK – RADIO MARIA (TANZANIA)

Campaign two

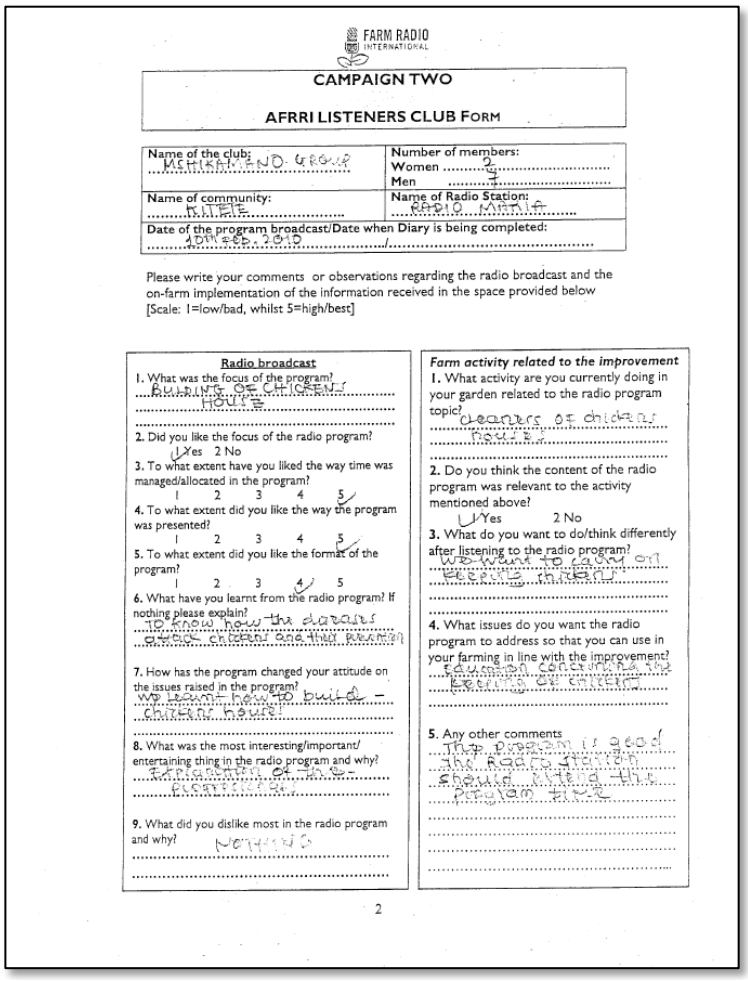
Date	Presenter	Topic	Focus statement [who, what, why]	Duration	Format options										
					Studio interviews	Narration	Field interviews	Panel	Community discussion	Phone-in shows	Text-in shows	Vox pop	Soundscape	Music	Jingles	Drama
14/11/09 15/11/09	Lilian Manyuka	Housing for local chicken husbandry	Mama Havinitishi Salum has decided to keep chickens in house to prevent diseases	9:-00 - 10.00pm 5.00 – 6.00 pm	-	Presenter	Mama Havinitishi Salum	-	-	15	59	-	Sound of local chickens	Traditional Dance	Advantage of keeping local chickens in house	Mama Havinitishi Salum and her family
21/11/09 22/11/09	Lilian Manyuka	Construction of local chicken house	Abdallah Mfaume of Kitete Village has decided to construct house for local chicken to reduce mortality .This situation made him to increase productivity and he is able to feed her children with milk now The expert from the office of agriculture and livestock is teaching about how to construct local chicken house	9:-00 - 10.00pm 5.00 – 6.00 pm	-	Presenter	Livestock officer from Kilosa District, Mr. Nikodemas Nzenga. Farmer from – Kitete – Mr. Abdallah Mfaume	-	-	-	60	-	Sound of local chickens	Traditional dance Gospel Music	To sensitize construction of local chicken houses	A farmer who keep chickens in house and the one who uses free range system
5/12/09 6/12/09	Lilian Manyuka	Housing for Local chicken	Mama Havinitishi Salum has decided to keep chickens in house to prevent diseases	9:-00 - 10.00pm 5.00 – 6.00 pm	-	Presenter	Mama Havinitishi Salum	-	-	20	43	-	Sounds of chickens	Traditional dance	Advantage of keeping local chickens in house	Mama Havinitish Salumu and her family

Above: A typical AFRRI radio program logbook.

Listener feedback was captured through listener feedback forms. These simple-to-fill-out forms gathered information:

- **Program messages**, including content, formats and presentation styles -- What was broadcast? Was the information in the program easy to understand? What was attractive in the program? What was unattractive? Was anything important missing?
- **What was learned?**
- **Farmer's intention to change attitude or behaviour** (i.e. farmer's decision with regard to the promoted agricultural improvement).

Figure 12



FARM RADIO INTERNATIONAL

CAMPAIGN TWO

AFRRI LISTENERS CLUB FORM

Name of the club: MCHIKICHINI END GROUP	Number of members: Women 9 Men 1
Name of community: KITETE	Name of Radio Station: RADIO MARIA
Date of the program broadcast/Date when Diary is being completed: 10TH FEB. 2010	

Please write your comments or observations regarding the radio broadcast and the on-farm implementation of the information received in the space provided below [Scale: 1=low/bad, whilst 5=high/best]

Radio broadcast

1. What was the focus of the program? BUILDING OF CHICKENS HOUSE
2. Did you like the focus of the radio program? ✓Yes 2 No
3. To what extent have you liked the way time was managed/allocated in the program? 1 2 3 4 5✓
4. To what extent did you like the way the program was presented? 1 2 3 4 5✓
5. To what extent did you like the format of the program? 1 2 3 4✓ 5
6. What have you learnt from the radio program? If nothing please explain? TO KNOW HOW THE DOCTORS CHECK CHICKEN AND THEY TREATMENT
7. How has the program changed your attitude on the issues raised in the program? WE LEARN HOW TO BUILD A CHICKEN HOUSE
8. What was the most interesting/important/entertaining thing in the radio program and why? EXPLANATION OF THE PLEASE SIR
9. What did you dislike most in the radio program and why? NOTHING

Farm activity related to the improvement

1. What activity are you currently doing in your garden related to the radio program topic? CLEANERS OF CHICKENS HOUSE
2. Do you think the content of the radio program was relevant to the activity mentioned above? ✓Yes 2 No
3. What do you want to do/think differently after listening to the radio program? WE WANT TO CARRY ON CLEANING CHICKEN
4. What issues do you want the radio program to address so that you can use in your farming in line with the improvement? EXPLANATION CONCERNING THE EXERCISE OF CHICKENS
5. Any other comments THE PROGRAM IS GOOD THE ROAD STARTED CHANGE AFTER THE PROGRAM TRUE

2

Left: A filled-out AFRRI Listeners Club Form used to gather feedback from the listening community.

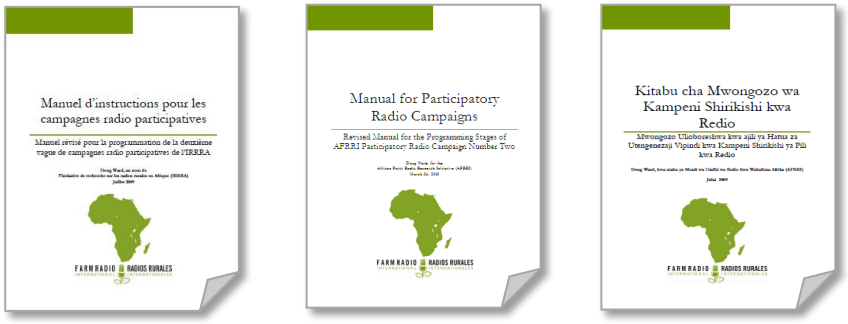
This particular form is from an AFRRI Listener Group in Kitete, Tanzania, part of the the Radio Maria PRC.

3) *Community monitoring visits, featuring focus group discussions (FGDs) and interviews* with community members, using topic guides. In each visit, discussions were held with subgroups of adult men (10-12 per community), adult women (10-12 per community) and youth (10-12 per community). Monitoring visits were conducted at least three times in three communities over the course of the PRC for each radio station.

4) *Case Farmer Diaries* - AFRRI helped each radio station recruit three "case farmers," and asked them to keep an *AFRRI Case Farmer Diary* throughout the campaign. Each case farmer recorded his or her observations about the following:
   - program topics
   - program formats
   - program presentation styles
   - knowledge gained
   - attitude/behaviour change (or intention for change)
   - practices related to the program topics.

Field visits to case farmers were conducted in order to observe and validate the level of practice by these individuals.

A PRC Manual was produced in English, French and Kiswahili to help broadcasters design and run their campaigns.



To read more about the Participatory Radio Campaign approach, please refer to our *Manual for Participatory Radio Campaigns* online:

http://bit.ly/farmradioprcmanual

A Closer Look: Why vetiver grass?

A case study on the selection of an agricultural improvement for a PRC



In September 2007, a team of researchers set out to discover what farmers in the Lilongwe area of Malawi were really concerned about. The team was comprised of broadcasters from the Zodiak Broadcasting Station (ZBS), along with local extension workers, farmers, and AFRRI staff. They used a number of participatory rapid appraisal methods to connect with farmers: There were focus group discussions with male and female farmers of different ages, key informant interviews, site visits and observations, ranking exercises, and other activities. It was soon discovered that farmers in this hilly area had one concern at the top of their list: soil. In particular, soil erosion and fertility.

The rolling hills in this area have long presented a challenge to farmers. When rains are heavy, water floods over the land. Soil is washed away. But when the rains are gone, little water is retained in the soil. Consultations with the project's knowledge partner and with an NGO working in the area (Total Land Care) revealed that planting rows of vetiver grass along ridges could check this problem. Vetiver has deep roots, is not palatable to grazing animals, and can therefore act as a long-term, effective barrier to overland flow of rainwater. Further research confirmed that some farmers had started planting vetiver and that other farmers wanted to learn more about it. All the necessary knowledge and resources were available locally: Total Land Care and the local extension office were able to provide technical advice and support, and planting materials could be produced relatively easily in small plantations. It was decided that vetiver grass would be the "star" of a PRC program entitled *Mlera Nthaka* (keeper of the soil).

Before long, vetiver was the "star" of farmers' fields. And farmers continued to employ vetiver grass long after the PRC ended. Eighteen months after the PRC had concluded, 45% of surveyed farmers in Zodiac's listening communities reported growing vetiver grass on contour ridges! This compares to only 10% of surveyed farmers in non-listening CCs. Zodiac's second PRC examined soil fertility, focusing on the appropriate and timely utilization of manure. This PRC was also popular and effective. When the PRC was completed, 22% of households in listening communities were preparing and utilizing compost manure appropriately, compared to 6% in non-listening CCs.



3.32 Summative evaluation

A summative evaluation activity was included at the end of the first PRC. This aimed to identify the strengths, weaknesses, and lessons learned from the PRC, and helped to inform and improve future campaigns.

The summative evaluation took the form of a "town hall" forum. This one- to two-day event involved each radio station and its associated communities. AFRRI staff and radio station employees reported back to the community on the campaign – when it started, when it ended, what it included, the feedback that was received, changes that were observed, and so on. The meeting brought together farmers, extension workers, broadcasters, partner non-governmental organizations and other stakeholders for small group discussions and activities that allowed stakeholders and listeners to do the following:

- participate in collective thinking on progress made since the formative research process;
- give feedback on the program;
- indicate what they learned from the campaign;
- identify challenges they face; and
- indicate how they expect their practices to change in the future.

Extra effort was made to capture the voices of women and ensure that quieter farmers had opportunities to speak by having smaller group discussions as well as larger forum-type plenary discussions. At the same time, the summative evaluation gave farmers a chance to celebrate their achievements alongside the broadcasters that serve them. In many cases, the event was captured and broadcast on the radio station for those in the community that could not attend.



A Farmer makes comments as fellow farmers look on during the summative evaluation for the PRC1 campaign by Volta Star Radio on the promotion of New Rice for Africa (NERICA) in the Volta Region of Ghana.
Photo credit: Ben Fiafor

3.4 Outcome evaluation

3.41 Overview of the Evaluation

The outcome evaluation in Ghana, Malawi, Mali, Tanzania and Uganda was designed to provide quantitative and qualitative evidence of the effectiveness of the second round of PRCs in each country and to assess ways the PRC effected changes in knowledge, attitudes and practices.

The first outcome evaluation took place from December 2009 to January 2010 – roughly 6-8 months after the two PRCs had concluded in each country. The second outcome evaluation took place from July to August 2010. It included the following: a household survey covering 4,500 randomly selected household representatives in 90 communities across the five countries; farm visits and field measurements; key informant interviews; and the collection of secondary data from other sources, such as national agricultural extension services. The detailed findings presented in section 5.0 of this report reflect the results of the second outcome evaluation.

The data collected for the evaluation was analyzed to assess how gender, age, type of radio station, frequency of listening, and other factors which may have affected the degree of changes that took place in

communities. The evaluation gathered information from communities with differing access to the radio programs, allowing a comparison of the degree of changes in communities with full, limited, or no access to, or engagement in, the PRCs.

3.42 Data collection strategy

Evaluation teams in each of the five countries were tasked with capturing the main quantitative and qualitative changes that took place in farmers' knowledge, intentions and practices after the PRC was launched. A variety of tools and methods were used to collect and verify information for the outcome evaluation. An outcome evaluation guide with sampling procedures, questionnaires and other research tools, and data tables was prepared and distributed to the evaluation teams in each country.

These tools, which are described below, were used to gather information in three different types of communities.

a) **Active listening communities**: ALCs were actively involved in the PRCs from day one. They helped select the agricultural improvement to be featured in the PRC, were surveyed for baseline data and formative research, were visited throughout the PRC for monitoring and feedback, and had their voices and stories featured on the radio programs. It is recognized that many of the changes observed in these communities may be at least partly due to the contact and interaction that took place throughout the campaign.

b) **Passive listening communities:** PLCs are communities with similar agricultural practices and natural resource availability to ALCs. There is no contact with the radio station or project personnel before, during or after the campaigns.

c) **Control Communities:** At the beginning of the campaign, AFRRI identified one community for each radio station that could not access the radio programming, either because the signal did not reach their community, or because community members did not understand the language of the broadcast. Over the course of the PRC, a number of control communities lost their status, either because the radio station increased its signal strength or because people in the community found a way to receive the programs, (in one case, by erecting their own antenna). In these cases, AFRRI selected new control communities just prior to the outcome evaluation, and ensured that the radio station's broadcasts could not be heard in these communities.

For each of the 15 PRCs investigated, two ALCs, two PLCs and two CCs were studied – 90 communities in total.

3.43 Tools used in Outcome Evaluation

Household surveys

The household surveys were a core component of the outcome evaluation. A mobile-based survey application, called Mobile Researcher, was used to collect the household survey data. This system allowed the surveyor to conduct the survey solely on a basic mobile phone, (using a Java applet), which sends survey data to a central server immediately on completion. After running the system through a small pilot test, AFRRI decided to use it for the full evaluation in order to ensure data was of good/consistent quality and could be monitored centrally by a project manager based in Ottawa. Furthermore, this method avoided errors associated with translation and transcription of hard copy surveys. Completing a survey on a mobile phone took approximately half as much time as a paper-based survey, and the step of entering data from a paper survey into a data base was totally eliminated. See ***A Closer Look: Monitoring with mobiles*** (in this section) for further information about the use of this technology.

> ***I was surprised when some community members shared the observation that the mobile phone was a better tool than the paper we write on.They believe that, with the mobile phone, the information goes straight to the authority for the necessary action, while information collected using notepaper may be discarded after the interview. This is giving more credence to our relationship with the communities we serve with our work.***
>
> **Ben Fiafor, the National Research Coordinator for the AFRRI program in Ghana**

In each country, AFRRI hired a team of enumerators to complete the survey. The team of five to eight individuals consisted of research assistants, project staff, and in many cases, staff from the participating radio stations. Before the actual survey was conducted the teams underwent a two-day training workshop: Topics covered included, introduction to the AFRRI research questions and the PRC method, an overview of the three partner radio stations, the agricultural improvements to be analyzed, the methodology to be used for randomly selecting interviewees, community entry issues, methods of data validation and technical use of the mobile researcher tool.

Teams surveyed 50 individuals, (one per randomly selected household – about 1 out of every 4-6 households), in each community, and aimed for a male-to-female ratio of 50:50. In all, 300 households, (100 ALC + 100 PLC + 100 CC), were surveyed for each radio station.

The survey posed 30 questions, encompassing basic bio-data, and questions about PRC awareness, knowledge of the agricultural improvement featured in the PRC, attitudes about the improvement, current practice of the agricultural improvement, and/or the intention to practice the improvement.

A closer look: Monitoring with mobiles

Using mobile phones as a convenient and cost-effective survey tool

How do you collect 4,500 household surveys across five countries in under a month and be certain that all the data ends up in one location? For FRI, the solution was *Mobile Researcher*, an application that lives on a basic Nokia mobile phone and can help conduct face-to-face surveys with farmers. **http://www.populi.net/mobileresearcher/**

In less than one month, the African Farm Radio Research Initiative (AFRRI) measured the impact of its four-month-long participatory radio campaigns (PRCs) by using approximately 40, low-end Nokia mobile phones and 40 enumerators/fieldworkers across five countries. During the month-long evaluation of the PRCs, the Mobile Researcher software was used to design, customize, and install the surveys in each country, through one website. The website featured an intuitive set of online tools which allowed detailed monitoring of each enumerator's progress as well as analysis of results – all in one central online location.

"The tool is an efficient and reliable means for research and development organizations to collect information from remote areas, in a timely and non-intrusive manner, with a built-in monitoring system for fieldwork, says Sheila Huggins-Rao, program coordinator for AFRRI. "It has changed the way we, at Farm Radio International, conduct our surveys."



