



OUTCOME EVALUATION REPORT

JULY 2016

Mobilizing Radio and ICTs to Fight Vitamin A Deficiency by Scaling-up the Production and Consumption of Orange Fleshed Sweetpotato



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LIST OF ACRONYMS

ALC: Active listening community. Defined as community which could listen to the radio program, and in which project partners conducted additional OFSP promotional activities.

CC: Control community. Defined as community which did not have access to the radio program or other project activities.

FRI: Farm Radio International

ICT: Information and Communication Technology

KAP: Knowledge-Attitude-Practice

OFSP: Orange-fleshed sweet potato

PLC: Passive listening community. Defined as a community which could listen to the radio, but in which project partners conducted no additional OFSP promotion activities.

PRC: Participatory Radio Campaign

CHAPTER 1: EXECUTIVE SUMMARY

Between 2012 and 2015, Farm Radio International and its partners launched a radio campaign focused on orange-fleshed sweet potato (OFSP), a vitamin-A rich staple crop in the four campaign countries (Burkina Faso, Ghana, Tanzania, and Uganda). An estimated 3.5 million households tuned into to the programs. The campaign significantly increased knowledge of nutrition, vitamin A deficiency, and the health benefits of OFSP, and resulted in hundreds of thousands of families beginning to grow and eat OFSP. The campaign demonstrated that, when used effectively, radio is a valuable tool to educate listeners about nutritional messages, and to drive consumption and production of crops which can help address nutritional deficiencies.

In partnership with the Bill & Melinda Gates Foundation, Helen Keller International, the International Potato Center and Sweet Potato Action for Security and Health in Africa (SASHA), Farm Radio International launched a three-year initiative in 2012 to decrease vitamin A deficiency, called *Mobilizing Radio and ICTs to Fight Vitamin A Deficiency by Scaling-up the Production and Consumption of Orange Fleshed Sweet Potato*. Using participatory radio and ICT strategies, the project was designed to scale-up production and consumption of OFSP in Tanzania, Uganda, Ghana, and Burkina Faso, adding it to the diets of at least 100,000 rural households.

At the beginning of the project, there had already been years of OFSP promotion work in Uganda and Tanzania, while OFSP was relatively new in Ghana and Burkina Faso. But sweet potato was a major crop in many or most areas of each of the four countries.

The project hoped to achieve results in a number of areas, including:

- increasing knowledge of nutrition
- increasing knowledge of OFSP production
- increasing OFSP consumption
- increasing OFSP production
- dispelling myths about OFSP
- increasing knowledge of cooking/preparation options

The project worked with 15 radio stations in the four countries, produced 481 hours of programming on OFSP, and employed a variety of ICT strategies to share and exchange information on consumption and production, including a variety of *beep4 services*¹.

¹ *Beep4 services* allow individuals to flash a number (phone and hang up) to a radio station, and, in return, receive an SMS or phone call with various types of information. For example, in the OFSP project, the *Beep4vine* service sent contact information for vine suppliers in the caller's local area.

OVERALL RESULTS

- Estimated number of listeners across four countries: **3.5 million**
- Average gain in knowledge (as measured by difference in score on knowledge quiz between baseline and outcome survey): **35 %**
- Estimated number of new OFSP growers: **432,000**
- Estimated number of new households eating OFSP: **650,000**
- Number of people registered as ICT subscribers and using FRI's beep4services or beep2vote service during the radio campaigns: **47,216**
- Number of hours of OFSP promotional programs over the three years of the project: **481**
- Number of hours of information on nutrition and micronutrients for parents and caregivers: **149**

There were gains in knowledge in all four countries. In Burkina Faso, Ghana, and Tanzania, gains were substantial. In Uganda, gains were more modest, but the programs helped to build knowledge in particular areas such as dispelling myths about OFSP. In all cases, the listening communities (ALCs and PLCs) had higher knowledge scores than the control communities, though the difference is marginal in Uganda, where OFSP promotional activities had achieved most penetration. Listening to the radio programs was clearly associated with higher knowledge of nutrition, vitamin A, and OFSP production.

There was a clear relationship between more frequent listening and more frequent consumption of OFSP in Uganda, Tanzania, and Ghana. In all countries, consumption of OFSP was higher in listening communities.

Demand for vines expanded beyond the original target areas because of the broad geographical coverage of the radio programs. As a result, farmers who multiplied and sold vines increased their earnings. Feedback from the outcome evaluation and the radio programs showed that the most common challenge farmers faced in growing and eating OFSP was the availability of vines. This underlines the success of FRI's radio campaigns in increasing demand and planting. Both men and women are interested in growing OFSP if demand increases, and further investments in processing and value-adding initiatives are expanded.

With regard to the lack of vine availability, in future projects, radio could play a role in reflecting the demand for goods and services such as planting materials, and help match supply to demand by involving suppliers at the formative stages of the project. The beep4vine service in Tanzania represents a step in this direction. The service allowed local vine buyers and multipliers to connect through the radio. A follow-up found that, in all, 455 bundles of vines were sold through beep4vine.

Radio was the preferred source of information in both baseline and outcome surveys in Burkina Faso, Ghana, and Tanzania, while respondents in Uganda found radio and extension sources equally useful. The radio programs provided farmers with a valuable opportunity to discuss topics with a variety of actors involved in OFSP promotion.

COUNTRY RESULTS

In Burkina Faso, the most impressive results were gains in knowledge. There were a small number of new growers, and radio was the most common and most useful source of information on OFSP in listening communities.

Knowledge scores in Radio Palabre's listening area doubled between baseline and outcome survey, while the scores of respondents from Voix du Verger's listening area rose by 91%.

There were knowledge gains in the following areas:

- the proportion of respondents who correctly identified a list of symptoms as risks of vitamin A deficiency rose from 1%-35%
- the percentage of respondents who identified OFSP as a dietary source of vitamin A increased by a factor of 1.5, from 26%-40%
- the percentage of respondents who knew that there are dietary sources of vitamin A rose by a factor of 2.5, from 24%-61%
- the percentage of respondents who knew that a few small orange sweet potatoes a day meets the daily vitamin A requirements of children under 5 rose more than fourfold from 9%-41%

Qualitative research with focus groups showed that:

- Listeners know the nutritional properties of OFSP and the benefits of OFSP for managing vitamin A deficiency.
- Farmers prefer selling OFSP because people like it; the attraction of selling OFSP is the main draw for growing the crop.
- For three reasons, farmers keep only a small amount of OFSP for family needs:
 - They prefer to market OFSP.
 - They have limited capacity to store the crop.
 - They are not familiar with methods of adding value to OFSP.

In Ghana as well, the most impressive results were increases in knowledge, but there were also increases in consumption. There were a good number of new OFSP farmers, and respondents in listening communities had higher knowledge scores, grew OFSP more often, were more likely to eat OFSP, and ate OFSP much more frequently, compared to respondents in control communities.

Respondents from Radio Central's listening area scored 12% higher on the outcome than the baseline survey, while respondents from Nabiina FM's listening area boosted their score by 82%.

A higher percentage of respondents at outcome also:

- recognized the health-related risks of vitamin A deficiency (a 75% increase over baseline)
- knew that a small portion of OFSP can meet a young child's daily requirement of vitamin A (a 71% increase over baseline)
- recognized that a number of myths about consuming OFSP were untrue (a 52% increase over baseline)

There was a 22% increase in the percentage of farmers who grew OFSP from baseline to outcome, from 46-56%.

There was an increase in OFSP consumption from 3-7% between baseline and outcome. When this change is extrapolated to the entire radio coverage area in Ghana, it represents an additional 13,000 new households eating OFSP.

In Tanzania, the most impressive results were gains in knowledge, increased consumption, and a significant increase in the number of OFSP growers.

Knowledge scores increased 64% in Radio Maria's coverage area between baseline to outcome. The number of respondents in the Lake Zone (Radio Maria listeners) who scored 50% or better almost doubled (from 44-83%) between baseline and outcome surveys, while the number of respondents who scored 70% or better more than doubled, from 28-59%.

Across the country, a significantly higher percentage of respondents at outcome:

- correctly recognized myths about the risks of consuming OFSP as untrue (a more than doubling over baseline, from 30-64%)
- knew that pregnant woman can safely eat OFSP (a 93% increase over baseline, from 41-79%)
- knew that OFSP is a dietary source of vitamin A (a 68% increase over baseline, from 38-64%)
- knew that a small portion of OFSP can meet a young child's daily requirement for vitamin A (a 68% increase over baseline, from 41-69%)

Between baseline and outcome, there was a significant increase in the percentage of respondents who grew OFSP, from 20-54%. Extrapolating these results to the total radio coverage area, we estimate that, compared to baseline, there were **264,600** new OFSP growers in these regions of Tanzania at the time of the outcome survey.

The percentage of respondents who had eaten OFSP in the 7 days before the survey more than tripled from baseline and outcome, from 9% to 29%, and was much higher in listening communities.

In Uganda, findings from the outcome evaluation suggest that, when extrapolated to the total radio coverage area for the project, about 116,000 farmers started growing OFSP between baseline and outcome, and an estimated 374,000 new households started eating OFSP.

Consumption of OFSP during the 7 days before the survey rose strongly between baseline and outcome, from 25-48%, and there was a clear trend associating more frequent listening with increased consumption of OFSP.

In this project, Uganda is a special case because of the long-term engagement of much of the country with efforts to promote OFSP. Even against this backdrop, listeners had gains in knowledge. More frequent listeners scored higher than less frequent listeners for all three radio stations in Uganda, and there was a 34% increase in respondents who correctly recognized a number of myths about OFSP as untrue.

Also:

- There was a clear association between more frequent listening and increased consumption of OFSP.
- The percentage of respondents who had eaten OFSP in the last 7 days was significantly higher in ALCs than in PLCs or CCs.

INTRODUCTION

1. 1 INTRODUCTION

Vitamin A deficiency is a widespread health challenge in sub-Saharan Africa. As many as 43 million children under the age of 5 in sub-Saharan Africa are vitamin A-deficient. An estimated 250,000 to 500,000 malnourished children in the developing world go blind every year from a deficiency of vitamin A. Vitamin A deficiency reduces the ability to fight infections and places children at much greater risk of measles, respiratory and diarrheal infections, decreased growth rate, slow bone development, and decreased likelihood of survival from serious illness.² Vitamin A deficiency also contributes to maternal mortality and poor health outcomes during pregnancy and breastfeeding.³

Sweet potatoes are a staple crop in many parts of sub-Saharan Africa. But the traditional African sweet potato is pale yellow, not bright orange like those in Canadian or American supermarkets. Orange is the colour of foods that are rich in beta-carotene—necessary for vitamin A production. After fifteen years of research, breeders have created new varieties of African sweet potato through biofortification.

Orange-fleshed sweet potato (OFSP) is a highly nutritious crop with particular benefits for pregnant women, new mothers, and young children. Increasing the intake of OFSP (especially by children) is an excellent approach to reducing vitamin A deficiency.

In 2012, Farm Radio International (FRI) launched a three-year initiative to reduce the burden of vitamin A deficiency, working in partnership with the Bill & Melinda Gates Foundation, Helen Keller International, The International Potato Centre (CIP), and the Sweet Potato Action for Security and Health in Africa (SASHA). Using participatory radio and ICT strategies, the project aimed to scale up the production and consumption of OFSP in Burkina Faso, Ghana, Tanzania, and Uganda, adding it to the diets of at least 100,000 rural households.

Over three years, FRI worked with fifteen radio stations and with national OFSP experts in these four countries.

The project used interactive radio. This differs from conventional radio in that members of the target audience actively contribute to program design and development. Audience members work with farmers, researchers, buyers, technical experts, policy-makers, and others to develop interesting and interactive

² World Health Organization. *Vitamin A Deficiency*, <http://www.who.int/nutrition/topics/vad/en/> Retrieved, May 24, 2016.

³ Latham, Michael E. (1997). *Human Nutrition in the Developing World*. FAO Food and Nutrition Paper. Food and Agriculture Organization of the United Nations. ISBN 92D5D0399DX; Sommer, Alfred, 1995. *Vitamin A Deficiency and Its Consequences: A Field Guide to Detection and Control*. World Health Organization: Geneva, ISBN 92D4D 54478D3.4. Downloadable at: http://www.who.int/nutrition/publications/micronutrients/vitamin_a_deficiency/9241544783/en/ Reviewed May 24, 2016.

programs. Interactive radio takes advantage of new ICTs to make programs more content-rich, accessible, and entertaining. Radio stations broadcast the programs over 4-6 months, and the programs are designed to meet specific, measurable learning and behavioural goals.

FRI implemented the OFSP program in a phased approach, working with six stations in year one (two each in Tanzania, Uganda, and Ghana), and nine additional stations in years two and three (two in Tanzania, Uganda, and Ghana, and three in Burkina Faso). In each country, FRI worked with a number of institutions and specialists already promoting OFSP. FRI helped build the radio stations' capacity not only to make effective interactive programs and use ICTs to their best advantage, but also to deliver quality, accurate, and entertaining information on OFSP. The radio programs covered all aspects of OFSP: production, marketing, preparation, nutrition, and consumption. We established listener groups both increase listener interaction with the radio station and increase support for farmers who chose to grow and consume OFSP. This support included easier access to planting materials and opportunities to learn more about recipes, preparation and processing options, and nutrition.

By the end of the project, fifteen stations had aired 481 hours of OFSP programs, reaching an estimated audience of more than 3.5 million rural households. The result was increased knowledge, skills, and commitment of small-scale farmers to grow OFSP, and increased knowledge, skills, and commitment of farmers to increase OFSP in their diets.

Overall, this project made significant progress towards achieving investment outputs and outcomes, while also identifying and addressing gaps in knowledge and resource distribution within OFSP promotion.

A total of 481 hours were broadcast across 15 radio stations in four countries (Burkina Faso, Ghana, Uganda and Tanzania).

During the first year of the project, six stations, (two each in Ghana, Uganda and Tanzania) participated in training and capacity building activities. During the second year, an additional six stations (two in each of the three countries) began working with Farm Radio and took part in training activities.

A number of interactive radio strategies were used during the project, including *beep4services*⁴, to share and exchange information on production and consumption habits and nutritional knowledge. A new *beep4vine* service provided access to information on planting material for areas with high OFSP demand. A total of **47,216 individual farmers across all four countries contacted one of the *beep4services* numbers** at least once. This database of farmers is now accessible for each of the project radio stations, creating an active base of loyal listeners to build future programming to support the promotion of OFSP. Particularly in Ghana, the radio programs and broadcasters' consistent engagement with listeners increased demand for planting material.

⁴ FRI developed and rolled out a system for radio stations to tally missed calls or "beeps" from their listening audience. This service, dubbed *beep2vote*, encourages real-time interaction with the audience and can build a database of registered listeners. The project also used missed calls to deliver on-demand information to farmers who beeped a specific number promoted on the program. The main information provided was where to access clean OFSP planting materials.

Programs broadcast by participating radio stations responded to the information needs of their listeners. Based on the results of formative research, the programs highlighted key aspects of OFSP production and consumption (and sales) that were most relevant to their listeners. For example, because the availability of vines was limited, the first set of programs broadcast by Radio Central in Ghana focused on nutritional knowledge and awareness of vitamin A. Once vines became readily available, the programs switched focus to production, cultivation, and harvesting. Prior to and immediately following harvest, the programs discussed preparation techniques and hosted a series of “cooking demonstrations” in selected listening communities. In Uganda, the focus was more on consumption, because there were already high rates of production. In Tanzania, priorities included nutritional knowledge and accessing planting material. In total, 32 campaigns of weekly 30-minute programs were broadcast across four countries since 2012.

Purpose of the evaluation

The overall purpose of this evaluation was to assess the impact of the radio programs and radio-related activities⁵ on:

- knowledge of OFSP nutrition, production, and consumption in targeted sweet potato-growing areas in four countries
- consumption of OFSP in the four countries
- production of OFSP in the four countries

More specifically, we designed the evaluation to measure progress against the following objectives:

- broadcast effective programs that reach a potential audience of 2-2.5 million farmers in four countries
- increase the knowledge, skills, and commitment of 100,000 households in four countries to grow OFSP
- increase the knowledge, skills, and commitment of parents and caregivers in 100,000 households in four countries to increase OFSP in the diets of children, pregnant women, and nursing mothers

1.1.2 METHODOLOGY

Quantitative methods: 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. The 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.

⁵ Radio-related activities included: “beep-to” services (see below), cooking shows, outreach to schools, nutrition workshops with radio broadcasters, direct involvement with extension services, and participation in other OFSP-related activities and trainings led by researchers.

In each country, FRI hired a team of enumerators to administer the survey. The seven-member team included project staff, extension officers, radio station staff, and university and college students. FRI conducted a two-day training workshop for the country team before the survey was administered. Workshop topics included: objectives of the project, purpose of the survey, introduction to the research questions and the PRC method⁶, an overview of the partner radio stations, information about the OFSP project, a description of the methodology to be used for randomly selecting interviewees, issues around “community entry,” methods of validating data, and technical issues with using the mobile researcher tool.

Enumeration teams received lists of community members from local government offices in each community, and surveyed 60 randomly selected individuals (representatives of their households) in each community. The goal was to obtain a 50:50 male-to-female ratio. The survey posed a variety of questions, including basic knowledge about OFSP and vitamin A deficiency, production levels of sweet potato, consumption habits for sweet potatoes and other foods, and radio listening habits, in addition to basic identification and demographic questions.

Qualitative methods:

Methods used included:

- focus group discussions in Burkina Faso, Ghana, and Uganda
- a variety of ICT-mediated interactive service such as mobile-based polling and SMS- or phone call-outs were used during project implementation, though these are not described or analyzed in this outcome report, aside from noting that 47,000 individuals participated in these kinds of services across all countries, and providing a description and analysis of the *Beep-to-vine* service in the Tanzania chapter.

