



FEED^{THE}FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

FINAL OUTCOME EVALUATION REPORT: AGRICULTURE TECHNOLOGY TRANSFER (ATT) IN GHANA



October 2016

Submitted by:

Farm Radio International
1404 Scott Street
Ottawa, Ontario, K1Y 4M8
Canada

Project coordinator:

Benjamin Fiafor
Farm Radio International
Email: bfiafor@farmradio.org



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This project is made possible by the generous support of the American people through the United States Agency for International Development (USAID) under a sub-agreement with IFDC. The contents of this report are the responsibility of Farm Radio International and do not necessarily reflect the views of USAID or the United States Government.

LIST OF ACRONYMS

ATT	Agricultural Technology Transfer
CA	Conservation Agriculture
FRI	Farm Radio International
FGD	Focus Group Discussion
ICT	Information and Communication Technology
ISFM	Integrated Soil Fertility Management
IVR	Interactive Voice Response
KII	Key Informant Interviews
NPK	Nitrogen-Phosphorus-Potassium (fertilizer)
NR	Northern Region
PRC	Participatory Radio Campaign
SHF	Smallholder Farmer
TSP	Triple Super Phosphate
UDP	Urea Deep Placement
VOICE	Value, Opportunity, Information, Consistency/Convenience, and Entertaining
UER	Upper East Region
UWR	Upper West Region
USAID	United States Agency for International Development
VOICE	FRI's VOICE Standards

EXECUTIVE SUMMARY

In Ghana, agriculture is a critical sector in the country's economic and social development, accounting for 35% of the country's Gross Domestic Product and providing employment to about 56% of the workforce—primarily smallholder farmers, both men and women. In spite of Ghana's potential to produce a variety of crops in various climatic zones, the country falls within the World Food Programme's classification of a "food-deficit country."

Therefore, support programs such as the Feed the Future Ghana Agriculture Technology Transfer (ATT) Project are essential to both transform the sector and significantly contribute to its impact on farmers, especially smallholder farmers (SHFs). The design and implementation of the ATT project emphasized the need for sustainable solutions to improve rice, soybean, and maize value chains. It also focused on deepening knowledge and uptake of recommended agricultural practices by male and female farmers in 12 districts of the Northern, Upper East, and Upper West Regions.

This endline evaluation applied both quantitative and qualitative approaches to data collection, including a household survey, Focus Group Discussions (FGDs), Key Informant Interviews (KIIs), telephone interviews, summative stakeholder forums, and documentation of success stories.

KEY FINDINGS AND CONCLUSIONS

The findings are categorized into four main areas: uptake of recommended practices, knowledge, listening practices and listener/station interaction, and training/capacity building. We also note some of the key challenges identified by various stakeholders.

UPTAKE OF RECOMMENDED PRACTICES:

FRI's partnership with four radio stations resulted in the broadcast of information on recommended agricultural practices and promoted their uptake by farmers.

Comparing levels of uptake between listeners and non-listeners, we find that listeners had considerably higher levels of uptake of the following practices:

- growing improved rice varieties (57% of listeners vs. 17% of non-listeners). In addition, 58% of respondents to an endline telephone survey grew improved varieties of rice.
- acquiring rice seeds via recommended sources (43% of listeners vs. 22% of non-listeners)
- applying fertilizer to rice (80% of listeners vs. 53% of non-listeners)
- acquiring soya seeds via recommended sources (57% of listeners vs. 36% of non-listeners)
- applying TSP on soya bean (25% of listeners vs. 5% of non-listeners)
- applying TSP on soya bean at the recommended time (18% of listeners vs. 0% of non-listeners)
- applying inoculant on soya bean (34% of listeners vs. 0% of non-listeners).
- leaving soya roots in the ground after harvest (65% of listeners vs. 50% of non-listeners.)

Thus, listening had a considerable impact on uptake of a variety of practices, and a particularly large impact on practices related to soya bean, and on acquiring seeds through recommended sources. These findings provide a compelling case for radio programs to be central in the dissemination of critical information on good agricultural practices.

The radio programs contributed significantly to changing the practices of rice, maize, and soy bean farmers. A large majority of respondents—86% of men and 71% of women—rated the influence of radio on their uptake of recommended practices as *important* or *very important*. One focus group participant in Tumu (UWR) said, "There is a change in attitude of farmers, and this is reflected in

their use of modern farming practices, timely weed control, and proper method[s] of applying fertilizer.”

Though the project’s target was for 36,000 farmers to try 1 or more recommended practices, we found that most farmers were already using 1-2 recommended practices at baseline. Therefore, for the endline survey, we found it useful to calculate the percentage of farmers who were practising *4 or more* and *5 or more* practices. As shown in the table below, fully **25% of respondents had tried 4 or more recommended practices by endline**. The rate of uptake was slightly higher for women.

Number of recommended practices	Percentage uptake	Male respondents uptake	Female respondents uptake
1 or more	73%	71%	77%
4 or more	25%	24%	27%
5 or more	19%	19%	21%

Evidence for these changes in farming practices was supported by key informant interviews. For example, Alhaji Atinka Abdulai, Managing Director of Atinka Company Limited, Wa Municipal, in UWR, said: *“Last year our company sold 60,000 bags of fertilizer and 200 metric tonnes of seeds. This year, our company has sold 80,000 bags of fertilizer and 350 metric tonnes of seeds.”*

KNOWLEDGE:

The endline household survey assessed farmers’ current knowledge of best practices for growing rice, maize, and soya bean, and compared it to baseline levels of knowledge. **Knowledge levels increased on average by 20%** between baseline and endline, from 46% to 55%. In FGDs, farmers in all regions indicated that the information they received on the radio changed their attitude towards specific agricultural practices. FGD participants added that using songs and drama strengthened the increase in knowledge, especially for women, while male farmers said that the information shared on the radio programs “served their information needs as farmers.” Knowledge levels were similar at endline between genders—56% male and 53% female.

LISTENING PRACTICES AND LISTENER/STATION INTERACTION:

The endline evaluation measured radio listening behaviour, including membership in listening groups, and respondents’ opinions on the most valuable sources of information about ISFM/CA and UDP.

More than four-fifths (82%) of respondents listened to the radio programs on one of the four project stations. When that percentage is extrapolated to the total coverage area of the four radio stations, we estimate that **719,157 individuals listened to the programs**, considerably more than the 100,000 target.

Farmers participated in the program through phone-ins to the radio station, through a beep-to-call service, and through listener groups. In total, there were **34,191** individual interactions between listeners and the four radio stations, through phone-ins and the beep-to-call service. An additional **2,860** interactions were recorded through the IVR Farmers Fone Service.

TRAINING/CAPACITY DEVELOPMENT:

Capacity development for the four radio stations included provision of ICT equipment and two types of training: in-station training and training on ICTs.

Based on an assessment of broadcasters' training needs, the training program was designed to increase the skills of broadcasters at the four partner radio stations. The training aimed to develop the skills needed to produce farmer radio programs which meet the VOICE Standards for farmer radio programs.

While the level of listener involvement in most radio programs was low at baseline, broadcasters indicated that involvement had increased tremendously by endline, as the stations employed a variety of radio formats to make the program more engaging.

In total, there were 80 days of training (20 per station). Two main types of training were offered: in-station training and ICT training. The total number of trainees was 29—9 women and 20 men.

CHALLENGES:

There were many examples in focus groups of farmers expressing how the project had positively impacted their lives. For example, Felicia from UER said: *"Now I can better feed myself and my children, and it has also improved my financial standing. Now I can sell some [crops] and support my children."*

Nevertheless, there were a number of barriers to uptake of particular practices, including farmers' inability to regularly listen to the programs because of lack of access to a radio set during the broadcasts.

Unsurprisingly, in light of the fact that the northern regions are, according to government statistics, the poorest in the country, many farmers considered cost as the main barrier to purchasing and using improved seeds and applying fertilizers, among other practices. Farmers also said that both the limited amount of time available for call-ins and the fact that the station phone lines were often busy limited their ability to interact with the programs.

1.0 INTRODUCTION/BACKGROUND

This section provides an overview of the agricultural sector in Ghana and links it to the rationale for the Agriculture Technology Transfer Project. It emphasizes the role of Farm Radio International in overall program delivery in the current project, and outlines project components and the objectives of the final evaluation.

The agricultural sector in Ghana accounts for 35% of the country's Gross Domestic Product (GDP), and provides employment to about 56% of the workforce—primarily smallholder farmers, including both men and women. The country produces a variety of crops in various climatic zones, which range from dry savannah to wet forest and run in east-west bands across the country. Though more than half the labour force is involved in agriculture, the World Food Programme classifies Ghana as a “food-deficit country.” However, there is strong potential for improved productivity in crops which are key to food security, including maize, rice, sorghum, cassava, yam, and cowpea. Several efforts—including the Millennium Challenge Initiative and Feed the Future—are in place to transform the sector for greater impact. The current project, named Feed the Future Ghana Agriculture Technology Transfer (ATT) Project, explores sustainable solutions for improving rice, soybean, and maize value chains. It focuses on the introduction of new technologies to develop and improve the seed sector in northern Ghana in the face of recurring environmental challenges.

Farm Radio International (FRI), in collaboration with four northern radio stations, is contributing to the ATT project by communicating effectively with tens of thousands of farmers through the medium of radio, adapting and delivering training programs for broadcasters, and helping design and broadcast specialized interactive radio programs that share knowledge and give small-scale farming families opportunities to voice their opinions and concerns.

Agricultural extension officers are an invaluable resource for farmers looking to increase yields. Extension officers demonstrate the benefits of different methods to manage diseases or pests, and advise farmers of the benefits of improved seed varieties and fertilizer use. But agricultural extension officers cannot be everywhere. Many farmers in remote areas are infrequently visited by extension officers. In response to this challenge, radio, video, text messaging, mobile apps, and other Information and Communication Technologies (ICTs) are now being deployed to reach more farmers more frequently with quality agricultural advice, thereby complementing traditional extension services.

Using ICTs, this project aims to extend the reach of agricultural information, improve the efficacy of local extension services, and promote lasting behaviour change among small-scale farmers, so they can increase yields and improve food security.

AT A GLANCE

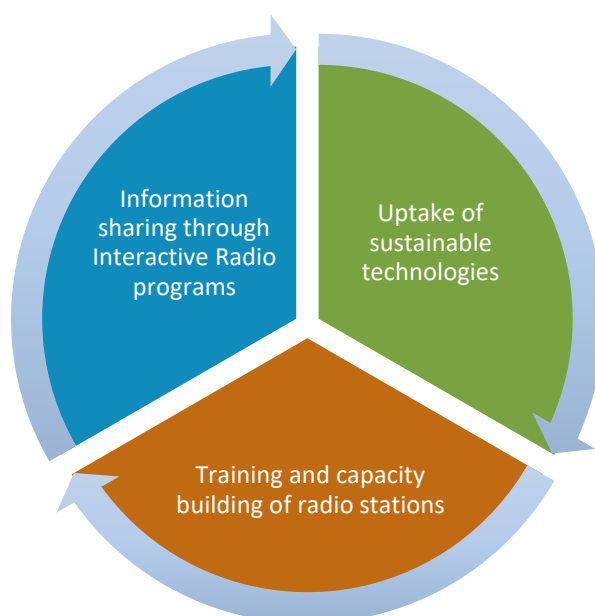
The ATT project uses radio and other ICTs to extend the reach of agricultural information, improve the efficacy of local extension services, and promote lasting behaviour change among small-scale farmers, towards improving food security.