Previously, studies had been conducted using paper-based tools administered face-to-face. It often took several weeks to collect the data and translate the answers from local languages to English, and several more weeks to process and analyze the findings. If there were challenges in the field with inputting the data, helping the enumerators to understand the question, or not finding enough respondents, it was difficult to address the challenges immediately. Oftentimes, challenges were not shared until field reports were submitted.

With Mobile Researcher, troubleshooting was done simultaneously with the fieldwork, so minor glitches in the technology or the survey could be corrected and easily updated via phone in real time.

So, what does this mean for future research work in development initiatives? It means more input from development and research beneficiaries can be included in all aspects of project design, implementation and monitoring. Rural farming communities will have fewer disruptions and may be more willing to participate in surveys now that they require less time. Research and development organizations can collect information from their partners prior to, during, and after projects are delivered. Over time, this will create more innovative research, more collaborative initiatives for African farmers, and ultimately, more effective ways of working together globally.

Key informant and secondary data

Data collected in the household surveys was augmented by records from government departments, NGOs, extension agents and other sources. This secondary data was scrutinized to ensure its accuracy and relevance. That scrutiny considered the quality of the source, how it compared with similar information available, and its timeliness (i.e. how recent the data).

Validation – farm visits

To verify information gathered in the household surveys, and to document how farmers implemented the improvement, field teams visited households that reported adopting an improvement during the survey. Five respondents (10%) from each community were randomly selected for validation farm visits. During the visits, team members recorded the scale of implementation, (e.g., the size of the garden, the number of beehives, etc.), and documented their findings with photographs and narrative. Information collected during visits was then cross-referenced with data collected during household surveys.

In some instances, evaluation teams were unable to visit farms because farmers were occupied with church meetings, funerals, marketing activities, or other events that took them away from their farms.

In Tanzania, Radio Maria's radio campaign on housing and marketing local chickens used innovative promotions such as giving out t-shirts featuring the program's title: *"Heka Heka Vijijini,"* meaning Busy Busy in the Village. This proved an incredibly popular marketing piece for the station.



Photo credit: Margaret Kingamkono

Key informant interviews and testimonials

Field teams sent questionnaires to key stakeholders, including extension workers, NGOs, knowledge partners, government officials, broadcasters and others. Their observations augmented survey findings and provided knowledgeable insight from informed and expert stakeholders who were familiar with the landscape before, during, and after the PRC

Abstracting key information from previous monitoring and evaluation activities

Information collected over the course of the PRC– from summative assessments, town hall meetings, focus group discussions, farm visits, log sheets and case farmer diaries – revealed a great deal about how farmers, extension workers and others responded to the campaigns: Insights into what farmers liked and disliked, as well as shifts in attitude, knowledge and intentions were revealed. Between PRC1 and PRC2, this largely qualitative data was used to make mid-course corrections to the radio campaigns; for example, it allowed radio stations to make changes to the way they presented information on the air – including format used, level of farmer interaction, and the clarity of message.



Dorice Kaunda,Tanzanian Broadcast Corporation, captures an interview with a Maasai woman in Mairowa village near Arusha, using her Sansa MP3 recorder.
Photo credit: Susuma Susuma

> ***Previously, we were just hearing different agricultural activities of other areas totally different from our agricultural zone like Chikwawa – lower Shire –which we could not implement. We are now thankful to ZBS for coming up with an agricultural radio program that responds to priority concerns of our own agricultural zone.***
>
> Female farmer that listened to the ZBS radio campaign



Moumouni, a Farm Radio enumerator, interviews an extension worker in Kadiolo, in the Zegoua region of Mali, using Mobile Researcher on his phone.
Photo credit: Modibo Coulibaly

> ***The whole program was being produced by us farmers. We had been advising the producer to exclude from the program songs not done by the community and those irrelevant to the focus of the program, for these derail listeners' interest and [the] audience may not recognize the kind of program being aired.***

Farmer in Malawi speaking about the MBC radio campaign

3.5 Limitations in the research methods

The outcome evaluation faced several biases and potential sources of error, as follows:

- FRI is not a neutral observer. While every effort was made to use objective methods, the organization came to this exercise hoping to learn that farm radio is effective.
- Selecting communities – ALCs, PLCs and CCs -- that were alike in most aspects except their access to or involvement in the PRC was a challenge. AFRRI developed strict guidelines for the selection of communities to minimize their differences. Despite these efforts, some CCs may have had more barriers to the uptake of new practices, including lack of agricultural inputs, greater distance from markets, or fewer traditional extension resources due to remoteness or a minority language.
- Selecting CCs and keeping them as CCs proved to be quite difficult and, in some cases, impossible. Some radio stations increased their signal strength, allowing CCs to receive the broadcasts. In other cases, CCs erected antennae in order to listen to the PRC programs. The project was powerless to stop these developments and, indeed, it would have been unethical to do so. Therefore, in many cases, AFRRI selected new CCs just prior to the outcome evaluation.

Limitations of baseline survey data:

Ideally, pre-campaign data about the knowledge, intentions and practices (KIPs) of farmers in relation to the specific improvements to be promoted by the PRC would have been gathered before the intervention. This proved to be a challenge.

A baseline study was completed in the first year of AFRRI, but the survey collected general information about crops and livestock, soil management practices, post-harvest practices, which were not specific enough to measure changes in knowledge and practice related to the very specific topics of the PRC. Although the baseline survey learned how many households practiced composting, for example, it did not collect information about how many used the specific type of compost pit promoted by the PRC. AFRRI relied on respondents' recollections of when they started practicing. The outcome evaluation survey asked, for example, "when did you start using or expand your use of improved beehives?" Supplemental questions and visits to 20% of farmer respondents verified the accuracy of the survey responses. Clear and specific baseline survey data on practice would have strengthened the findings. To assess the impact of PRCs on knowledge, special quizzes were designed to test the respondents' knowledge of information conveyed by the PRC. Differences in average test scores in the three types of communities were examined. This was quite effective; however, pre-intervention test results would have made the conclusions stronger.

4.0 The campaigns

4.1 The variety of improvements

The AFRRI partner radio campaigns covered a broad range of agricultural topics that ranged from marketing and adding value to shea butter, to using improved methods of composting. As described earlier, the improvement selection process followed guidelines that ensured farmers played an active role in selecting the topics, that the topics were relevant and appropriate for the farming audience, and that they could be covered in a PRC.

Table 4 (next page) lists the topics for all the PRCs conducted through AFRRI. Several radio stations selected a PRC2 improvement that complemented the PRC1 improvement. For example, Dzimwe Community Radio in Malawi promoted the use of hybrid and improved maize varieties for their first campaign, then promoted one-to-one maize planting in their second campaign. Similarly Radio Ada in Ghana focused its second campaign on the production of quality manure compost; the first campaign, which promoted animal enclosures, had boosted the availability of manure. This continuity responded to the wishes of farmer listeners who expressed the desire to learn even more about the first campaign topic.

Uganda's Mega FM provides another good example of a synergy between PRC1 and PRC2. Its first campaign focused on the promotion of modern beekeeping (apiculture), while the second featured the cultivation of fruit trees to develop a larger supply of pollen for bees and, of course, fruit for humans. These examples illustrate the potential of using a sequence of PRCs to support value chain initiatives, with early programming in the first PRCs focusing on boosting production, subsequent PRCs highlighting post-harvest management, adding value to existing produce and livestock, and radio-based market information service (MIS), to help producers connect to markets.

In most cases, the agricultural improvements chosen were affordable and sustainable solutions that used available technology and respected the needs and wants of the communities.

Table 4

Country	Radio station	PRC1 improvement	PRC2 improvement
Ghana	**Radio Ada**	**Diversification** Promotion of animal housing to restrain grazing of small and large ruminant	**Soil management** Organic manure / mulching
	Radio Afram Plains	**Post-harvest** Use of neem leaves to protect greens and legumes	**Soil management** Proper preparation of compost and animal droppings
	Simli	**Post-harvest** Promotion of neem leaves and extract to preserve grain and legumes	**Soil management** Building of compost; proper application of manure Promotion of earth bonding
	Classic FM	**Diversification** Promotion of a new variety of tomato	**Soil management** Promotion of crop rotation and mulching
	Volta Star	**Diversification** Promotion of upland rice varieties (NERICA)	**Soil management** Minimum tillage / mulching
Malawi	**Nkhotakota Community radio station**	**Soil and water Management** Promote intercropping of leguminous and other crops as a soil fertility-enhancing technology	**Product diversification** Promote one-to-one method of planting maize.
	Malawi Broadcasting Corporation	**Marketing** Strengthening management of smallholder farmers' organizations, associations and co-operatives to improve access to markets for farm produce	**Soil and water management** Promote use of organic manure by smallholder farmers
	Zodiak Broadcasting Station	**Soil and water Management** Promote vetiver grass as a soil and water conservation technology	**Soil and water management** Promote utilization of organic manure by smallholder farmers
	Dzimwe Community radio station	**Product diversification** Promote use of hybrid and improved maize varieties in order to improve food security for smallholder farmers	**Product diversification** Promote one-to-one method of planting maize
	Mudziwathu community radio station	**Product diversification** Promote use of recommended farm inputs such as manure, seed, chemical fertilizers and pesticides to increase smallholder farmers' production, especially of maize	**Product diversification** Proper use of inputs for maize farming
Mali	**Radio Fanaka**	**Soil management** Compost Improved processing of Shea butter	**Soil management** Compost (Seydou Noko)
	Radio Jigiya	**Soil Management** Compost Improved processing of Shea Nuts	**Soil Management** Improved processing of Shea Nuts

	Banjo	**Soil management** Compost	**Soil management** Compost (Marie Noko)
	Radio Baguine	**Soil management** Compost	**Soil management** Compost
	ORTM Segou	**Soil management** Compost Improved processing of Shea Nuts	**Soil management** Compost
Tanzania	**Orkonerei**	**Diversification** Control of tick-borne disease	**Post-harvest management** Local chicken management – housing
	FADECO	**Soil management** Promote soil and water conservation technologies	**Post-harvest management** Local chicken management – disease control
	Sibuka FM	**Diversification** Promote improved agronomic practices for maize	**Soil management** Uses of farmyard manure
	Radio Maria	**Diversification** Housing for local chickens	**Diversification** Local chicken management
	Tanzania Broadcasting Corporation –Taifa	**Post-harvest management** Group marketing for maize production	**Post-harvest management** Group marketing
Uganda	**Mega FM**	**Diversification** Modern beekeeping	**Diversification** Integrating fruit trees with beekeeping (focusing on the planting of fruit trees)
	Kigadi Kibaale	**Diversification** Upscaling modern beekeeping	**Soil Management** Compost **Diversification** Upscaling of disease-resistant cassava Two campaigns due to the loss of the CBS PRC2 campaign due to political reasons
	Voice of Teso	**Diversification** Akena cassava	**Diversification** Value addition and marketing of Akena cassava
	CBS	**Diversification** Upscaling poultry Improvement and management	PRC2 cancelled due to shut down of station
	UBC	**Diversification** Victoria Highland Irish Potatoes	**Diversification** Up scaling of Victoria Highland Irish potatoes Seed propagation

Did you know that Farm Radio has created a companion report on our use of ICTs in radio campaigns? *The new age of radio: How ICTs are changing rural radio in Africa.*

http://bit.ly/farmradioict



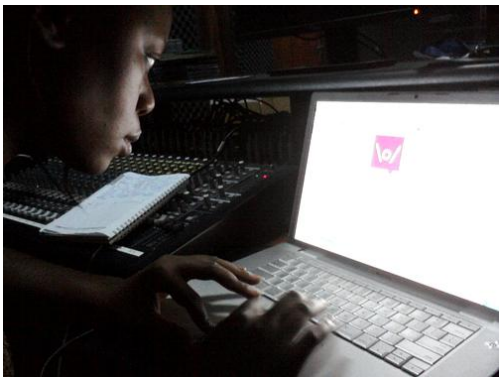
A closer look: SMS Alerts

Using text messages to alert farmers of upcoming broadcasts

"Beep Beep." The sound of an SMS (short message service) arriving in your phone's inbox rings and vibrates from your pocket. You break for a moment from preparing your compost pit to read what has come:

"Dear listener – *Heka heka vijijini* starts in 30 minutes on 93.3 Radio Maria. This week's program talks about marketing local chicken – tell your neighbours!"

The above 160 characters represent a typical SMS farmers would receive, alerting them to an upcoming program from the local radio station. The SMS alert service was tested as part of the African Farm Radio Research Initiative (AFRRI's) research strategy to explore how information communication technologies (ICTs) can improve radio for farmers.



Above: Lilian Manyuka of Radio Maria in Tanzania uses the Frontline SMS interface to send out an SMS alert before the weekly PRC program.

Eleven of AFRRI's 25 partner radio stations have learned how to use software to ease the management and transmission of SMS alerts to their listening communities. Feedback so far has been outstanding. Esther Chambo from Benadi village in Malawi has received SMS alerts from MBC, (Malawi Broadcast Corporation), for eight weeks as part of their campaign on the use of manure as a fertilizer. Esther said:
"This is the best! I forgot about the program because I was busy working in the field, but with the alerts I was reminded."

Important lessons were learned from these mini-experiments. People in communities that received SMS alerts were up to 20% more likely to listen to all or most of the PRCs than people in communities that did not receive alerts. This is significant, because, as presented later in this report (section 5.3), the frequency of listening to PRC episodes was strongly and positively connected to the impact of the PRC on knowledge and practice of promoted agricultural improvements. A detailed report on AFRRIs examination of ICTs and radio provides more information on the experiments and lessons learned from them.

During PRC2, AFRRI conducted a series of ICT mini-experiments with the potential to increase the reach and effectiveness of farm radio programming. The ICT packages were tested in small experiments in order to understand how the technology could enhance radio programming.

ICT packages analyzed in PRC2

- **Pkg 1.** Broadcasters' electronic resources
- **Pkg 2.** Digital recording and editing equipment
- **Pkg 3.** On-air phone calls to extension agents and other experts
- **Pkg 4.** On-air phone calls to farmers / listeners
- **Pkg 5.** Text messaging alerts from broadcasters
- **Pkg 6.** Radio agent
- **Pkg 7.** Playback on demand
- **Pkg 8.** Playback on demand through Freedom Fone
- **Pkg 9.** VSAT internet and micro ISP model



L-R: Joshua Adu (Radio Ada), Kojo Oppong (Winneba), and Richard Ovulley (Afram-Plains) practice their editing skills using Audacity Open Source software at the AFRRI Broadcaster Training in Ghana.

Photo credit: Bart Sullivan

> ***Les NTICs faire participer le maximum de paysans aux programmes de la radio / ICTs have enabled the involvement of the maximum number of farmers in the radio programs.***
>
> **Seydou Diakite,**
> **Station manager, Radio Jigiya**

5.0 Findings

5.1 Overview

The outcome evaluation collected a large and rich variety of information, using the tools described in section 3.4 above. This section of the report presents findings from an analysis of aggregated data collected in the household survey conducted in the three types of communities for 15 PRCs in five countries. Specifically, it analyzes responses to survey questions that allow an estimate of the following:

a) **The use of radio and reach of PRCs --** The survey revealed how many households have radios, how often household members listen to the radio, where and with whom they listen to the radio, whether low-income households and women listen as often as better-off households and men, how many farmers listened to the PRCs, and whether women and lower-income farmers listened to PRCs as often as men and better-off farmers.
b) **Changes in knowledge** – Customized, five-question quizzes related to the practiced promoted in each PRC were designed and administered. Each quiz had two "true-false" and three multiple choice questions. Enumerators asked respondents to answer the questions, then entered how many of the five quiz questions they answered correctly into a mobile phone-based survey instrument. By comparing average quiz scores across the three types of communities, (ALC, PLC, CC), it was possible to measure the impact of the PRC on knowledge. Further, by comparing the relationship between quiz scores and the frequency of listening to PRC episodes, it was possible to determine whether more frequent listening was associated with higher levels of knowledge.
c) **Changes in practice** -- The survey asked respondents whether they had adopted the promoted practice (for example, planting upland rice, enclosing their animals, using improved beehives, planting vetiver grass on contours, etc.), and, if so, when they had started. Five to seven follow-up questions were then asked to confirm that the specific activities involved in adopting the practice were indeed being conducted by the respondents. Subsequent site visits to the farms of randomly selected respondents verified the accuracy of these responses. This report presents data on the proportion of households that adopted the improvement promoted through the PRC.

The use of three types of communities – active listening, passive listening and non-listening (control) – enabled an assessment of the contribution of the PRC to changes in knowledge and agricultural practices. Differences observed between active and passive listening communities indicate the contribution of direct community participation in PRC planning, broadcasting, and feedbacks. The difference between PLCs and CCs reflects the impact of listening to the PRC without additional contact with the radio station prior to or during the broadcasts.

The survey results have been analyzed to determine who in the community listens and benefits from the PRC. The analysis examined listening levels, changes in knowledge and rates of uptake of promoted practices between women and men, younger and older farmers, and wealthier and poorer farmers, (using cell phone ownership as a proxy for wealth).

Finally, by comparing features of the most effective PRCs with PRCs that had less of an impact, it was possible to identify some of the factors that should be considered when planning and implementing future PRCs. The best results, for example, were realized when the radio station was popular, widely listened to, trusted, and had a history of broadcasting development-oriented programs. Also, some types of practices may be better suited to PRCs than others. Factors such as availability of inputs, simplicity of the practice, and the existence of markets, appear to impact the effectiveness of PRCs. The relatively small sample size – 15 stations – and

the wide variation in stations and PRC topics, however, makes it difficult to draw firm conclusions about the determinants of a PRC's effectiveness.