Sampling strategy: FRI used a two-stage, semi-random sampling method, starting with a cluster of purposefully sampled communities in a radio station’s coverage area. We purposefully sampled communities by: 1) targeting sweet potato-growing areas, and 2) choosing communities which allowed for back-and-forth travel which fit within the project budget and timeline. We chose listening and control communities according to the following ratio: 2/3 listening, 1/3 control. This division allows us to compare listening and non-listening (control) communities at the outcome stage, as listening is the main intervention in the project.

After identifying control, active, and passive communities, we used systematic random sampling to survey a random sample of people in each community.

To achieve a random sample, we:

- numbered the units in the population from 1 to N

⁶ PRCs (Participatory Radio Campaigns) are carefully-designed radio series which help farmers learn about, evaluate, decide on, and introduce new agricultural practices on their farms. With training and support from Farm Radio International, selected radio stations work closely with farmers and farmer organizations, agricultural extension and advisory services, researchers, and others to carefully plan and deliver a four- to six-month radio campaign.

- decided on the n (sample size) that we needed and randomly selected an integer between 1 and k ($k = N/n =$ the interval size)
- sampled every k th unit

Methodology for extrapolating findings to the target regions:

The extent to which the findings generated by the outcome survey apply to the target regions in each country depends on the representativeness of our sample.

To calculate *total listenership* for each of the radio stations involved in the current project, we used data from the radio station and population data from <http://www.worldpop.org.uk/>, and employed the following process to create maps which show broadcast coverage zones for each of the station.

We gathered the following information from each station:

1. The location of the station transmitter (GPS coordinates)
2. The radio station frequency
3. The height of the station transmitter
4. The power of the station transmitter (watts or kilowatts)
5. The gain of the station transmitter (dB)

These five variables were fed into GIS mapping software which adheres to FCC standards for determining FM radio contours, based on the Longley-Rice prediction model for FM propagation on irregular terrain (Longley A. G. and Rice, 1968⁷).

We obtained population maps from <http://www.worldpop.org.uk/> and overlaid them with the radio contour maps produced by this method, then made two calculations for each broadcast zone: a) total potential population (the population in the station's broadcast coverage zone), and b) total potential rural population (the rural population in the station's broadcast zone, with "rural" defined as less than 400 people/km²). We made a further calculation to estimate adult population, using estimates of adult population percentages in each country from the UN, e.g., <http://data.un.org/CountryProfile.aspx?crName=Ethiopia>.

Based on these calculations, we extrapolated the results from the outcome survey to the total adult population in the radio station's coverage area.

It should be noted that the validity of extrapolating the survey findings to the wider area of radio coverage in order to estimate a) total listenership, b) number of farmers growing OFSP, c) number of new OFSP growers, d) number of households eating OFSP, and e) number of new households eating OFSP, rests on the assumption that respondents to the outcome survey were representative of the wider radio coverage area. As indicated below, efforts were made to ensure that respondents in surveyed communities were

⁷ A. G. Longley and P. L. Rice, *Prediction of TropOFSPheric radio transmission over irregular terrain, A Computer method-1968*. ESSA Tech. Rep. ERL 79-ITS 67, U.S. Government Printing Office, Washington, DC, July 1968.

similar to respondents in other communities in the radio coverage area in important ways, including that they:

- used similar agricultural practices
- had similar income and other demographics
- enjoyed similar access to extension or other social services, and
- had relatively similar cultural practices that impact farming and diet.

Purposeful sampling of sweet potato-growing areas limits the validity of the extrapolations only if we extrapolate to areas which do not grow OFSP at similar rates. For the smaller stations, we are extrapolating to small and relatively homogenous areas, which are likely to grow sweet potato at the same rate as the surveyed communities. For Uganda, our extrapolations were likely also reasonably valid because almost all areas in Uganda grow sweet potato. The fact that we excluded at least one station in each country from the outcome survey (and the subsequent extrapolation) also makes the extrapolation numbers lower and more conservative.

EVALUATING KNOWLEDGE

In a KAP (Knowledge-Attitude-Practice) survey, the knowledge section assesses the extent of community knowledge about, for example, a particular agricultural practice, or specific aspect of household nutrition and human health. In this case, the knowledge survey assessed farmers' knowledge of OFSP and vitamin A.⁸

Challenges in assessing knowledge using KAP surveys

The following difficulties are endemic to survey-based knowledge assessments:

- *Attribution:* When attempting to determine the degree of change in knowledge that occurs through a particular intervention, it is difficult to isolate the intervention from other potential sources of knowledge on the same or similar topics in a community. Many development organizations work on similar themes, often making it virtually impossible to isolate sources of knowledge. Also, it is often not ideal to do so, as the most effective communication-based programs are those that integrate with the multiple sources and forms of knowledge that coexist in a community.
- *Translation:* Surveys are first produced in English, and then translated into a local language. Results are then translated back to English for analysis. The meaning of terms and phrases can sometimes change in ways that challenge the validity of the results. This is compounded by the fact that the project occurred in four different countries, and thus the survey was translated into several languages.
- *Power relationships:* Often, unequal power relationships between people who conduct surveys and respondents result in respondents attempting to provide the “right” answer, which may skew results.

Identification of control communities:

Active listening communities (ALCs) are defined for this project as communities which receive the radio signal and in which there is significant interaction with the OFSP program, either through listening clubs, regular visits from radio station or project staff, or other types of interaction. Passive listening communities (PLCs) are communities which can receive the radio signal, but have no other interaction with the project. Control communities (CCs) are communities which cannot receive the radio signal.

Ideally, CCs differ from ALCs and PLCs only in their access to the radio signal and project activities. Thus, they should have:

- similar agricultural practices
- similar income and other demographics
- similar access to extension or other social services
- relatively similar cultural practices that impact farming and diet

⁸ We collected data in the baseline survey on attitudes, but decided to narrow the focus of the outcome survey to concentrate on changes in production, knowledge, and consumption, all indirectly related to attitude.

It was not possible to find control communities who could not access the radio signal in every country. Therefore, the following modification was made:

- Tanzania: One of the radio stations (Radio Maria) has countrywide coverage, so it was not possible to find communities without access to the station's signal. In Tanzania, we defined control communities as those which could hear the PRC, but lacked exposure to other OFSP interventions. PLCs had very little interaction with project activities, but are located nearby ALCs, meaning that there are interactions between individuals in ALCs and individuals in PLCs. In contrast, CCs are in more remote areas, far from regular contact with ALCs or PLCs.

1.1.2 TOPICS COVERED IN BASELINE AND OUTLINE SURVEYS

Separate baseline surveys were conducted in each of the four project countries between March and May 2013 in Ghana, Tanzania, and Uganda, and in March 2014 in Burkina Faso. The surveys were written in English and translated into the appropriate languages for the surveyed communities.

In addition to basic location and demographic data, topics covered included the following:

- questions that tested knowledge of vitamin A, nutrition and OFSP.
- attitude questions related to vitamin A, nutrition and OFSP (these were not repeated in the outcome survey, but rather served to inform the radio programs)
- production questions, e.g., varieties grown, perceived benefits, satisfaction with the variety
- consumption questions, for example, dietary recall for OFSP and a variety of other foods, consumption by women, men and children, and preparation methods
- radio listening practices and preferences

A single outcome survey was created for all four countries, translated into the appropriate languages for the surveyed communities, and administered between June and September, 2015.

Topics covered in the outcome survey were similar to the baseline survey, and included:

- knowledge questions (virtually identical to the baseline knowledge questions)
- production questions, e.g., yield, sales and multiplication activities, source of planting materials, pest management activities
- consumption questions, e.g., dietary recall as per the baseline survey, children's consumption, frequency of consumption, and preparation methods
- radio listening practices and preferences
- assessment of radio program quality

1.2 FINDINGS

1.2.1 REACH

Anticipated reach: It was hoped that the radio programs in the four countries would reach a potential audience of 2-2.5 million rural households (assuming an average of 150,000 households per station), across four countries and 15 stations.

As noted below in **Table 1-1**, the stations reached a potential audience of almost 6.8 million. Extrapolations from listenership data in the Mobenzi survey generate a total listenership in the radio coverage areas of the four countries of **3,566,500**.

Table 1-1: Estimated reach in project countries

COUNTRY	RADIO STATION CATCHMENT AREA	ESTIMATED ADULT POPULATION WITHIN AREA	ESTIMATED NUMBER OF LISTENERS	ESTIMATED NUMBER OF PEOPLE GROWING OFSP IN AREA
Burkina Faso	Voix du Verger	40,300	14,300	1,600
	Radio Palabre	135,400	53,600	2,700
	Lotamou* ⁹	68,900		
Total in country		208,600	67,900	4,300
Ghana	Nabiina	150,900	141,800	93,600
	Radio Central	208,300	87,000	6,100
	North Star	118,400	115,300	92,300
	Radio Faafaa*	365,000		
Total in country		842,600	344,100	192,000
Tanzania	Radio Maria	1,876,000	687,800	350,800
	Abood FM	547,200	139,200	36,200
	Standard FM*	610,000		
Total in country		3,033,200	827,000	387,000
Uganda	Liberty FM	337,900	189,200	166,500

⁹ We did not conduct outcome surveys in the stations marked with an asterisk. Therefore, we do not have listenership numbers for these stations, nor any basis on which to extrapolate total listenership numbers for individual countries or across all four countries. Thus, total listenership can be considered a conservative estimate. In Uganda, the CBS signal covers the entire country. CBS-1 was used because it covers the CBS-2 zone as well as some additional areas. CBS-2 was removed from population estimates.

	CBS-1	3,272,500	2,090,700	1,714,400
	Radio Wa	94,100	47,500	25,700
	Continental FM*	142,400		
Total in country		3,846,900	2,327,400	1,906,600
TOTAL		7,931,300	3,566,400	2,489,900

1.2.2 DEMOGRAPHICS

As shown in **Table 1-2**, there were 3,282 respondents in the four countries, 54.6% female, and 45.4% male.

Table 1-2: Respondents by country and sex

COUNTRY	FEMALE RESPONDENTS	MALE RESPONDENTS	TOTAL RESPONDENTS
Burkina Faso	277 (54.4%)	232 (45.6%)	509
Ghana	607 (53.3%)	532 (46.7%)	1139
Tanzania	370 (53.5%)	321 (46.5%)	691
Uganda	537 (56.9%)	406 (43.1%)	943
TOTAL	1791 (54.6%)	1491 (45.4%)	3282

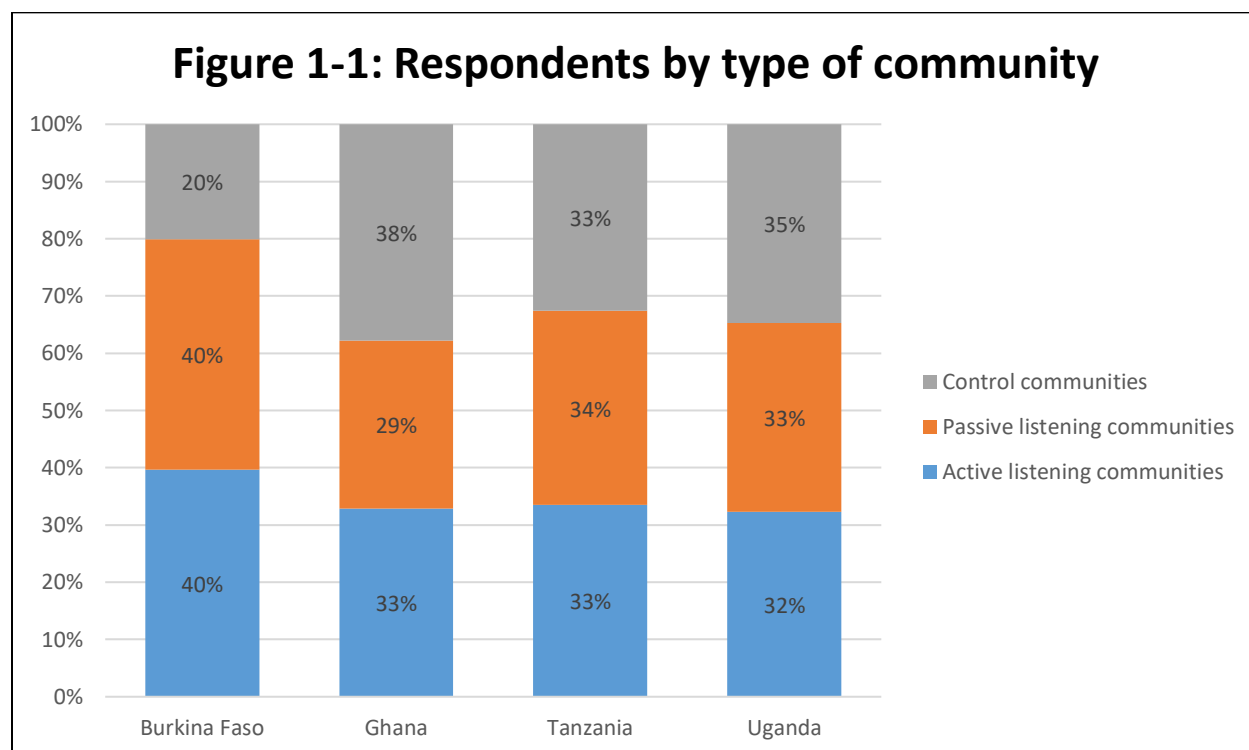
As shown in **Table 1-3**, the age distribution was relatively similar across the four countries, with the only difference being the relatively smaller 18-30 age group and relatively larger 31-45 age group in Tanzania.

Table 1-3: Respondents by country and age group

COUNTRY	18-30	31-45	46-60	Over 60
Burkina Faso	179 (35.2%)	183 (36.0%)	100 (19.6%)	47 (9.2%)
Ghana	349 (30.6%)	435 (38.2%)	240 (21.1%)	115 (10.1%)
Tanzania	148 (21.4%)	305 (44.3%)	158 (22.9%)	80 (11.6%)
Uganda	343 (36.4%)	327 (34.7%)	172 (18.2%)	101 (10.7%)

TOTAL	1019 (31.0%)	1250 (38.1%)	670 (20.4%)	343 (10.5%)
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As shown in **Figure 1-1**, the distribution of respondents between Active Listening Communities (ALCs), Passive Listening Communities (PLCs), and Control Communities (CCs), was relatively even, except in Burkina Faso, where there were fewer respondents in CCs¹⁰.

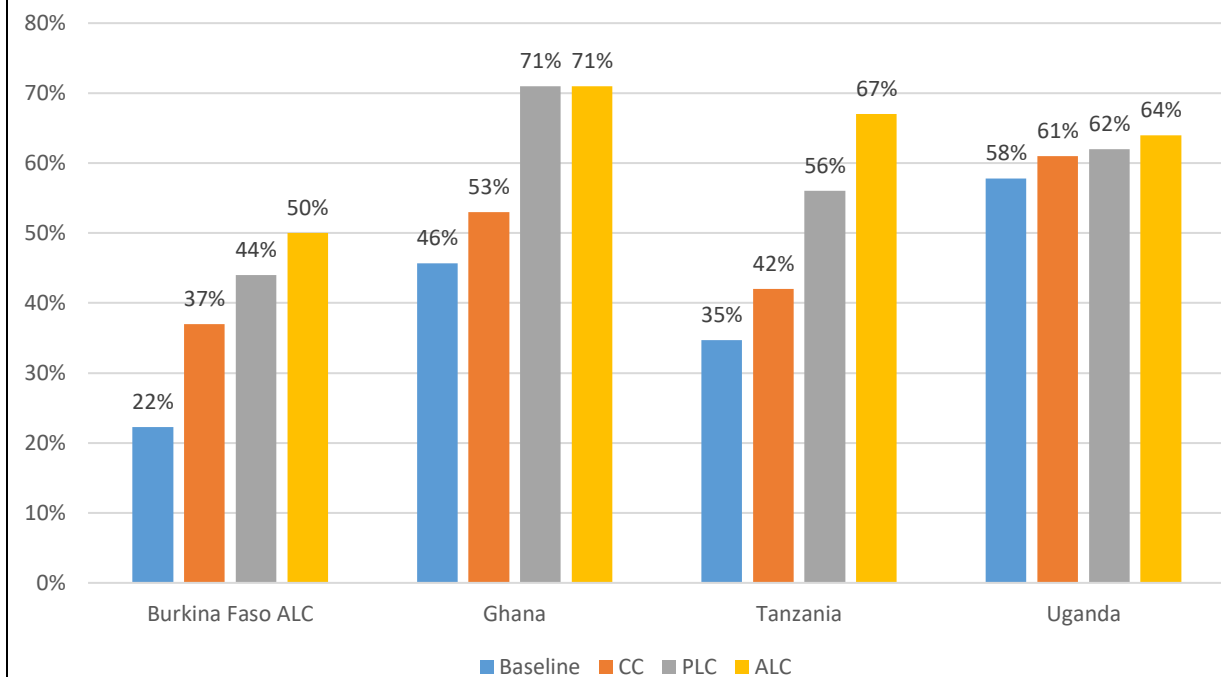


1.2.3 KNOWLEDGE

As mentioned above, the most impressive results were gains in knowledge. **Figure 1-2** shows the gains in knowledge between the baseline and outcome surveys for each of the four countries, and for the different types of communities at the outcome stage. All countries except Uganda had large gains in knowledge: In Burkina Faso, knowledge levels in listening communities doubled, from 22% at baseline to 44% in PLCs and 50% in ALCs; in Ghana, knowledge scores in listening communities increased 54%, from 46-71% in both PLCs and ALCs; in Tanzania, knowledge scores increased from 35% at baseline to 56% and 67% in PLCs and ALCs; and in Uganda, knowledge scores increased from 58-62% and 64% in PLCs and ALCs. In all cases, listening communities (ALCs and PLCs) have higher knowledge scores than the control communities, though the difference is marginal in Uganda, where OFSP promotional activities had achieved the highest penetration. Listening to the radio programs is clearly associated with higher knowledge of nutrition, vitamin A, and OFSP production.