The Feed the Future USAID Agriculture Technology Transfer Project (FTF-USAID ATT) is a five-year activity funded by the U.S. Agency for International Development's Ghana Mission (USAID/Ghana). It aims to “increase the competitiveness of rice, maize, and soya value chains to foster broad-based and sustained economic growth through the increased availability of agricultural technologies which result in increased and sustained productivity in northern Ghana.”

The project focuses on Ghana's Feed the Future (FTF) intervention zone, which covers 12 districts in the three regions of northern Ghana, and addresses constraints to the production of rice, maize, and soya bean. More specifically, the project focuses on improving the rice, soybean, and maize value chains by strengthening the seed industry and agricultural practices via the promotion of Integrated Soil Fertility Management (ISFM). This goal was pursued in collaboration with government research and regulatory institutions and the private sector, by developing public institutions' and private businesses' capacity to introduce new technologies and supply agricultural inputs in collaboration with other stakeholders. The ATT project also encouraged the introduction and uptake of sustainable technologies to increase productivity and profit margins for agricultural producers throughout northern Ghana.

In October 2015, FRI began supporting four radio stations in the Northern, Upper East, and Upper West Regions to produce and broadcast programs on relevant agricultural technologies for the ATT project.

Components of the project



1.1 OBJECTIVES OF THE EVALUATION

The overarching aim of the final evaluation was to assess the progress and impact of the ATT project against the baseline situation. The specific objectives included:

- Determining respondents' knowledge of best practices for growing rice, maize, and soya bean;
- Determining respondents' uptake of recommended practices for growing rice, maize, and soya bean;
- Determining the number of listeners to the programs on the four project stations; and
- Building the capacity of the four radio stations to design, produce, and broadcast programs that meet the VOICE Standards for farmer radio programs.

2.0 METHODOLOGY AND SUMMARY OF KEY ACTIVITIES

This section presents an overview of the final evaluation process. It details the quantitative and qualitative data collections used, and acts as a foundation for the subsequent section on key findings.

The final evaluation process included quantitative and qualitative methods, including a survey which generated the quantitative data needed to track progress against baseline numbers. FRI also conducted a smaller telephone survey of listeners that contained a smaller number of questions. Qualitative approaches included Focus Group Discussions (FGDs), Key Informant Interviews (KIIs), and endline stakeholder discussions at a town hall meeting. FRI also documented outcome stories or testimonies.

The main method used for the endline evaluation was a survey, which generated extensive quantitative data. In total, 683 people were interviewed, including 436 men and 247 women. The survey was conducted via an enumerated face-to-face structured questionnaire. FRI employed a mobile data collection system called Mobenzi to collect, store, and output the data for analysis from a central location in Ottawa, Canada.

The FGDs sought to assess five major aspects¹ of the project:

1. Respondents' understanding and knowledge of the focus of the program;
2. Respondents' knowledge of the content of the program;
3. The impact of the program;
4. The role of ICTs in listener involvement; and
5. The barriers to uptake of recommended agricultural practices.

The main target groups for the FGDs were male and female farmers in the project area. In some instances, men and women were interviewed together in groups. Where necessary, discussions were held separately. This ensured that both collective and individual voices were adequately captured and reflected in the findings.

We also conducted Key Informant Interviews, which elaborated on details of critical issues raised during the FGDs.

AT A GLANCE

Quantitative and qualitative approaches were adopted for data collection. Participatory techniques were used, making respondents central to the process, for example, FGDs, key informant interviews, and stakeholder forums.

¹ The findings from the FGDs are captured in Section 3.6 below.

2.1 HOUSEHOLD SURVEY SAMPLING STRATEGY

SAMPLE DESIGN

We conducted a face-to-face household survey by using a two-stage cluster sampling technique. The Primary Sampling Units (PSUs) were constituencies, while the Secondary Sampling Units (SSUs) were households within those constituencies.

Sampling frame

The sampling frame for the survey consisted of radio listeners within the coverage area of North Star FM, URA Radio, Radford FM and W93.5FM. The estimated total adult rural population within this frame was almost 900,000 people. Because of this large size, the following section on sample size calculation assumes large numbers and sample estimations statistically relevant for these sizes.

Sample size calculation

The sample size for the endline survey was calculated by using the following equation, in accordance with recommendations from the United Nations Department of Economic and Social Affairs²:

$$\text{Formula 1) } n_h = \frac{Z^2(r)(1-r)(f)(k)}{(p)(\bar{n})(e^2)} \text{ where:}$$

- n_h is the number of households required for the survey,
- Z is the standard score, for alpha level of 0.05, in the normal curve (1.96),
- r is an estimate of the key indicator (listening to the radio program 60%)³,
- f refers to a design effect of 1.7⁴,
- p is the proportion of the total population accounted for by the population aged 15-64 (57.7%),
- k is a multiplier to take into account the anticipated rate of non-response (1.1),
- \bar{n} is the average household size (5.1), and
- e is the level of precision ($0.05 * r$).

Substituting these recommended values gives:

$$n_h = (3.84) (0.60) (1-0.60) (1.7) (1.1) / (0.577) (5.1) (0.0009).$$

Formula [2] reduces further to

$$n_h = 1.723392 / 0.0026484$$

$$n_h = \mathbf{651}$$

This sample number is accurate within a 95% confidence interval.

Cluster selection and size (first stage)

For the survey evaluation, the teams visited clusters that were chosen in the baseline stage of the project. These 18 clusters formed the primary sampling units for the study, and secondary sampling units (households) were distributed according to a Probability Proportional to Size (PPS) method. For this survey, it was difficult to get accurate populations for the actual communities, so the PPS methodology was used on the participating districts, as shown in **Table 1**.

² United Nations Department of Economic and Social Affairs (2005). *Designing Household Survey Samples: Practical Guidelines*. Accessed August 22, 2016:

<http://unstats.un.org/unsd/demographic/sources/surveys/Handbook23June05.pdf>

³ This percentage was obtained by averaging the listening percentages from previously-administered surveys in Ghana.

⁴ The *design effect* reflects the loss of effectiveness when using cluster sampling instead of random sampling. It considers the rate of homogeneity (roh) and average sample size per cluster. It is difficult to calculate roh as it requires gathering extensive data. This design effect was calculated based on a previous survey.

Table 1:

Region	District	Population ⁵	Percentage of sampled districts	Number of households to sample
Northern	Kumbungu	112,331	7.23%	47
	Yendi	199,592	12.85%	84
	Savelugu	139,283	8.97%	58
	West Mamprusi	168,011	10.82%	70
	Sagnarigu	148,099	9.54%	62
	Tolon	112,331	7.23%	47
Upper East	Bolgatanga	131,550	8.47%	55
	Nabdam	115,020	7.41%	48
	Kassena Nankana West	70,667	4.55%	30
	Kassena Nankana Municipal	109,944	7.08%	46
Upper West	Daffiama/Bussie/Issa	51,654	3.33%	22
	Jirapa	88,402	5.69%	37
	Sissala East	56,528	3.64%	24
	Sissala West	49,573	3.19%	21
Total		1,552,985	100%	651

Systematic random sample (second stage)

Several districts sampled in the baseline contained more than one community. Therefore, the number of sampled units from these districts was divided among these communities as seen in the table below. Selecting the households in a cluster involved:

- identifying a starting position in the cluster;
- choosing a random start number;
- choosing the direction of travel throughout the community;
- identifying x households on an approximately straight line in the selected direction; and
- selecting a sampling interval by dividing the community population by the number of households to be sampled, as shown in **Table 2** below.

⁵ Populations obtained from 2010 and 2012 publications from the Ghana Statistical Service

Table 2: Communities sampled for survey questionnaire

Region	District	Community	Number of households to sample
Northern Region	Kumbungu	Kpalga	47
	Yendi	Kpatia	84
	Savelugu	Libga	58
	West Mamprusi	Karimenga	70
	Sagnarigu	Garishegu	62
	Tolon	Nyankpala Tunaayili	47
Upper East	Bolgatanga	Dubila	55
	Nabdam	Daasang	24
	Kassena Nankana West	Kolgo	30
	Kassena Nankana Municipal	Kajelo	23
	Nabdam	Baadaboog	24
	Kassena-Nankana Municipal	Kwarania	23
Upper West	Daffiama/Bussie/Issa	Kojokperi	11
	Jirapa	Tiiza	37
	Sissala East	Pieng	24
	Sissala West	Jawia	10
	Sissala West	Duu	11
	Daffiama/Bussie/Issa	Korinyiri	11
Total			651

For the outcome evaluation, we used a mobile-based survey application called Mobenzi to collect household data. Mobenzi is a software package that allows researchers to create a survey questionnaire on a website. Research assistants then download the questionnaire to a mobile phone and, while conducting an interview, input survey responses onto the phone. This system allows the surveyor to send data to a central server immediately on completion of the interview. This method avoids the errors associated with the translation and transcription of hard copy surveys and allows for real-time review of the data as it reaches the central server.

Completing a survey on a mobile phone takes approximately half as much time as conducting a paper-based survey, and eliminates the step of entering data from a paper survey into a database.

In each country, FRI hired a team of enumerators to administer the survey. The team included project staff, extension officers, radio station staff, and university and college students. A full-day pre-data collection training was organized for the teams and conducted by the research team leader. This provided an opportunity to discuss data collection guides and decide on roles and responsibilities, including report writing and troubleshooting. Both quantitative and qualitative data were generated, and gender-disaggregated information collected wherever possible.

For consistency and efficiency, two teams worked jointly in the Northern Region, then separated to work in the Upper East Region and Upper West Region.

Enumeration teams received lists of community members from local government offices in each community, and surveyed randomly selected individuals (representatives of their households). The goal was to obtain a 70:30 male-to-female ratio because of the relative difficulties accessing women for interviews in northern Ghana.

The survey questionnaire (available as **Appendix 1**) collected:

- basic demographic information,
- information on respondents' knowledge and attitude towards farming practices,
- information on respondents' farming practices for rice, maize, and soya bean,
- respondents' radio listening behavior, respondents' ratings of the importance of radio as a source of information and as an influence on their decision to change their farming practices.

After receiving the survey information, FRI staff analyzed the results, which are summarized in the sections below.

Phone survey

In addition to the survey questionnaire, a telephone survey of listeners was conducted across the three regions. While the respondents do not represent a random sample since there is an inherent selection bias in how respondents "opted in" to the system (for example, 79% of respondents were male and 99% listened to the PRC programs), many of the findings of the phone survey are similar to those of the questionnaire, which strengthens the reliability of the questionnaire findings. We have added the phone survey findings to the appropriate sections below.