The concept of using radio to provide extension services to small-scale farmers is intuitively attractive, particularly in environments characterized by low literacy levels, weak or non-existent extension services, and wide-scale radio ownership. Small-scale farmers in most rural areas of sub-Saharan Africa operate in exactly this sort of environment. For this reason, African radio stations, especially public ones, have been broadcasting programs for farmers for decades, and many rural development projects have made use of radio in their information dissemination strategies. Despite this, until AFRRI, there has never been a concerted, multi-country, multi-year research initiative to investigate whether these programs are actually effective. To determine whether radio is an effective means of increasing the adoption of practices which are likely to help create success for farmers, evidence is required that a) large numbers of farmers will listen to farm radio programs; b) they will gain new knowledge as a result, and; c) they will adopt new practices that create success.

5.2 Radio's reach

It has often been stated that "radio is king" when it comes to sharing information with farmers. AFRRI set out to investigate the truth of this assertion by asking basic questions about the reach of radio in general and farm radio programs in particular.

Do farmers listen to the radio? How often?

It goes without saying that farm radio programs cannot be effective if farmers don't listen to the radio. Any hope of effectively communicating with small-scale low-income farmers via radio depends on positive responses to a range of questions: Do farmers have a radio in their home? Do they listen to the radio? If they do listen generally, did farmers listen to the PRCs? How often? Did females and males listen equally often? Did the poorest farmers listen as often as better-off farmers? Were the PRCs accessed only by older farmers, or did youth and younger farmers also tune in? All of these questions have been answered to varying degrees by AFRRI.

Do farmers have a radio in their home?

Yes, most of them do. Of the approximately 4,500 respondents who answered this question in the PRC2 outcome evaluation, over three-quarters (77%) reported that they had a radio in their home. The highest level of ownership was found in Mali (85%), followed by Uganda (80%), while the lowest was in Malawi (66%).

Do they listen to the radio? How often?

The vast majority (91%) of the outcome evaluation survey respondents reported that they listen to the radio at least once a week, and 67% said they listen every day. In fact, 70% of non-radio-owners listen at least weekly by visiting their neighbours or listening in public places, though only 15% listen daily. High levels of listenership were observed in all five countries. In Mali, 95% of respondents reported weekly, and 84% reported daily listening. At the low end, 84% of respondents in Tanzania listened at least weekly and 52% daily.

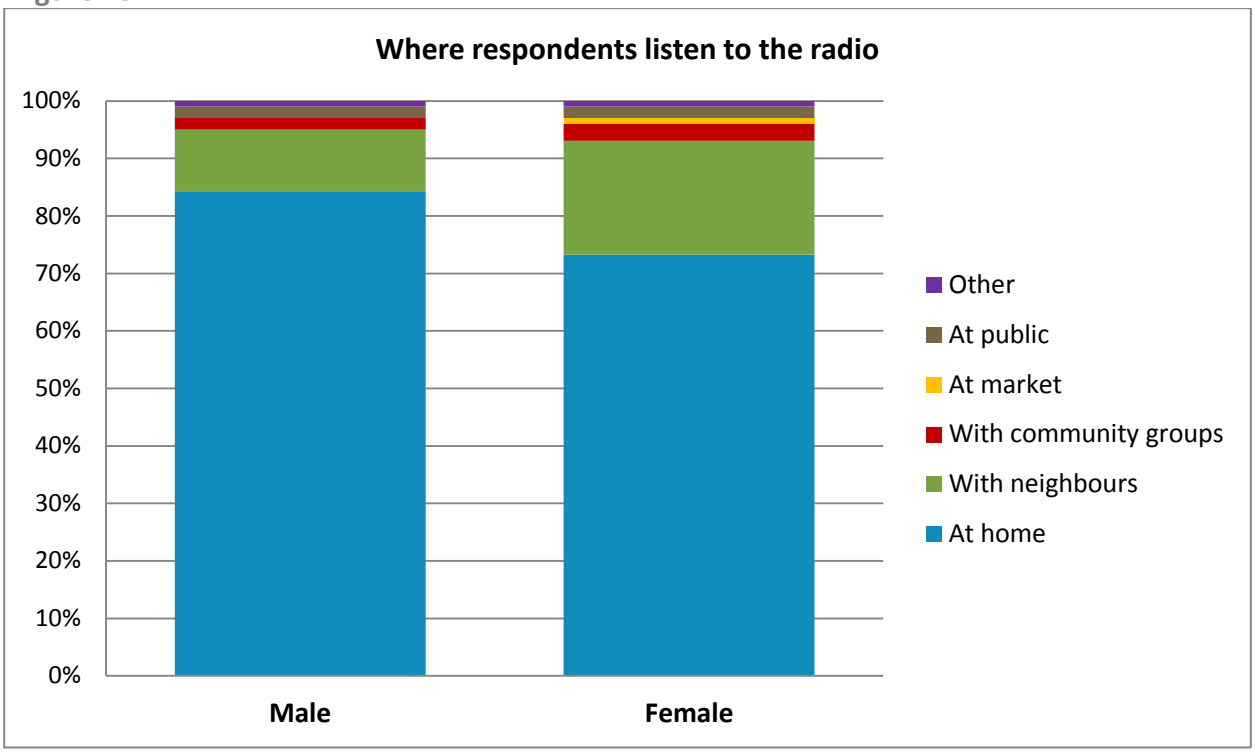
Table 5

Frequency of listening	Total	Uganda	Ghana	Mali	Malawi	Tanzania
Weekly	67%	72%	74%	84%	54%	52%
Daily	24%	22%	21%	11%	35%	32%

Where do they listen to the radio?

The survey asked respondents to indicate where they most often listen to radio. As the graph below illustrates, most listening takes place at home (85% male, 74% female), while 11% of males and 20% of females listen most often with neighbours. Only 2% of males and 3 % of females listen most often with community groups, such as radio listening clubs.

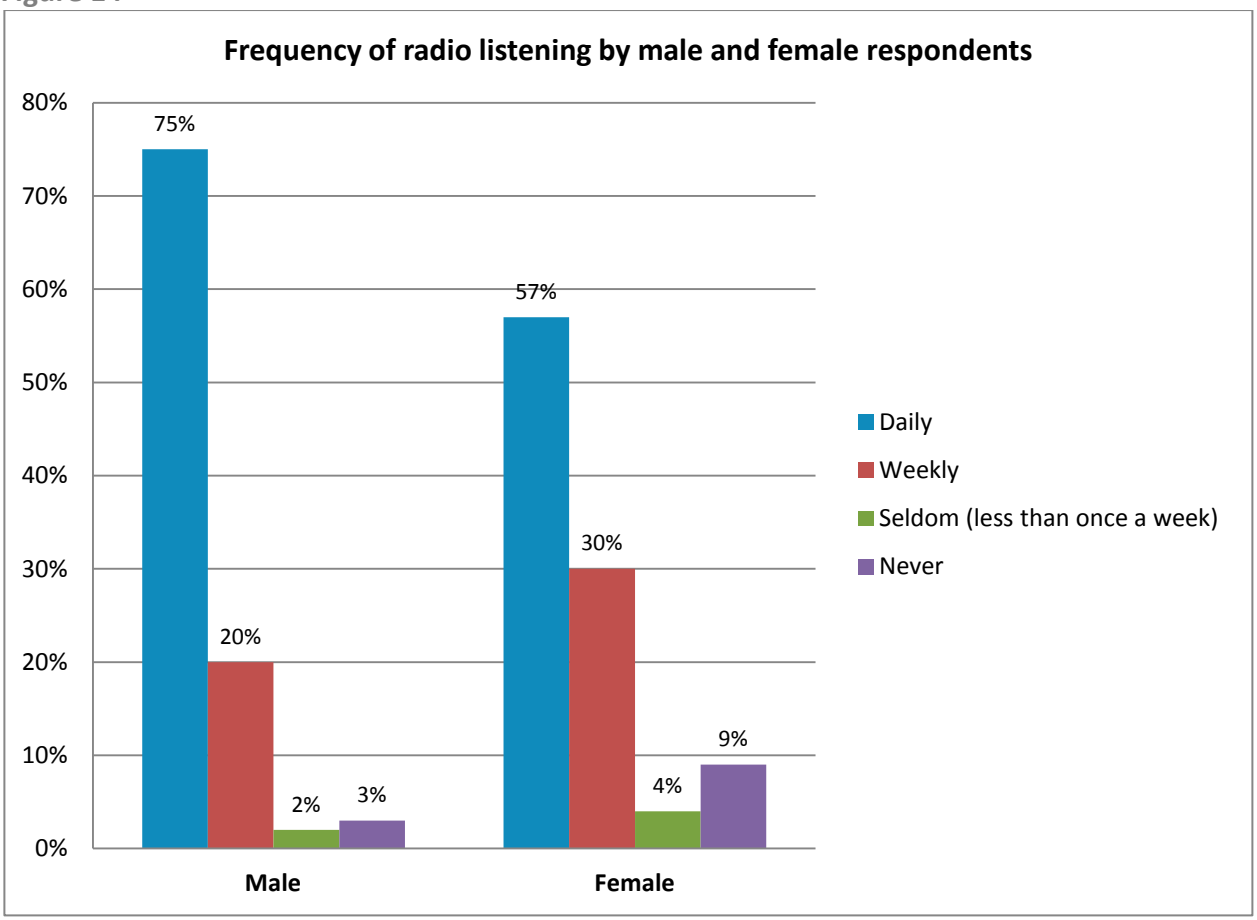
Figure 13



Do women listen as regularly as men?

The survey revealed that 87% of female respondents listen to the radio on a regular basis – lower than the 95% of males who listen regularly, but still a high percentage. Women are considerably less likely, however, to listen on a daily basis (57% versus 75% of men), and about 9% of women never listen to the radio, compared with only 3% of men.

Figure 14

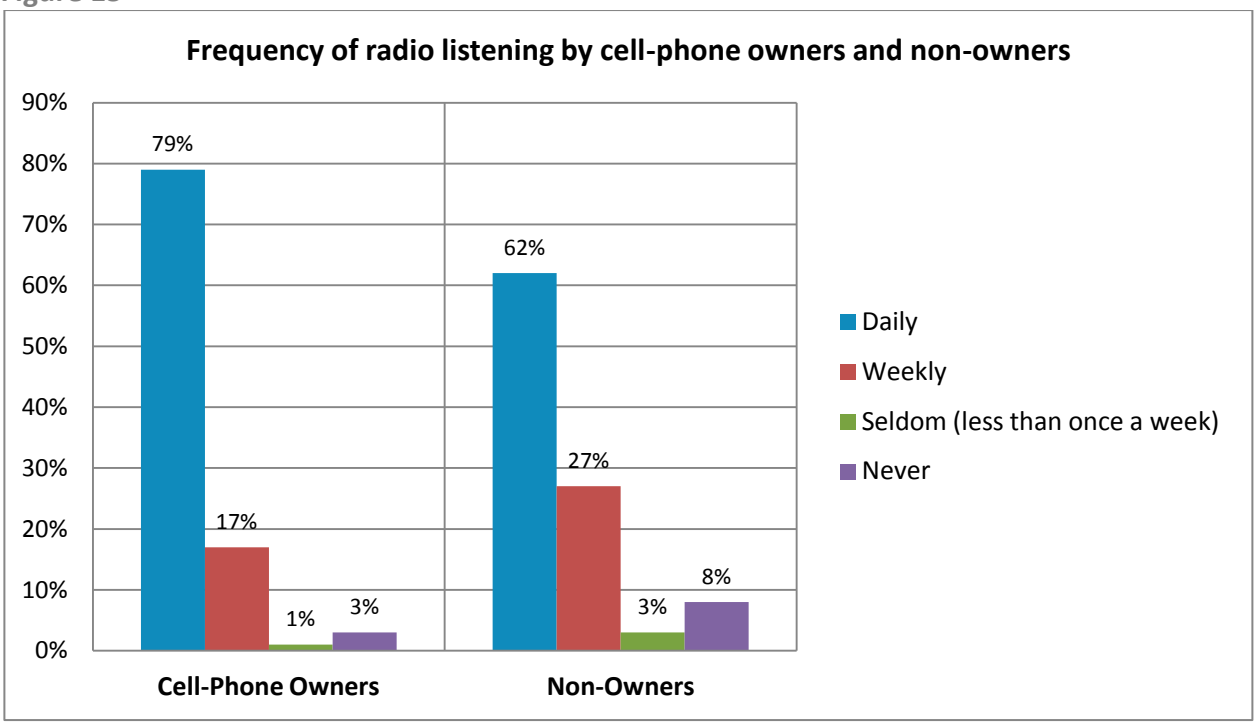


Do poorer households listen as regularly as better-off households?

Another critical question is whether the poorest households listen as frequently as better-off households. While the AFRRI survey did not investigate the income level of respondents, it did ask respondents to state whether or not they owned a cell phone. Using cell phone ownership as a proxy for wealth[10], the survey found that farmers with phones, and therefore, perhaps, those who are better off economically, are somewhat more likely than their apparently less well-off peers to listen regularly. Even 89% of farmers without cell phones, however, reported listening at least weekly.

[10] The authors recognize that cell phone ownership is an imperfect and incomplete and inadequate proxy for wealth, and these findings are offered cautiously. In addition to the income of the owner, owning a cell phone can reveal comfort with technology, access to phones, and other characteristics of the owner. Sometimes, phones are not purchased by the users but by others (such as their adult children) who want to be able to contact them. Cell phones are one of several assets such as bicycles, radios, furniture etc that, taken together, have been used as an indicator of wealth (Falkhingham, J. And C. Namazie, *Measuring Health and Poverty: a review of approaches to identifying the poor,* DFID Health Systems Resource Centre, London, 2002) . A recent study by Blumenstock, Shen and Eavle (*A Method for Estimating the Relationship Between Phone Use and Wealth,* - published on the Internet at *http://www.jblumenstock.com/files/papers/jblumenstock_qmq2010.pdf)* found that cell phone use (measured through call records) was a promising method for wealth estimation.

Figure 15



Did farmers listen to the AFRRI PRCs?

Qualitative information gathered during monitoring activities and summative "town hall" evaluation meetings strongly indicated that, at least in ALCs, where listeners were informed about the program and engaged in the content, the PRC broadcasts drew a large audience. The outcome evaluation for the second set of PRCs showed that, indeed, a majority of farmers living in the areas reached by the radio stations' broadcast signal listened to the PRCs.

In ALCs, 83.1% of respondents reported listening to at least half of the PRC's weekly episodes[11]. Almost half (49%) listened to more than 75% of the episodes. The fact that radio broadcasters regularly visited the ALCs, interviewed their members, asked for their feedback, and recorded community discussions, undoubtedly contributed to this high level of listenership. It is to be expected that people will be more likely to tune into a program knowing they may hear themselves or their neighbours on air.

But surveys also found high levels of listenership in PLCs, where community members had no formal contact with the radio station before, during or after the PRC. The survey showed that 66% of respondents in PLCs listened to at least half of the PRC episodes, and that one-third listened to over three-quarters of the broadcasts. Given the growing number of stations available "on the dial" and the fact that PRCs were not marketed in PLCs, this represents a very high level of engagement – more than double the Nielsen ratings for even the most popular TV programs in the US[12].

[11] The 95% confidence interval for this statistic is 81.1-85.1%. In other words, it may be considered accurate 19 times out of 20 plus or minus 2%.

These figures represent the average listenership across all 15 stations. There was considerable variation, however. At the high end was Radio Ada in Ghana, where 69% of PLC respondents listened to at least three-quarters of the episodes and 97% listened to at least half – virtually the whole population. The table below presents listener data for all 15 stations, showing the percentage of respondents that listened to at least 75%, or at least 50% of episodes.

> ***I cannot understand farmers that say that winter is not good for them when it comes to production. I have a brother who works in Bamako. Each winter, he sends me money to purchase agricultural inputs like fertilizer. But this year, when the radio campaign began on ORTM Ségou, I started producing compost. I split my field into two sections. On one hectare I put compost, and on the rest I put fertilizer. After three weeks, the plants that received compost far exceeded the others in height! I told myself: "I knew." I told my brother that we could now use the money he sends us for other things. I only want to say "Thank you," to Fousseyni Diarra at ORTM Ségou Radio. He is a star for us farmers.***
>
> **Adama Coulibaly,**
> **farmer from Massala in Mali**

Table 6 - Listenership levels across all AFRRI countries

Country	Station	Listened to at least 75% of PRC episodes		Listened to at least 50% of PRC episodes	
		ALCs	**PLCs**	**ALCs**	**PLCs**
Ghana	Radio Ada	66%	69%	99%	97%
	Classic FM	45%	45%	89%	85%
	Volta Star	61%	47%	86%	89%
Mali	Radio Banjo	58%	33%	90%	57%
	Fanaka Radio	73%	46%	86%	88%
	Radio Jigiya	60%	38%	83%	76%
Uganda	Mega FM	73%	55%	95%	92%
	KKCR	60%	47%	95%	92%
	UBC	41%	38%	93%	86%
Malawi	Zodiac	34%	12%	74%	53%
	Nkhotakota	35%	12%	74%	57%
	Mudziwathu	14%	9%	57%	32%
Tanzania	Radio Maria	30%	9%	62%	22%
	Sibuku	45%	9%	66%	45%
	TBC	38%	18%	72%	35%
AVERAGE		**49%**	**32%**	**82%**	**66%**

Several of the above figures stand out. First, it is clear that, in most cases, actively engaging communities in the development, creation and monitoring of radio programs, and adding support from extension workers and other agricultural experts, (which is what ALCs experienced), quite dramatically increases listenership. While the extensive involvement of ALCs cannot be replicated in all communities, more modest efforts to engage communities could yield positive results. For example, broadcasters can "call out" to farmers in more communities and interview them on air.

The gap between listener numbers in ALCs and PLCs was notable in Tanzania, most markedly at Radio Maria. The large gap (62% vs 22%) can be explained by the fact that Radio Maria is a Catholic radio station, while the research communities (both passive and active) investigated in the outcome evaluation were predominantly Muslim and therefore unlikely to listen unless actively engaged.