¹⁰ This was because of a challenge with collecting data from some of the control communities in Burkina Faso.

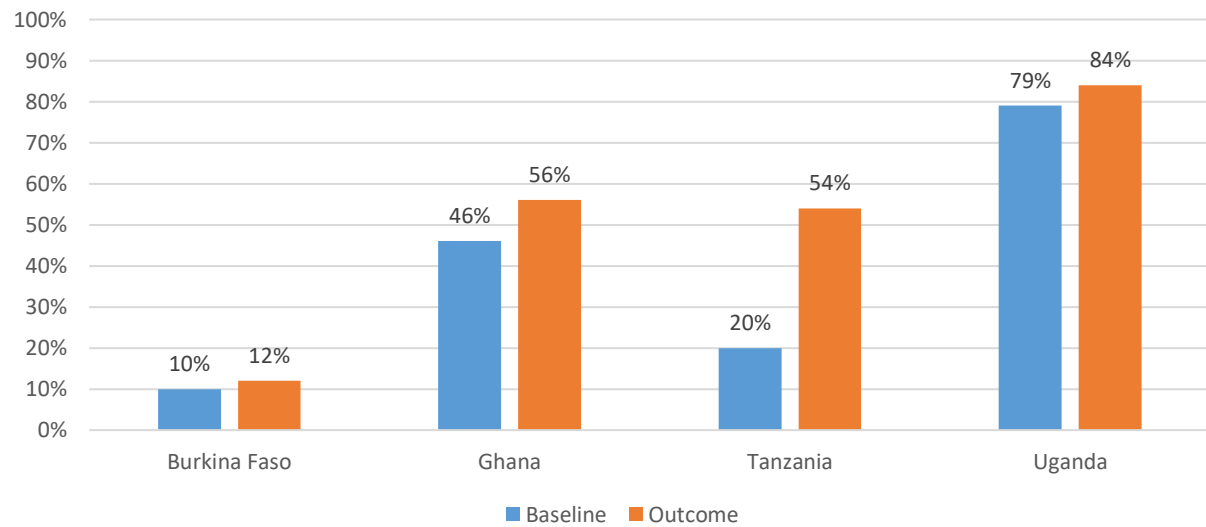
Figure 1-2: Average score on knowledge quiz by country and type of community, baseline vs. outcome



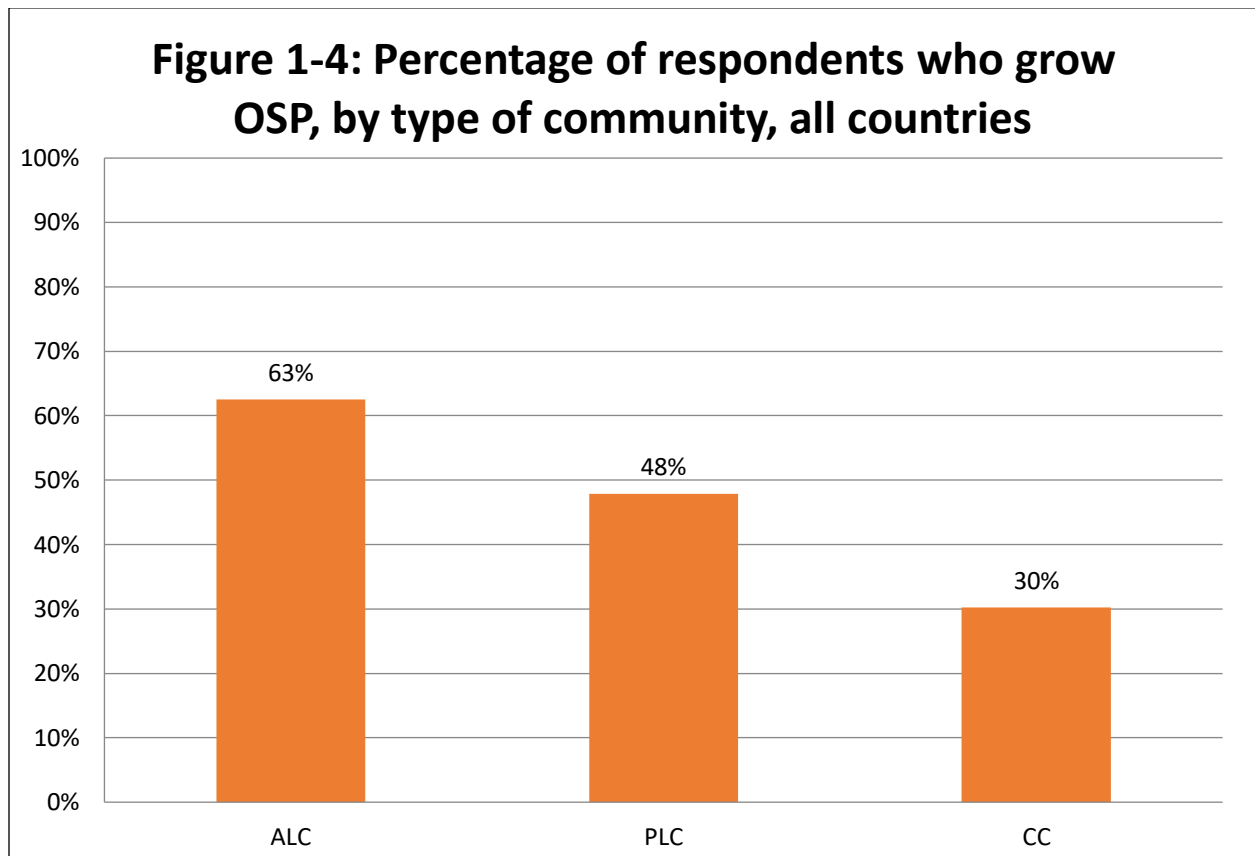
1.2.4 PRODUCTION

The percentage of farmers who reported growing orange sweet potato rose in all four countries from baseline to outcome, as shown in **Figure 1-3**, with Burkina Faso and Uganda showing the smallest change. It should be noted that the project ran for a shorter time in Burkina Faso, limiting uptake, and that OFSP production was already very high in Uganda.

Figure 1-3: Percentage of respondents who grew sweet potato by country, baseline vs. outcome

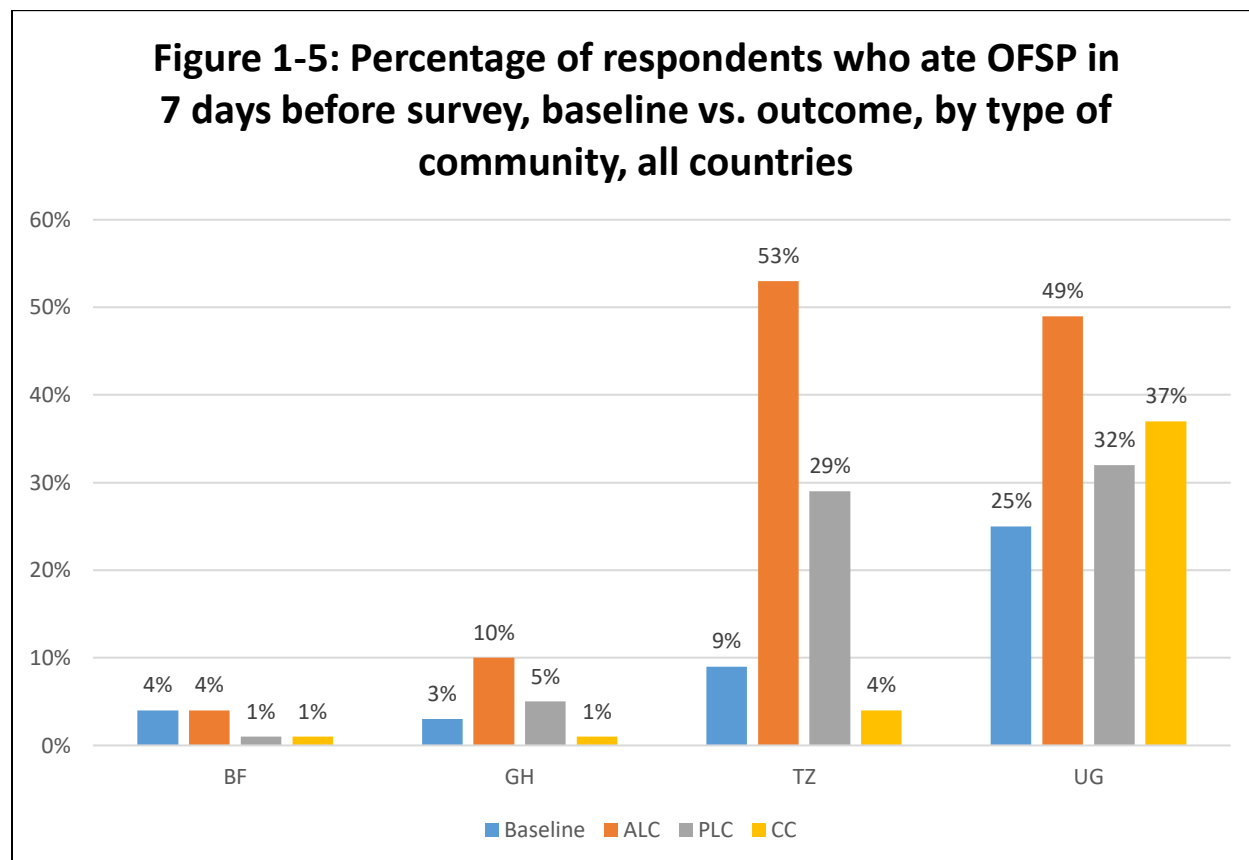


As shown in **Figure 1-4** below, the percentage of respondents who grew OFSP at outcome was considerably higher in listening than in non-listening communities, underlining the strong connection between listening and OFSP production.



1.2.5 CONSUMPTION

As shown in **Figure 1-5**, there was an increase in OFSP consumption in all countries except Burkina Faso. In all countries, consumption of OFSP was higher in listening communities. Countries in East Africa had much higher rates of consumption, especially at outcome.

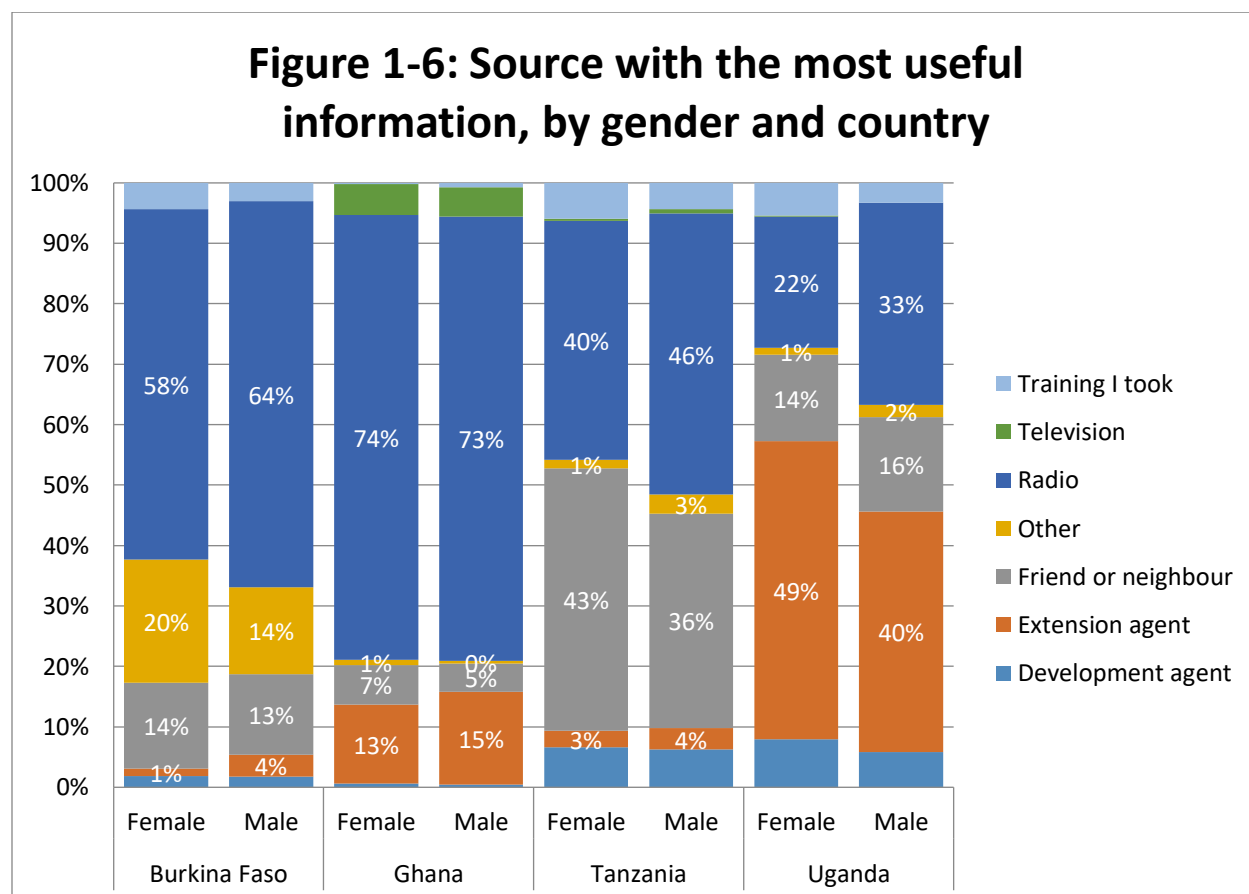


Children's consumption of OFSP

There were survey problems and, possibly, sampling problems associated with our questions on children consuming OFSP. Unfortunately, these problems do not allow us to compare baseline with outcome results, and thus there was no way to tell if children's consumption rose, or to have enough confidence in the findings to present the outcome survey data on children's consumption.

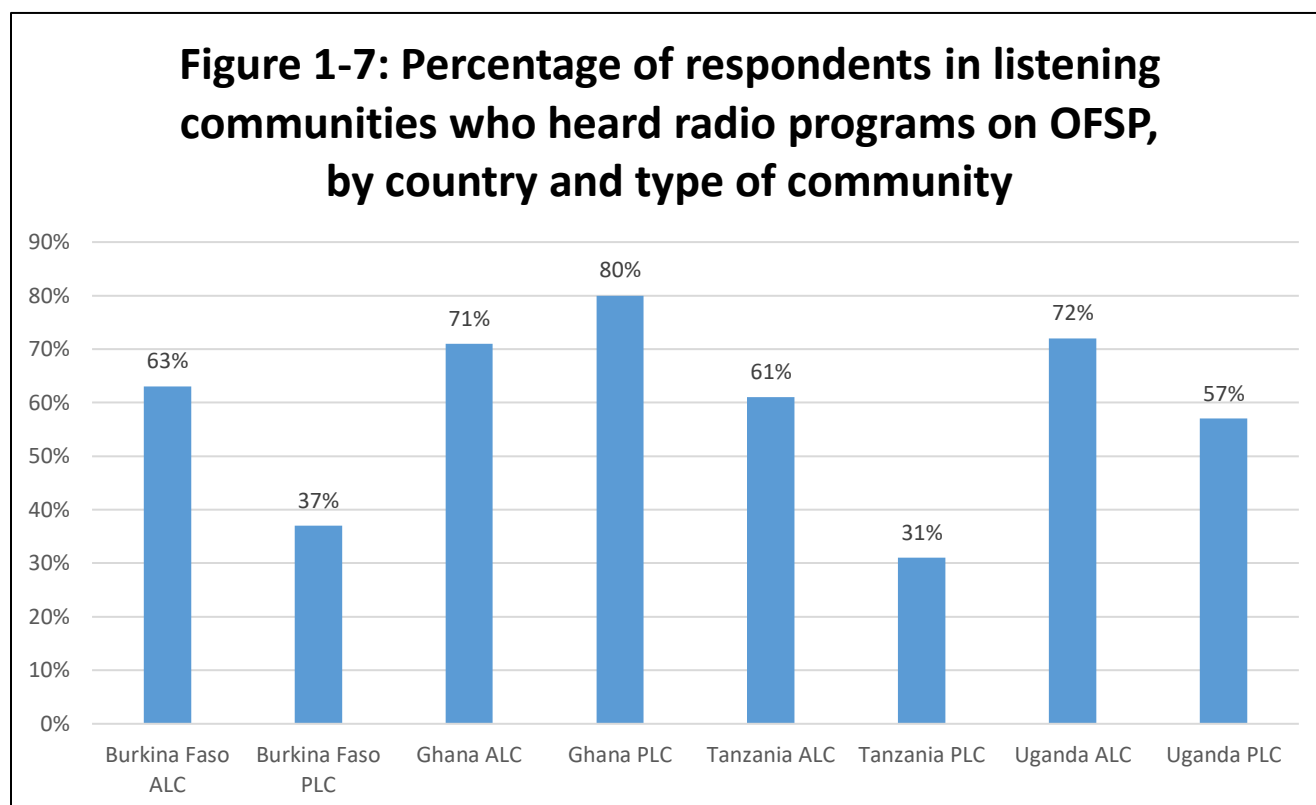
1.2.6 SOURCES OF INFORMATION ABOUT OFSP

As shown in **Figure 1-6**, the majority of respondents in Burkina Faso and Ghana said that radio was the most useful source of information on OFSP. In Tanzania, radio and friends and neighbours were about equally valued, while in Uganda, extension agents were rated as the most useful source, followed by radio. Men and women differed little in their opinion on the most useful source of information about OFSP. While friends and neighbours were more frequent sources of information in Tanzania than in other countries, an appreciable minority of respondents in other countries, with the exception of Ghana, also cited this as a source. This finding should be considered when designing similar projects. It may be that friends and neighbours act not only as a source of information, but as a medium for new adoption.