The telephone survey (included as **Appendix 3**) included 19 questions on listenership, satisfaction with and rated importance of the radio program, and uptake of promoted practices for rice, maize, and soya bean.

Respondents were chosen randomly from a list of 10,000 farmers profiled on the Uliza platform in the Northern, Upper East, and Upper West regions.

The project trained five monitors to conduct the interviews, representing the five languages in which the radio program was broadcast, and the monitors recorded responses on a Google form. If a respondent refused to pick up or was unavailable, the interviewee moved to the next person on the list until 385 respondents were interviewed.

2.2 GEOGRAPHICAL SCOPE AND COVERAGE

The final evaluation involved collecting data from the three regions of northern Ghana. As shown in **Table 3**, the Focus Group Discussions involved 18 communities, six in each region. With respect to telephone interviews, there was a total of 385 respondents. In addition, FRI conducted 11 key informant interviews. **Table 3** shows the number of participants in each region for each of the approaches.

Table 3: Participants in various data collection strategies

TYPE OF DATA COLLECTION	NUMBER OF PARTICIPANTS IN COMMUNITIES			
	Northern	Upper East	Upper West	Total
Survey questionnaire	386	177	120	683
Focus Group Discussions ⁶	6 communities	6 communities	6 communities	18 communities
Key Informant Interviews	0	7	4	11
Telephone survey interviews	176	120	89	385
Summative discussions	24	24	30	78

2.3 FOCUS GROUP DISCUSSIONS

FGDs were organized in all three regions to help bolster quantitative information on knowledge levels and uptake of recommended practices. The focus group questions are available as **Appendix 2**. **Table 4** lists the communities visited during the FGDs:

Table 4: Communities that participated in FGDs

FGD	Northern Region	Upper East Region	Upper West Region
Participating communities	Libga	Dubila	Kojokperi
	Kpalga	Daasang	Tiiza
	Karimenga	Kajelo	Korinyiri
	Kpatia	Kolgo	Pieng
	Garishegu	Baadaboog	Jewia
	Nyankpala Tunaayili	Kwarania	Duu
Total	18 communities		

2.4 SUMMATIVE STAKEHOLDER FORUMS

As part of the endline evaluation, FRI conducted three Regional Summative Evaluation Forums. The purpose was to bring together various target groups and stakeholders with a direct or indirect stake in the project to:

- reflect on the effectiveness of implementation;
- capture how the radio programs were conducted;
- assess the strengths, weaknesses, and lessons learned; and
- discuss how to improve upon future radio programs.

⁶ Participating communities are listed below for each region.

Forums were organized in each of the three northern regions. As detailed in **Table 5**, participants included 30 farmers, 4 agricultural extension workers, 14 broadcasters, representatives of 12 partner NGOs, representatives of 7 seed supply companies or input dealers, and 11 FRI staff.

Table 5: Summative stakeholder forum participants

Participant categories	Wa	Bolgatanga	Tamale
Farmers	12	8	10
Broadcasters	6	4	4
Extension officers	1	2	1
NGOs/Other institutions	4	5	3
Seed companies/Input dealers	3	2	2
Farm Radio International	4	3	4
Total	30	24	24

3.0 KEY FINDINGS

This section presents the findings across the main components of the project. The findings on knowledge and practice were largely generated by comparing endline against baseline numbers. Other salient findings include indicators related to listening behavior, interactive radio features such as beep-to-call, and training/capacity building.

3.1 PROGRESS AGAINST KEY PERFORMANCE INDICATORS

The project performance indicators served as the minimum reference for the final evaluation. In a number of areas, actual results exceeded the planned targets, as shown in **Table 6** below:

Table 6: Key performance indicators and results

INDICATOR	TARGET	RESULTS
# of radio stations participating in project	3	4 North Star Radio – Tamale (one language) URA Radio – Bolga (two languages) Radford – Tumu (one language) W93.5FM – Wa (one language)
# of hours of quality interactive rural radio programming at all stations (including repeats)	270	228 URA Radio 56 hours, North Star Radio 70 hours Radford 60 hours W93FM, 42 hours
# of farmers registered on Uliza platform throughout the lifetime of the radio broadcasts	10,000	10,020
# of interactions with IVR over the lifetime of the broadcasts	No target	37,051 34,191 interactions were captured from the four radio stations through the weekly voice poll questions. An additional 2,860 interactions were recorded through the IVR Farmers Fone Service (which provided weather info, market info. and a weekly summary of the radio program)
# of IVR and SMS messages sent to registered smallholder farmers over the lifetime of the broadcast	No target	20 “Farm Tips” voice messages were pushed to each radio station audience in their languages. 13,583 smallholder farmers received the Farm Tips voice messages, including: North Star FM: 7,046 W93.5 FM: 2,851 Radford FM: 2,364 URA Radio, Kasem language: 543 URA Radio, Gurune language: 779
# CLGs formed or engaged	100	90
# CLG radio sets delivered with training	30	90

# days of training delivered	No target	80 (20 per station, including the ICT training)
# of broadcasters trained	18 (25% women, 75% men)	29: 9 women (31%), 20 men
# of technical messages delivered via IVR	No target	192 (48 per station. Technical messages included weather and climate information, market reports, and agricultural tips via IVR.)
# of jingles designed, produced, and delivered	No target	North Star - 6 jingles designed and 3 produced. Aired 3-5 days a week for four months, for a total of 720 broadcasts. Radford - 6 jingles designed and produced. Aired 2 times a day and 3 times a week for four months, for a total of 576 broadcasts. W93 FM – 6 jingles designed and 3 produced. Aired twice a day and 3 times a week, for a total of 126 broadcasts. URA Radio – 12 jingles designed and produced.
Average % of CLGs who gave positive feedback on episodes	67% (2/3)	60% (average over 8 months)
# of partnerships formed and cultivated	No target	11—MoFA, SARI, IITA, GREENETH, PICs bag, Technoserve, UDS, U. of Ghana Department of Agriculture, Meridian seed company, Antika, Ganoma.
% of surveyed listeners scoring 60% or better on knowledge quiz	75% in listening communities	40% of listeners
# of respondents who adopted 4 or more practices ⁷	No target	230,600, including 27.13% of female respondents and 23.62% of male respondents
% of respondents who adopted 2 or more practices	No target	57% ⁸
% of respondents who adopted 1 or more practices	36,000	612,725, or 73.5% of respondents, including 77.3% of female and 71.3% of male respondents
% of surveyed farmers who reported radio as their #1 or #2 influence on uptake of practices	>60%	80% chose radio as their #1 source of info about ISFM/CA 78% chose radio as their #1 source of info about UDP
Listenership	Potential listening audience: 100,000	719,157, or 82.43% of respondents reported actually listening, including 80.97% of female and 83.26% male respondents across the 3 regions.

⁷ These uptake percentages do not include uptake of ISFM/CA practices. If these practices were included, the percentages would be very much higher, as many ISFM/CA practices were already used at baseline by a high percentage of respondents.

⁸ The percentage of respondents with uptake of 2 or more practices is included for interest only; no extrapolation was done.

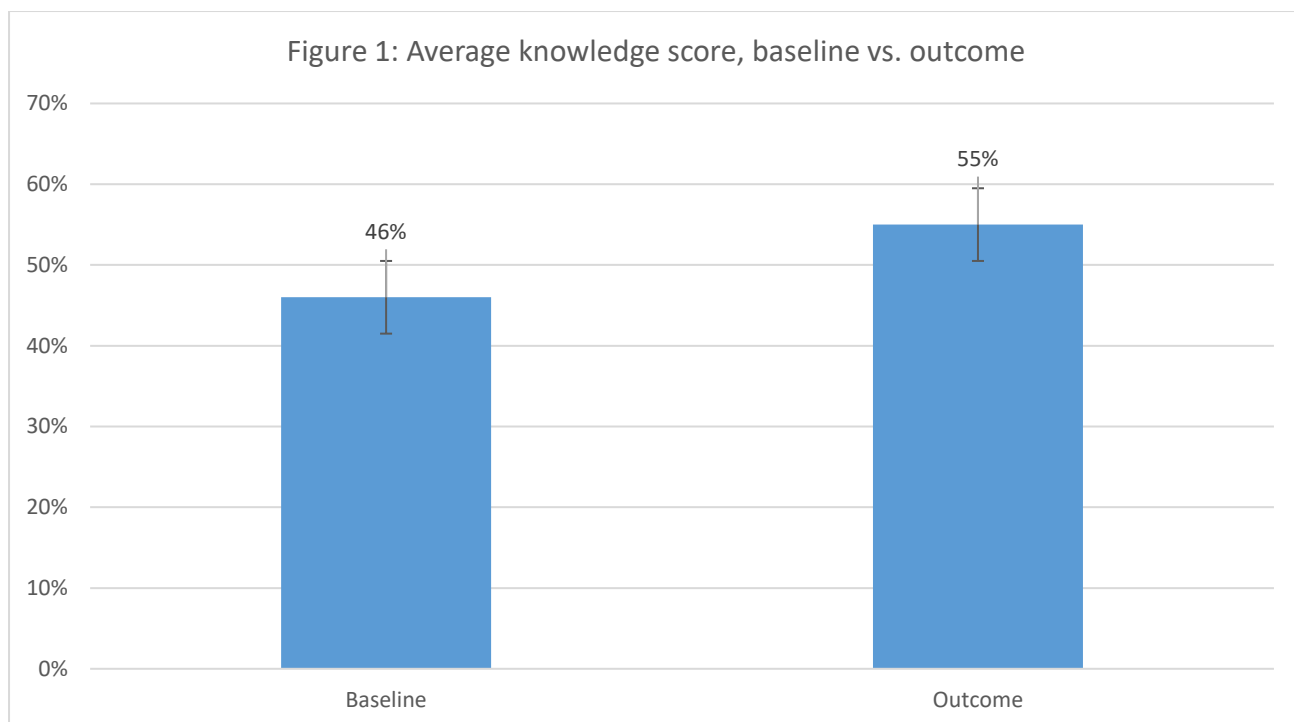
3.2 KNOWLEDGE

This section of the report presents the survey findings on farmers' current knowledge of best practices for growing rice, maize, and soya bean. It compares endline levels of knowledge with baseline levels. **Table 7** compares the percentage of correct responses to all knowledge questions at both baseline and endline, and also compares scores between women and men.