In some stations, however, the difference in listenership between ALCs and PLCs was much smaller or even negligible. Radio Ada and Volta Star in Ghana and Mega FM in Uganda both stand out in this regard. These are stations that are known to be widely trusted, widely listened to, and reputed for good development-oriented programming.

Did women and lower-income farmers tune into the PRCs?

Again, it is important to ask: who listened? The table below shows the proportion of PLC and ALC members who listened to more than half of PRC episodes, broken down by gender, and by whether or not respondents owned a cell phone. A quick review of this table makes it clear that females and non-owners of cell phones (lower-income) were less likely to listen to the PRCs than males and cell phone owners. While females listened less frequently, however, they did listen in large numbers: Over 60% of females in PLCs reportedly listened to at least half the PRC episodes.

Table 7 - Percentage of respondents who listened to at least 50% of PRC episodes

Country	ALCs				PLCs			
	Male	**Female**	**Non-owner of cell phone**	**Cell phone owner**	**Male**	**Female**	**Non-owner of cell phone**	**Cell phone owner**
Average	88%	76%	79%	90%	77%	62%	66%	80%

Farmers who owned cell phones were more likely to listen regularly to the PRCs. Yet over two-thirds of farmers without cell phones, (a proxy for lower-income farmers), also reported listening to over 50% of the PRC episodes in PLCs.

> ***I learned about neem from the AFRRI program. I cut the dry leaves of the neem tree and put them in a sack and went and sprinkled them on the eggplants and really I got a very good yield. That was last year. This year I am intending to increase my farm and see if it can help me more. I got 30 Ghana cedis from my very small farm, and my family and I also ate many of the eggplants.***
>
> **Gorgina Kare, farmer in Odimase, Ghana**

5.3 The impact of PRCs on farmers' knowledge

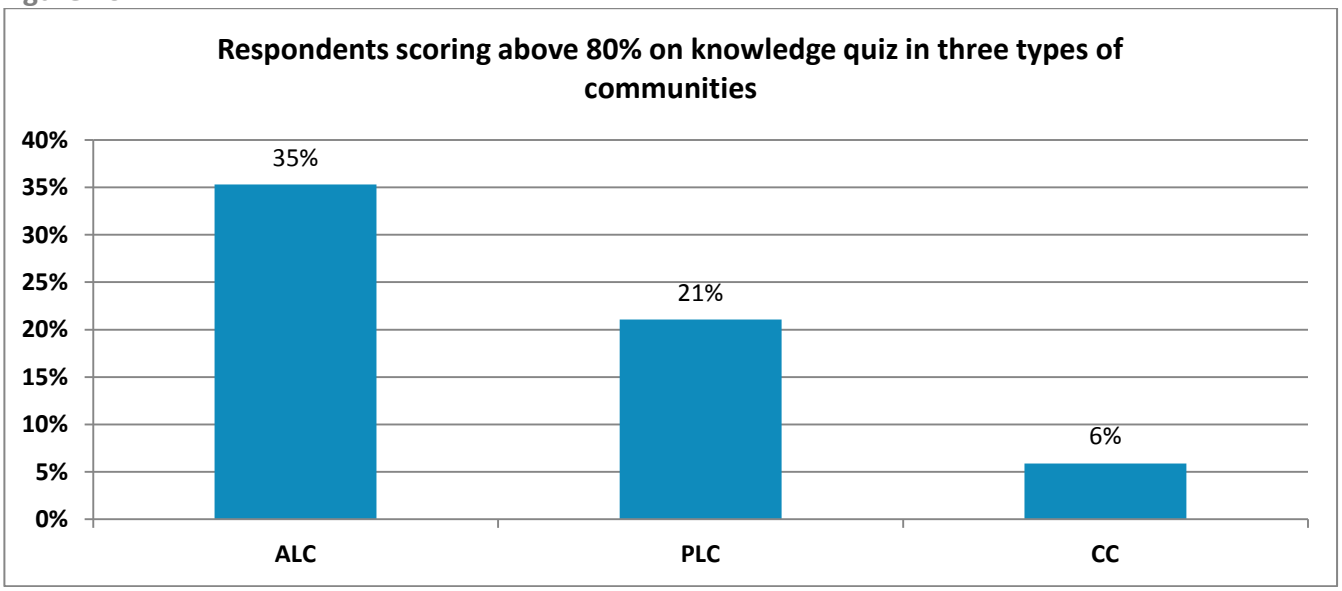
The AFRRI study found that PRCs reached small-scale farmers of every description in large numbers. AFRRI also wanted to determine to what extent PRCs make a substantial contribution to farmers' knowledge. Did listening to PRCs lead to measurable changes in farmers' knowledge of specific farming practices?.

The PRCs conveyed a great deal of information to farming families, through on-air discussions, interviews, call-outs to experts, profiles of practicing farmers, and other radio formats. The aim was to deepen farmers' knowledge of a specific agricultural practice over the period of the campaign. Qualitative and anecdotal information gathered through monitoring and evaluation activities strongly suggested that farmers in ALCs gained new knowledge about promoted agricultural practices.

To determine whether knowledge levels had indeed been affected by the PRCs, particularly in PLCs – where farmers could listen to the radio programs but had no other contact with the project – AFRRI designed short quizzes with specific questions that tested the extent to which the information conveyed by the PRCs had been absorbed and retained by farmers.[13] If the average test scores were higher in listening areas than non-listening areas, one could conclude that the PRC had an impact on knowledge.

Overall, as Figure 16 shows, the PRCs had a substantial impact on knowledge in ALCs, with over one-third of surveyed farmers scoring 4 or 5 on the five-question quiz. Approximately three-quarters (72.3%) of ALC respondents had at least "good knowledge," (3 of 5 or better)[14]. The PRC also had a significant impact in PLCs, with just over one-fifth of respondents scoring 4 or 5, and half scoring better than 3. In CCs, on the other hand, only 6% scored 4 or 5 and 15% scored at least 3. Overall, more than 3 times as many PLC residents as CC residents demonstrated good or detailed knowledge of the practice featured in the PRC.

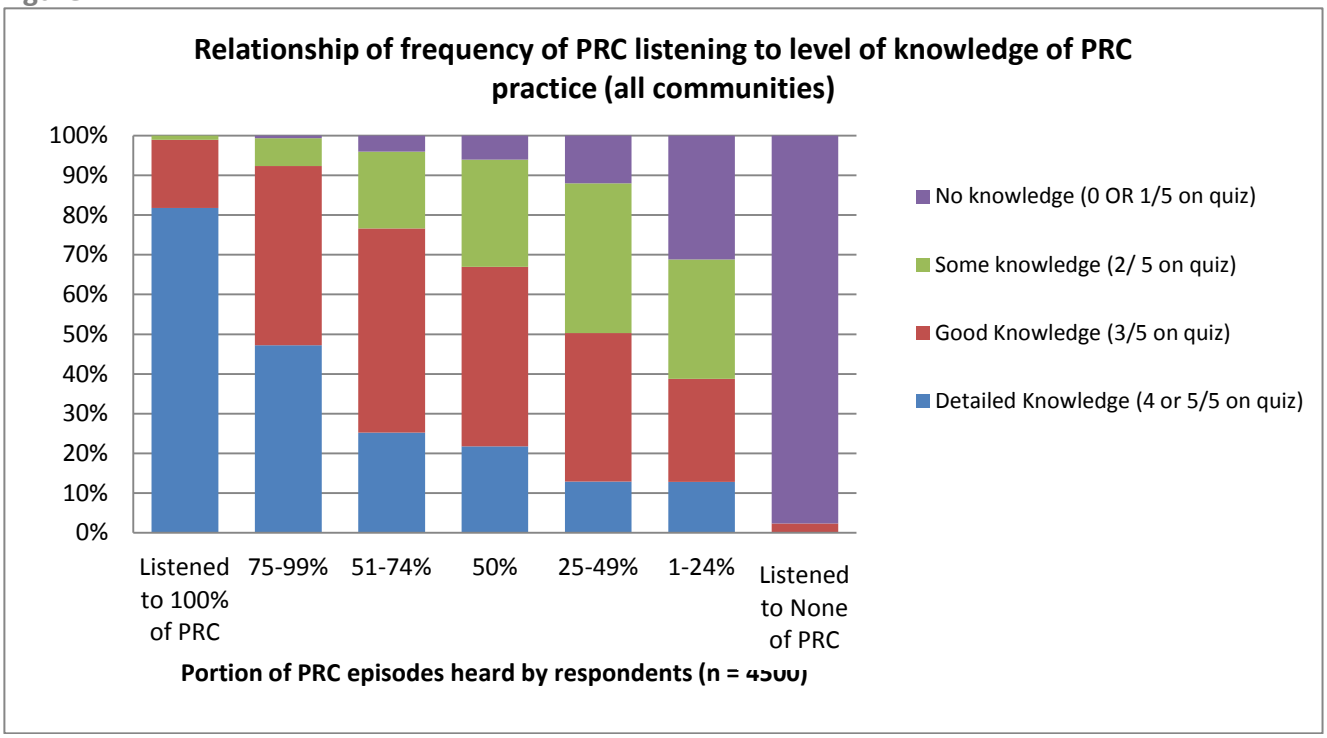
Figure 16



[13] Though a baseline survey had been conducted prior to the launch of the PRCs, the survey did not include questions which were specific enough to allow a before-and-after comparison of knowledge of the specific practice by the PRC.
[14] The 95% confidence interval for this result is 70.2-74.4% - or plus/minus 2.1%, 19 times out of 20.

Figure 17 shows the relationship between frequency of PRC listening and the level of knowledge about the PRC topic, as reflected in the quiz scores.

Figure 17



The chart above shows that 81.3% of respondents who listened to all of the PRC episodes scored 80% or better on the quiz and none scored less than 2 out of 5 on the quiz. On the other hand, the very large majority – over 95% - of the respondents who hadn't listened to the broadcasts scored 0 or 1 out of 5 on the knowledge quiz. The confidence interval for the difference between those that heard all PRC episodes and scored at least 80% on the quiz and those who heard none and scored 80% or over is statistically significant[15].

This finding indicates that farm radio is most effective when accompanied with strategies to ensure high and frequent listenership. The findings show that frequent listening to farm radio is associated with significant gains in knowledge and uptake of specific agricultural improvements. Investments in marketing PRCs and SMS alerts to accompany traditional farm radio programs, therefore, may have a much greater chance of impacting the household food security of farmers than those that do not employ these marketing strategies.

> ***We love the Twi language and the fact that the program is presented in Twi is great because most farmers speak it.***
>
> Farmer in the Classic FM listening area in Ghana

[15] Significant at the 95% confidence interval of 76.9 and 85.7% (81.3% plus/minus 4.4%, 19 times out of 20).Calculated based on the Wald method – normal approximation to the binomial distribution – adjusted as recommended by Agresti, A., and Coull, B. (1998). Approximate is better than 'exact' for interval estimation of binomial proportions. *The American Statistician,* 52, 119-126. Significant at the 95% confidence interval of 76.9 and 85.7% (81.3% plus/minus 4.4%, 19 times out of 20).

A closer look: Programming for a sustainable future

PRCs help farmers adapt to climate change



On the surface, the two PRC topics carried out by Volta Star Radio in Ghana were very different. The first was about a new variety of rice. The second was about soil management. However, both radio campaigns encouraged farmers to adapt to climate change in practical ways. PRC1 introduced farmers to a rice variety suitable for drier climates. PRC2 informed farmers how some of their current practices, such as bush burning, have a negative environmental impact, and offered alternatives that could improve farm productivity.

Volta Star Radio is a regional wing of the Ghana Broadcasting Corporation, and features regular programs on farming, trade, and commercial activities. It broadcasts 24 hours a day to the Volta Region and parts of Eastern and Greater Accra. This area includes a humid rain forest zone and an area of semi-deciduous forest. Rice is a staple crop, but rice typically depends on large quantities of water. Preliminary studies by AFRRI researchers, aimed at determining community members' priorities, showed an urgent need for a more resilient and water-efficient variety of rice which could survive in drier climates.

PRC1 introduced farmers to the New Rice for Africa (NERICA). NERICA is a high yielding cultivar, resilient and water-efficient, with a short gestation period. PRC1 introduced NERICA to two of the fifteen districts in Volta Region – those identified as the most favourable climatically. Cultivating NERICA, in addition to local varieties traditionally grown in swampy areas, would improve farmers' food security and increase their marketing opportunities.

The PRC on NERICA ran from May 3 to August 30, 2009, comprising seventeen, 30-minute episodes. The program was presented by Anane Gbadago and used a variety of formats to enhance public participation, and offer a broad perspective on the introduction of NERICA. Ten studio interviews were conducted with agricultural extension officers. Four broadcasts incorporated field interviews with local farmers, and one included a field interview with food vendors. There were also radio talks with professionals such as governmental environmental and agricultural staff. Fifteen of the episodes featured phone-in and phone-out sessions, during which community members were given an opportunity to provide feedback, express concerns or ask questions. An average of five calls were aired during each of these sessions. In order to keep the program entertaining as well as educational, music was incorporated into the broadcasts, ranging from traditional songs to women's troupes to gospel music.



In ALCs, almost two out of three farmers (63%) started planting NERICA. In PLCs, 23% of farmers adopted NERICA. Follow-up field research revealed that farmers prefer NERICA because it can be cultivated in upland areas as well as lowlands, whereas the local varieties thrive only in lowland swampy areas. As further proof of NERICA's new popularity, extension workers in the area reported increased demand for seeds and information on cultivating NERICA.

While Volta Star's first PRC helped farmers to grow an important crop in challenging climatic conditions, its second PRC aimed to help farmers improve growing conditions by improving soil health. PRC2 covered a number of topics, including the following: the land as a living thing; activities which degrade the land; bush burning and its negative effects on the soil; cultivating nitrogen-fixing plants to restore soil fertility; rainfall and weather; the benefits of manure for the soil; compost preparation; *mucuna* as a soil enhancement plant; and simple methods to check erosion.

Anane Gbadago was again the presenter, and PRC2 ran from January 3rd to May 30th, 2010. Eighteen, 30-minute episodes were aired. Volta Star's PRC2 included innovative and intensive use of SMS to increase interaction with listeners. Farmers were encouraged to send questions and comments to the broadcasters by SMS. Text messages were received and discussed during 13 episodes, with approximately 40 texts received per broadcast.

Follow-up focus group discussions and interviews with local farmers demonstrated that the programs had a conisderable impact. Many farmers have stopped bush burning, taken up composting, and started to practice intercropping. The final outcome survey showed that nearly half of ALC farmers (47%) had adopted the promoted practices, compared to over one-third (35%) of PLC farmers and only 1% of farmers in CCs.

> ***We can teach others who are not in listening communities about how to apply the improvement, for example, planting in lines.***
>
> **Farmer in the RAP FM listening area**

Watch Enock Kyambaddee, a farm manager for Uganda Rural Development Training Center (URDT) and extension officer, talk about AFRRI and food security.



http://bit.ly/farmradiovideo2

Comparing the PRCs' impact on knowledge

A more detailed analysis shows considerable differences in the impact of different PRCs on farmers' knowledge. The table below presents the data for the 15 PRCs that were evaluated.

Table 8 - Knowledge quiz results in three types of communities

Country	Station	Scored at least 60% (3/5) on the knowledge quiz			Spread between PLC and CC
		ALCs	**PLCs**	**CCs**	
Ghana	Radio Ada	96%	100%	24%	76
	Classic FM	96%	77%	52%	25
	Volta Star	86%	73%	15%	58
Mali	Radio Banjo	56%	17%	0%	17
	Fanaka Radio	79%	49%	0%	49
	Radio Jigiya	76%	57%	0%	57
Uganda	Mega FM	87%	76%	18%	58
	KKCR	80%	55%	17%	38
	UBC	50%	38%	10%	28
Malawi	Zodiac	78%	77%	22%	55
	Nkhotakota CR	72%	63%	25%	38
	Mudziwathu CR	88%	82%	52%	30
Tanzania	Radio Maria	37%	1%	0%	1
	Sibuku	41%	11%	0%	11
	TBC	41%	7%	0%	7
AVERAGE		**72%**	**51%**	**15%**	**36**

It is apparent from the table that the active engagement of communities (in ALCs) results in greater gains in knowledge. In all but one of the PRCs, scores were higher in ALCs than in PLCs, with the gap ranging from 1% to 39%. The gap in knowledge between ALCs and PLCs is likely associated with the greater levels of interaction between broadcasters, various agricultural personnel and farmer/listeners from the ALCs. Yet, respondents in PLCs also scored much higher than respondents in CCs. In 9 out of the 15 PRCs, over half of respondents in PLCs scored better than 3 out of 5 on the quiz, and in 5 PRCs, over 75% of PLC respondents had the same score. In only 2 PRCs did more than 50% of CC respondents score above 60% on the quiz. And in 6 PRCs, none of the CC respondents scored better than 60%. The gap in knowledge between PLCs and CCS (which ranged from 1-76%) was related to farmers gaining knowledge by listening to PRC programming without any other contact with radio station or AFRRI staff.

The impact on knowledge across the 15 PRCs, however, was not even – some, like Radio Ada's PRC on producing manure compost – were incredibly effective in raising knowledge (100% of PLC respondents scored 3 or better out of 5). Others, like Tanzanian Broadcasting Corporation's PRC on group marketing of maize, seemed to have a much smaller impact on knowledge (7% of PLC respondents scored 3 or better out of 5).The factors that might be associated with greater gains in knowledge are discussed below in section 5.51 below.

5.4 The impact of PRCs on farmer practice

At the end of the day, while changes in knowledge and attitude are important, the ultimate aim is to enable farmers to adopt new practices that result in improved food security. It was beyond the scope of AFRRI to directly measure how the adoption of a particular practice affected food security, poverty or nutrition. AFRRI was careful during the process of selecting agricultural practices to identify changes that had proved effective in meeting food security goals. AFRRI focused on measuring the uptake of an improved agricultural practice as a result of listening to the PRC programs.