1.2.7 LISTENING BEHAVIOUR

As shown in **Figure 1-7**, listenership in communities which could receive the radio station's signal ranged from 37-80%, and varied significantly between countries. In every country except Ghana, there was higher listenership in ALCs.



1.2.8 QUALITY OF PROGRAMMING

The Mobenzi questionnaire asked respondents five questions related to the quality of the OFSP programs.

A strong majority of respondents said that the PRC programs were *somewhat better* or *much better* than other agricultural radio programs, with 91% of Ghanaians responding in this fashion, compared to 90% of Ugandans, 86% of Tanzanians, and 77% of the respondents from Burkina Faso.

A strong majority in all four countries *agreed* or *strongly agreed* that the PRC programs were relevant to their needs as a farmer, with the highest percentage of positive responses again in Uganda and Ghana, both at 98%, with Tanzania at 91% and Burkina Faso at 89%.

A majority of respondents *agreed* or *strongly agreed* that the program was broadcast as scheduled. The response was again most positive in Uganda and Ghana.

A strong majority of respondents in all four countries found the radio programs entertaining, with Uganda and Ghana again leading the way.

A large majority of women respondents in all countries *agreed* or *strongly agreed* that the program was relevant to woman farmers.

See the country chapters below for country-specific results on program quality.



CHAPTER 2: BURKINA FASO

2.1 INTRODUCTION

TARGET AREAS IN BURKINA FASO

Burkina Faso is a Sahelian country in central West Africa with an area of 274,200 km² and a population of 17 million. Crop and livestock production are the main activities for 86% of the working population in rural areas. There are two seasons: a rainy season from June to September and a dry season from October to May.

The three project areas are:

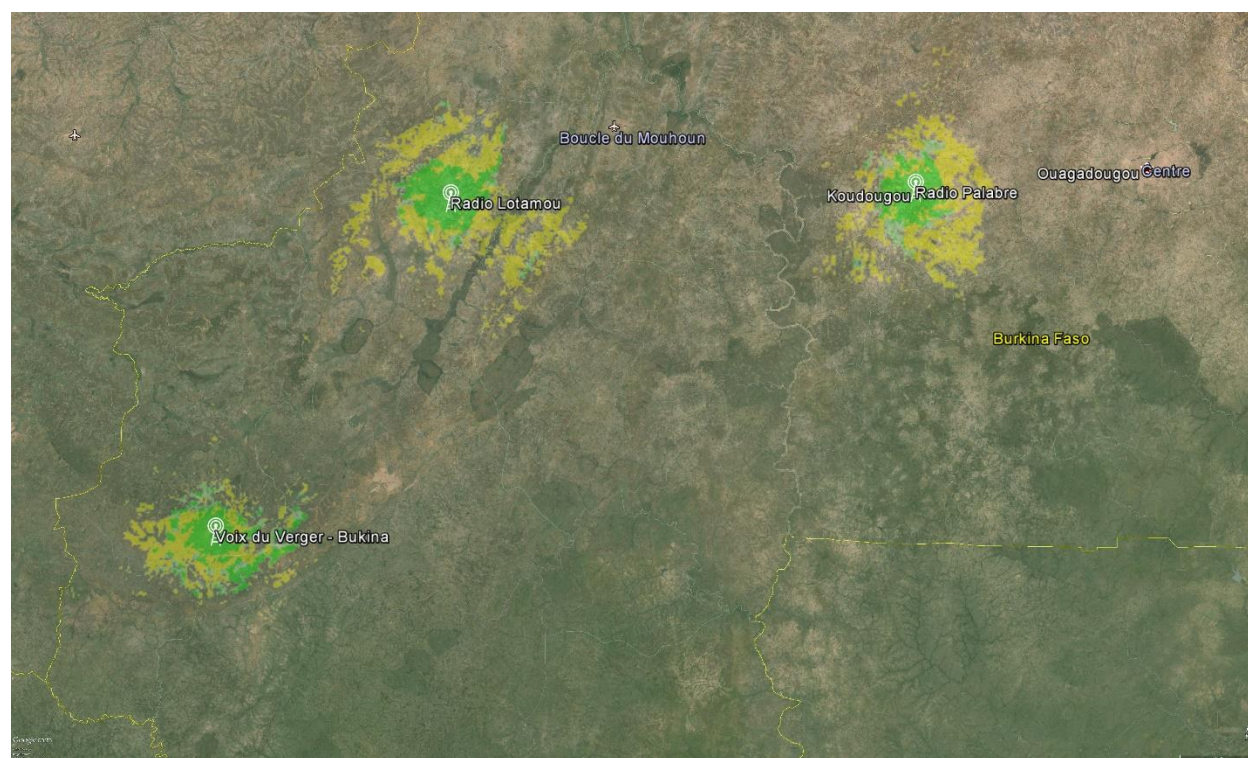
- Koudougou: capital of the province of Boulkiemdé in west central Burkina
- Orodara: capital of the province of Kénédougou in western Burkina Faso
- Solenzo: capital of the province of Banwa in western Burkina Faso

The project areas can be divided into two groups: Solenzo and Orodara are areas with high potential for growing sweet potatoes (OFSP varieties had been introduced some years ago but without much uptake); Koudougou is an area where very little sweet potato is grown, and where OFSP had also been introduced some years ago, but is no longer grown.

In Burkina Faso, project implementation started before the OFSP seed system was functional. While INERA (Institut de l'Environnement et de Recherches Agricoles) had varieties for distribution, it typically relied on seed producers for multiplication and selling. Farmers received cuttings from other farmers, and were not used to purchasing or selling cuttings. By project end, funding from the Bill & Melinda Gates Foundation and the International Potato Center had allowed further development of the seed system. With the support of agricultural officers, cuttings are now being multiplied in the project areas, and training is being offered to producers and processors.

Table 2-1: Details of project areas

Department	Radio station	Community	Planting season	OFSP varieties
Koudougou	Radio Palabre	Lâ Goundi Secteur 10	1 season: June to September	BF59xCIP TIB440060
Orodara	Radio Voix du Verger	Sokouraba Djigouéra Pendié-Badara	June to December (January or February in some areas)	Americain
Solenzo	Lotamou	Santié (Mollé) Yasso Badinga	June to October (plus small-scale irrigated production in the dry season)	BF59xCIP



Map of radio station coverage areas in Burkina Faso

2.2 FINDINGS IN BURKINA FASO

2.2.1 REACH

We extrapolated the outcome survey findings on listenership and the percentage of surveyed farmers who grow OFSP in order to estimate:

- the total number of listeners in the coverage areas of the two stations, and
- the total number of farmers in the coverage areas who grow OFSP.

As shown in **Table 2-2**, an estimated **67,900** listened to the OFSP programs, and **4,300** farmers are growing OFSP in the radio station coverage areas.

Table 2-2: Listenership

Radio station catchment area	Estimated adult population within radio coverage area	Estimated number of listeners	Estimated number of people growing OFSP in radio coverage area
Voix du Verger	40,200	14,300	1,600
Radio Palabre	135,400	53,600	2,700
Lotamou* ¹¹	68,900		
Total in country	175,600	67,900	4,300

Table 2-3 shows all communities involved in the outcome survey, broken down by type of community.

Table 2-3: Outcome survey communities

ALC communities	PLC communities	CC communities
Samogohiri, Orodara	Banzon, Orodara	N'Dorola, Orodara
Djigouèra, Orodara	Bakari Bougou, Orodara	Tikan, Koudougou
Villy-Siguinvoussé, Koudougou	Koné, Koudougou	
Lah, Koudougou	Saria, Koudougou	

¹¹ We did not conduct outcome surveys in the stations marked with an asterisk. Therefore, we do not have listenership numbers for these stations, nor any basis on which to extrapolate total listenership numbers for individual countries or across all four countries. Thus, total listenership can be considered a conservative estimate. Time and budgetary restrictions did not allow an outcome survey to be conducted at Radio Lotonou.

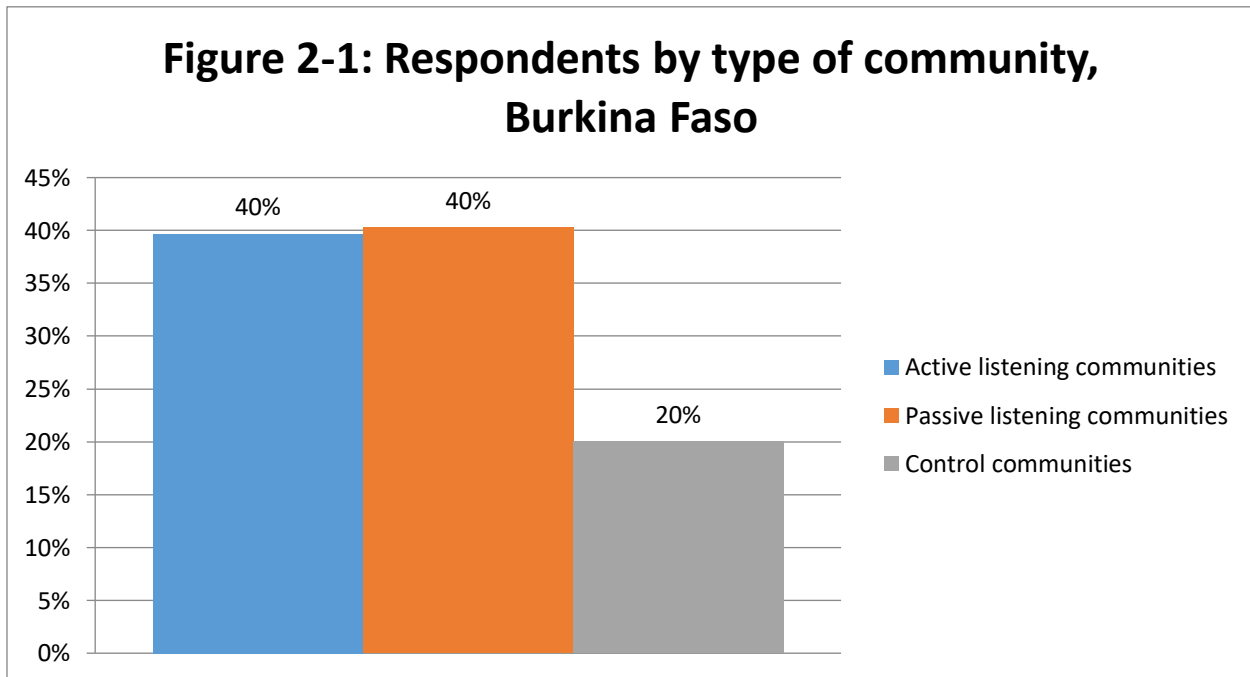
2.2.2 DEMOGRAPHICS

As shown in **Table 2-4**, there were more female than male respondents, and the largest age groups were the 18-30 and the 31-45 year-olds.

Table 2-4: Respondents by sex and age

# of respondents by sex			
Women		Men	
277 (54.4%)		232 (45.5%)	
# of respondents by age group			
18-30	31-45	46-60	Above 60
179 (35.2%)	183 (36%)	100 (20%)	47 (9.2%)

As shown in **Figure 2-1**, in Burkina Faso, there were about twice as many respondents in ALCs and PLCs as in CCs.



2.2.3 KNOWLEDGE

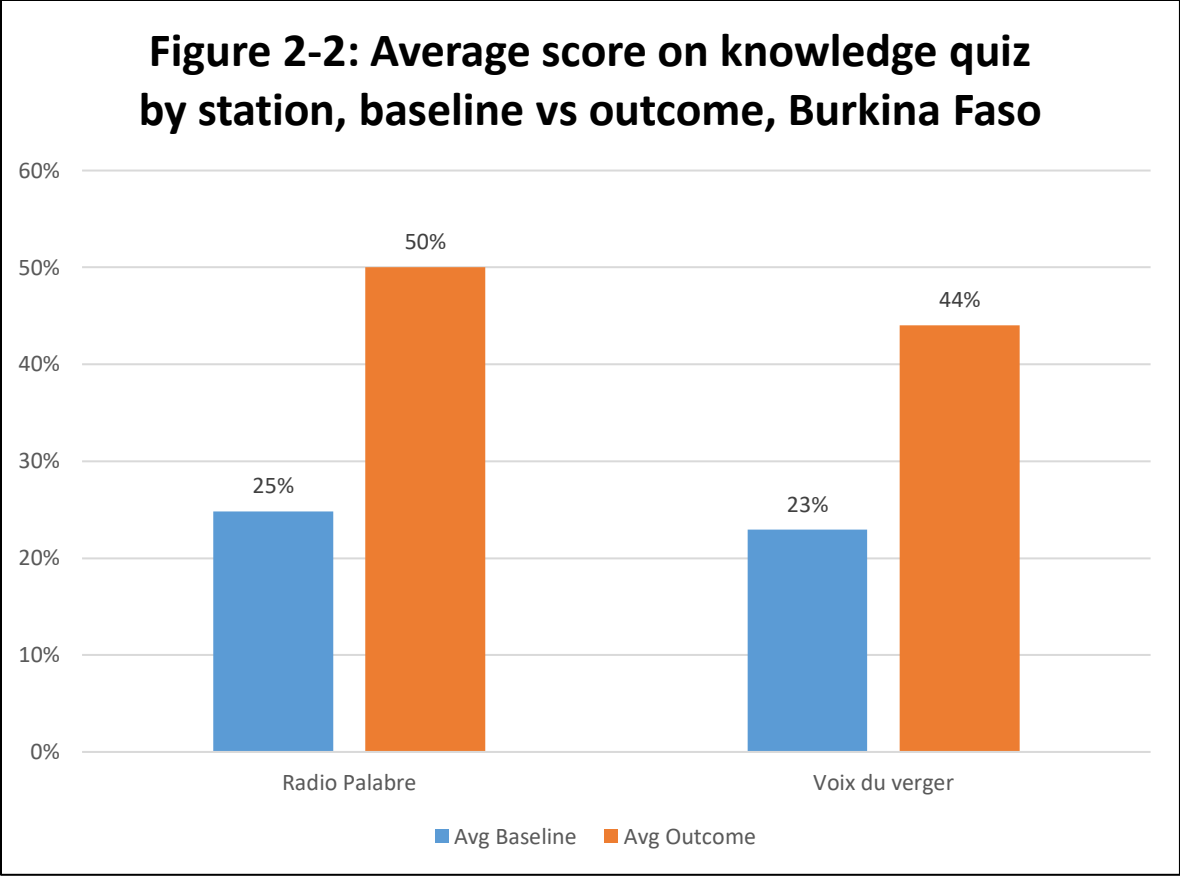
The baseline and outcome surveys asked questions to test respondents' knowledge of nutrition, vitamin A, and the nutritional benefits of OFSP. Questions in the baseline survey were repeated in the outcome survey. This section presents the findings on respondents' level of knowledge, including a comparison of scores on the knowledge quiz between baseline and outcome.

As shown in **Table 2-5**, there was little difference in the average score on the outcome knowledge quiz between male and female respondents, with both averaging a little less than 50% correct answers.

Table 2-5 Average knowledge score on outcome survey by sex

	Average score
Female respondents	43%
Male respondents	47%

Figure 2-2 shows the average score by station, and compares scores on the baseline and outcome surveys. Respondents from Radio Palabre's listening area in Koudougou doubled their scores in the outcome survey, while respondents from Voix du Verger's listening area in Orodara increased their scores by 91%. Average scores were roughly equal between the two stations/regions.



As shown in **Figure 2-3**, respondents in listening communities scored higher than respondents from non-listening communities.

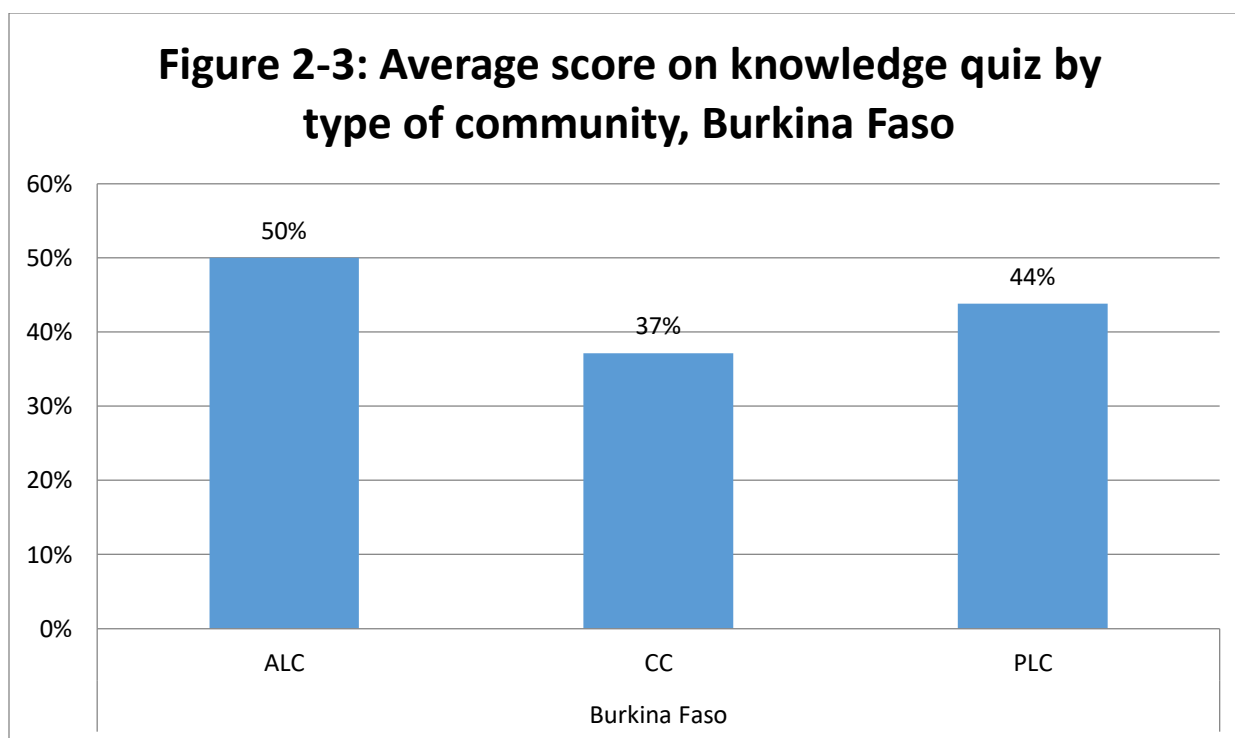


Figure 2-4 shows the percentage of respondents who answered each of the knowledge questions correctly, and compares the percentage of respondents who answered each question correctly between the baseline and outcome surveys, disaggregated by type of community. Copies of the baseline and outcome questionnaires are available in **Appendix I**.