Table 7: Endline and baseline results of knowledge survey, disaggregated by gender (percentages)

Question	BASELINE OVERALL	ENDLINE OVERALL	BASELINE MEN	BASELINE WOMEN	ENDLINE MEN	ENDLINE WOMEN
ISFM/CA #1	82	93	84	79	93	91
ISFM/CA #2	84	92	83	85	92	91
ISFM/CA #3	64	58	66	62	59	57
ISFM/CA #4	64	80	66	60	82	76
ISFM/CA #5	56	81	58	51	81	82
ISFM/CA #6	55	69	61	44	72	62
ISFM/CA #7	33	50	36	29	51	48
SOYBEAN #1	6	11	6	7	9	13
SOYBEAN #2	18	33	19	17	34	30
SOYBEAN #3	29	43	31	27	44	41
SOYBEAN #4	69	73	68	72	72	76
SOYBEAN #5	36	51	37	35	54	45
SOYBEAN #6	41	51	40	44	54	45
SOYBEAN #7	48	56	50	44	58	51
MORE THAN 60% CORRECT OVERALL	17	41	18	16	41	40
AVERAGE SCORE	46	55	47	44	56	53

As shown in the last row of **Table 7** above, average knowledge levels rose by 20% between baseline and endline, from 46-55% (see also **Figure 1**). The percentage of respondents who answered each question correctly rose for 13 of 14 questions, and rose significantly for several questions. Also, the percentage of respondents who answered more than 60% of questions correctly more than doubled, from 17-41%.

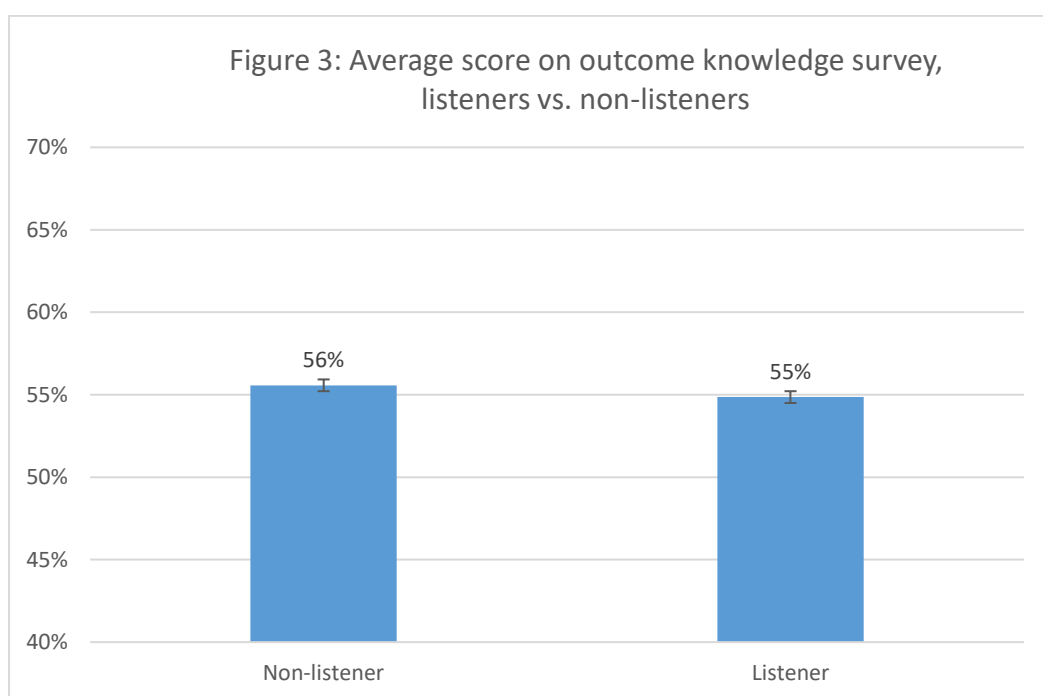
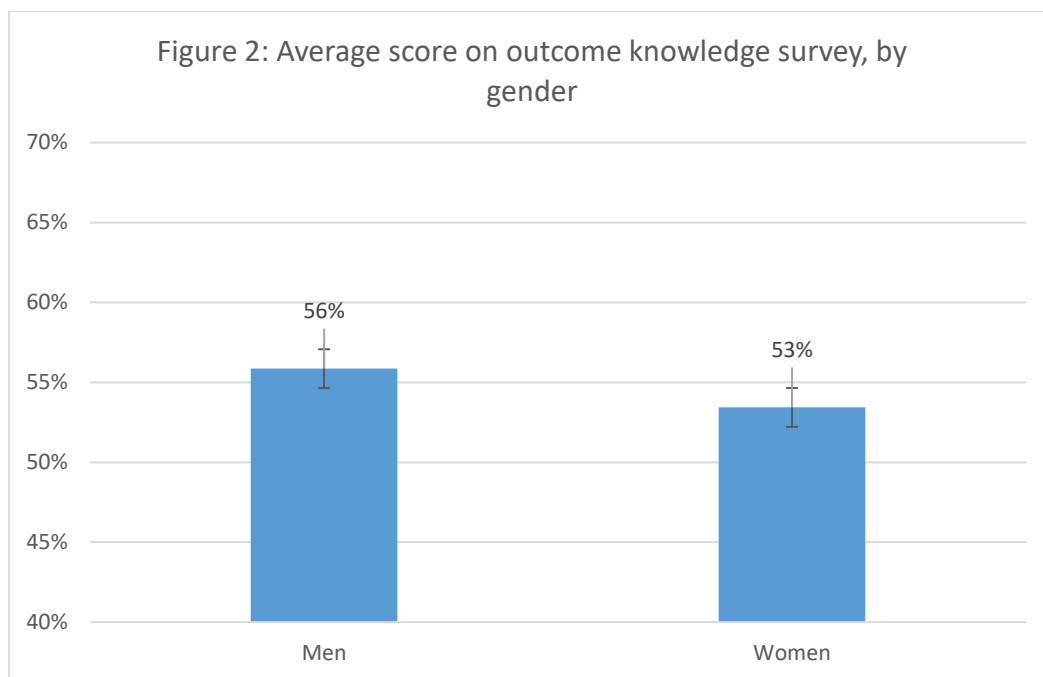


There were sizeable increases (see **Table 7**) in the percentage of respondents who knew that:

- planting time has an impact on crop yield (correct responses increased from 64-80%)
- crop spacing impacts the rate at which disease spreads (increased from 56-81%)
- weed resistance is NOT a benefit of improved maize seeds (increased from 33-50%)
- you should apply TSP on soya farms 10 days after planting (increased from 18-33%)
- improved soya bean seeds are not resistant to weeds (increased from 29-43%)
- improved seeds can be replanted / used again the following season (increased from 36-51%).

THE IMPACT OF GENDER AND LISTENING ON KNOWLEDGE LEVELS

While overall average scores were 20% higher than at baseline, there was little difference in average scores between men and women, with men scoring slightly higher, as shown in **Figure 2**. There was also no significant difference in average knowledge levels between listeners and non-listeners, as shown in **Figure 3**. This is an interesting finding, and, as we will see in Section 3.4 on uptake of recommended practices, is at odds with the increases in uptake. Thus, even though farmers did not display increased knowledge, their rate of uptake was higher.



3.3 LISTENERSHIP

As shown in **Figure 4**, 82% of respondents listened to the radio programs on the four project radio stations, including 81% of women and 83% of men.

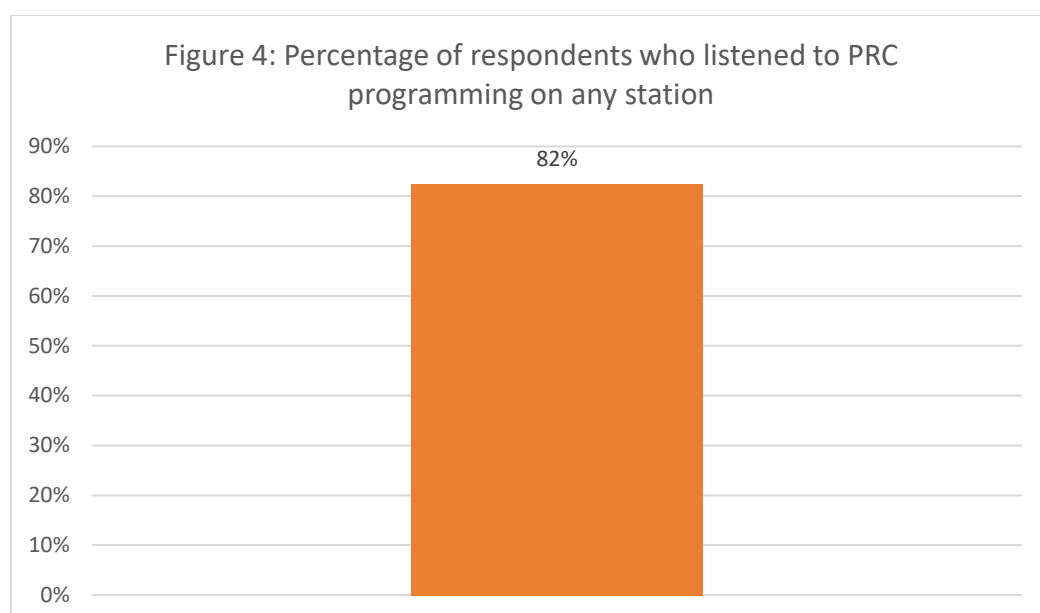
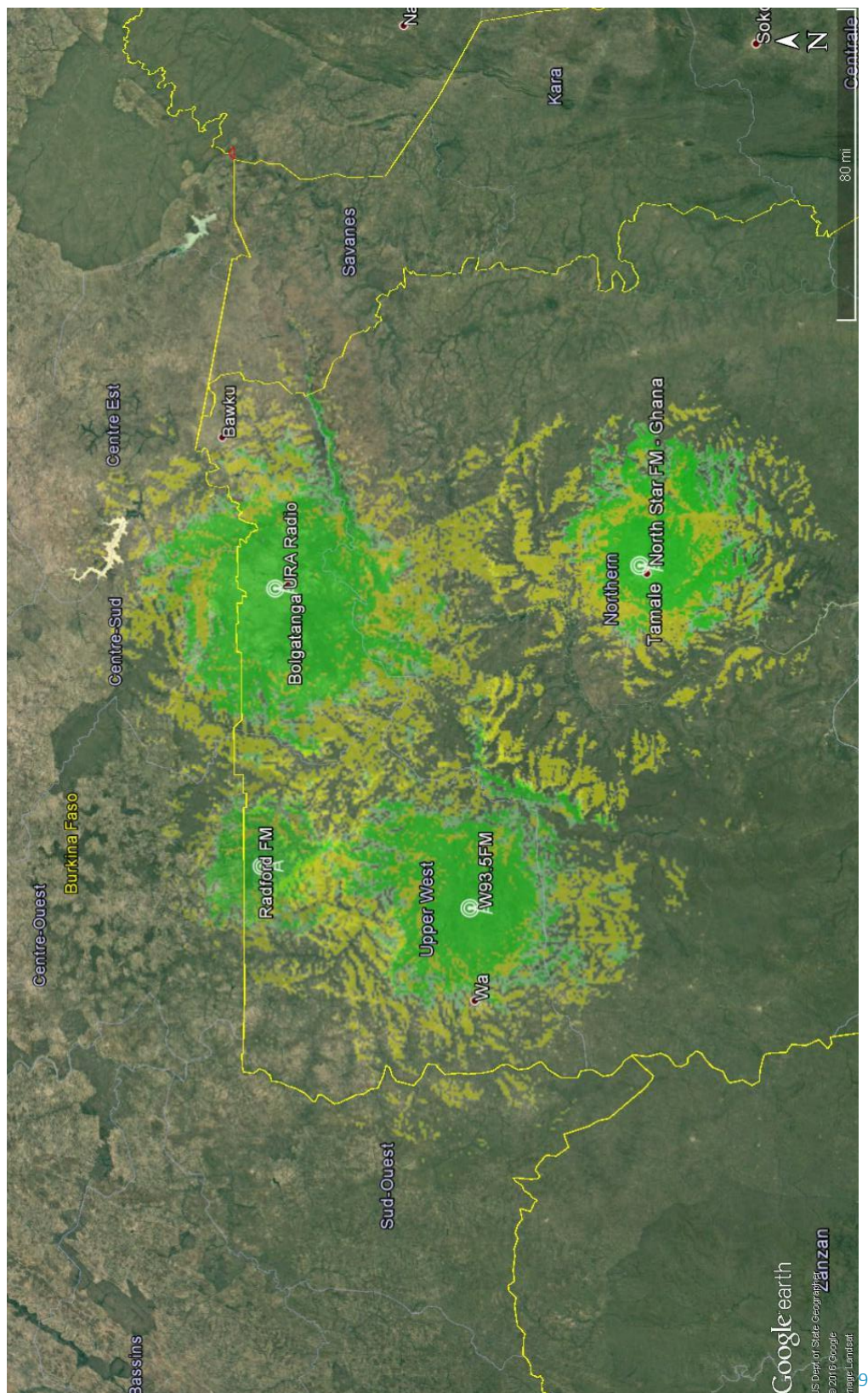