During and shortly after the implementation of the PRCs, action research activities, such as case farmer diaries, focus group discussions in communities, extension workers' records, and summative "town hall meetings" provided an abundance of qualitative anecdotal evidence that listeners were adopting the practices that were being discussed by the PRCs.

> ***Extension people have been there for ages, but we are not moving forward with our farming activities and farmers don't seem to be taking up the recommended improvements – which means extension staff have their own shortfalls. But hearing about the same messages from fellow farmers on radio ignites our interest and zeal to take up the improvements by following [in the] footsteps of those sharing their stories, experiences.***
>
> **Farmer in Malawi in reference to the MBC radio campaign**

A closer look: The sound of buzzing is music to our ears

Improved beekeeping In Gulu, Uganda



For Mega FM in Gulu, Uganda, the PRC about improved beekeeping for Acholi farmers was not only about teaching farmers about apiculture; it was also a means of shifting beekeeping from a traditional to a modified practice with a market focus.

Maxwell Luketta is an entomologist who doubled as the AFRRI extension volunteer for radio campaigns on improved beekeeping at Mega FM. He confirms that the PRC approach has increased the adoption of improved beekeeping methods. "The AFRRI radio campaign has made many people aware of the importance of modern beekeeping because of the continuous broadcasts. Weekly messages on the same issues of improved beekeeping have made people realize the need to start practicing modern bee keeping." He adds: "… Farmers in the AFRRI listening communities of Abululyec and Choo pee have increasingly asked for modern beehives and modern bee harvesting gear."

Maxwell believes one of the reasons for the success of this PRC was the way Mega FM combined cell phones with radio broadcasts..



"People called Mega FM to offer opinions about the topic of discussion, which is a sign that those who can afford using telephones can share their opinions with other listeners. These days, telephones have made communication faster than it was, and using radio and telephones makes information flow very spontaneous. We no longer wait for letters that take 2-3 weeks.

"For listeners whose phones cannot go through during the radio programs, they can send SMS to the radio with questions which can be addressed during the next radio programs. Or if they send their messages in time, they get replies during the same radio broadcast."

Maxwell is glad that AFRRI radio campaigns have enhanced his job as an extension officer. He now realizes there are some places too remote for extension staff to visit, but which can be reached by radio broadcasts.

"The radio helps us to reach many farmers in a short time, so that when we go there we only deal with a few issues of practical demonstration, because most information will be known by farmers through the radio." Maxwell envisions more farmers' participation in agricultural radio programs. He cautions, however, that radio alone may not be sufficient to meet all food security challenges.

"Much as the radio is very informative, there are some issues that require practical demonstration, and so the link with extension and radio should be emphasized more in all sectors of agriculture."

The PRC2 outcome evaluation provided compelling quantitative evidence that high numbers of farmers adopted a new farming practice during and after the start of a PRC, even in PLCs. The chart below compares the uptake in active, passive and control communities:

Figure 18

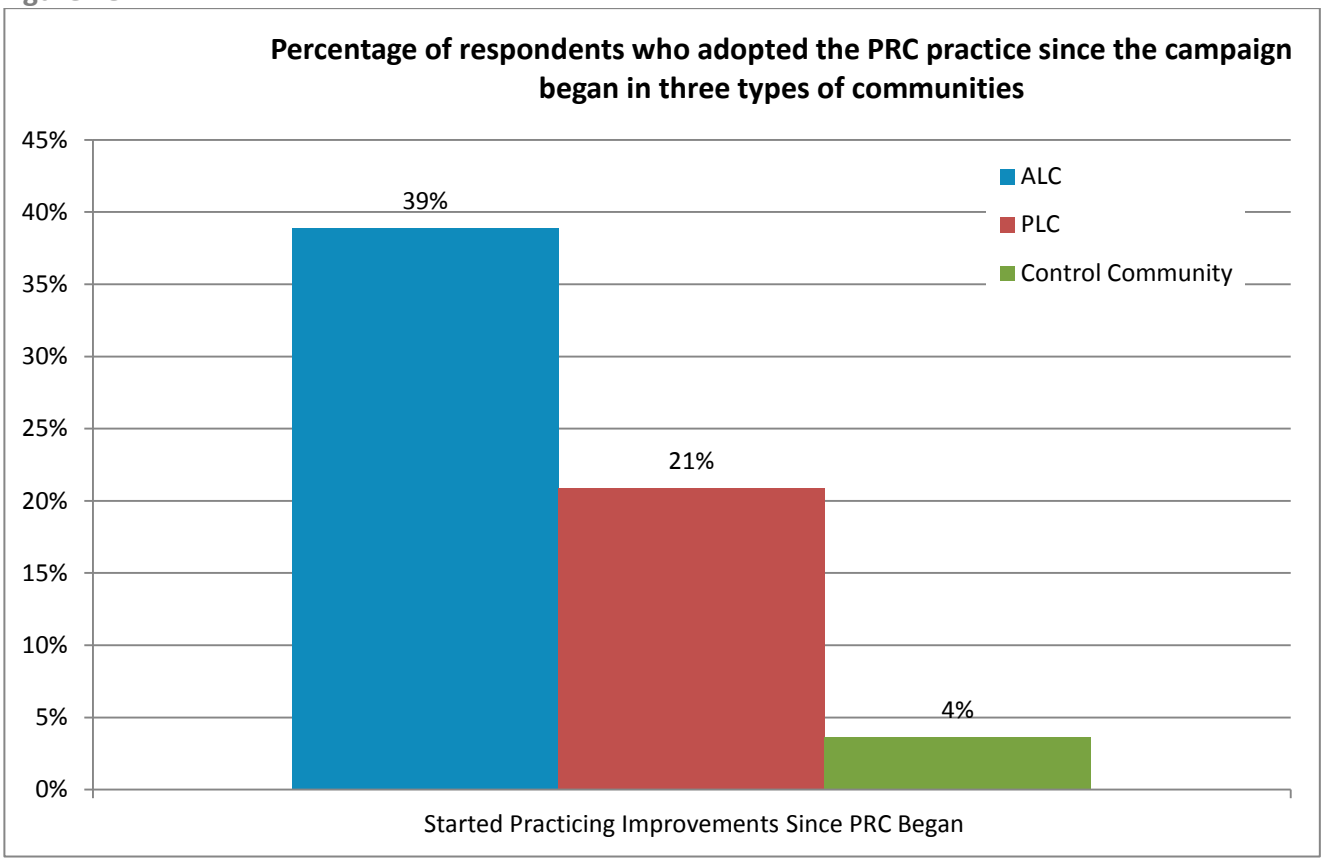


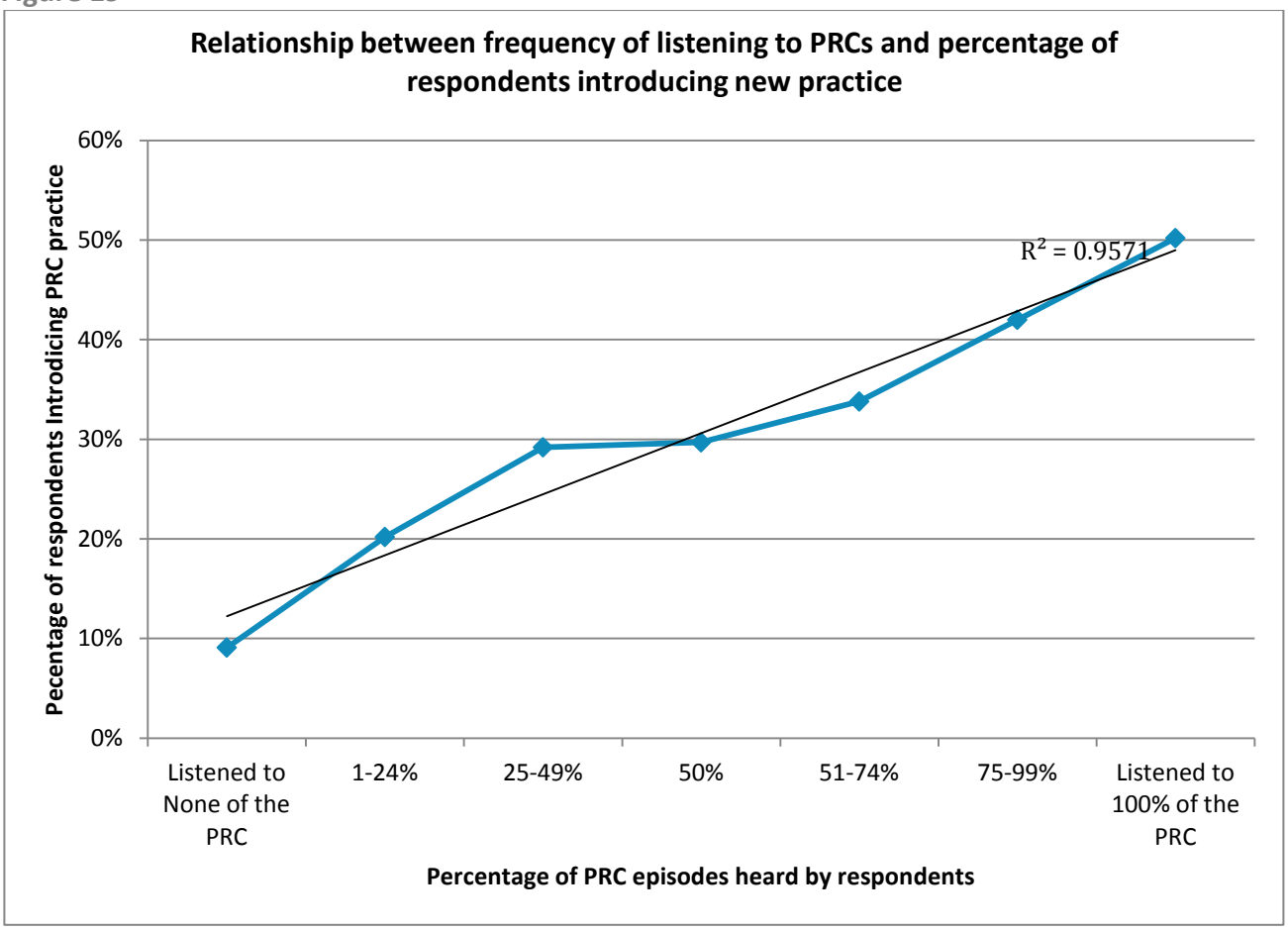
Figure 18 shows that In ALCs (communities directly engaged in planning, monitoring, and evaluating the PRCs) --the uptake was, on average, 39.5%, or two out of every five households.[16] Even in PLCs, over 20% of respondents adopted the agricultural improvement during or following the PRC . This was, on average, five times greater than the percentage of surveyed farmers in control communities that adopted the same improvement within the same time period.

While engaging farmers in participatory radio processes requires upfront investment, engaged communities are much more likely to be positively affected by the programs and information presented on the radio. Moreover, a campaign developed with the participation of a limited number of communities can result in programming that is popular and effective, even in communities that do not actively participate. This has important implications for scaling-up. The findings suggest that, if one million farmers are reached by a PRC, on average, over 200,000 of listeners in PLCs will adopt the practice featured in the PRC, even if the campaign actively engaged only a small number of farmers in a few communities.

The connection between PRC listenership and uptake of new practices is further illustrated in the following graph:

[16] The 95% confidence interval for this figure is 37.1-41.9% – or plus/minus 2.4%, 19 times out of 20.

Figure 19



Half of those who listened to 100% of the PRC episodes introduced the PRC practice. Only 8.9% of those who listened to none of the PRC (including respondents who live in ALCs) introduced the same practice over the same time period. There is a 41.4%.[17] gap between the rate of uptake among those who heard 100% and those who heard none of the PRC. This finding shows a strong association between frequent listening to PRC programming and adoption of the practice featured in the PRC. Even farmers who listened to a small number of episodes were twice as likely to introduce the new practice as farmers who listened to none.

> ***People are calling me Dr Kwasowanji, literally meaning 'Dr. What do I lack?' because I have harvested a lot of groundnuts and maize, to mention a few. I have bought goats to bring more income to cover school fees for my children.***
>
> **Farmer who listened to the Nkhotakota campaign in Malawi**

[17] The 95% confidence interval for this figure is 31.3 to 52.5% – or plus/minus 10.1%.

Similar to the findings on gains in knowledge, there was considerable variation across the 15 PRCs in terms of the adoption of agricultural practices. The table below presents the data.

Table 9 - Level of improvement uptake across all AFRRI countries from PRC2

Country	Station	PRC improvement	Started practicing improvement since PRC began		
			ALCs	**PLCs**	**CCs**
Ghana	Radio Ada	Improved soil health through manure compost & mulching	68%	48%	0%
	Classic FM	Improved soil health through mulching	46%	37%	1%
	Volta Star	Improved soil health through minimal tillage & mulching	47%	35%	1%
Mali	Radio Banjo	Improved soil health through compost	11%	3%	0%
	Fanaka Radio	Improved soil health through compost	42%	10%	0%
	Radio Jigiya	Improved production of shea butter	54%	16%	0%
Uganda	Mega FM	Cultivation of fruit trees	46%	31%	5%
	KKCR	Improved soil health through compost	40%	17%	10%
	UBC	Cultivation of improved potatoes	13%	5%	4%
Malawi	Zodiac	Improved soil health through compost manure	33%	22%	4%
	Nkhotakota CR	One-by-one planting of maize	30%	33%	13%
	Mudziwathu CR	Proper use of inputs for maize farming	47%	33%	16%
Tanzania	Radio Maria	Management of local chickens	28%	1%	1%
	Sibuku	Improved soil health through compost manure	50%	22%	0%
	TBC	Group marketing	29%	1%	0%
AVERAGE			**39%**	**21%**	**4%**

Some PRCs were much more effective than others in encouraging the uptake of new agricultural practices. In ALCs, the range of adoption was 13% to 68%, while in PLCs the range is 1% to 48%. In some PRCs, such as those on improved maize cultivation practices by Mudziwathu Community Radio and Dzimwe Community Radio, the uptake was relatively high, even in in CCs (13% and 16% respectively), although this still represents less than half the rate of uptake in the PLCs for these stations (33% in both cases). The high rate of uptake in these particular CCs may be explained by the fact that conventional government extension service has strongly promoted these cultivation practices throughout Malawi's maize-growing areas. Yet the PRC more than doubled the uptake in Mudziwathu and Dzimwe's PLCs.

Possible explanations for the wide variation in uptake are presented in more detail in section 6.0.

At Radio Maria, adoption rates of improved management of local chickens were reasonably high in the ALCs (28%), but no higher in the PLCs than in the CCs. Radio Maria ran a good campaign, with plenty of interaction, good information, and a variety of engaging formats. The relatively low uptake in Radio Maria's PLCs is likely due to the fact that communities that were studied for the outcome evaluation are predominantly Muslim and do not normally listen to a Catholic station. Only 22% of respondents in Radio Maria's PLCs listened to more than 50% of the PRC episodes, although 60% reported listening to the radio (usually another station) every day. Another interesting case is the PRC on potatoes presented by the Uganda Broadcasting Corporation. The uptake in PLCs and CCs was virtually identical. Two factors might explain this. First, this variety of potato has been heavily promoted through a variety of extension services for many years, and the PRC may not have given a large additional boost to its adoption. Second, the UBC PRC was plagued with disruptions, due to power outages and other problems, so the program was not on the air consistently. In addition, a new radio station with a stronger signal started broadcasting to the ALCs and interfered with UBC's signal. In the end, only 38% of UBC's ALCs heard 75% or more of the PRC broadcasts.

To investigate some of the factors that may determine the effectiveness of a campaign, two PRCs with very different levels of impact in PLCs are presented on the following pages.

A closer look: A tale of two campaigns

Promoting animal housing in Ghana and Tanzania

There are many distinguishing factors between campaigns that may determine differential impact. Two similar campaigns in different countries shed light on factors that help to explain these differences.

Why would one PRC result in high levels of knowledge and widespread uptake of a practice while a similar PRC had a smaller impact?

Radio Ada, a community radio station operating in the Greater Accra region of Ghana, ran a PRC in 2009 on livestock management (chickens and other animals), with special focus on the construction and use of simple animal enclosures. During the same time period, Radio Maria, a private radio station operating out of Dar es Salaam, Tanzania, ran a similar campaign on local chicken housing. In their second campaigns, both stations built on the gains achieved in the first campaigns. For Radio Ada, PRC2 focused on using manure gathered in new animal enclosures to create quality fertilizer. At Radio Maria, PRC2 featured improved poultry (local chicken) management, including vaccinations and nutrition.





Left: Philip Akafo, a farmer in the Dangme East District of the Greater Accra area in Ghana. Philip raises chickens, pigs and goats and has learned from Radio Ada's AFRRI programs how to enclose his animals. With the help of the station, Philip was able to increase his herd from 8 – 15 sheep and from 12 – 45 goats.

Right: The chairwoman of the listening group in Tanzania showing AFRRI staff her two-story chicken house

Both campaigns ran for approximately four months and had roughly the same quantity of programming (about 12-14 hours per campaign). Both included extensive farmer involvement through call-ins, text-ins and field interviews. Both radio campaigns appeared to include all the ingredients of a successful PRC. Listener satisfaction was very high for both programs. As a result, it was puzzling to find widely different impacts.

According to the outcome evaluation survey, Radio Ada's campaign was significantly more effective than Radio Maria's. This does not appear to be related to the quality of the campaign, but to other factors. The proportion of smallholder farmer listeners that listened to 50% or more of Radio Ada's campaign was a remarkable 97%. By comparison, only 22% of surveyed smallholder farmers reported listening to Radio Maria's PRC.