The percentage of correct responses increased significantly for six of nine questions.

There were increases in:

- the percentage of respondents who recognized the health-related risks of vitamin A deficiency (percentage correct rose from 1% at baseline to 7% in ALCs and 5% in PLCs)
- the percentage of respondents who identified OFSP as a dietary source of vitamin A (tripled from 16% at baseline to 48% in ALCs and doubled to 31% in PLCs)
- the percentage of respondents who correctly responded that OFSP contains vitamin A (from 24% at baseline to 64% in ALCs, and 59% in PLCs)
- the percentage of respondents who knew that a few small orange sweet potatoes meets the daily vitamin A requirement of children under 5 (from 9% at baseline to 54% in ALCs and 44% in PLCs)
- the percentage of respondents who correctly identified a list of symptoms as being myths rather than actual risks of consuming OFSP (from 39% at baseline to 63% in ALCs and 57% in PLCs)
- the percentage of respondents who knew that it was safe for pregnant women to eat OFSP (from 47% at baseline to 64% in ALCs and 62% in PLCs)

Figure 2-4: Average percentage of correct to knowledge quiz questions, baseline vs. outcome survey, by type of community, Burkina Faso

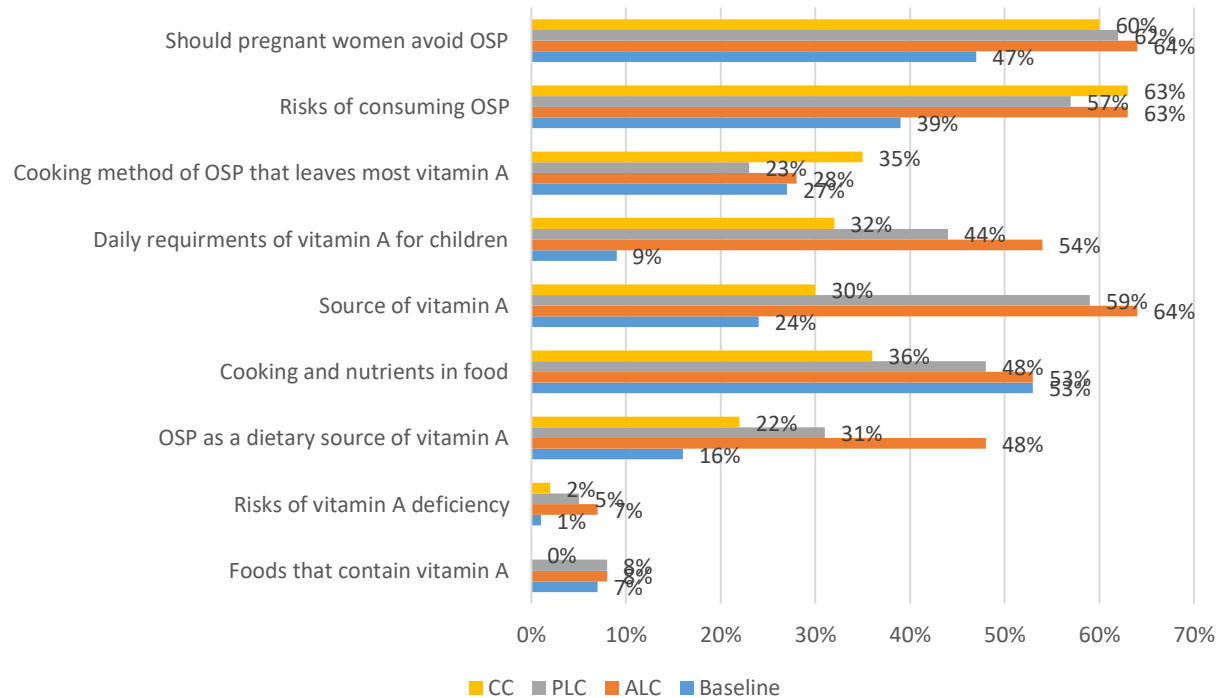
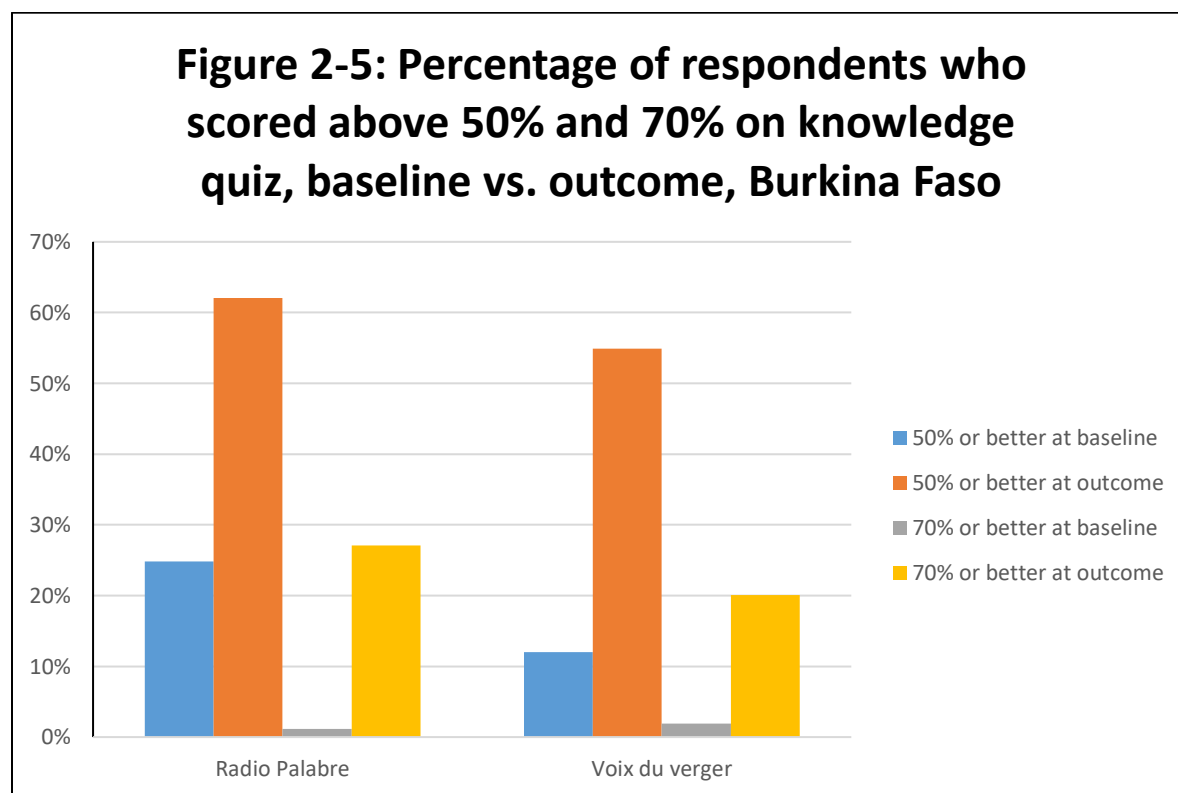


Figure 2-5 compares the percentage of respondents who scored between 50% and 100% or between 70% and 100% on baseline and outcome surveys, by radio station.

The percentage of respondents in Radio Palabre’s listening area (Koudougou) who scored 50% or better rose by a factor of 2.5, from 25-62%, while the number of respondents who scored 70% or better jumped from 1-27%. In Voix du Verger’s listening area (Orodara), the percentage of respondents who scored 50% or better almost quadrupled, from 12-45%, while the number of respondents who scored 70% or better rose from 2-20%. Knowledge levels were higher in Radio Palabre’s listening area than in Voix du Verger’s listening area.

There was no clear and consistent trend in the relationship between frequency of listening and knowledge scores. However, more frequent listeners to either station (four episodes or more) generally scored higher than respondents who listened to less than four broadcasts.

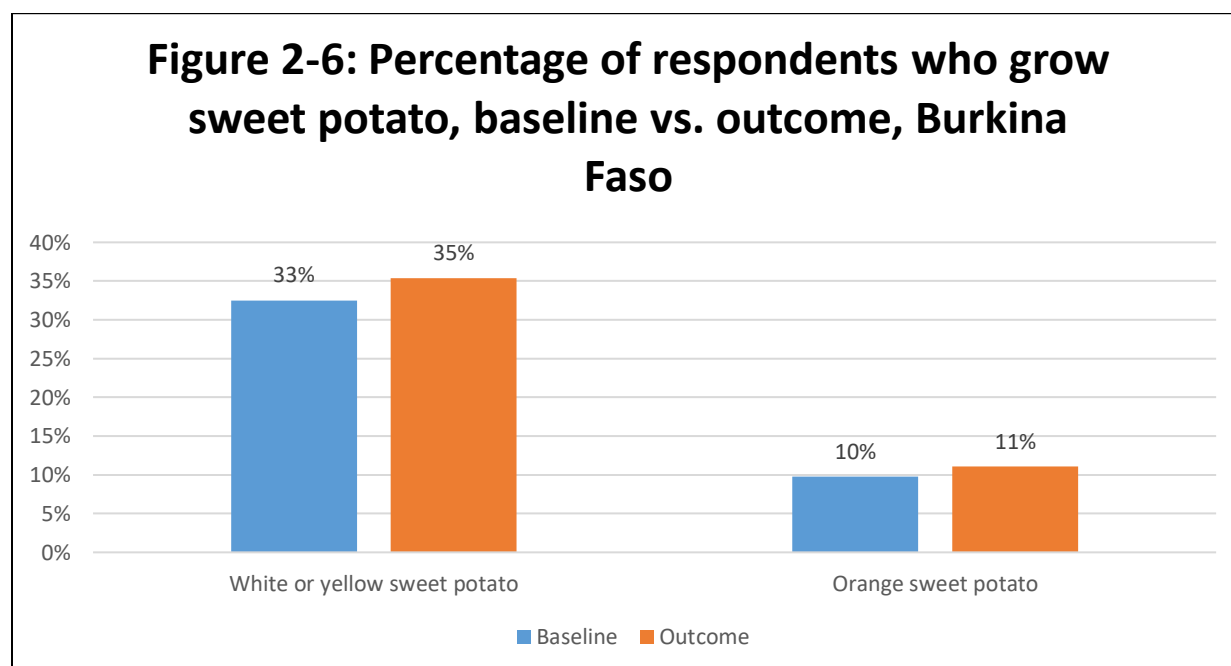


2.2.4 PRODUCTION

This section presents findings related to OFSP production, including:

- a comparison between the percentage of respondents who grew OFSP in the baseline and outcome surveys,
- a comparison between the percentage of respondents who grew OFSP in different types of communities, and
- the reasons respondents chose not to grow OFSP.

As shown in **Figure 2-6**, the percentage of respondents who grew OFSP rose from 10-11% between baseline and outcome, while the percentage of respondents who grow yellow or white sweet potato rose from 33-35%.



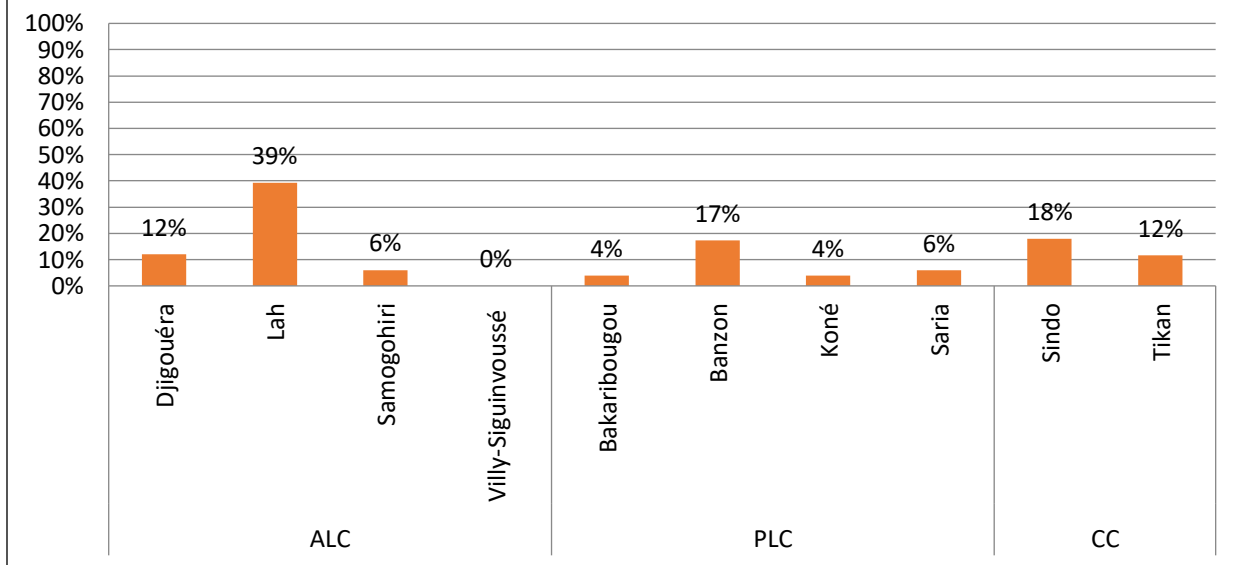
As shown in **Table 2-6**, if we extrapolate the rise in OFSP production from 10% at baseline to 11% at outcome, and extrapolate this situation to the radio station coverage areas, there are an estimated 680 new OFSP farmers.

Table 2-6: New OFSP farmers since baseline

Grow OFSP at baseline	Grow OFSP at outcome	Difference	New OFSP farmers
10%	11%	1%	680

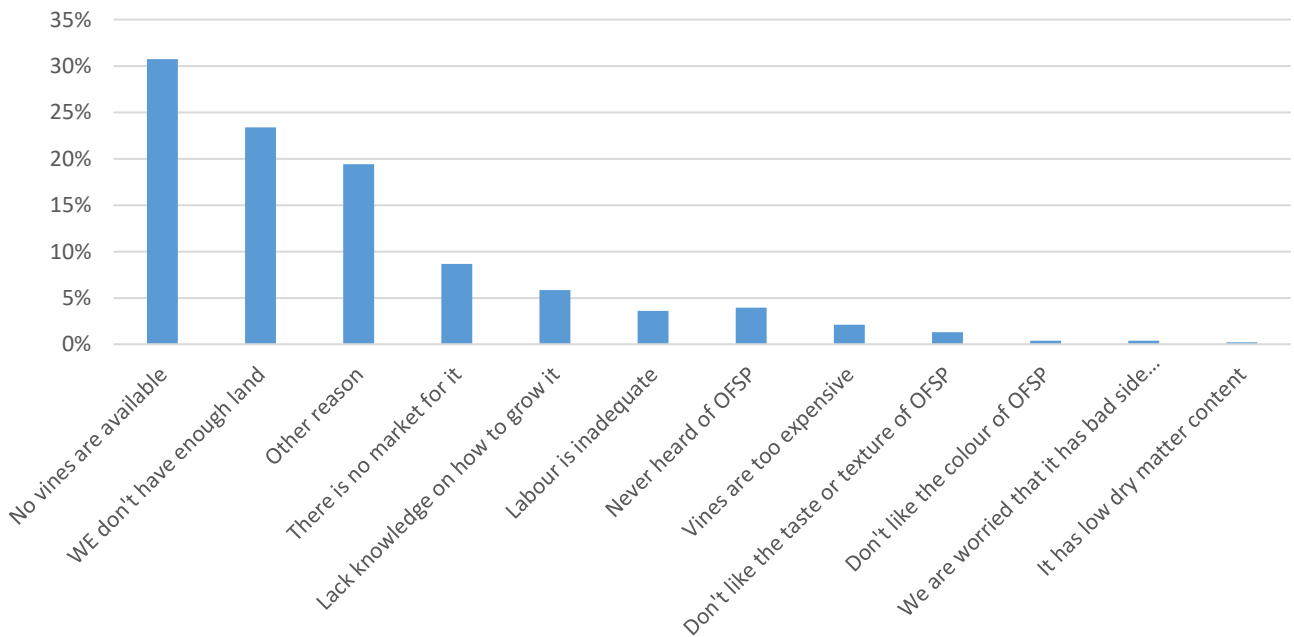
Figure 2-7 shows that the percentage of respondents who grew OFSP was low in all communities except for Lah.

Figure 2-7: Percentage of respondents who grow OFSP, by type of community and individual community, Burkina Faso



As shown in **Figure 2-8**, the main reasons respondents didn't grow OFSP are lack of availability of vines, lack of land, and "other reasons." In Orodora, the main barrier was lack of vines; in Koudougou, it was lack of land. In the baseline survey, the main reasons for not growing OFSP were, in order of frequency, lack of land, "other reasons," lack of vines, and lack of knowledge to grow the crop.