Table 8 breaks down listenership by radio station, and estimates the total number of listeners to the PRC programs on the four stations, based on the percentage of survey respondents who said that they listened to the programs. As indicated in **Table 8** below, an estimated 720,000 men and women listened to the PRC programs on the four stations. This estimate is based on the FM coverage of the four stations, as shown in the map below which was outputted via FRI's in-house radio mapping system.

Table 8: Estimated listenership

Radio station catchment area	Total population within coverage area	Total rural working age population (61.4% of population)	Percentage of farmers that listened to FRI program	Extrapolation of listenership to population estimate
Radford FM & W93.5 FM (overlapping coverage)	275,389	72,587	71%	51,536
North Star FM	766,835	118,386	87%	102,995
URA Radio	1,131,240	697,070	81%	564,626
TOTAL	2,173,464	888,043		719,157



⁹ The above map shows the estimated coverage for all of the stations involved in the project. The green coverage zone represents 60 decibels and the yellow 48 decibels reached by radio set receivers. These estimates are common practice to measure expected reach of radio signals. Anyone within both the green and yellow should have had the potential to listen.

3.4 UPTAKE OF RECOMMENDED PRACTICES

As described above, FRI implemented a randomized outcome evaluation survey that used a two-step cluster sample within the coverage area of the project radio stations in order to determine the overall level of practice among survey respondents. The findings are summarized below. All results are within a 95% confidence interval or +/- 5%, based on the sampling procedure used.

Table 9 compares uptake of a variety of practices between baseline and endline. It also compares uptake between listeners and non-listeners to give a sense of the effectiveness of radio programming at encouraging “trial adoption” of promoted practices. Particularly positive or interesting findings are further discussed below. Please note the relatively high level of uptake at baseline for several practices.

Table 9: Uptake of practices recommended on the radio programs

QUESTION # AND TOPIC	ENDLINE					BASELINE		
	OVERALL ADOPTION	MALE ADOPTION	FEMALE ADOPTION	LISTENER ADOPTION	NON- LISTENER ADOPTION	BASELINE OVERALL	MALE ADOPTION	FEMALE ADOPTION
7.4 GROW IMPROVED RICE VARIETIES	52%	54%	48%	57%	17%	53%	46%	63%
7.7 ACQUIRE RICE SEEDS VIA RECOMMENDED SOURCES	36%	40%	40%	43%	22%	33%	39%	24%
7.9 PLANTING IN ROWS	62%	57%	69%	61%	69%	57%	52%	64%
7.10 APPLY FERTILIZER	76%	80%	72%	80%	53%	62%	71%	49%
7.14 USE UDP	56%	53%	61%	55%	60%	50%	49%	51%
8.9 ISFM PRACTICES USED (1 or more)	100%	100%	100%	100%	100%	100%	100%	100%
8.12 GROW IMPROVED MAIZE VARIETIES	30%	28%	34%	31%	24%	19%	20%	18%
8.14 ACQUIRE MAIZE SEEDS THROUGH RECOMMENDED SOURCES	38%	35%	42%	38%	35%	26%	28%	22%
8.19 PLANT IN ROWS	97%	98%	96%	98%	95%	96%	96%	96%
8.22 APPLY NPK TO MAIZE	83%	83%	81%	84%	74%	76%	79%	71%
8.23 DEEP PLACEMENT OF NPK	67%	61%	82%	69%	62%	53%	51%	57%
8.25 APPLY UREA	25%	23%	29%	26%	20%	51%	48%	56%
8.26 APPLY UREA AT RECOMMENDED TIME	82%	78%	88%	79%	100%	71%	71%	73%
9.4 GROW IMPROVED SOY VARIETIES	60%	59%	61%	62%	50%	50%	52%	48%
9.7 ACQUIRE SOYA SEEDS VIA RECOMMENDED SOURCES	54%	56%	51%	57%	36%	36%	38%	33%
9.9 APPLY TSP ON SOYA	22%	25%	17%	25%	5%	64%	66%	61%

9.10 APPLY TSP AT RECOMMENDED TIME	18%	44%	8%	18%	0%	14%	12%	17%
9.12 PLANT IN ROWS	90%	90%	89%	90%	85%	91%	90%	93%
9.13 WEED SOYA TWICE	40%	38%	43%	39%	44%	43%	42%	45%
9.16 APPLY INOCULANT	29%	34%	20%	34%	0%	26%	23%	30%
9.18 ROTATE SOY AND CEREAL	94%	97%	87%	93%	95%	78%	81%	72%
9.21 LEAVE SOYA ROOTS IN SOIL AFTER HARVEST	63%	63%	63%	65%	50%	58%	55%	63%

By comparing baseline and endline uptake of practices, we see substantial increases in uptake of:

- applying fertilizer to rice (increase from 62-76%);
- growing improved maize varieties (increase from 19-30%); (In addition, 65% of respondents to the endline telephone survey grew improved maize varieties.)
- acquiring maize seeds through recommended sources (increase from 26-38%);
- deep placement of NPK in maize production (increase from 53-67%);
- acquiring soya seeds through recommended sources (increase from 36-54%); and
- rotating soya bean and cereals (78-94%)

Comparing gender levels of uptake at endline, the rate of uptake for women is considerably higher for the following practices:

- planting rice in rows (69% for women vs. 57% for men). (The comparable numbers in the telephone survey were 87% of women and 79% of men.)
- deep placement of NPK in maize (82% for women vs. 61% for men)
- applying TSP at the recommended time in soya bean production (44% for women vs. 8% for men)
- applying inoculant to soy (34% for women vs. 20% for men).

Comparing levels of uptake between listeners and non-listeners, we find that listeners had considerably higher levels of uptake for the following practices:

- growing improved rice varieties (57% of listeners vs. 17% of non-listeners) (58% of respondents to the endline telephone survey grew improved varieties of rice)
- acquiring rice seeds via recommended sources (43% of listeners vs. 22% of non-listeners)
- applying fertilizer to rice (80% of listeners vs. 53% of non-listeners)
- acquiring soya seeds via recommended sources (57% of listeners vs. 36% of non-listeners)
- applying TSP on soya bean (25% of listeners vs. 5% of non-listeners)
- applying TSP on soya bean at the recommended time (18% of listeners vs. 0% of non-listeners)
- applying inoculant on soya bean (34% of listeners vs. 0% of non-listeners) (Only 5% of respondents to the endline telephone survey used inoculant.)
- leaving soya roots in the ground after harvest (65% of listeners vs. 50% of non-listeners.)

From the three bulleted list above, we can see that listening had a considerable impact on uptake of a variety of practices, and a particularly large impact on practices related to soya bean, and on acquiring seeds through recommended sources.

With respect to improved maize seeds, there was an appreciable increase in *using improved seeds* from a low adoption rate of 19% at baseline to 30% at endline. Overall adoption is generally low and will therefore require further sensitization. It will be important to determine the barriers to adoption for male and female farmers.

The practice of *applying TSP on soya* saw a large decrease at endline from 64-22%. Several factors may have accounted for this, and will need to be identified in order to reverse that trend.

NUMBER OF RECOMMENDED PRACTICES AT ENDLINE

Most farmers were using 1-2 recommended practices at baseline. Therefore, for the endline survey, we found it useful to calculate the percentage of farmers who were practising 4 or more and 5 or more practices—see **Figure 5**.