There were also differences in the level of knowledge of the PRC content and adoption of the PRC practice. At Radio Ada, 100% of PLC respondents received a "high" grade in the post-campaign knowledge quiz, meaning that they had scored 80% or above. Only 1% of PLC listeners to Radio Maria's PRC scored at this level. Nearly half (48%) of Radio Ada's PLC farmers adopted the improvement, while only 1% of Radio Maria's PLC respondents started practicing.

What is the explanation for the large difference in results between two very similar campaigns? *(cont'd on next page)*

Explaining the differences: Four enabling factors for a successful campaign

1. **Work with a radio station that is listened to by the farmers the PRC wants to reach**
   Radio Maria in Tanzania is a Christian radio station. Many of the surrounding farming areas that received the PRC are Muslim. Therefore, regardless of the quality of the PRC, much of the potential listening audience did not feel that Radio Maria was "their" radio station and were non-listeners from the start. In fact, only 22% of PLC respondents reported listening to 50% or more of Radio Maria's campaign. This presents an uphill battle to pull in listeners rather than a simpler effort to leverage existing audiences. Radio Ada, on the other hand, is a well-known, popular and trusted community-owned-and-operated radio station. The level of connection between farmers and the station is very high. This connectedness had an obvious effect on farmers' level of trust in contents of the PRC, their willingness to participate in discussions, and to pursue the issues that were important to them on air. Thus, it is crucial to carefully consider the potential audience when choosing radio stations with which to work.

2. **Appropriate technology wins**
   The initial programs in these two campaigns focused on teaching farmers how to construct livestock housing (mostly for chickens). The type of housing promoted in Ghana was quite different than in Tanzania. Radio Ada focused on using readily available materials, such as sticks to construct animal housing, while Radio Maria's campaign focused on more "modern" designs of chicken housing that often required farmers to seek out inputs that were not readily available. In the end, more listeners were able to try the type of housing in Ghana than in Tanzania.

3. **Extension support matters**
   Although it is clear that PRCs are strongly associated with increased adoption of positive agricultural practices, they should not be conducted in isolation from traditional extension services. For a PRC to meet its full potential, it needs support on the ground from extension workers who can reinforce the messages heard on the air, conduct field demonstrations, and answer farmers' questions. For Radio Maria, the extension support was sparse. Where extension support was available, the agents were often very young, and community members did not know them. By comparison, the extension agents connected to Radio Ada's PRC were much more engaged and available as communities worked to introduce animal enclosures into their agriculture operations.

4. **PRCs may be more suited to some types of practices than others**
   Practices that require farmers to obtain inputs which may not be readily available -- such as wood for building, or expensive vaccinations, for example -- offer additional challenges. These kinds of practices are just as important as "simpler" ones, like using manure or intercropping, but may require a slightly different approach. As shown in the analysis of Radio Ada and Radio Maria, promoting more "complicated" improvements requires increased involvement of local extension officers, along with demonstrations on how to construct animal housing.

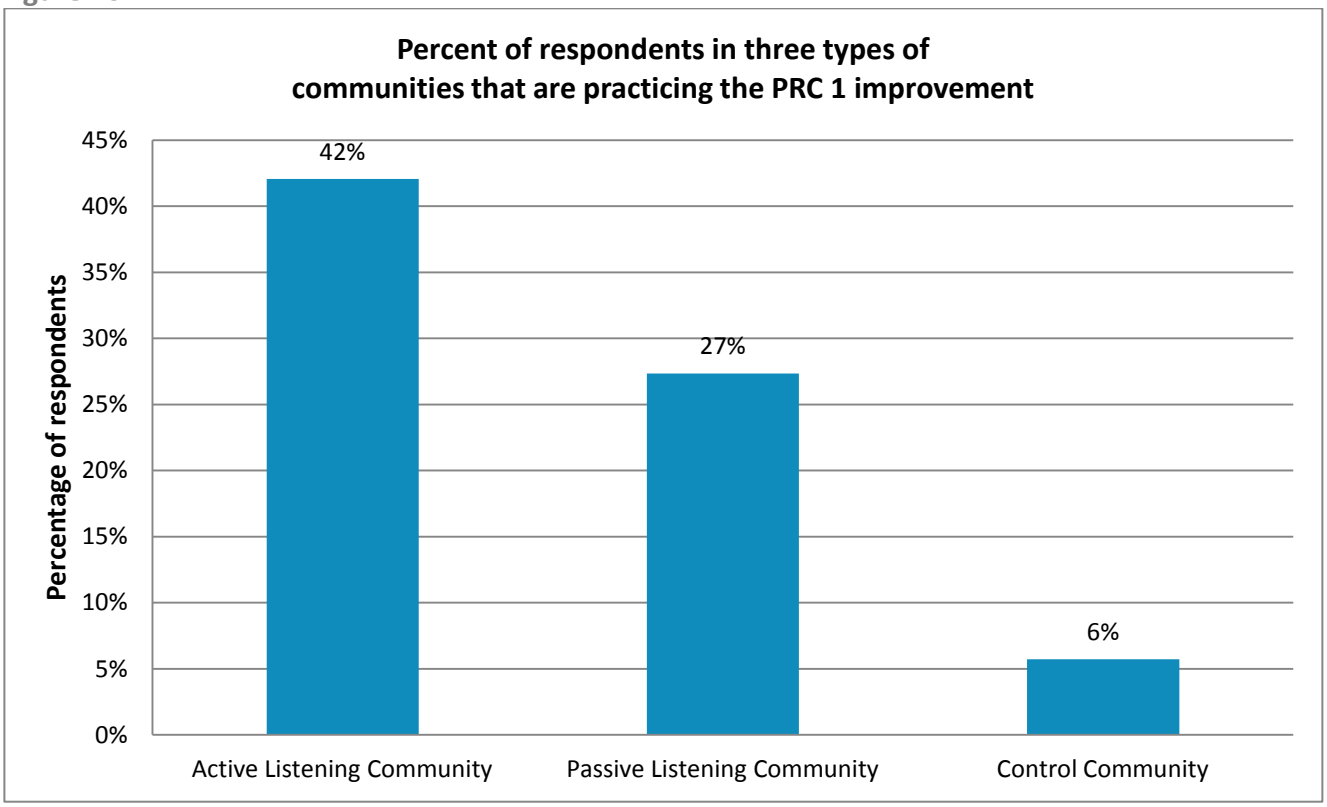
In the end, it is difficult or impossible to predict whether a campaign will flourish or have minimal impact on local agricultural practices. This analysis highlights several factors that may help determine the success factors associated with PRCs. Some of these factors include the following: the extent to which radio stations are already listened to and trusted by the targeted beneficiaries; the complexity or difficulty of adopting the improvement on the part of the target audience; and the availability of good extension support to support the adoption of the practice.

5.5 Summary of trends

The longer-term Impact of PRC1

The outcome evaluation of PRC2 confirmed that within four-to-six-months of a PRC's completion, significant numbers of community members will have adopted a new farming practice. It is important to ask, however, how long this shift in practices will last. Will the change be a flash in the pan? Or will the adoption rate increase as neighbours observe the success of early adopters and take up the practice? It is too early to say for the PRC2 practices. However, the PRC2 outcome evaluation survey also asked respondents to indicate whether they had adopted and maintained the practice promoted one year earlier by PRC1. The results are as follows:

Figure 20



These results suggest that the impact of PRC1 on practice was sustained for at least a year after the PRC was complete.

A follow-up grant received from the Bill & Melinda Gates Foundation for the African Farm Radio Results Initiative (AFRRI-2), will enable FRI to return to the 90 researched communities in 2012 and again in 2014, allowing a more accurate, long-term tracking of the impact of PRCs.

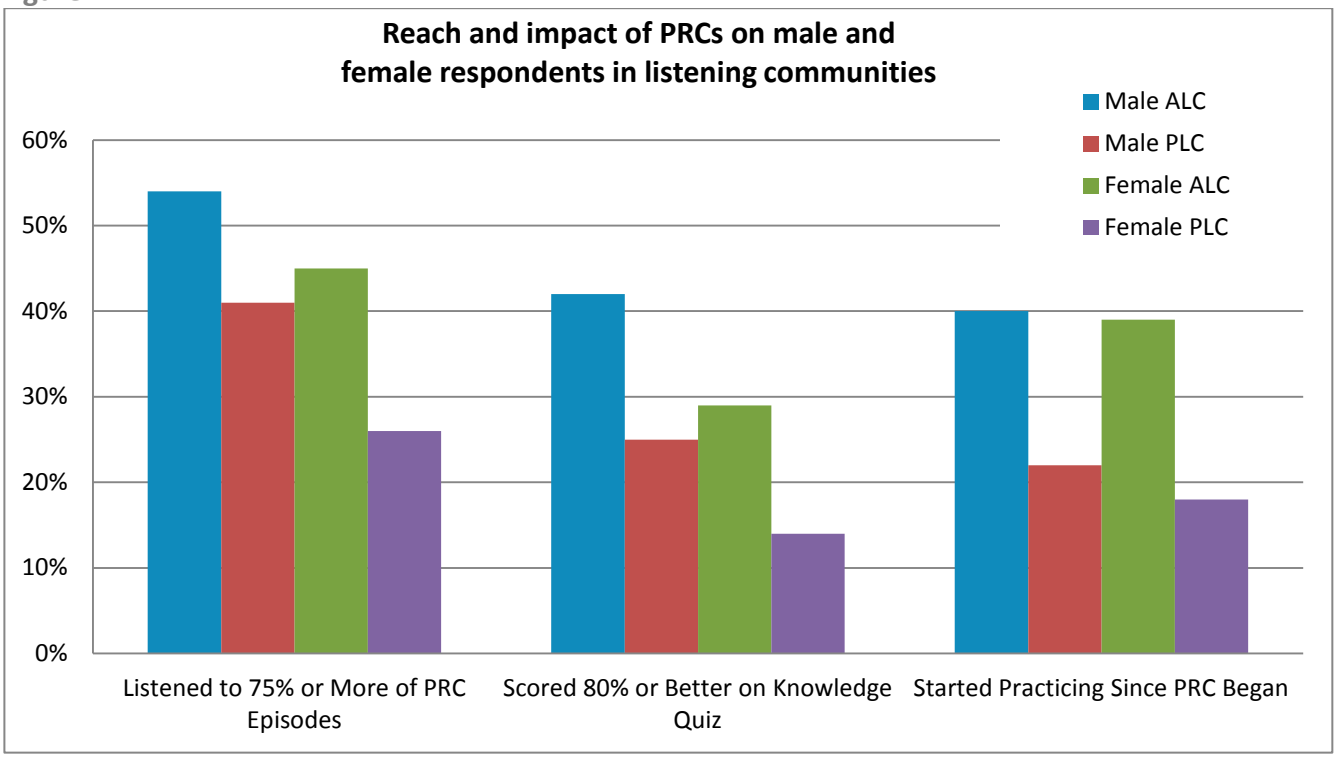
5.51 Differences in reach and impact on various groups

Differential impact on women and men

AFRRI sought to answer whether, how, and to what extent women and men use radio to help them meet their food security goals. The PRCs were planned and developed to ensure that the needs and interests of both female and male farmers were taken into account, and that women had a voice in the programs. For

example, female-only and male-only focus group discussions were arranged as part of the rapid appraisal, formative research, and monitoring activities. Aware of differential access to and control of radio sets, research activities investigated whether females listened to PRCs as frequently as males, and whether PRCs had a similar or dissimilar effect on the knowledge, attitudes and practices of males and females. The outcome evaluation survey gathered responses from 2,640 males and 2,121 females. Only one person was selected from each surveyed household. Males and females were randomly interviewed to arrive at a near-even gender balance among respondents. Figure 21 (below) shows the rates of male and female listenership, knowledge, and adoption of PRC improvements.

Figure 21



This data indicates that, overall, males are more likely to listen than females, but that females listen in reasonably high numbers – 45% of females in ALCs and 36% of females in PLCs heard at least 75% of the PRC episodes. More than half (54%) of male ALC respondents listened to 75% or more episodes, while 41% of PLC male respondents listened as frequently. Notably, it is clear that living in an ALC – for both males and females – had a bigger impact than gender on knowledge gains or adoption of practices.

Also noteworthy is that, while males listened more frequently and scored better on the knowledge quiz, females in ALCs were almost as likely as their male counterparts to report that they had introduced the featured practice since the PRC began. Thus, unlike males, female respondents were more likely to have introduced the practice than to have gained detailed knowledge of it (defined as scores of 80% or better on the knowledge quiz). This may be because decisions to introduce practices are often household decisions, and males or females are equally likely to report that the household has adopted a new practice.

A closer look: A women-oriented PRC

Radio Jigiya, a community radio station based in the Zégoua region of Mali, ran a PRC on improvements in the production and processing of shea nuts into marketable shea butter. The PRC was carefully designed to be broadcast at a time of day when women could listen, and featured the voices, stories and perspectives of female shea nut farmers. Did this campaign have a larger female listening audience, and did it lead to relatively higher gains in knowledge and uptake of practices among women in Jigiya's listening area? The answer is yes.





Figure 22

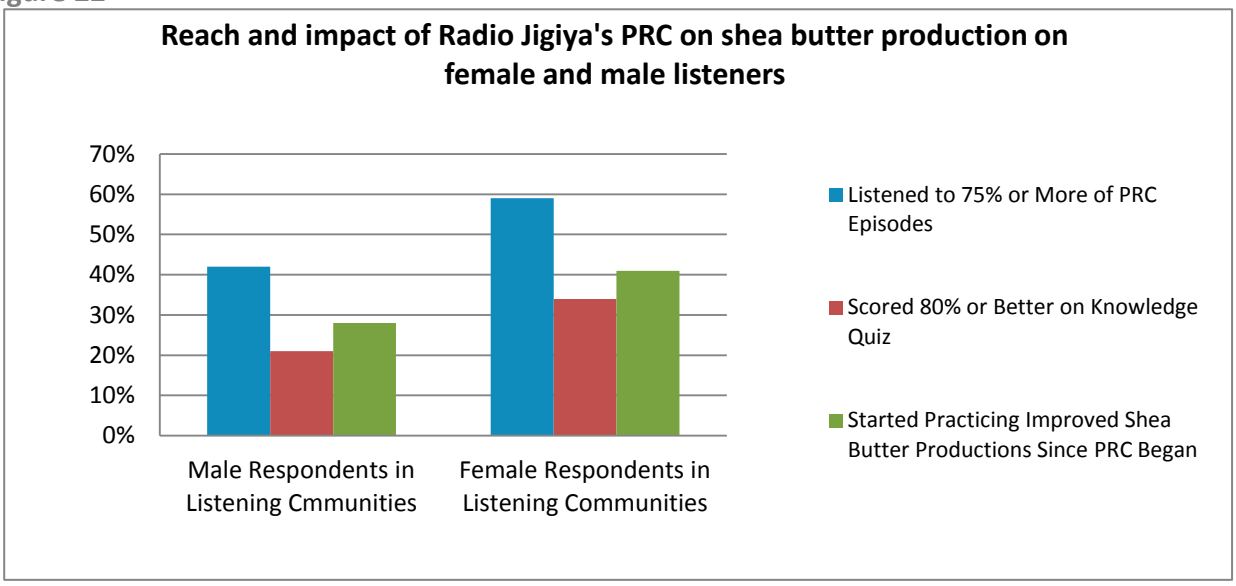


Figure 22 shows that 59% of female respondents listened to at least 75% of PRC episodes , compared to 42% of males, and an average of 35% of females for the other PRCs. The percentage who displayed detailed knowledge about (34%), and adopted (41%) improved shea processing practices was notably higher among females than males. (None of the listeners in the CCs - male or female - demonstrated detailed knowledge or adopted the new practices). But it is interesting to note that even a female-oriented PRC was quite popular and effective with males.

As described in the box above, it is possible to boost female listenership and increase knowledge and practice by focusing specifically on a practice that women are particularly interested in and by broadcasting the PRC at a time when women are able to listen. Radio Jigiya ran a very successful PRC on new methods of processing shea butter – a product normally processed and controlled by women – at the time of day when women usually listen to the radio. This suggests that choice of topic and time of day are important factors in predicting whether women will benefit from a PRC.

Does radio serve the poorest farmers?

The outcome evaluation survey asked respondents whether they owned a cell phone, as a proxy for wealth. Did cell phone owners have a big advantage when it came to benefiting from farm radio programs? Were non-owners disadvantaged? To answer these questions, frequency of listening, knowledge level and uptake of new practices was compared between male cell-phone-owners and non-owners in PLCs (to control for differences attributable to gender, only males were questioned).