Figure 2-8 Reasons why respondents don't grow OFSP, Burkina Faso



As shown in **Table 2-7**, there was no relationship between the type of community and the likelihood of growing OFSP. Also, sweet potato growers in Koudougou (who might be more likely to be new sweet potato growers than their counterparts in Orodara because less sweet potato is grown in Koudougou) were more likely than their counterparts in Orodara to plant half or more of their sweet potato crop as OFSP.

Also, there was no relationship between frequency of listening and the percentage of respondents who grew OFSP (data not shown).

Table 2-7: Other OFSP production results

% of respondents who grow OFSP, by type of community		
ALC – 14%	PLC – 8%	CC – 15%
% of sweet potato growers who produce half or more of their crop as OFSP by department		
Koudougou – 48%	Orodara – 25%	

2.2.5 CONSUMPTION

This section presents findings from the outcome survey on consuming OFSP, and a comparison of consumption patterns between baseline and outcome surveys.

As shown in **Table 2-8**, consumption of OFSP is higher in ALCs than in other communities. Also, consumption of OFSP fell from baseline to outcome.

The percentage of respondents who eat OFSP twice a week or more is slightly higher in ALCs than in other communities. It should be noted that more than half of respondents report that they eat OFSP “rarely” in all stations.

Also, there was no relationship between frequency of listening and consumption of OFSP.

Table 2-8 Consumption results

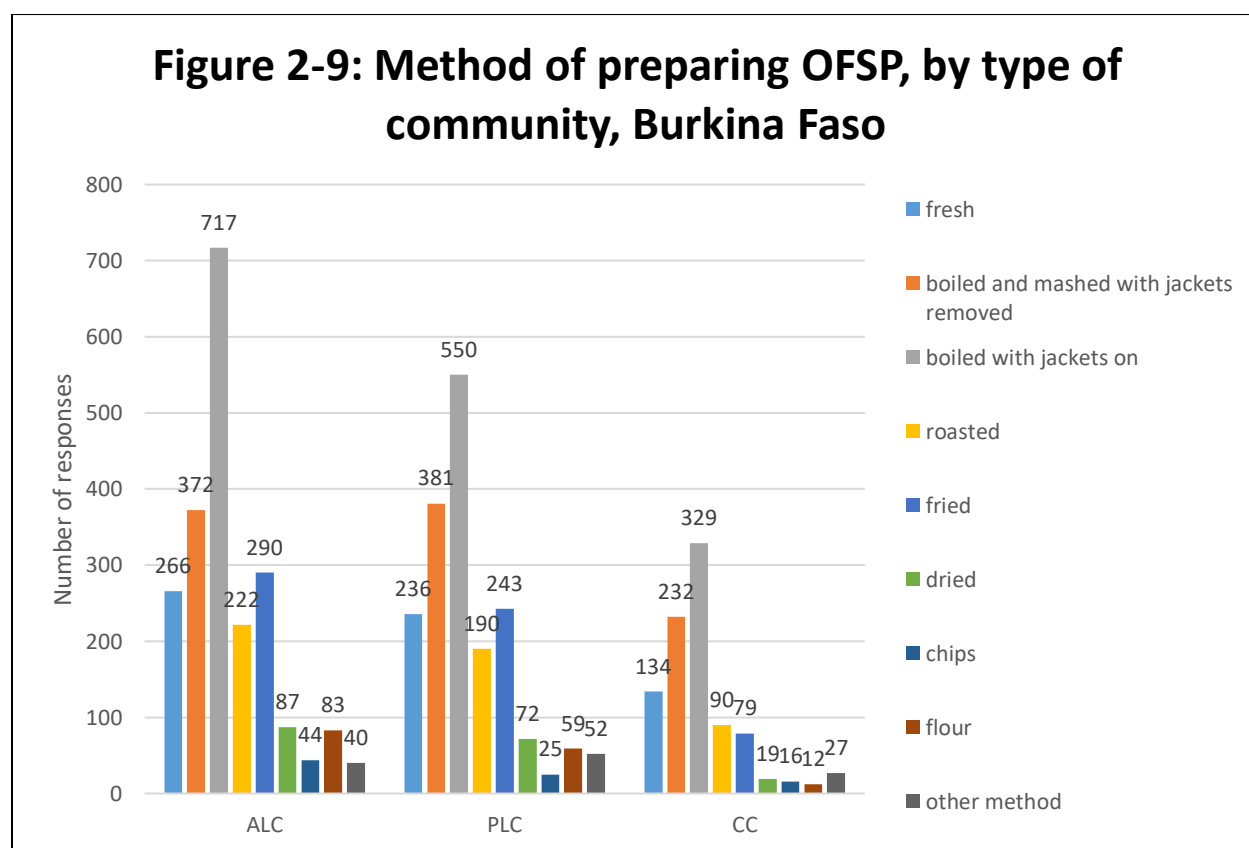
% of respondents who had eaten OFSP in the 7 days before the outcome survey, by type of community		
ALC: 4%	PLC: 1%	CC: 0%
% of respondents who had eaten OFSP in the 7 days before the survey, baseline vs. outcome		
Baseline: 4%		Outcome: 2%
% of respondents who eat OFSP twice a week or more by type of community		
ALC: 32%	PLC: 24%	CC: 26%

As shown in **Table 2-9**, the percentage of respondents who eat OFSP dropped from 4% at baseline to 2% at outcome.¹² It should be noted that the decrease is not statistically significant, so could have been due to chance.

Table 2-9: New OFSP eaters since baseline

Eat OFSP at baseline	Eat OFSP at outcome	Difference	New OFSP eaters
4%	2%	-2%	-

As shown in **Figure 2-9**, the most popular methods of preparing OFSP in Burkina Faso are, in order of frequency: boiling with jackets on, frying, and eating raw. In the baseline survey, the most popular methods were: boiling with jackets on, boiling with jackets removed, and “ragout de patate” (potato stew). While the PRC programming in Burkina Faso talked extensively about the benefits of consuming OFSP, it devoted less air time to methods of preparing OFSP.



¹² It should be noted that FRI’s project team and partners, as well as a reviewer of this chapter found the decrease in consumption surprising, and noted that it conflicted with anecdotal evidence on the ground.

2.2.6 MULTIPLYING, SELLING, AND MANAGING PESTS

This section presents FRI's findings on

- using pest management practices,
- selling OFSP roots,
- processing OFSP before selling,
- multiplying vines, and
- selling vines.

As shown in **Figure 2-10**, respondents in listening communities were somewhat more likely to spray to control pests, somewhat less likely to uproot and destroy infected plants, and somewhat less likely to do nothing, compared to respondents from CCs.

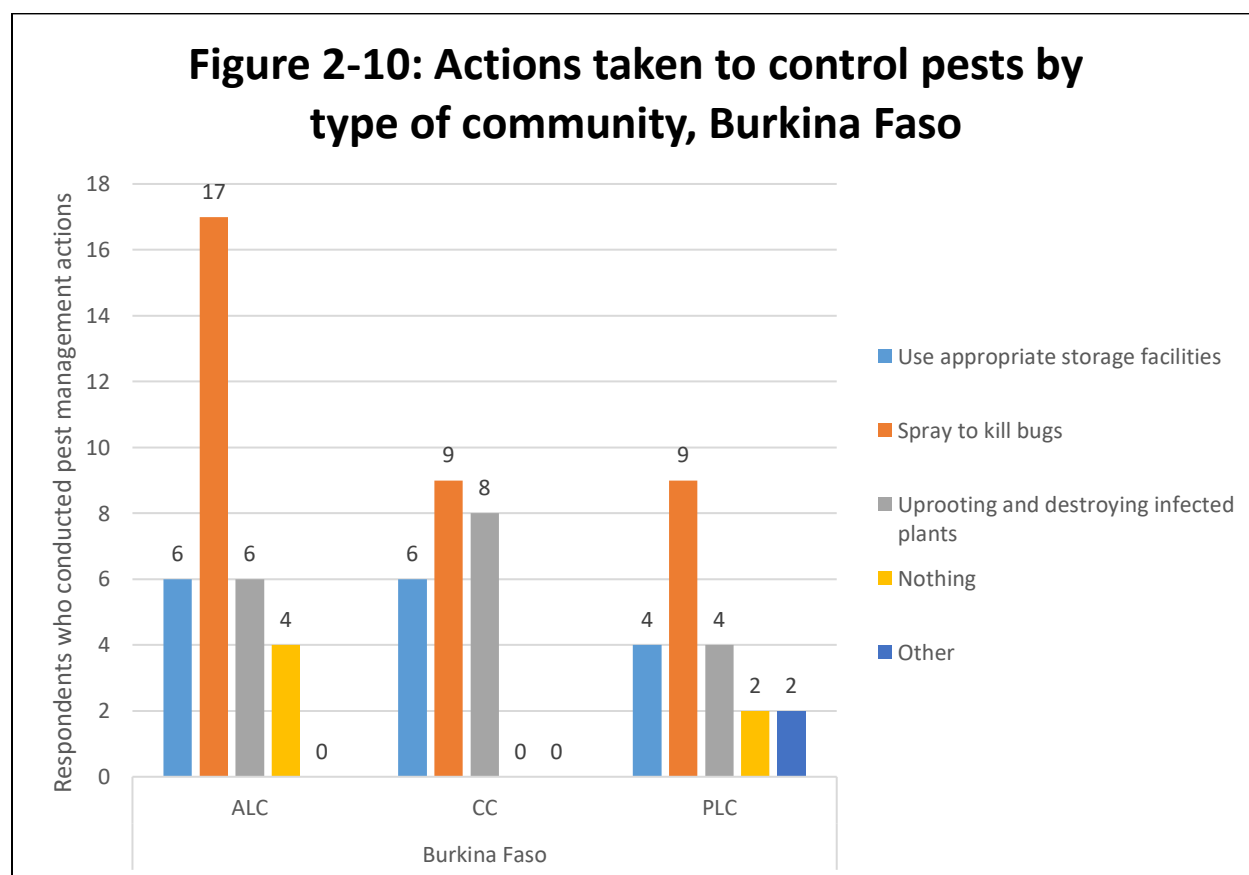


Table 2-10 shows that respondents in listening communities were more likely to: process OFSP before selling, multiply vines, and sell vines. It should be noted that the number of farmers who perform these actions is small in all types of community, so differences between types of communities are not statistically significant.

Table 2-10 Percentage of respondents who sell and process OFSP, and multiply and grow vines, by type of community

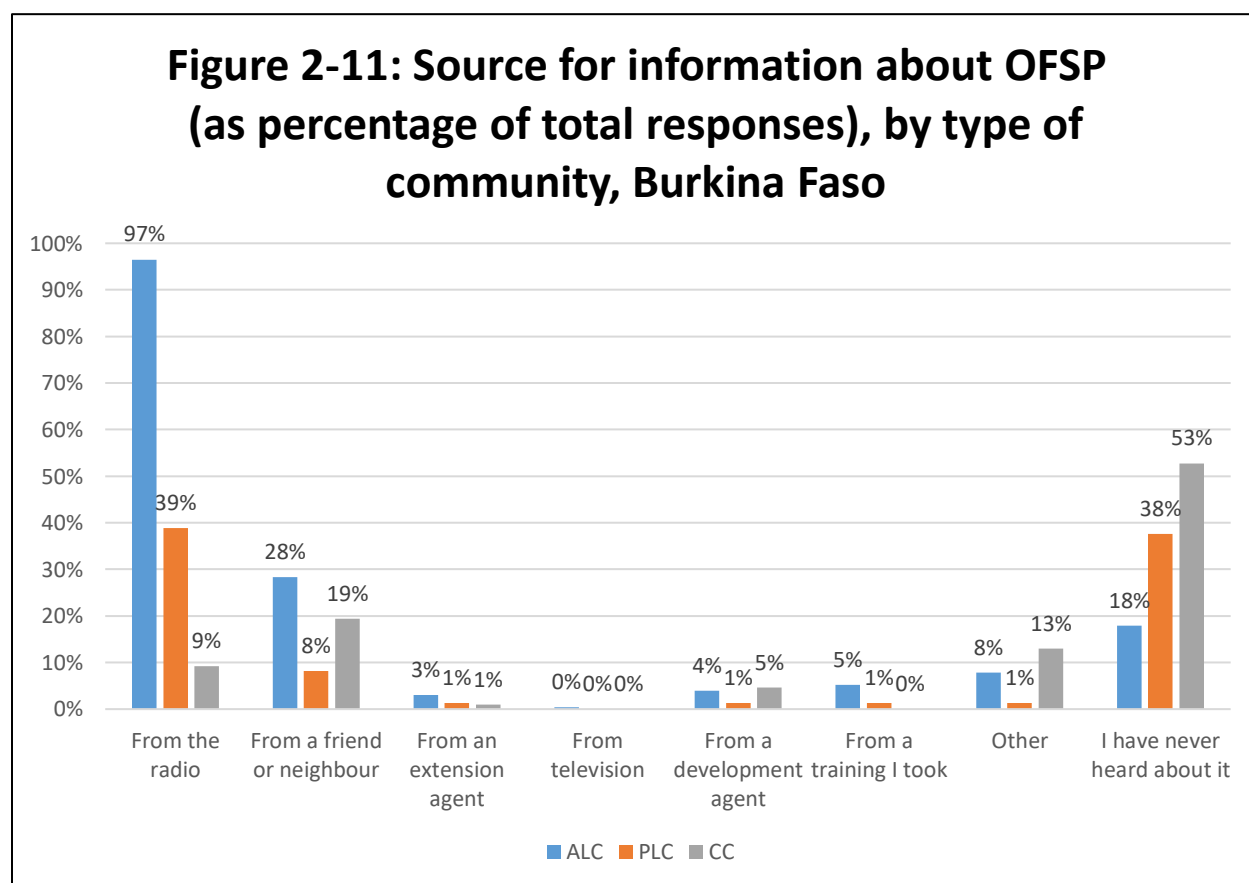
% of respondents who sell OFSP by type of community		
ALC: 34%	PLC: 44%	CC: 87%
% of respondents who process OFSP before selling		
ALC: 30%	PLC: 14%	CC: 8%
% of respondents who multiply vines, by type of community		
ALC: Palabre 44%; Orodora 25%	PLC: Palabre 33%; Orodora 33%	CC: Palabre 33%; Orodora 11%
% of respondents who sell vines		
ALC: 40%	PLC: 75%	CC: 0%

2.2.7 LISTENING BEHAVIOUR AND SOURCES OF INFORMATION ABOUT OFSP

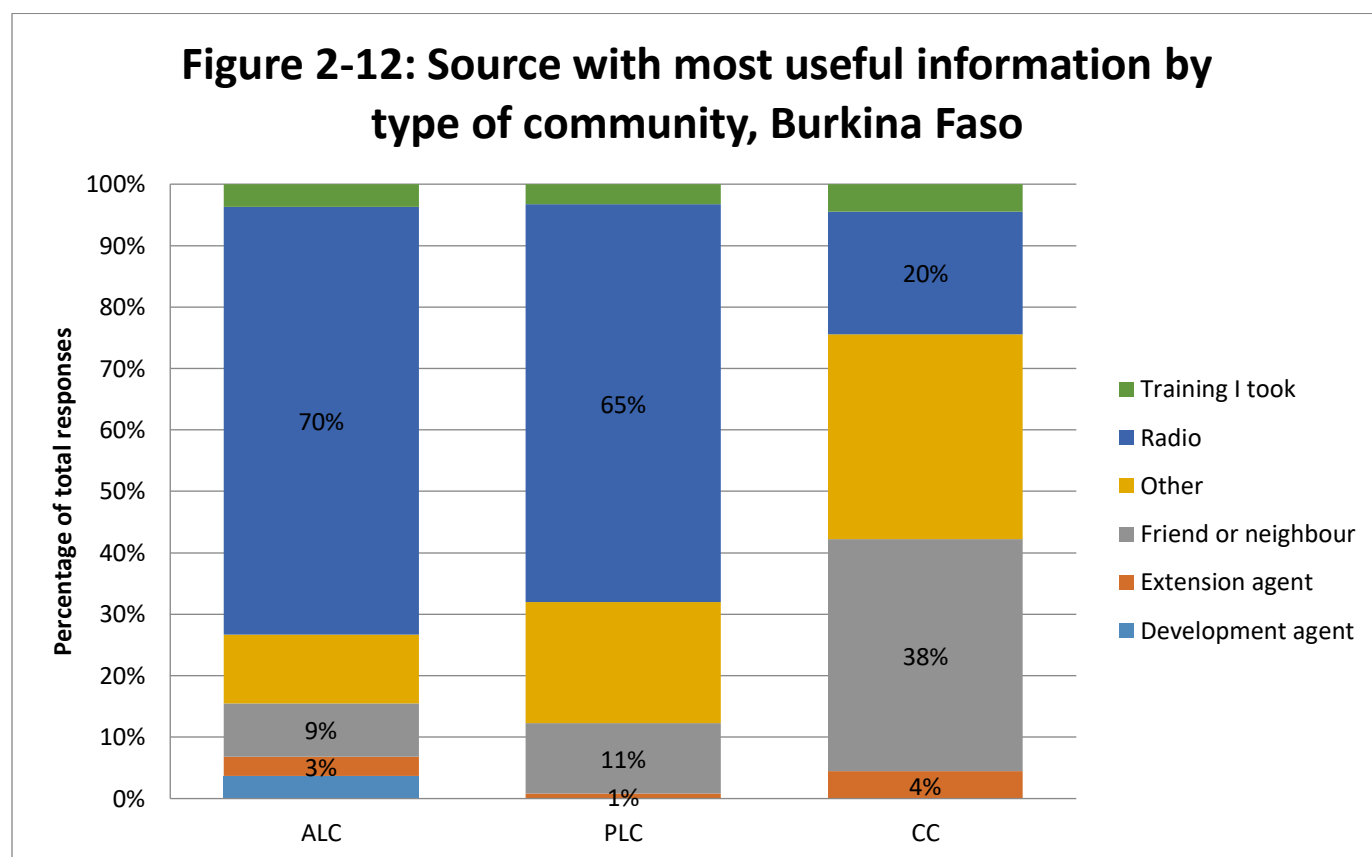
This section presents information on:

- the sources of respondents' information about OFSP,
- the most important source of information about OFSP,
- the percentage of respondents who were aware of and who listened to the programs,
- the percentage of those who were aware of the program who actually listened, and
- the relationship between frequency of listening and both yield and production of OFSP.