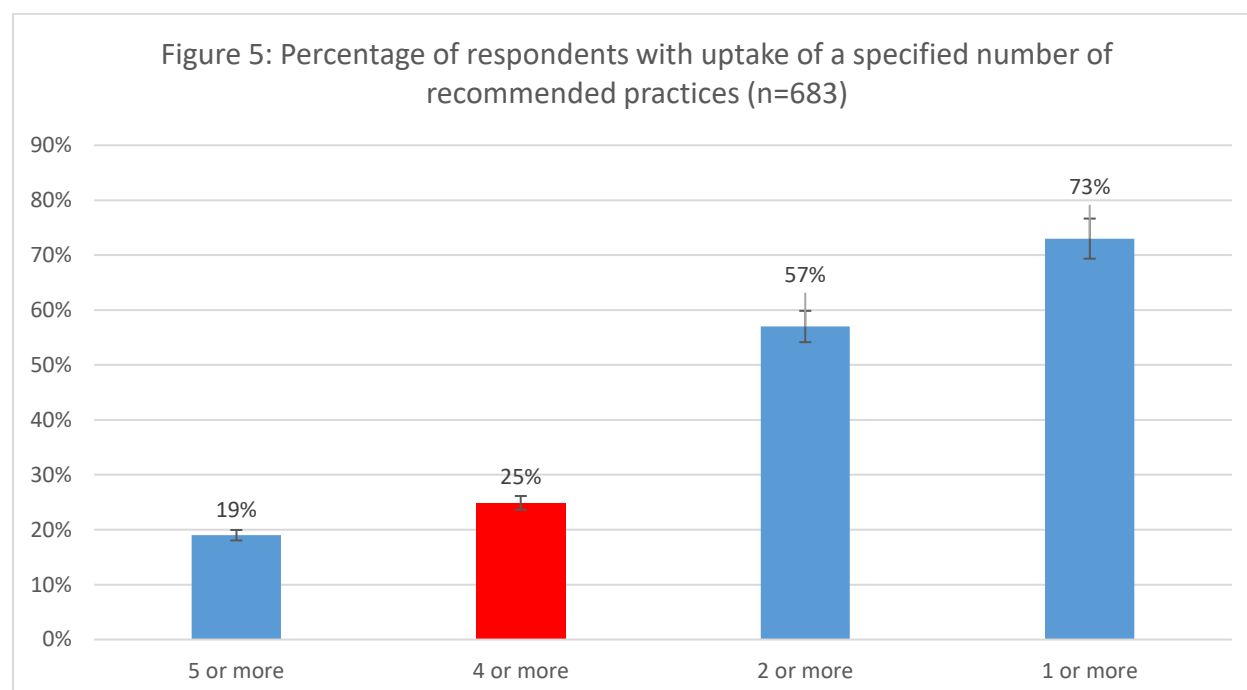
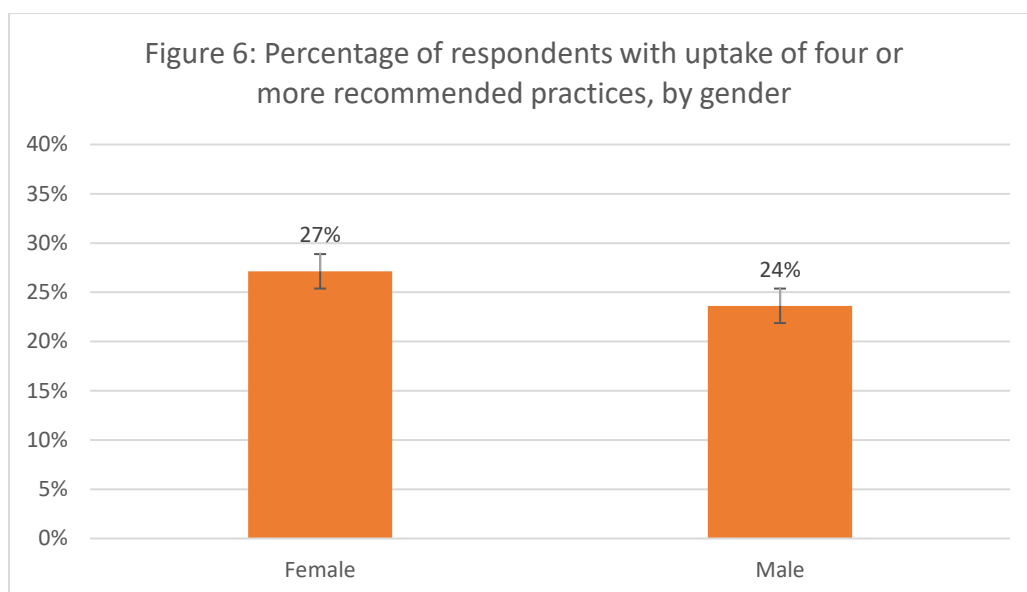


Figure 6 breaks down uptake of 4 or more practices by gender. As noted in **Figure 6**, female farmers' uptake of 4 or more practices was higher than male farmers' uptake. Women's uptake at endline exceeded men for planting rice and maize in rows, using UDP, growing improved maize, applying urea, and deep placement of NPK.



EXTRAPOLATING LISTENERSHIP AND PRACTICE

A major target of the project was to determine the actual number of farmers with uptake of the promoted practices at endline. FRI used a statistical extrapolation to estimate the number of farmers who listened to the programs, and tried the promoted practices. These estimates were calculated by multiplying the percentages obtained through the survey by the estimated rural working-age population covered by the four radio stations, and by using FRI's in-house FM radio coverage mapping system, which uses the GIS system QGIS and population estimates from the latest Ghana census, as described above.

The figures in *Table 10* are estimates rather than exact numbers. But they do show clearly that the programs exceeded the targets established at the beginning of the project for listenership and uptake of practices.

Table 10: Extrapolated listenership and uptake of practice

Radio station catchment area	Percentage of farmers that listened to FRI program	Extrapolation of listenership to estimated population	Percentage of farmers who used at least one practice	Extrapolation of practice (1 or more) to estimated population	Percentage of farmers who used at least 4 practices	Extrapolation of practice (4 or more) to estimated population
Radford FM & W93.5 FM (overlapping coverage)	71%	51,536	59%	30,406	15%	7,730
North Star FM	87%	102,995	72%	74,156	30%	30,898
URA Radio	81%	564,626	90%	508,163	34%	191,972
TOTAL		719,157		612,725		230,600

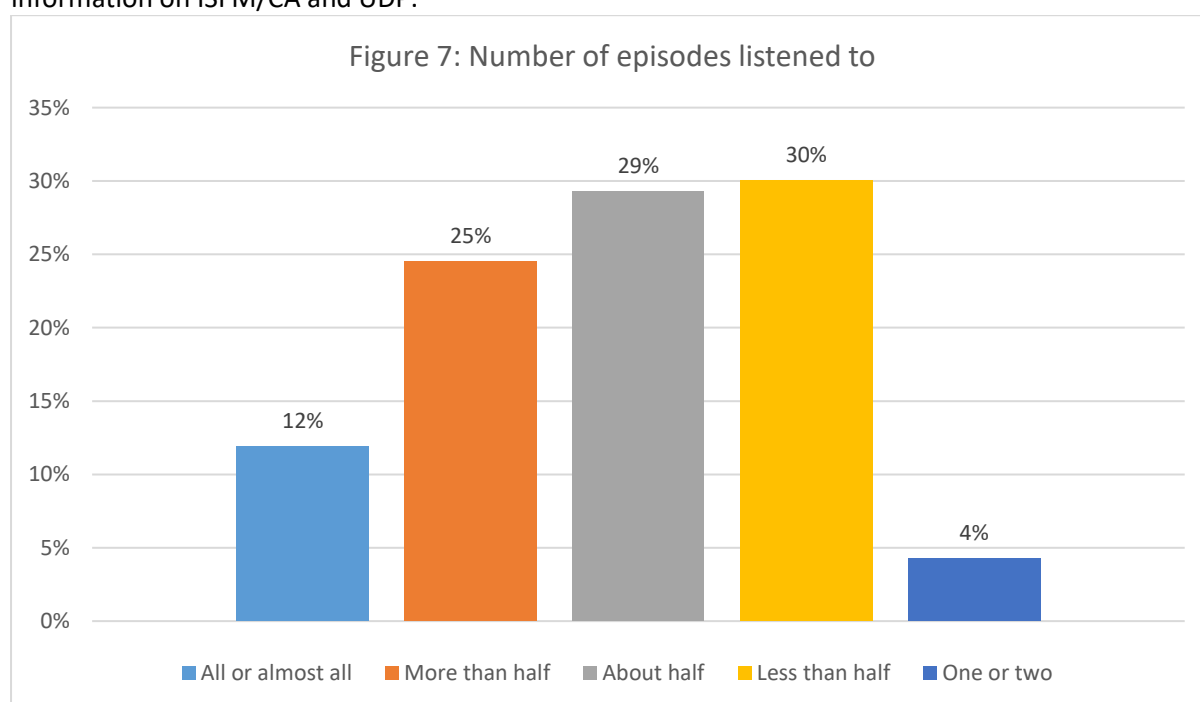
3.5 RADIO LISTENING BEHAVIOR AND AUDIENCE INTERACTIONS

This section presents endline findings related to radio listening behaviour and respondents' opinions of the most valuable source of information on ISFM/CA and UDP. As shown in **Table 11**, men are more easily able to listen to the radio in their homes, and more often regularly listened to project programs with a listening group.

Table 11: Radio listening behaviour

INDICATOR	ACHIEVED RESULT
% of respondents with home access to radio	Overall: 76% Men: 83% Women: 63%
% of respondents who had listened to the radio in the last 6 months	Overall: 87% Men 89% Women: 84%
% of respondents who belong to a listening group	Overall: 64% Men: 63% Women: 64%
% of respondents who listened to the program regularly with a listening group	Overall: 57% Men: 64% Women: 44%

Figure 7 presents our findings on the number of episodes listened to, while **Figures 8 and 9** show that the large majority of respondents consider radio to be their most important source of information on ISFM/CA and UDP.