Figure 23

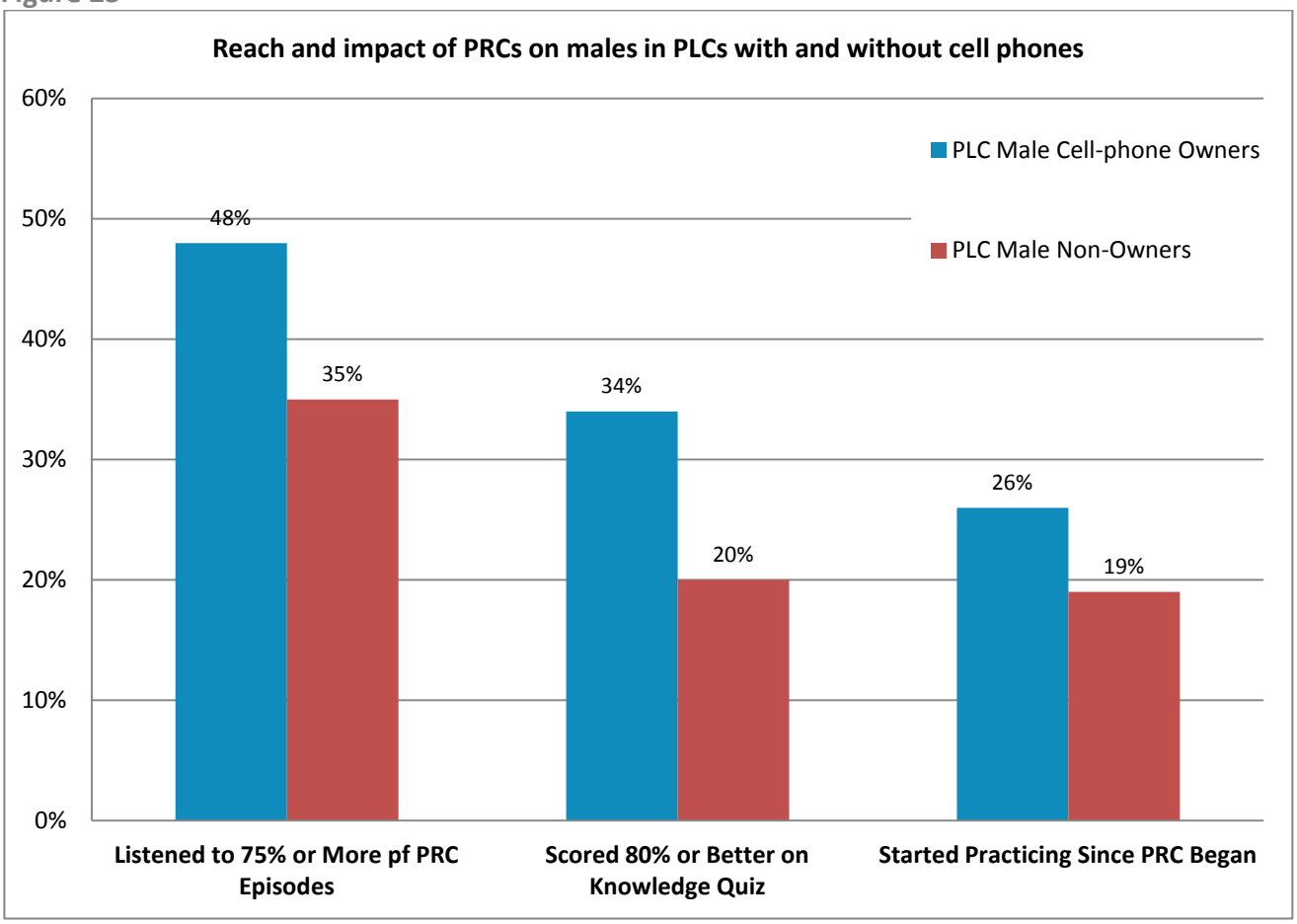


Figure 23 indicates that cell phone owners were more likely to listen to PRCs, demonstrated more knowledge about the practice featured in the PRCs, and were more likely to adopt the practice. Interestingly, the gap between owners and non-owners was greater for knowledge gain (14%) than for adoption of practice (7%), yet non-owners started practicing improvements at nearly the same rate as owners. PRCs are clearly helpful to lower-income farmers – 20% of PLC males without cell phones gained detailed knowledge of the practice and 19% started practicing the agricultural improvement promoted in the PRC. But cell phone ownership may also be indicative of the "early adopters" of innovations, both agricultural and technical. More than just an

indication of wealth, in other words, cell phone ownership may indicate those individuals who value the exchange of information. The higher scores of cell phone owners may, therefore, be associated with the values and attributes of cell phone owners rather than, or as well as, their income status.

Does age make a difference?

An important challenge facing agricultural development is that farming is, in many countries, an occupation that young people try to avoid or are discouraged from pursuing. Yet young people, who often have better education, more links with urban markets, and more energy and physical strength, may have the most to gain from improvements in small-scale farming practices. It is therefore worth investigating whether PRCs reach young people and, if they do, whether these listeners act upon the information they hear.

Table 10 - Age group comparisons

Age of respondents	Type of community	Listened to 75% or more PRC episodes	Scored 80% or better on knowledge quiz	Started practicing since PRC began
Under 20 years old	ALC	44%	27%	44%
	PLC	16%	11%	17%
	CC	NA	2%	3%
20-40 years old	ALC	50%	37%	42%
	PLC	32%	19%	19%
	CC	NA	7%	5%
Over 40 years old	ALC	51%	35%	34%
	PLC	40%	24%	22%
	CC	NA	6%	2%

The table, above, suggests that, while older farmers are more likely to listen to PRCs and gain knowledge from them than are younger farmers, (especially in the PLCs), the gap narrows when it comes to adoption of practices. Young people are as likely as their elders – sometimes more likely -- to take up new agricultural practices. Living in an ALC had a huge impact on the knowledge and uptake of agricultural practices by young farmers. Nearly half (44%) of ALC respondents under 20 listened to the PRC regularly; yet only 16% of PLC respondents in this age group listened regularly. The trend continues, though not so strongly, with practices: There was a bigger gap in uptake rate between young people in ALCs and those living in PLCs than can be seen among older farmers. Younger farmers were more likely listen to the PRCs, gain more knowledge, and try the new agricultural improvement if their community was actively involved in the PRC.

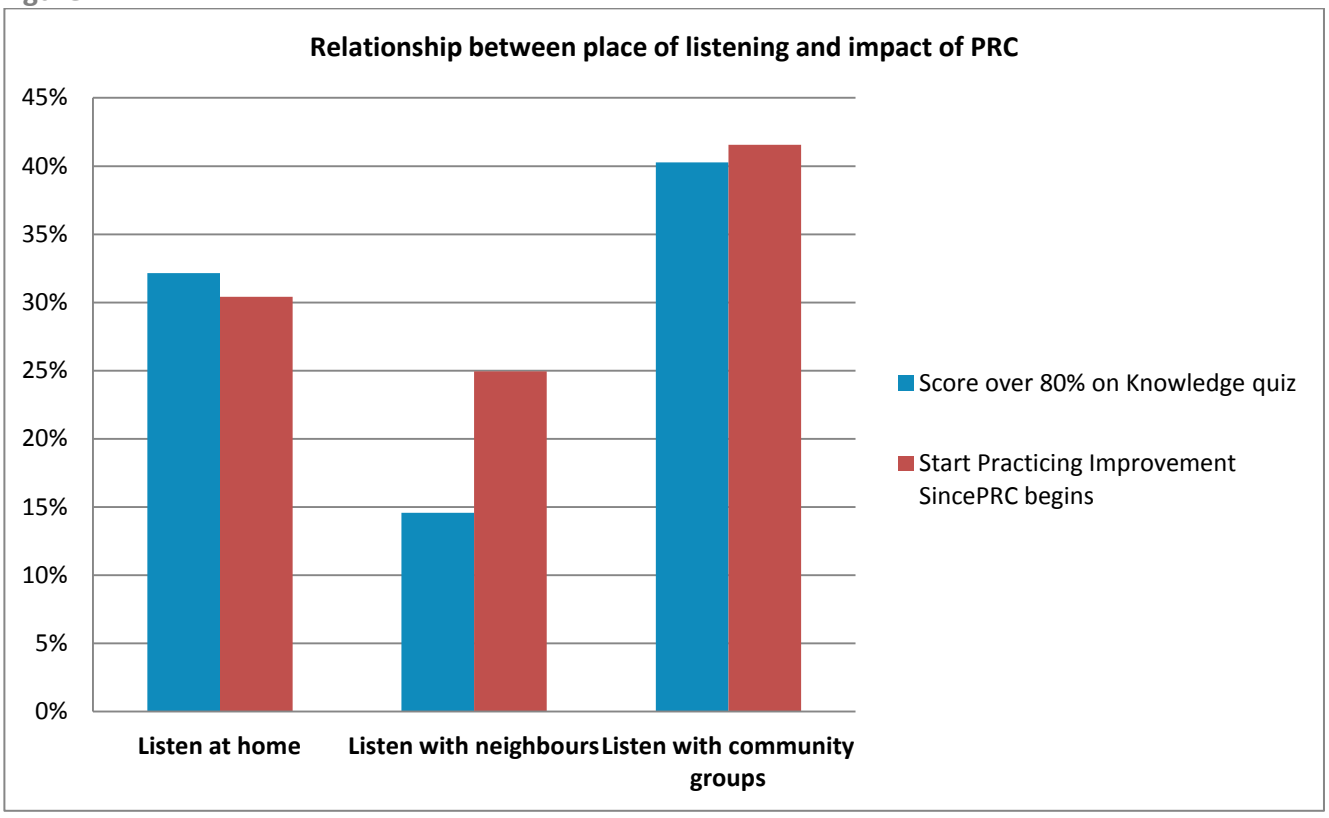
Listening alone or in groups – what is the preference? Does it make a difference?

Many development communication efforts over the decades have involved the creation and facilitation of radio listening groups, based on the assumption that people like to listen in groups, are more likely to gain knowledge and adopt new practices if they do, and that group listening is an effective strategy to overcome a scarcity of radios.

As the figure in section 5.2, above, reveals, however, the large majority of radio listening takes place at home. About 10% of male respondents and 20% of females said they listened with their neighbours. Only 2% of males and 3% of females reported listening to the radio most often with community groups, such as listening clubs. Given the preponderance of home listening, future radio strategies should consider programming suitable for home listening, not those dependent on group interaction.

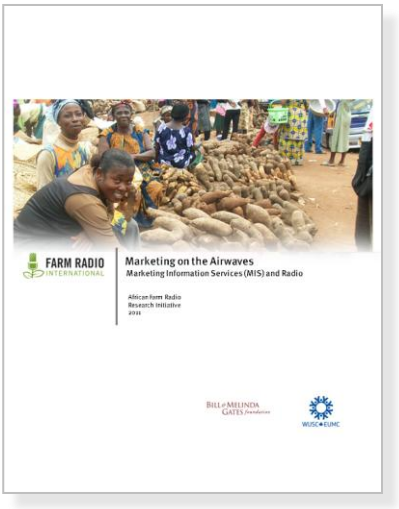
Place of listening, however, can also have an impact on knowledge gain and adoption of practices. Figure 24 below suggests that group listening increases the impact of PRCs, on both knowledge and practice. However, it must be noted that the size of the sample that listened with community groups (90 out of 4496 respondents) is very small. Those who listened with neighbours or with a group were also more likely to adopt the new agricultural practice than they were to understand it, as represented by the lower scores on the knowledge quiz. Perhaps, when one listens with neighbours, adoption of new practices proceeds via imitation rather than other kinds of learning.

Figure 24



Did you know that Farm Radio conducted a thorough analysis of Market Information Services in each of the AFRRI partner countries? *Marketing on the Airwaves: Marketing Information Services (MIS) and Radio*

http://bit.ly/farmradiomis



6.0 Why are some PRCs more effective than others?

While all PRCs had a significant impact on knowledge and practice in ALCs and PLCs, there was considerable variation, particularly within PLCs. Some PRCs had a large impact on knowledge and practice in PLCs compared to CCs. The difference was much smaller in other PRCs. What accounts for these differences? What lessons can be drawn for future participatory farm radio programming?

AFRRI's research design did not allow precise identification of the factors that determine the effectiveness of PRCs. There were too many variables across the sample size of 25 stations (15 were investigated in the outcome evaluation). The type and size of station differed; the type of practice featured in the PRC was different; specific features of the PRC design varied; market and policy conditions were dissimilar; and the level of extension support in the broadcast areas was different. Further analysis, however, allows us to identify some factors that appear to be associated with very effective or less effective PRCs.

Frequency of Listening

One of the most powerful determinants of effectiveness seems to be listenership. The tables in section 5 reveal that, generally speaking, the more episodes of a PRC heard by individual respondents, regardless of the type of community (ALC or PLC), the more likely they were to score well on the knowledge quiz or to introduce the agricultural practice featured in the PRC. This finding speaks to the importance of working with stations that are popular with farmers, using formats that are engaging and entertaining, and using strategies like SMS alerts to boost listenership.

A station-by-station analysis, however, reveals that high listenership, by itself, is not a guarantee of high impact. For example, 86% of PLC respondents said they listened to more than 50% of the episodes of UBC's PRC, but only 5% of these respondents scored over 80% on the knowledge quiz, and only 5% adopted the practice. Radio Ada had extremely high rates of listenership (97% in PLCs) *and* very high levels of knowledge gain (84% scored 80% or more on the knowledge quiz), plus very high uptake (nearly half of PLC respondents started practicing since the PRC began – compared to 0% in the control community). Sibuka Radio in Tanzania had relatively low listenership (45% of PLC respondents listened to 50% or more of the PRC episodes) but quite high adoption levels– 22% in PLCs versus 0% in the control communities.

These numbers suggest that it would be wrong to simply assume that more frequent listening leads to greater impact. Clearly, other factors are at play.

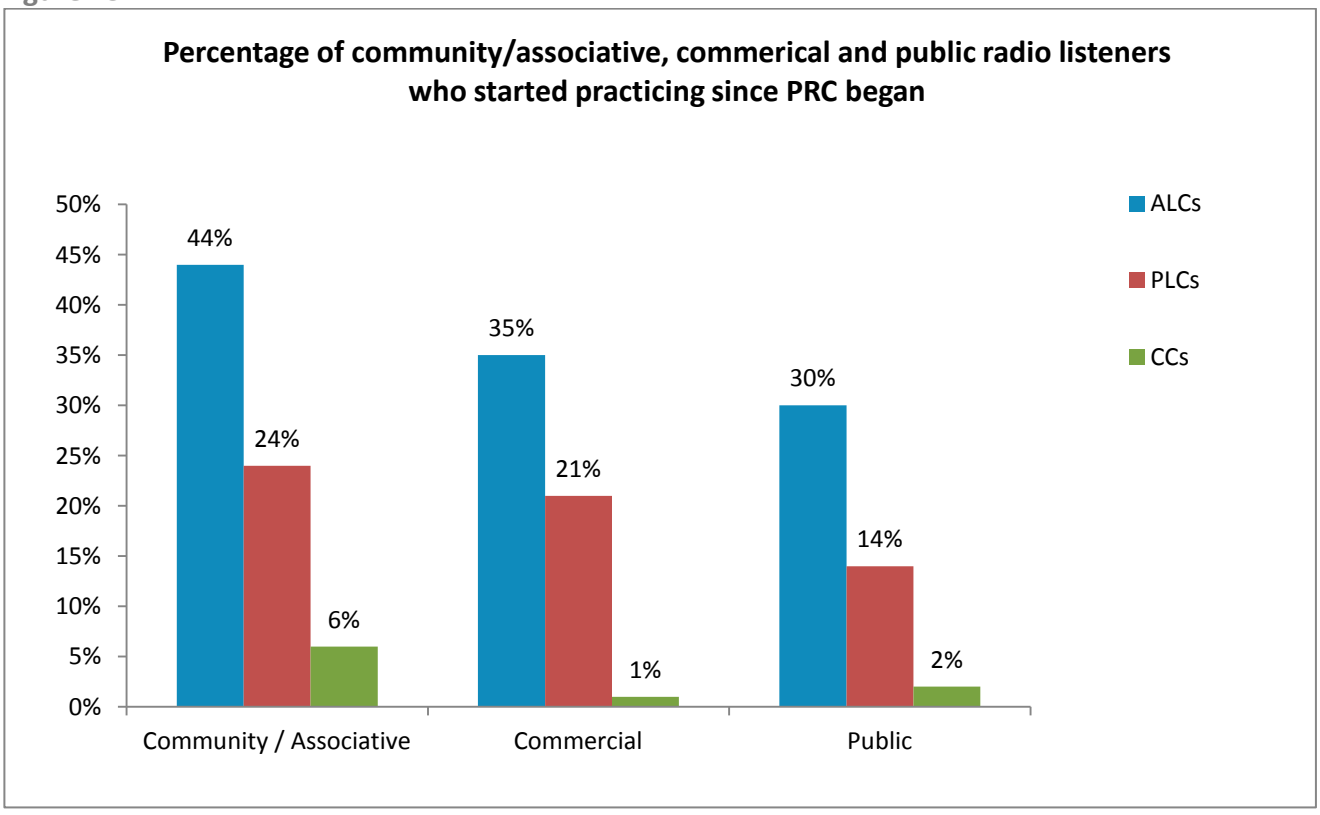
Who farmers listen with

It was noted in Section 5.2, above, that when listeners hear PRCs in organized groups, they seem to be more likely to gain knowledge and introduce promoted practices. This would suggest that PRCs that include an effort to organize listening groups that actively participate in analyzing and discussing what they hear on the radio might be more effective than PRCs that do not – at least for the members of those groups. But the data is not strong enough and the sample size too small (90 respondents) to make this claim decisively. In any case, organizing and supporting listening clubs is difficult, and the evidence suggests that the majority of farmers currently listen at home with their families. Because the majority of farmers listen to the radio at home, any attempt to create a high-impact, scalable PRC will need to be relevant and suitable to the home listener. That being said, where listening groups already exist, it makes sense to work with them to encourage group interaction with PRCs.

Ownership of the radio station

AFRRI also considered how different types of ownership may affect the impact a PRC has on its listeners. Three models of ownership were considered: public, commercial, and community/associative. Community/associative stations are those such as Radio Maria that are owned and operated by another civil society organization[18]. Figure 25 shows the differing impact of public, private, and community/associative radio on uptake of promoted practices:

Figure 25



[18] In many cases, the lines separating models of ownership are blurry and fluid. Mega FM, for example, is supported by, and has a mandate from, the public, but is technically a "privately-owned" station, although it functions very much like a community station.

It is important to note that the sample size is very small, with only 15 stations included and no more than six stations of any one type. Also, there is wide variation within these categories. Radio Maria, for example, is categorized as a "community/associative" station but had quite low adoption of the PRC practice, while Volta Star, a public station, had very high uptake. In short, it would be a mistake to use this data to make claims that one model of ownership is associated with more effective PRCs than another. It is reasonable to conclude that *all* models of ownership *can* be effective in serving smallholder farmers and having an impact on adoption of agricultural practices. Public stations appear to face the stiffest challenges when it comes to impacting listeners, but even they, as demonstrated by Volta Star, can be quite effective. Agricultural research and development initiatives would therefore be ill-advised to work with only one or two models of ownership. In fact, the wisest choice may be to overlook ownership models and focus instead on the degree of commitment the station shows to serving farmers with reliable development programming and the extent to which farmers trust and listen to the station. This point is elaborated below.