As shown in **Figure 2-11**, radio is by far the most common source of information about OFSP in listening communities, and friends and neighbours are the most common source in CCs. Nine per cent of respondents in CCs indicated that they heard about OFSP via the radio. This is not an uncommon finding in FRI projects. There are a variety of potential explanations: First, it is possible that respondents heard about OFSP on other, non-project radio stations; second, respondents may have heard about OFSP on the radio while visiting listening communities; third, respondents may simply have been mistaken in reporting that they heard about OFSP on the radio; and fourth, respondents may have perceived an incentive to indicating that they had heard about OFSP on the radio (acquiescence bias).

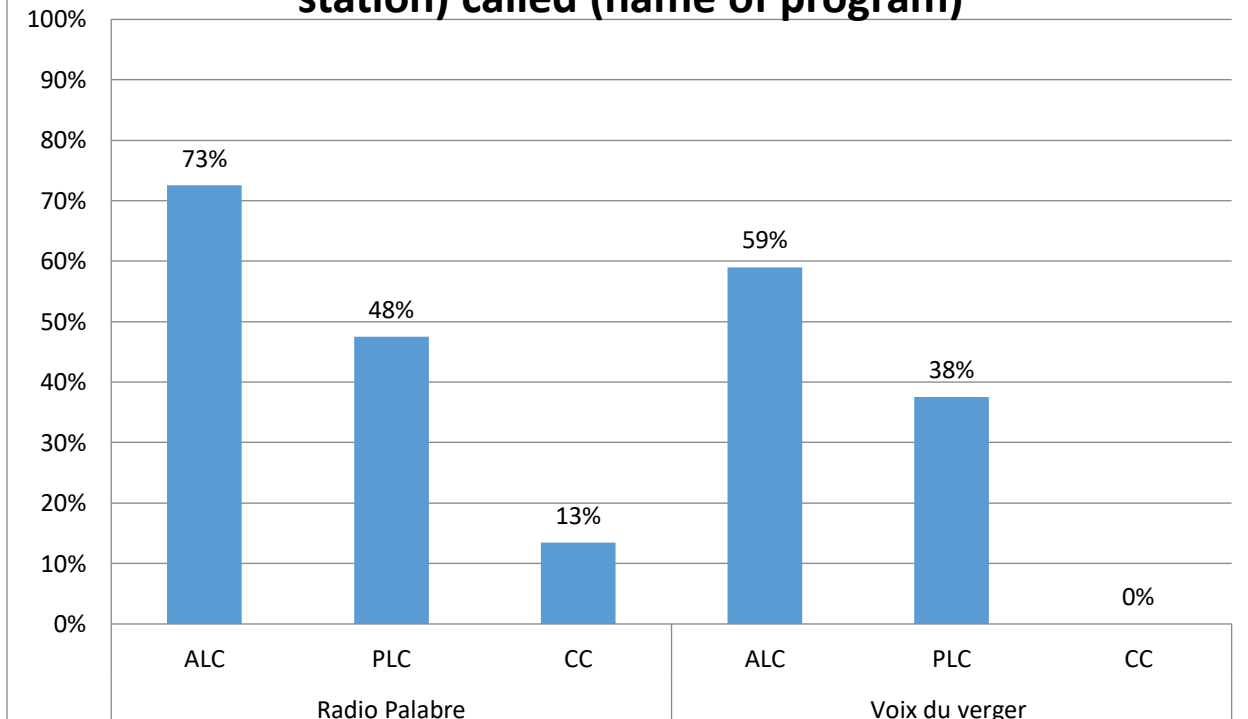


As shown in **Figure 2-12**, radio was considered the most useful source for information about OFSP by respondents in listening communities. Friends and neighbours and “other” were more important sources in CCs.



As shown in **Figure 2-13** (and as expected), a much higher percentage of respondents from listening communities were aware of the program than respondents from control communities. In all types of communities, respondents from Radio Palabre’s listening area were more aware of the program than respondents from Voix du Verger’s listening area.

Figure 2-13: Percentage of respondents who were aware of a radio program on (name of station) called (name of program)



As shown in **Table 2-11**, the percentage of respondents who were aware and listened to the programs was high in both ALCs and PLCs.

Also, there was no clear relationship between frequency of listening and the percentage of respondents who grow OFSP for either of the stations in Burkina Faso. There was also no clear relationship between frequency of listening and yield (data not shown).

Table 2-11: Other results

% of respondents who were aware of program and listened to it, by type of community	
ALC: 95%	PLC: 89%

2.2.8 PROGRAM QUALITY

In the outcome survey, we asked respondents to rate the quality of the OFSP radio programs on five different measures. **Table 2-12** shows how the survey results.

Table 2-12: Program quality¹³ (N = 210)

	Much better than other programs (%)	Somewhat better (%)	About the same (%)	Somewhat worse (%)	Much worse (%)
Comparing the PRC program to other agricultural programs	63	23	11	1	0
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
The program was relevant to my needs as a farmer	40	48	11	0	0
The program came on at the scheduled time	20	44	33	3	0
I found the program entertaining	35	55	10	0	0
The program was relevant to women farmers ¹⁴	35	53	12	0	0

As shown in **Table 2-12**, respondents rated the programs very positively: the percentage of respondents who agreed or strongly agreed ranged from 64-90%.

¹³ Figures may not add up to 100 because of rounding.

¹⁴ This question was asked only to women.

2.3 FOCUS GROUP DISCUSSIONS IN BURKINA FASO

FRI held separate focus groups with groups of men and women in Koudougou and Orodara departments. The groups included members of listening groups set up for the project. In Koudougou, FRI conducted focus groups in the villages of Saria and Lah. Participants in the women's groups were 30 married women from the two villages, between 18 and 65 years old, with an average age of 42 years. All women practiced agriculture as their main activity and were involved in small-scale trading as a secondary activity.

The men's focus groups in Koudougou included 24 men from the two villages, aged between 26 and 65 years old, with an average age of 46. All men but one were married and practiced agriculture as their main activity, with livestock keeping, mechanics, and masonry as secondary activities.

In Orodara, FRI conducted men's and women's focus groups in the villages of Djigouèra and Banzon. The women's focus group included 24 married women from the two villages, aged 23-58 years, with an average age of 41 years. The women were mainly engaged in agriculture, and secondary activities included trade and selling local beer.

The men's focus groups in Orodara included 26 married men from the two villages, aged 25-67 years, with an average age of 46 years. The men were primarily engaged in agriculture and secondarily in trade, masonry, and crafts.

The Orodara focus groups found that men and women farmers were familiar with OFSP well before the arrival of the project, and grew it for household consumption. By comparison, men and women in Koudougou discovered OFSP only after the tuber was imported as part of the project.

Feedback from the focus groups indicated that the radio programs enabled farmers in both areas to better understand OFSP, learn about its nutritional value, and differentiate between OFSP and other varieties of potatoes.

Listeners learned through project activities that OFSP can be processed into various products. Listeners reported that they prepare OFSP in many different ways, including traditional ways of cooking sweet potatoes. OFSP was eaten raw, cooked, and boiled. Some men in Banzon preferred to peel and eat OFSP raw. Women spoke about cooking, boiling, frying, or mixing OFSP with other ingredients in sauces or other dishes. According to women in the Djigouèra focus group:

“We peel OFSP and dry it for two days before mixing it with a sauce or grinding it for preparing porridge. We also grind dried OFSP and steam it to prepare couscous. One can process it into paste by adding some peanut butter. OFSP can also be boiled, fried, or roasted.”

In Orodara, OFSP is normally roasted. People's knowledge of preparing OFSP was based on their knowledge of preparing other sweet potato varieties, and the knowledge they acquired that OFSP does not require as much cooking time as other types of potatoes.

Most focus group participants learned about the benefits of OFSP through the PRC. When the focus groups were conducted, many farmers were growing OFSP for the first time, and had not had an opportunity to assess the benefits of feeding OFSP to children under 5 years old, pregnant women, and nursing mothers. Thus, the direct impact of the project on children's development can only be evaluated after the first harvest.

Men and women in focus groups demonstrated that they understood the nutritional messages about OFSP and vitamin A. For example, according to women in the Saria focus group:

“When children eat OFSP, it helps maintain their body, as it provides them with health, strength, and enough water and blood.”

The women in the Lah focus group said,

“OFSP provides health and vitamin A. It helps control malnutrition, treat night blindness, and it helps children grow well and develops their intelligence.”

Banzon women said,

“OFSP provides strength, vitamin A, blood, and it prevents diseases. OFSP is also good for pregnant women because it facilitates labour. It gives strength to the mother and the child.”

Banzon men said,

“OFSP provides vitamin A and improves ossification. OFSP is a whole food, which protects against diseases. Both children and adults enjoy the same benefits.”

Men in Djigouèra made a similar observation,

“OFSP provides health, vitamin A, and protects the body against diseases by strengthening it.”

According to the focus groups, farmers grew many varieties of potatoes on the same field, and knowledgeable producers sort the cuttings before planting them in nurseries.

There were not enough cuttings for all producers to receive a sufficient quantity; some producers received four cuttings while others only received one. Some farmers shared cuttings among themselves. Some groups, such as the group from Lah, collected money in order to buy cuttings from other regions. Because the INERA regional centres exhausted their supply of cuttings, other listening groups took advantage of family and neighbours to get cuttings.

The facilitators of the focus groups summarized the lessons from the groups as follows:

Farmers know the nutritional properties and benefits of OFSP for managing vitamin A deficiency.

It is clear that the radio programs had a huge positive impact on communities' knowledge of OFSP.

Growers know and give good explanations of the vitamins contained in the different foods.

Farmers prefer selling their OFSP because people like it. Even when farmers are just starting to produce OFSP, they prefer to sell it for profit. They tend to sell their crop in markets because there are so many growers that local supply would exceed demand, and it is difficult for farmers to store the roots. Farmers became interested in OFSP because they can make money by selling it.

Farmers keep only a small amount of OFSP for family needs. This is not only because they are interested in marketing the OFSP, but because of storage problems and lack of knowledge of value-added products.

2.4 KEY FINDINGS AND CONCLUSIONS

In Burkina Faso, the most impressive results are the gains in knowledge. There are a small number of new growers. Radio is the most common and useful source of info on OFSP in listening communities.

OVERALL

- Estimated number of listeners: 67,900
- Estimated number of new OFSP farmers since baseline: 680

KNOWLEDGE

As noted above, the most impressive results in Burkina Faso were gains in knowledge. The findings from the outcome survey and the focus groups show that listening to the OFSP programs resulted in better knowledge. The outcome survey documented gains in knowledge of the dietary sources of vitamin A, the fact that OFSP contains vitamin A, the capacity of OFSP to address vitamin A deficiency, and in identifying myths about OFSP. Average knowledge scores increased significantly in the coverage areas for both radio stations.

CONSUMPTION

There was no increase in the level of OFSP consumption between baseline and outcome surveys, and there was no relationship between frequency of listening and the likelihood of consuming OFSP. As mentioned above, the decrease in OFSP consumption from 4% to 2% between baseline and outcome is not statistically significant, and, according to the FRI team and stakeholders, was at odds with anecdotal evidence on the ground.

CHILDREN'S CONSUMPTION OF OFSP

There were survey problems and, possibly, sampling problems associated with some of survey questions on children's consumption of OFSP. Thus, while we have data from the outcome survey on children's consumption of OFSP and the frequency of that consumption, we have no basis for comparison between baseline and outcome, and cannot determine whether children's consumption increased over the duration of the project.

In the outcome survey, a high percentage of respondents in all types of communities reported that they fed OFSP to their children under 5, though more than half fed it to them rarely. This seems to be at odds with the finding that only 2% of households had eaten OFSP in the 7 days before the outcome survey. We do not know the reason for this apparent mismatch.

OTHER

Radio is by far the most common source of information about OFSP in listening communities, and was considered the most useful source for information on OFSP by respondents in listening communities

A very high percentage of respondents in listening communities who were aware of the program listened to it.

Listeners had higher levels of knowledge. But frequency of listening was not associated with gains in knowledge, higher likelihood of consuming OFSP, higher likelihood of growing OFSP, or OFSP yield.

Focus group research showed that:

- Farmers know the nutritional properties and benefits of OFSP for managing vitamin A deficiency.
- Farmers prefer selling their OFSP because people like it. The attraction of selling OFSP is the main draw for growing the crop.
- For three reasons, farmers keep only a small amount of OFSP for family needs:
 - They prefer to market OFSP.
 - They have limited capacity to store the crop.
 - They are not familiar with methods of adding value to OFSP.

While lack of vine availability was a major impediment to greater production of OFSP, the national institution INERA (L'Institut de l'environnement et de recherches agricoles) has committed to initiating a program to address this gap.



Christian Kubajo, a vine multiplier in Volta Region

CHAPTER 3: GHANA

3.1 INTRODUCTION

TARGET AREAS IN GHANA

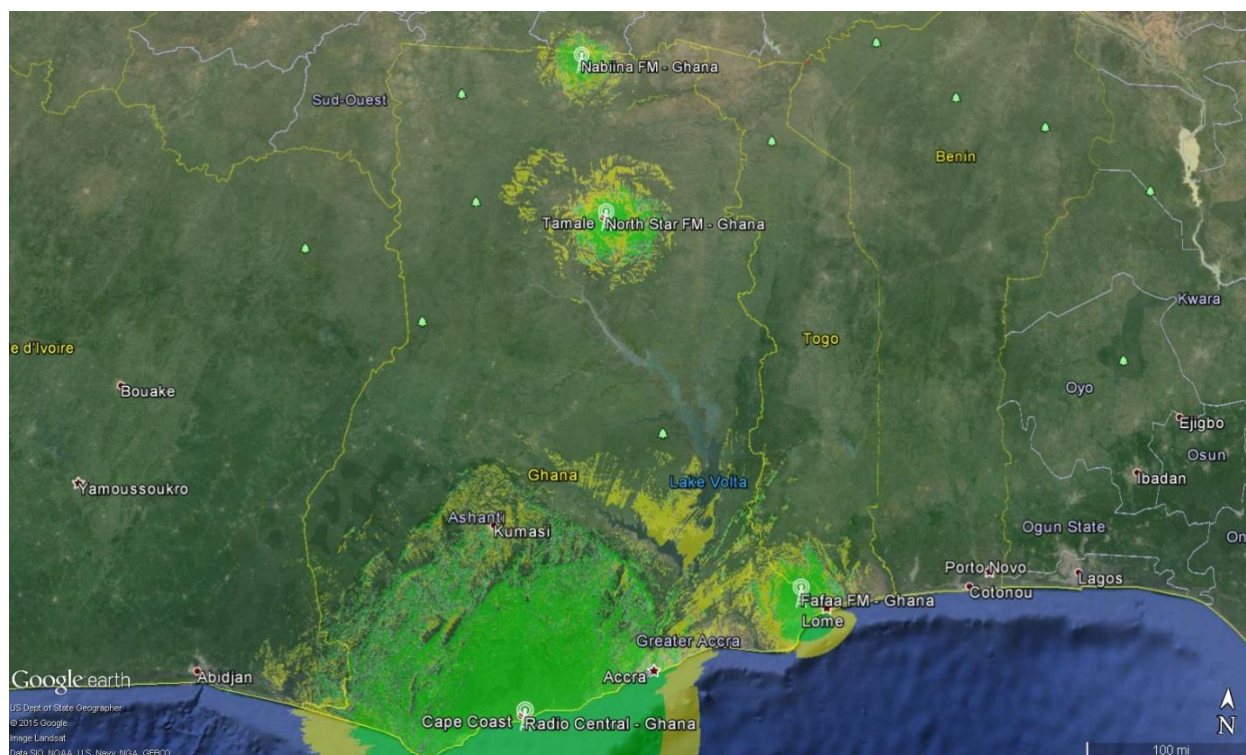
The Upper East Region, located in the northeast corner of Ghana, is the smallest region in the country. The inhabitants are mostly farmers, and the major crops are yam, maize, millet, soybeans, and cowpea.

The Northern Region has by far the largest area of any region in Ghana. Most people are farmers who grow yams, millet, sorghum, groundnut, rice, cowpea, and maize.

The Central Region is only slightly larger than the Upper East, and lies along the coastal belt. Aside from a few industries, the majority of the inhabitants are farmers and fisher folk, with cocoa, plantain, maize, sweet potatoes, vegetables, and cassava among the major crops grown in the region.