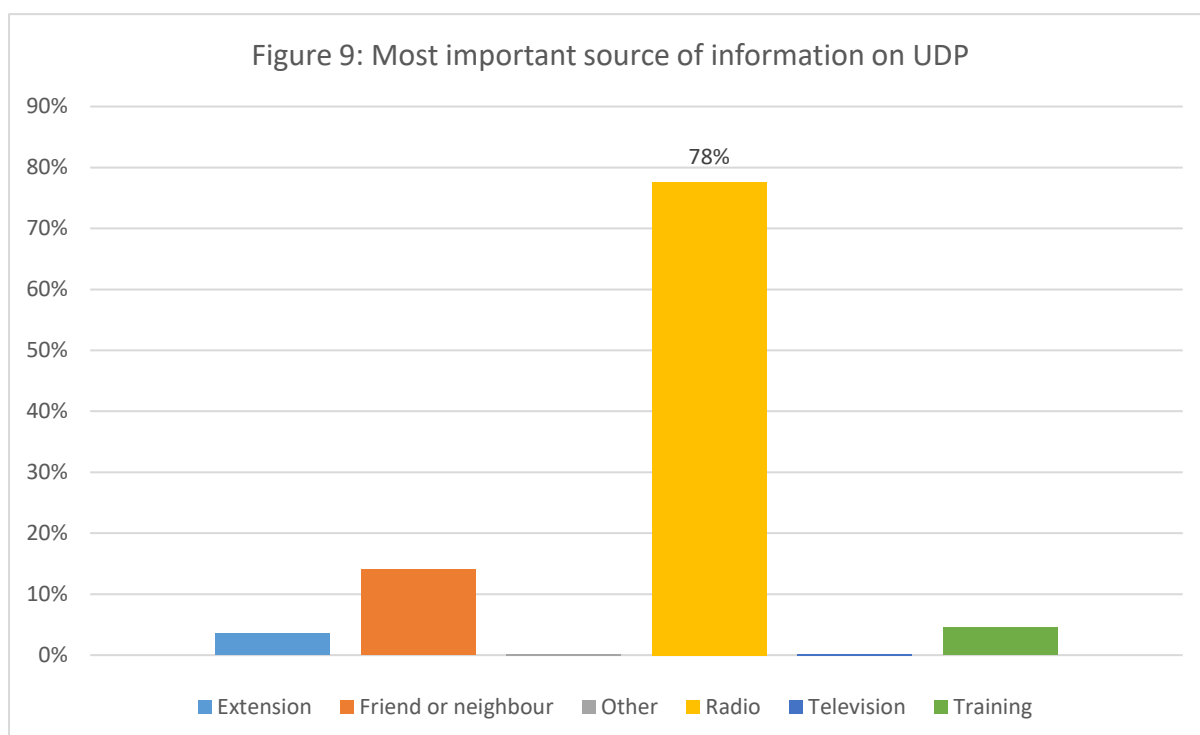
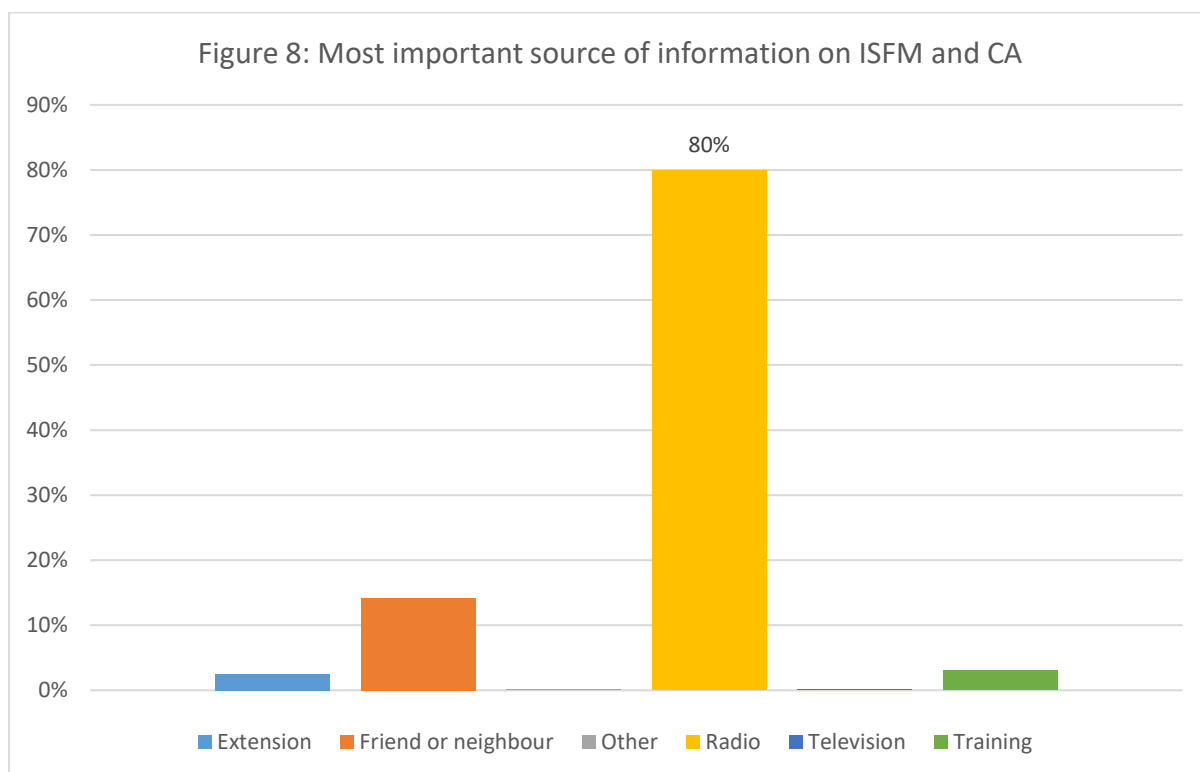
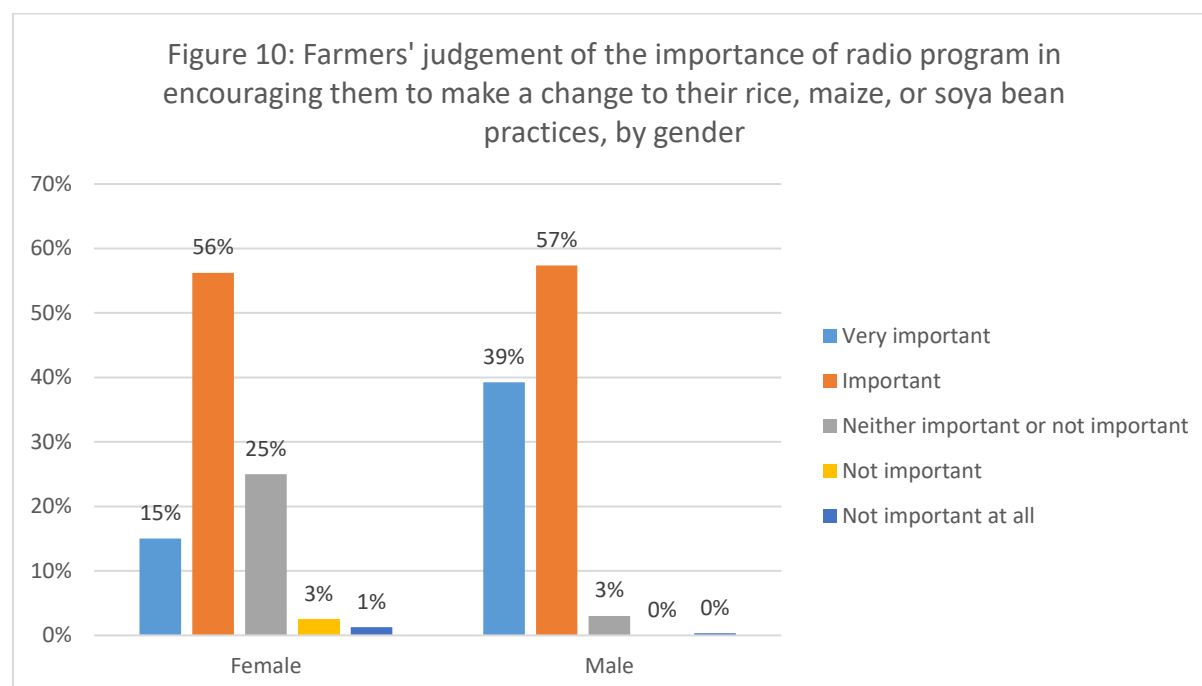


Figure 10 shows how men and women respondents rated the importance of radio as an influence on their decision to make changes to their farming practices. It shows that 71% of women and 96% of men rated radio as an *important* or *very important* influence.

In the telephone survey, 91% of respondents rated radio as an *important* or *very important* influence on their decision.



FRI uses a platform called *Uliza* to manage interactions between listeners and project radio stations. These interactions include call-ins and the various beep-to services which use interactive voice response (IVR) in the back-end, including, in this project, beep-to-call. **Table 12** shows the number of individual interactions tracked through Uliza during the ATT project, in total more than 34,000.

Table 12: Interactions with the radio stations throughout the project

Radio Station	Number of people that interacted on Uliza platform
North Star	15,101
W93.5FM	7,986
Radford	3,945
URA Radio	7,159
TOTAL	34,191

3.6 FINDINGS FROM FOCUS GROUP DISCUSSIONS

The Focus Group Discussions (FGDs) sought to assess several major aspects of the project:

1. understanding or knowledge of the focus of the program;
2. content of the program;
3. impact of the program;
4. the role of ICTs in listener involvement; and
5. barriers to the uptake of recommended agricultural practices.

The following is a summary of the major findings from the FGDs:

Table 12: FGD findings

ASPECT	SUMMARY OF FINDINGS
Focus of the program	<p>Overall, the FGDs reflected an impressive knowledge and understanding of the main theme or focus of the program in all three regions. Respondents demonstrated this by responding in the following ways when asked about the focus of the program:</p> <ul style="list-style-type: none"> • Improving soil fertility as a way of increasing yields in rice, maize, and soya bean production among male and female farmers; • Adopting and using improved seeds to increase yields; • Using Integrated Soil Fertility Management practices to enhance the fertility of the soils; and • Adopting appropriate technologies such as composting and row planting as well as placement of fertilizers to improve yields. <p>However, in 2 of 18 FGD communities (Kajelo in UER and Pieng in UWR), the community was unable to demonstrate clear understanding of the focus of the program. In one community, the radio signal was poor (Kajelo), and another community could only provide general ideas related to knowledge to support farming of rice, maize, and soya bean.</p>
Content¹⁰ of the Program	<p>FGDs demonstrated an excellent level of understanding of the content of the program. Participants demonstrated this understanding through responding that the following practices which they had heard about on the radio were beneficial:</p> <ul style="list-style-type: none"> • The urgent need to use improved seeds; • The importance of composting; • The danger of bush burning and the need to end burning biomass on the farms; • Minimum or no tillage and chemicals; • Planting techniques (in rows, mulching, cover cropping, etc.) • Land preparation and planning. <p>Program subjects not mentioned by participants included: harvesting techniques, budgeting and acquiring inputs, and site selection.</p>
Impact of the program	<ul style="list-style-type: none"> • Participants in the NR said that the radio program had contributed significantly to farming activities, especially to improvements in soil fertility. They said that the new knowledge they had acquired from the program has helped resolve some of their longstanding problems as farmers. Two specific examples that

¹⁰ Some respondents were able to describe the main topics they listened to, while others were only able to provide the details of specific discussion points from the radio programs.

	<p>were emphasized across all communities were <i>stopping the practice of burning of biomass</i> and <i>shifting towards strong uptake of composting</i>.</p> <ul style="list-style-type: none"> • Participants in UER said that the program had an impact on their work as farmers. Most had applied at least one of the recommended practices discussed on radio, in particular the <i>use of improved seeds</i> and <i>composting</i>. • In UWR in particular, respondents said that the impact of the program included increased knowledge of good farm practices, which contributed to <i>increased crop yields</i>.
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When asked about their most-liked radio program, FGD participants expressed their satisfaction with all radio formats. In particular, they were excited about the stations' use of formats such as songs, dramas, and riddles, which, they said, helped to reinforce the messages. Participants said that visits to communities and the radio presenters' ability to ask relevant questions helped to further their interest and deepen their understanding during discussions. They expressed particular interest in the following topics:

- mulching and how to prepare compost;
- no burning of biomass; and
- composting.

Overall, most communities said that the topics were educative and informative. Female participants in particular were comfortable hearing their voices in the songs and drama which they contributed to, and which were aired during the programs.

FINDINGS FROM SUMMATIVE FORUMS

Three regional summative forums were conducted near the end of the project, in each region.

Participants from all regions agreed that radio plays a vital role in food security in the sense that its wide coverage helps reduce post-harvest losses, increase the use of improved seeds, and help farmers plan and manage the farm. Participants said that farmers trust information they hear on the radio, and that the programs increased their yields, knowledge of composting, practice of applying fertilizer in a timely fashion, and use of best practices for harvesting and planting.

Broadcasters explained that they followed the steps involved in a typical RFP (Regular Farmer Program) or PRC to produce project programs, and that they are now capable of planning, producing, and monitoring a RFP/PRC program. They added that all programs were produced with the VOICE standards in mind, which improved the quality of the programs. Broadcasters felt that the good quality ICT equipment given to them by FRI helped them to produce good programs. Broadcasters agreed that working with FRI had a positive impact on their programs.

Farmers in all three regions said that the program was very useful and had a positive impact on their everyday farming activities. In particular, they mentioned the use of improved seeds, and recommended practices related to time of planting and harvesting, and the application of fertilizer. Farmers participated in the program through phone-ins, beep-to-call, and listener groups, and some served as resource persons. Using improved seeds, applying organic manure, and planting in rows were some of the significant practices farmers tried as a result of the radio program.

In terms of challenges, **broadcasters** cited that funds for field activities were inadequate. **Farmers** suggested that the program should be longer, and that there should be field demonstrations of some practices. Other **participants** felt that more stations should be involved, and that there should be an increased number of days and hours of broadcast.