Comparing High-impact VS Low-impact PRCs

For the purposes of this analysis, the 15 PRCs can be divided into two categories: "high-impact PRCs" and "low- impact PRCs." The first challenge in doing this was determining a standard measure of the "impact" of a PRC. One measure is the gap between the percentage of respondents in PLCs versus CCs that scored 80% or better on the knowledge quiz. The focus is on knowledge quiz results rather than uptake of practices because there are multiple factors other than the PRC that determine the adoption of practices: availability of inputs, complexity of the practice, the time required to introduce the practice, etc. Looking at PLCs rather than ALCs removes the impact of engaging listeners in the PRC planning, monitoring, and broadcasting process. The greater the difference between the percentage of PLC respondents and CC respondents who scored 80% or more on the quiz, the higher the impact of the PRC.

The table, below, lists the 15 PRCs investigated in this study and indicates the gap in knowledge of the PRC improvement between PLCs and CCs.

Table 11 - Impact of PRCs: Difference in percentage of PLC and CC respondents that scored 80% or better on knowledge quiz

Radio station	Country	Type of station	Theme	Gap between CC and PLC with respect to level of knowledge (80% or better on knowledge quiz)
Radio Ada	Ghana	Community	Improved soil health through manure compost & Mulching	76
Volta Star	Ghana	Public	Improved soil health through minimal tillage & mulching	58
Mega FM	Uganda	Community/Public	Cultivation of fruit trees	58
Radio Jigiya	Mali		Improved production of shea butter	57
Zodiac	Malawi	Commercial	Improved soil health through compost manure	55
Fanaka Radio	Mali		Improved soil health through compost	49
Nkhotakota CR	Malawi	Community	One-by-one planting of maize	38
KKCR	Uganda	Community	Improved soil health through compost	38
Mudziwathu CR	Malawi	Community	One-by-one planting of maize	30
UBC	Uganda	Public	Cultivation of Improved potatoes	28
Classic FM	Ghana	Commercial	Improved soil health through mulching	25
Radio Banjo	Mali	Public	Improved soil health through compost	17
Sibuku	Tanzania	Commercial	Improved soil health through compost manure	11
TBC	Tanzania	Public	Group marketing	7
Radio Maria	Tanzania	Associative/Community	Management of local chickens	1

According to this analysis, the ”high-impact” PRCs were those run by Radio Ada (76 point difference between PLCs and CCs), Volta Star (58 point difference), Mega FM (58), Radio Jigiya (57), Zodiac Broadcasting Station (55), and Fanaka Radio (49).

On the other end of the spectrum, the “low-impact” PRCs were those developed by Radio Maria, Tanzania Broadcasting Corporation, Sibuka Radio, and Radio Banjo, all of which had gaps of 17 points or less.

What are the trends?

Do the various high-impact and low-impact PRCs have features in common that can help identify the most important determinants of a successful PRC? Three factors are considered below: the characteristics of the radio station, the country broadcasting the PRC, and the PRC itself. In addition, there is also consideration of the particular practices promoted in the PRCs.

1. Characteristics of the radio station, the country and the PRC

Three of six high-impact PRCs were run by community radio stations, two by private, and one by a public broadcaster. Two of the four low-impact PRCs were operated by public broadcasters. Volta Star, however, which is a public station in Ghana, had the second most effective PRC overall, and Radio Maria, an associative/community radio, ran one of the least effective campaigns.

It is noteworthy that all PRCs in Ghana were effective, while all PRCs in Tanzania had limited impact on knowledge in PLCs. There is a temptation to assume that residents of Ghana, a relatively better-off country, were better equipped to benefit from PRCs than farmers in Tanzania, which is less economically developed. However, this would not explain why PRCs were quite effective in Mali and Malawi, countries which are also less economically developed than Ghana.

Another set of variables that one might expect to have an impact on the effectiveness of a farm radio program is the average length of the broadcast, the number of broadcasts, the frequency of "farmers' voices" on the air, and the total number of hours that the programs are aired. But analysis of the survey results shows no strong associations between these variables and the effectiveness of a PRC. Neither the length of the programs (30 minutes, 40 minutes, or one hour), the number of programs (14, 20, 24, or 32), or the duration of the campaign (16, 20, or 24 weeks) is strongly associated with the effectiveness of the campaign. This is reinforced by an analysis of the log sheets completed by the 15 radio stations. Radio Maria and Radio Banjo, for example, two of the stations with the lowest impact on knowledge and practice in PLCs, had the greatest number of hours of PRC broadcast (28 and 32 hours, respectively), repeated every program at least once, and featured the voices of farmers in nearly every episode. Radio Fanaka, on the other hand, had fewer total hours of broadcast (20), featured the voices of farmers less consistently than Radio Maria or Radio Banjo, yet had a much bigger impact on knowledge and practice. In some cases, these elements did affect the level of impact a PRC had on its audience. UBC's PRC, for example, had the fewest hours of broadcast (8.25), no program repeats, and relatively infrequently included farmers' voices in the PRC (only 36% of episodes had interviews with or call-ins from farmers – less than half as frequently as the next lowest PRC). Predictably, UBC's PRC also had quite low, (though not the lowest), impact on knowledge in PLCs (a 28 point gap between the percentage of PLC and CC respondents who scored 80% or better on the quiz).

One additional factor may better explain the range in effectiveness of PRCs: the popularity and trustworthiness of the station and its programs. Stations that ran the highest-impact PRCs – including Radio Ada, Mega FM, Radio Fanaka, Radio Jigiya, and Zodiak Broadcasting station – are very popular stations and widely viewed as trusted sources of information. While objective measures of trustworthiness and reliability were not investigated, there is anecdotal evidence that the stations that developed the most effective PRCs were widely considered by their audiences to be trusted sources of information.

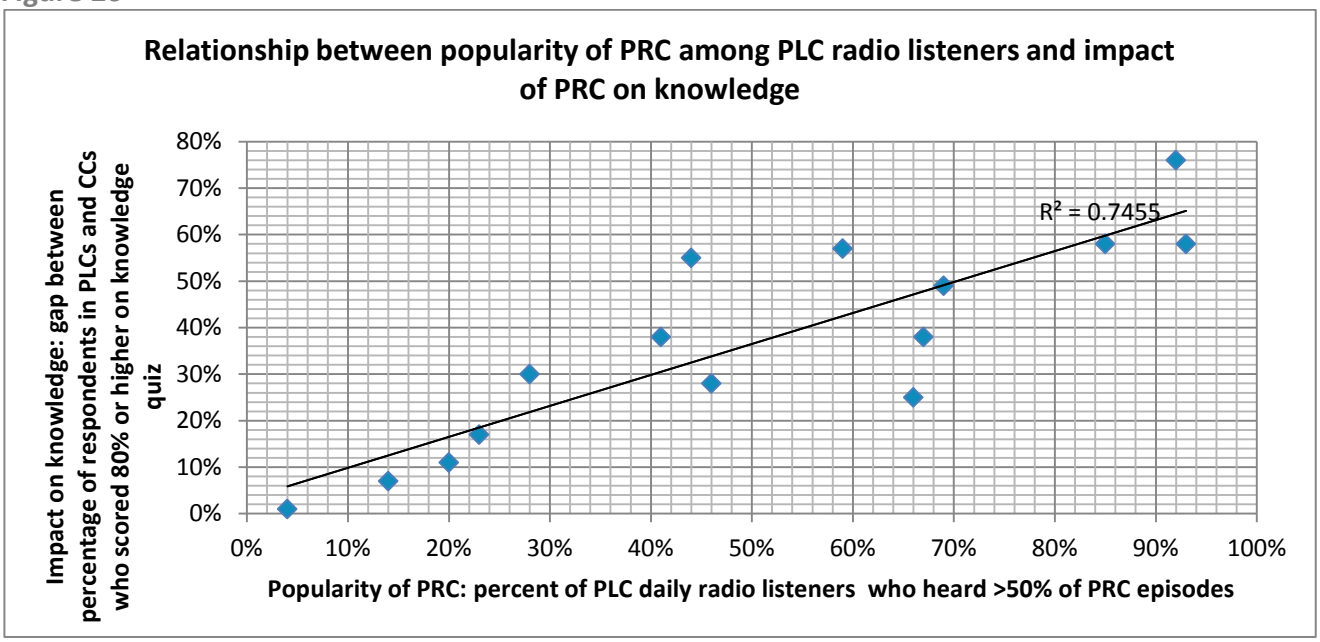
The outcome evaluation survey results did, however, offer a measure of the *popularity* of each station and their PRCs among radio-listeners. The survey captured the percentage of respondents who listen to the radio every day habitually, and the percentage of habitual radio listeners that tuned into the PRC regularly. If 90% of daily radio listeners listened to 50% or more of the PRC episodes, it was determined that the station's PRC was very popular. If, on the other hand, only 20% of daily radio listeners tuned in to the PRCs regularly, the PRC could be characterized as not very popular. The table below compares the popularity of PRCs with their impact on farmers' knowledge of PRC improvements.

Table 12 - Daily radio listeners in PLCs who listened to PRCs vs. score on knowledge quiz

Station	Percentage of daily radio listeners in PLCs who heard more than 50% of the stations' PRC	Gap between percentage of PLC and CC respondents who scored 80% or better on the knowledge quiz
Mega FM	93%	58%
Radio Ada	92%	76%
Volta Star	85%	58%
Radio Fanaka	69%	49%
KKCR	67%	38%
Classic FM	66%	25%
Radio Jigiya	59%	57%
Uganda Broadcasting Corp	46%	28%
Zodiac Broadcasting Station	44%	55%
Nkhotakhota Community Radio	41%	38%
Mudziwathu Community Radio	28%	30%
Banjo Radio	23%	17%
Sibuka FM	20%	11%
Tanzania Broadcasting Corp	14%	7%
Radio Maria	4%	1%

The figures above have been plotted on a scatter diagram below in Figure 26.

Figure 26



The PRC by Mega FM was heard regularly (more than 50% of time) by 93% of all daily radio listeners in the PLCs, and there was a very high 58 point spread between PLCs and CCs. Radio Ada's PRC, which resulted in an extraordinary 78 point gap between PLCs and CCs, was heard regularly by 92% of daily radio listeners. For Volta Star's PRC, 85% of daily radio listeners in PLCs tuned in regularly to their PRC. Radio Fanaka's PRC was frequently listened to by 69% of daily radio listeners. Each of these PRCs resulted in a spread in knowledge levels between PLC and CC respondents of between 49 and 78 points.

On the other end of the spectrum, the PRCs that were not very popular with listeners also had the smallest impact on knowledge. Radio Maria's PRC was heard by only 4% of daily radio listeners in its PLCs. The spread between knowledge levels in Radio Maria's PLCs and CCs was only 1%. Only 14% of daily radio listeners in TBC's PLCs listened to the station's PRC regularly. And Radio Banjo's PRC, which resulted in only a small gain in knowledge levels, was regularly heard by only 23% of daily radio listeners in the station's PLCs.

There are some exceptions in the mid-range: Zodiac Broadcasting Station's PRC was one of the most effective in terms of knowledge gain, but only 44% of daily radio listeners in PLCs tuned into it regularly. Also, while 66% of Classic FM's daily listeners tuned in to the PRC, there was only a 25 point spread between knowledge levels in PLCs and CCs.

These findings suggest that, generally speaking, PRCs will be more effective when aired on radio stations that are popular with radio listeners.

2. Characteristics of the improvement

Apart from the characteristics of the radio station, the features of the PRC, the level and location of listenership, it may be that some agricultural improvements are more "campaignable" than others. AFRRI examined the high-impact PRCs and the low-impact PRCs and looked for patterns – were some kinds of improvements more amenable to the PRC methodology than others? As the following shows, the evidence suggests that the type of improvement is not a major factor in the effectiveness of a PRC.

If the second PRC improvement built on the preceding PRC improvement, was it more effective?

In four of the six radio stations that implemented high-impact PRCs, the agricultural improvement in the second PRC2 built upon or linked to the agricultural practice promoted in PRC1. Radio Ada, for example, focused its first PRC on animal enclosures; Radia Ada's PRC2 examined how to use piles of manure from those enclosures to produce better compost. Mega FM's second PRC focused on the propagation of fruit trees, which had an indirect link with its first PRC on apiculture. Volta Star's PRC was an exception: PRC1 promoted NERICA rice, while PRC2 featured minimum tillage and mulching to improve soil health. On the other hand, the lowest-impact PRCs – those by Radio Maria, TBC, Radio Banjo, and UBC – also strongly linked the second PRC with the first campaign. So, while linking one PRC with the preceding PRC might make sense and have benefits, it did not necessarily result in a campaign having a higher impact on listeners.

Does the cost of introducing the Improvement make a difference to the PRC's effectiveness?

The most effective PRCs were more likely to feature low-cost improvements that farmers could adopt without large outlays of cash. Creating compost, for example, which was the focus of five of the six most effective PRCs, does not require the purchase of external inputs, and is within the capacity of farmers to accomplish with locally available resources.

Mega FM's PRC on planting fruit trees was different: adopting this practice required purchasing fruit tree seedlings. The cost of adopting this improvement was relatively high, yet so was the effectiveness of the PRC, with 31% of PLC respondents reporting that they planted fruit trees after the PRC began. Mega FM played a role beyond simply broadcasting the information, however, by facilitating the transportation of fruit tree seedlings to Gulu, and announcing the locations where farmers could purchase them. This may have counterbalanced the costliness of this improvement.

Does the complexity of the Improvement make a difference to the PRC's effectiveness?

The least effective PRCs featured, in some cases, more complex or difficult practices to adopt. TBC's campaign on establishing group marketing co-operatives, for example, required the direct support of an organizer. While listening to the radio may have fostered interest in this improvement, it did not, in most cases, result in sufficient knowledge gain, motivation, or capacity for farmers to create their own marketing groups. Similarly, Radio Maria's PRC on chicken housing and management required relatively costly inputs for adoption, such as the construction of brick or wire chicken houses, vaccinations, and enriched feed. The complexity of this improvement may be one of the reasons for low uptake of the practice following the PRC2. However, some high-impact PRCs, such as Volta Star's campaign on improved soil management was quite complex, featuring mulching, minimal tillage, crop rotation, composting, and intercropping. Overall, the evidence from the PRC2 outcome evaluation does not suggest that any one type of improvement is better suited to a PRC than another. A variety of improvements can be successfully introduced by PRCs.

3. Characteristics of successful PRCs are varied

The data from the PRC2 evaluation, which came from a sample of 15 PRCs, suggests that PRCs can work well whether they:

- are on public, commercial or community stations,
- feature 18 or 32 hours of broadcast,
- feature practices which are simple or complex to adopt,
- build on or have an association with a previous PRC

The key determinants of an effective PRC are that they are developed with the farmer-centered, participatory, interactive, research-informed methodology described earlier; and the broadcasting station is widely listened to and trusted by farmers targeted by the PRCs.

7.0 Conclusion

The African Farm Radio Research Initiative sought to learn how, and in what ways, agricultural radio programs could help small-scale farmers learn about and adopt new practices that contribute to their food security. One of the main methods of investigating these possibilities was the development of a new form of farm radio programming: the participatory radio campaign (PRC), the measurement of its reach, and the impact it had on farmers' knowledge and practices.

Over the three-and-a-half-year period of AFRRI's PRC project, the initiative worked with 25 radio stations in five countries to research, design, broadcast, monitor and evaluate 49 PRCs. Approximately 40 million smallholder farmers were served by these radio campaigns. They learned about a wide range of improved farming practices, and were able to introduce these innovations in their own operations, including the following: disease-resistant varieties of cassava, modern apiculture, methods of animal enclosure, composting, mulching, intercropping, controlling pests with neem extract, improved varieties of upland rice, shea nut production and processing, and other agricultural improvements.

In the process, the capacity of radio stations to design, deliver, and evaluate farm radio programming that makes use of new ICTs to increase interaction with listeners and boost the reach and accessibility of their services was strengthened. As a result, farmers will continue to benefit from higher quality farm radio services into the future.

As a research project, AFRRI also gathered and shared data to fill gaps in knowledge. Findings indicate that PRCs generate large audiences and have a significant and measurable impact on knowledge and practice in the farming communities that they reach. PRCs thus offer a proven methodology for taking improved agricultural practices to scale at a very low cost per farmer. Female and male, young and old, better-off and poor farmers listened and benefited from PRCs. It was also discovered that working with radio stations which are already listened to and trusted by farmers– regardless of whether they are commercial, public, community, or some other type of station – is a key factor in the successful impact of a radio campaign.

While AFRRI answered many questions, many more remain to be investigated. It is important to track and measure, for example, the long-term impact of PRCs – something FRI will be able to do with the AFRRI-2 grant from the Bill & Melinda Gates Foundation. It will also be important to study formats and methodologies of farm radio campaigns other than the PRC. Also, a clear and useful answer to the question "Why are some PRCs more effective than others?" requires more extensive study involving many more radio station partners.

The findings of this initial study indicate that PRCs can be used to scale-up agricultural initiatives. This can contribute to helping millions of farmers to understand, evaluate, make informed decisions about, and adopt agricultural practices that advance their food security goals.

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This report is dedicated to the memory of Dr. Martine Ngobo, Senior Researcher for the African Farm Radio Research Initiative. The impact of Martine's exemplary work to this project is immeasurable. Her dedication to her work has truly made a difference in the lives of thousands of farmers across Africa.

May the memory of Martine's smile serve as a reminder of the change one life can have on so many.

Thank you Martine.



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