MOST SIGNIFICANT CHANGES

During the summative forums, participants identified the most significant changes that had occurred in the communities as a result of the ATT project. They are as follows:

UWR: The communities that listened to W93.5FM overwhelmingly agreed that row planting was the most significant change for farmers, while farmers who listened to Radford indicated that using organic manure was the most significant change.

UER: the most significant change was trying row planting. After trying the practices, yields rose, crops grew well, and harvesting was easier.

NR: Most communities identified row planting as the most significant change that resulted from the radio program.

TRAINING/CAPACITY BUILDING

The project included a capacity-building component for the radio stations. Based on an assessment of broadcasters' training needs, a training program was designed to increase the skills of

broadcasters at the four partner radio stations. The training aimed to develop the skills needed to produce farmer radio programs that meet the VOICE Standards for farmer radio programs.¹¹

At baseline, broadcaster rated their programs against the VOICE standards as average, noting especially the low involvement of farmers in the program and the lack of a variety of formats. The broadcasters also concluded that most of the programs were not very engaging or interesting because they were limited to studio discussions and did not include farmers. In addition, *producers and presenters had skill gaps* in making their programs more engaging by using cost-effective and participatory formats such as vox pops, interviews, discussions, and reporting from the field. It was noted that both practical skills and appropriate equipment were required to address these gaps.

After the trainings, we found that broadcasters showed improved planning, production, and monitoring skills. There was evidence across all three regions that, because all programs were produced using the VOICE standards as the main reference tool, the programs were high quality. The ICT equipment given by FRI to the radio stations contributed significantly to designing and rolling out good programs.

There were two main types of training: in-station training and ICT training. The total number of trainees was 29—9 women and 20 men. In UWR, special women-only lines were established to encourage women to participate during phone-ins. One woman from Tumu in UWR was a regular resource person on Radford FM. In the UER, one women served as a resource person on many occasions. While there were no female resource persons on the air in NR, on some occasions, phone-outs were made, asking female farmers to share their experiences.

KEY INFORMANT INTERVIEWS

The project interviewed 11 key informants: input dealers, extension agents, and researchers.

Input dealers were fully aware of the programs, and some had appeared on air to share best practices and explain how to use their products. They were well aware of the purposes of the program—including promoting local input dealers' businesses—and said that they saw evidence of the program's effectiveness in local farmers' greater demand for improved seeds, whereas before farmers had largely considered an investment in improved seed to be a "waste of capital." Generally, input dealers found the programs useful because farmer demand for seed was higher than last year, with many sales outlets recording increases in sales volumes.

For example, in Bolgatanga (UER) an input dealer said:

"Last year my company sold a total 50 bags/45 kgs of seeds. However, this year we have sold more than 150 bags/45kg, and this can only be attributed to the radio program on seeds and fertilizer. It has helped my business."

Another input dealer in Bolgatanga said,

"Last year between January and August, we sold 813 50-kg bags of maize seed, and this year within the same period, we have sold 1900 50-kg bags of maize."

Similarly, in Chiana (UWR), an input dealer indicated,

"Last year, my company did not sell any seeds. However, this year we have sold 35 mini-bags (45kgs), and this can only be attributed to the radio program on seeds and fertilizer."

¹¹ The VOICE Standards for farmer radio programs are included as Appendix 4.

All businesses with improved sales figures attributed their greater sales to the education that farmers had received on the radio programs.

When asked about his willingness to financially support the radio programs, an input dealer replied that, although input dealers cannot shoulder the total financial responsibility for the programs, they can share knowledge, encourage people to listen, and support seed producers by selling their products. According to the input dealer, in that way, together with the producers and other input dealers, he is willing to contribute to sustaining the program.

An extension worker and an NGO project officer in the Upper East Region both agreed that the program has changed farmers' attitudes towards planting improved varieties.

A technologist with SARI said that farmers' attitudes had changed towards using improved seeds, timely weed control, proper methods of applying fertilizer, and modern farming practices in general.

An extension officer from UWR added that farmers' attitudes towards planting in rows and planting one seed per planting hole had also changed. The extension officer characterized the programs as being a way of extending extension work to large numbers of farmers, a task which is difficult to accomplish through face-to-face extension visits and meetings.

3.7 SUCCESS STORIES

Farmers' perspectives, testimonies, and personal stories are an important source of information about their level of satisfaction with the program. A broad range of success stories, including both female and male farmers, were carefully documented. Three are presented below.

SUCCESS STORY# 1: SOY BEAN FARMERS ABDULLAI NAPAGA AND SAIBU ZELIA (NR)

Abdullai Napaga and Saibu Zelia



Abdullai Napaga (left) and her daughter-in-law Saibu Zelia stand among the soya beans near their home in Libga.

When Abdullai Napaga saw a friend farming soya beans near her home in Libga in the Northern Region of Ghana, she saw an opportunity for herself.

“I asked her to explain everything to me, and then I came home and told my family that I want to go into growing soya beans. They supported me, so since then I have been growing soya beans.”

Napaga's daughter-in-law, Saibu Zelia, also joined. Together, the two of them now farm two acres of soya beans.

“If we are two, we can easily take care of the land,” says Zelia. “You don't have to look for a helper, but one person can take one side and one the other side, and you will finish what you are doing quickly.”

Their shift to growing soya beans was facilitated through information they learned from the ATT project and the Farm Radio International radio program. Napaga and Zelia ploughed manure into their fields to help the soya beans grow, and they also learned about the nutritional benefits of eating soya. Zelia says she learned to turn the beans into milk and other foods.

Marketing prices broadcast on the ATT program also helped the duo. “The prices I hear on the radio are the same price I sell [for] at the market,” says Napaga. “I have benefitted because no one can buy [for] less than what I heard on the radio, and I also cannot sell [for] more than what I heard.”

Napaga and Zelia use their profits to help themselves and their families, including when they need money for their children’s school fees (Napaga has eight children and Zelia has two).

“As a woman, you can use farming to take care of your children and get money to provide for the house,” says Zelia. Napaga adds, “I entreat other women to also go into soya bean farming. It’s something that you can farm, use for food, and also take care of your children.”

SUCCESS STORY #2: RICE FARMER ADOMPOKA FELICIA ABAANE (UER)

Adompoka Felicia Abaane – Yorogo



Adompoka Felicia Abaane stands in her rice paddy in the ICCOUR Irrigation Fields.

Adompoka Felicia Abaane weeds her rice paddy in the Iccour Irrigation Fields close to her home in Yorogo, in the Upper East Region of Ghana.

Felicia has been farming rice for 10 years, but until recently, her fields were not very successful. When she heard the ATT and Farm Radio International radio program broadcast on URA Radio, Felicia saw an opportunity.

“At first, whatever I was doing I was not getting good yield. I made time to sit any time it was time to listen to the program. I realized the things that I was doing that were bringing down my farm.”

Felicia quickly changed what she was doing and started following the practices suggested by the radio program.

Felicia began to use improved seeds. At the nursery, she was impressed with the way the seeds germinated. When she brought them to the field to transplant, she used the new method of planting the seedlings in line one-by-one. Watching them grow, she saw how fewer seeds could produce more yield. As Felicia continued to listen to the radio program, she learned how to properly apply herbicide and clear what was left by hand. The results were encouraging.

“Now I can better feed myself and my children and it has also improved my financial standing. Now I can sell some and support my children.” Felicia’s farming improved so much that she has been able to plant three times in one year—normally farmers are only able to plant twice a year.

“If you come back in a month’s time, you won’t believe that this is my farm,” she says. “It will grow well and the yield will be more than before.”

Felicia has been so successful that different organizations are considering using her and her rice paddies to grow seeds for other farmers.

SUCCESS STORY # 3: MAIZE FARMER KUTI JOSEPH (UER)

Kuti Joseph - Kajelo-Yenio



Kuti Joseph builds up soil in a mound around the base of the stalk of maize in a process called “earthing.”

Kuti Joseph’s maize farm looks different from many of the neighbouring fields. At the base of each stalk of maize, a small mound of soil serves to keep the stalk upright.

It’s a practice Joseph started only a month and a half ago, when he heard it suggested on the ATT and Farm Radio International radio program.

“I’ve seen that they are growing well. As they are standing now, I know very well they will come with more crops for me. It will provide a lot of food for me.”

The process is labour-intensive. Joseph uses a hoe to build up the soil at the base of the maize in a process called earthing.

Most farmers don’t practice it because of the costs, says Raymond Wegwi, the presenter of the *Kasem* radio program on URA Radio. He says the practice helps keep the maize from being blown down by strong winds where it risks being contaminated with aflatoxin, and helps farmers control weeds and improve the soil because the weeds are mixed into the soil to add nutrients.

Aside from earthing, Joseph has also begun to plant improved seeds and use proper fertilizing techniques.

“What we have heard from the radio is helping us to get our food for our own sake.”

4.0 CONCLUSIONS

The overall performance in the project met and in some cases exceeded key performance indicator targets.

Estimated listenership was approximately **720,000**, well above the targeted number.

Uptake for most practices rose compared to baseline, and was generally higher among listeners than non-listeners, which reflects the effectiveness of the radio programs at promoting uptake of practices. Evidence from FGDs in all 3 regions suggests that the radio programs contributed significantly to farming activities, especially improvement in yields. FGD discussions support the quantitative findings on uptake of recommended agricultural practices. FGD discussions also suggested that practices with long-term negative consequences on crop yield were reduced, for example bush burning and burning of biomass.

Overall knowledge levels rose by 20% over baseline, though there was no difference between knowledge levels of listeners and non-listeners. On some subjects, knowledge increased considerably. For example, knowledge that planting time effects crop yield increased from 64% to 80%, and knowledge that crop spacing impacts the rate of disease spread increased from 56% to 81%. The knowledge of female farmers increased particularly strongly in some areas, including knowledge of the effect of crop spacing on disease spread. Identifying the factors which supported this rise in women’s knowledge might suggest avenues for wider application of such factors.

In terms of uptake of recommended practices, as mentioned above, listeners had higher rates of uptake than non-listeners for a number of practices. For example, 57% of listeners used improved rice seeds compared to 17% for non-listeners. Similar results were recorded in other areas, implying that the radio program had a strong impact on adoption. This provides a compelling case for radio programs to be central in the dissemination of critical information on good agricultural practices.

Rates of uptake of practices were higher for men for some practices, and higher for women for others. There is a gap between uptake of row planting in soya beans and uptake in rice and maize. And uptake of applying TSP on soya decreased from 64% to 22% at endline. It will be critical to identify reasons for this drop in uptake among both male and female farmers.

During the FGDs, farmers described barriers to the uptake of recommended practices, including:

- Their inability to regularly listen to the programs because of lack of access to a radio set.
- The high cost of improved seeds
- In NR, male farmers indicated that they had harvested before the program started.
- Loss of interest in program due to delays in scheduled start times.
- In UER, female farmers cited financial constraints as the biggest challenge to buying chemical fertilizers.
- Inadequate access to transportation (trucks and tricycles) to transport compost to farms.
- Most farmers in UWR indicated that farming was not in session during the time the program was aired.

Addressing these constraints would likely improve uptake of practices in similar projects in the future.

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