Table 3-1: Details of project areas

Region	Radio stations	Districts	Communities	Planting season	OFSP varieties
Upper East Region	Nabiina	<ul style="list-style-type: none"> Kasena Nankana Municipal 	<ul style="list-style-type: none"> Punyoro Upper Telania Manchoro Gia Yua 	1 season: July-Oct	Apomuden
		<ul style="list-style-type: none"> Kasena Nankana West 	<ul style="list-style-type: none"> Kayoro 		
Northern Region	North Star	<ul style="list-style-type: none"> Savelugu-Nanton 	<ul style="list-style-type: none"> Tibale Kanvulli Gbumgbum 	Mid-July to mid- August for planting and harvesting, ending in October or November	Apomuden
		<ul style="list-style-type: none"> Kumbugu 	<ul style="list-style-type: none"> Vuggo Kushibu 		
		<ul style="list-style-type: none"> Nanumba North 	<ul style="list-style-type: none"> Demonayili 		
		<ul style="list-style-type: none"> Yendi 	<ul style="list-style-type: none"> Makayili 		
Central	Radio Central	<ul style="list-style-type: none"> Cape Coast metropolitan 	<ul style="list-style-type: none"> Nyamebekyere Nyamedom Yayakwano 	2 seasons: May/June – Aug, Aug/Sept – Oct.	Apomuden
	Ahomka FM Asafo FM	<ul style="list-style-type: none"> Komenda Edina Aguafo Abirm-(KEAA) 	<ul style="list-style-type: none"> Komenda Nkontrodu Ammissano 		
Volta	Radio Faafaa	<ul style="list-style-type: none"> Ketu North 	<ul style="list-style-type: none"> Devego Ohawu Akatsi North 	2 seasons: May/June – Aug, Aug/Sept – Oct.	Apomuden
		<ul style="list-style-type: none"> Akatsi South 	<ul style="list-style-type: none"> Kpevi Have-Fiakpokorfe Lume Avete 		



Map of radio station coverage areas in Ghana

Central and Upper East Ghana have been previously exposed to OFSP projects, while Northern and Volta Regions have no previous history of producing, consuming, or marketing OFSP. However, the communities with little or no knowledge of the benefits of OFSP are also the areas with the best sweet potato-growing potential.

Production status

During the initial scoping study, we found that the most popular type of OFSP was Apomuden. This variety, released in 2005, is widely available in the Volta and Central Regions, widely grown tolerates challenges, including viral diseases.

CHALLENGES

The flesh of Apomuden becomes very soft when boiled, and tends to soak up more oil than other sweet potato varieties when fried. Other varieties that may stand up better when boiled or fried are currently being considered.

Promoting OFSP in Ghana includes addressing several other challenges, including: the lack of availability of planting materials, the perishability of planting materials, the lack of appropriate storage facilities, the short storage life of roots, and the lack of visibility of OFSP in markets.

3.2 FINDINGS IN GHANA

3.2.1 REACH

Table 3-2 shows all communities involved in the outcome survey, broken down by type of community.

Table 3-3 Communities involved in the outcome survey

ALC community/region	PLC community/district	CC community/district
Komenda, Central	Nyamebekyere, Central	Ammissano, Central
Nkontrodu, Central	Nyamedom, Central	Yayakwano, Central
Punyoro, Upper East	Gia, Upper East	Kayoro, Upper East
Upper Talania, Upper East	Manchoro, Upper East	Yua, Upper East
Tibali, Northern	Gbumbum, Northern	Demonayili, Northern
Voggu Kushibu, Northern	Kanvulli, Northern	Makayili, Northern

We extrapolated the outcome survey findings on listenership and the percentage of surveyed farmers who grow OFSP in order to estimate:

- 1) the total number of listeners in the coverage areas of the three stations, and
- 2) the total number of farmers in the coverage areas who grow OFSP.

As shown in **Table 3-3**, an estimated **344,100** people listened to the OFSP programs, and an estimated **192,000** farmers are growing OFSP in the area.¹⁵

¹⁵ For a description of the methods used to generate these estimates, see Chapter 1.

Table 3-3: Listenership

Country	Radio station catchment area	Estimated adult population within radio coverage area	Estimated number of listeners	Estimated number of people growing OFSP in radio coverage area
Ghana	Nabiina FM	150,900	141,800	93,600
	Radio Central	208,300	87,000	6,100
	North Star FM	118,400	115,300	92,300
	Radio Faafaa ¹⁶	365,000		
Total		842,600	344,100	192,000

3.2.2. DEMOGRAPHICS

This section presents findings on the number, gender, and age of respondents in Ghana, and a breakdown of the number of respondents in ALCs, PLCs, and CCs.

As shown in **Table 3-4**, there were slightly more female than male respondents, and the largest age group was the 31-45 year-olds.

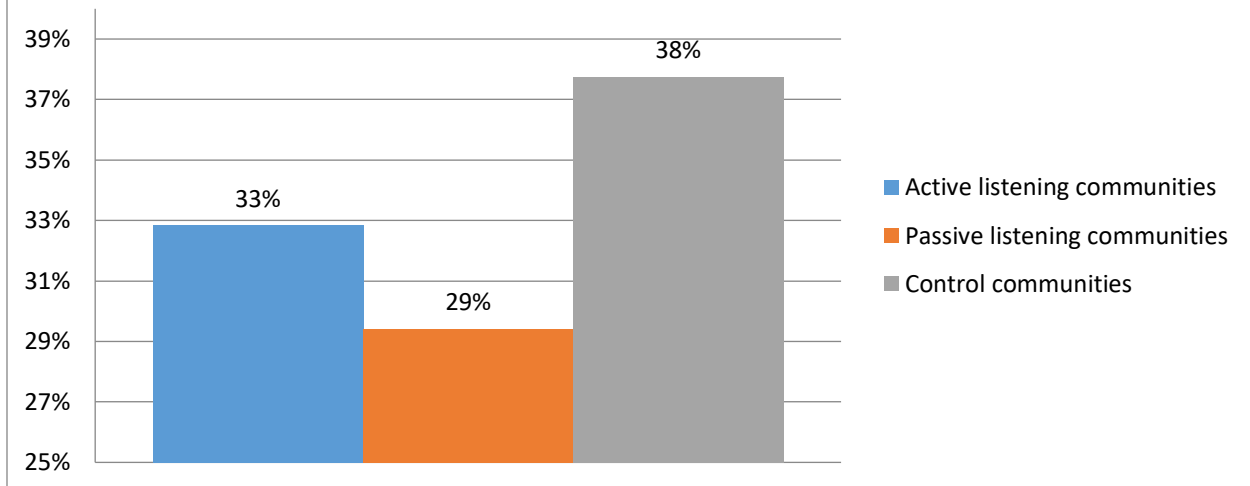
Table 3-4: Sex and age of respondents

# of respondents by sex			
Women		Men	
607 (53.3%)		532 (46.7%)	
# of respondents by age group			
18-30	31-45	46-60	Above 60
349 (30.6%)	435 (38.2%)	240 (21.1%)	115 (10.1%)

As shown in **Figure 3-1**, there were slightly more respondents in CCs than in ALCs or PLCs.

¹⁶ We did not conduct an outcome survey at Radio Faafaa. Therefore, we do not have listenership numbers or any basis on which to extrapolate total listenership numbers. Thus, total listenership for Ghana—and the total number of OFSP growers, new growers, and new households eating OFSP—can be considered a conservative estimate. The population in Radio Faafaa’s coverage area represents more than 40% of the total population in the four radio stations’ coverage area, so our estimates should be conservative indeed.

Figure 3-1: Respondents by type of community, Ghana



3.2.3 KNOWLEDGE

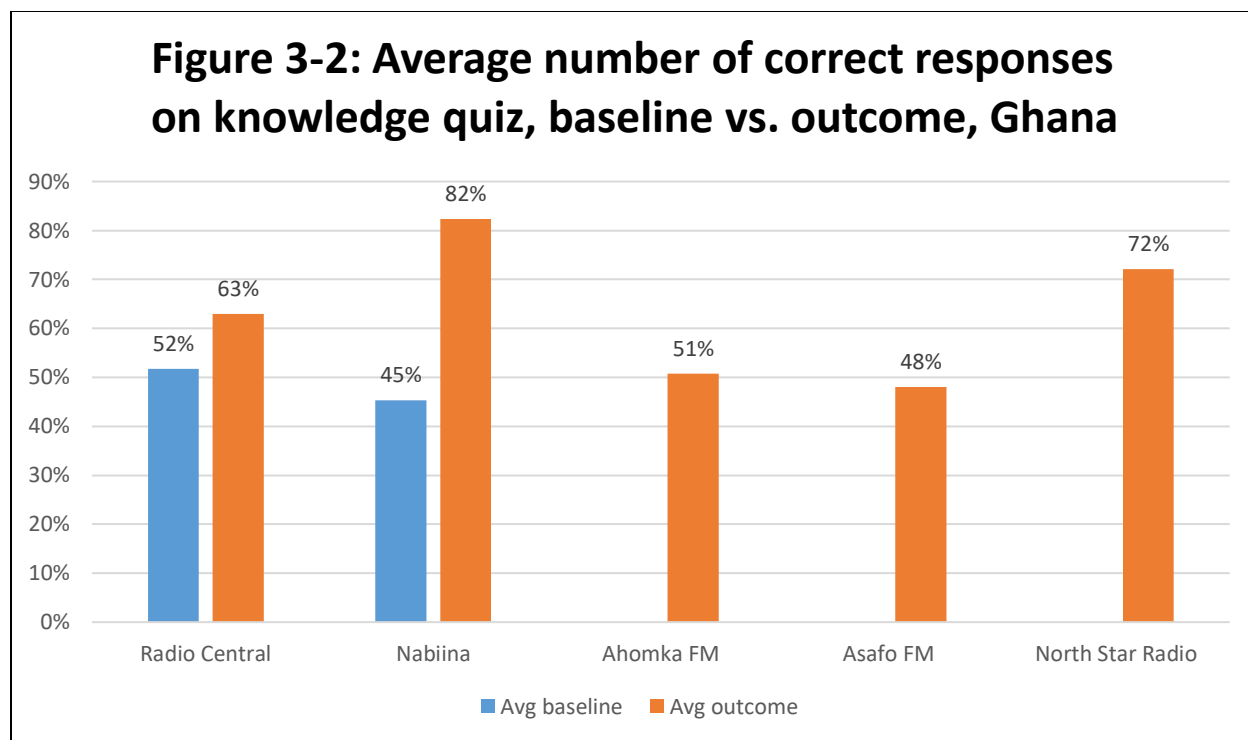
The baseline and outcome surveys asked questions which tested respondents' knowledge of nutrition, vitamin A, and the nutritional benefits of OFSP. Questions in the baseline survey were repeated in the outcome survey. This section presents the knowledge findings, including a comparison of scores on the knowledge quiz between baseline and outcome.

As shown in **Table 3-5**, there was little difference in the average score between male and female respondents, with both averaging about 70% correct responses.

Table 3-5 Average knowledge score on outcome survey by sex

	Average score
Female respondents	69%
Male respondents	73%

Figure 3-2 shows the average percentage of correct responses by station, and compares scores between the baseline and outcome surveys. At the beginning of the project, two stations were involved. Three additional stations came on board during Phase 2. So, while five stations participated in the outcome survey, only two stations took part in the baseline survey. Respondents from Radio Central's listening area scored 21% higher on the outcome survey, while respondents from Nabiina FM's listening area increased their score by 82%. Outcome scores were much higher at Nabiina and North Star than at other stations. In Nabiina's coverage area, this might be due to respondents' previous exposure to OFSP promotional activities.



As shown in **Figure 3-3**, listening communities scored significantly higher on the knowledge quiz than non-listening communities.

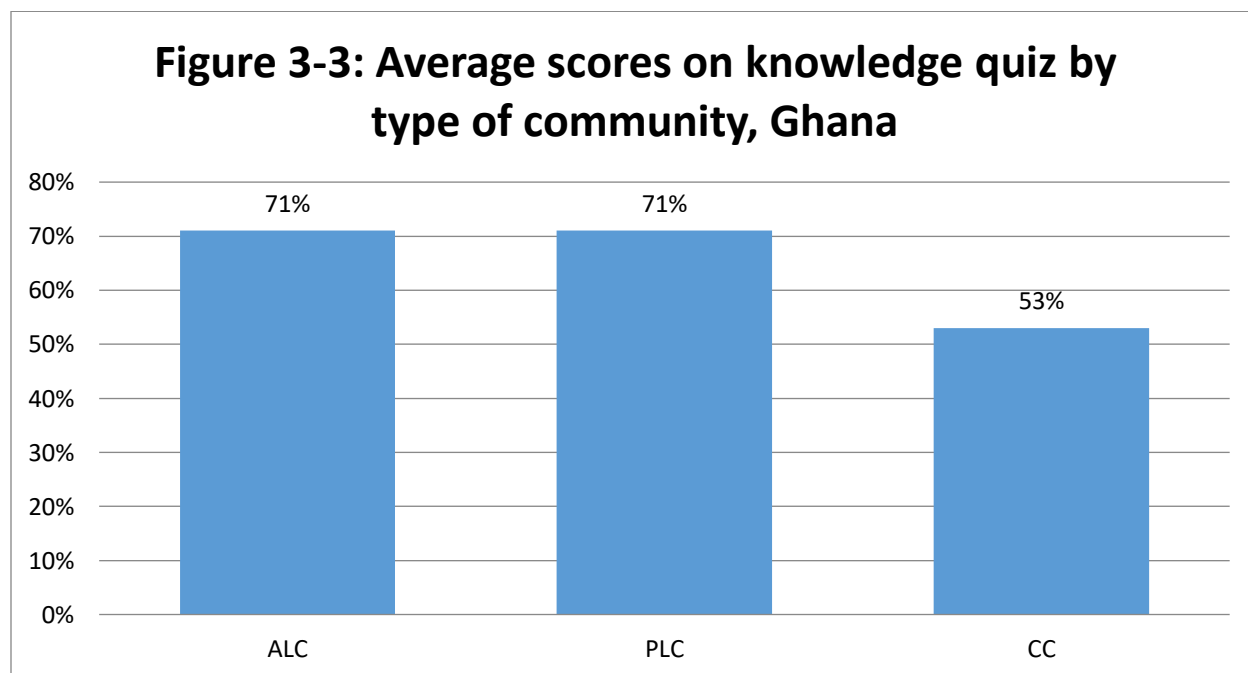


Figure 3-4 shows the percentage of respondents who answered each of the knowledge questions correctly, and compares the percentage of correct responses between baseline and outcome.

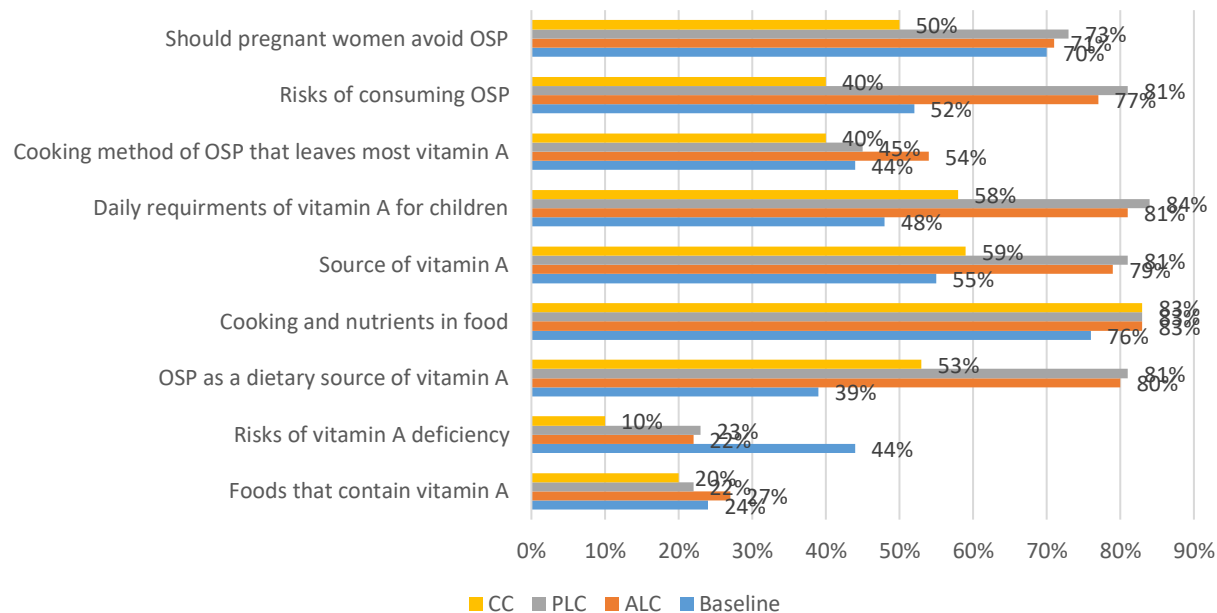
The percentage of respondents who answered correctly in the outcome survey increased for all but one question. These increases ranged from 1% and 3% for ALCs and PLCs, respectively, on a question on whether pregnant women should avoid OFSP (at baseline, 70% of respondents correctly answered this question), to an increase of 103% (more than double) on a question about whether OFSP is a source of vitamin A.

A higher percentage of respondents also:

- recognized that a number of myths about consuming OFSP were untrue (an increase over baseline, from 52 to 79% and 81% in ALCs and PLCs)
- knew the correct method of preparing OFSP to best retain vitamin A (an increase from 44% at baseline to 54% and 45% in ALCs and PLCs)
- knew that a small portion of OFSP can meet a young child's daily requirement of vitamin A (an increase, from 4% at baseline to 81% and 84% in ALCs and PLCs)
- knew that OFSP contains vitamin A (an increase from 55% to 79% and 81% in ALCs and PLCs, respectively)
- knew that lengthy cooking of food destroys some nutrients (an increase from 76% at baseline to 83% in both ALCs and PLCs)

The percentage of respondents who recognized the health-related risks of vitamin A deficiency decreased from 44% at baseline to 22% and 23% in ALCs and PLCs. Though we have no unequivocal evidence, we think that it is most likely that confusion about the question caused this reduction in knowledge, and that it does not reflect actual reduced knowledge. There were six possible responses to the question: four listed symptoms of vitamin A deficiency, one was "none of the above," and the sixth was "all of the above" (the correct answer). Our speculation is that listeners may have heard more information about some symptoms than others during the radio campaign, and that their increased knowledge of these particular symptoms may have caused them to not choose the correct response.

Figure 3-4: Average percentage of correct responses to knowledge quiz, baseline vs. outcome, by type of community, Ghana

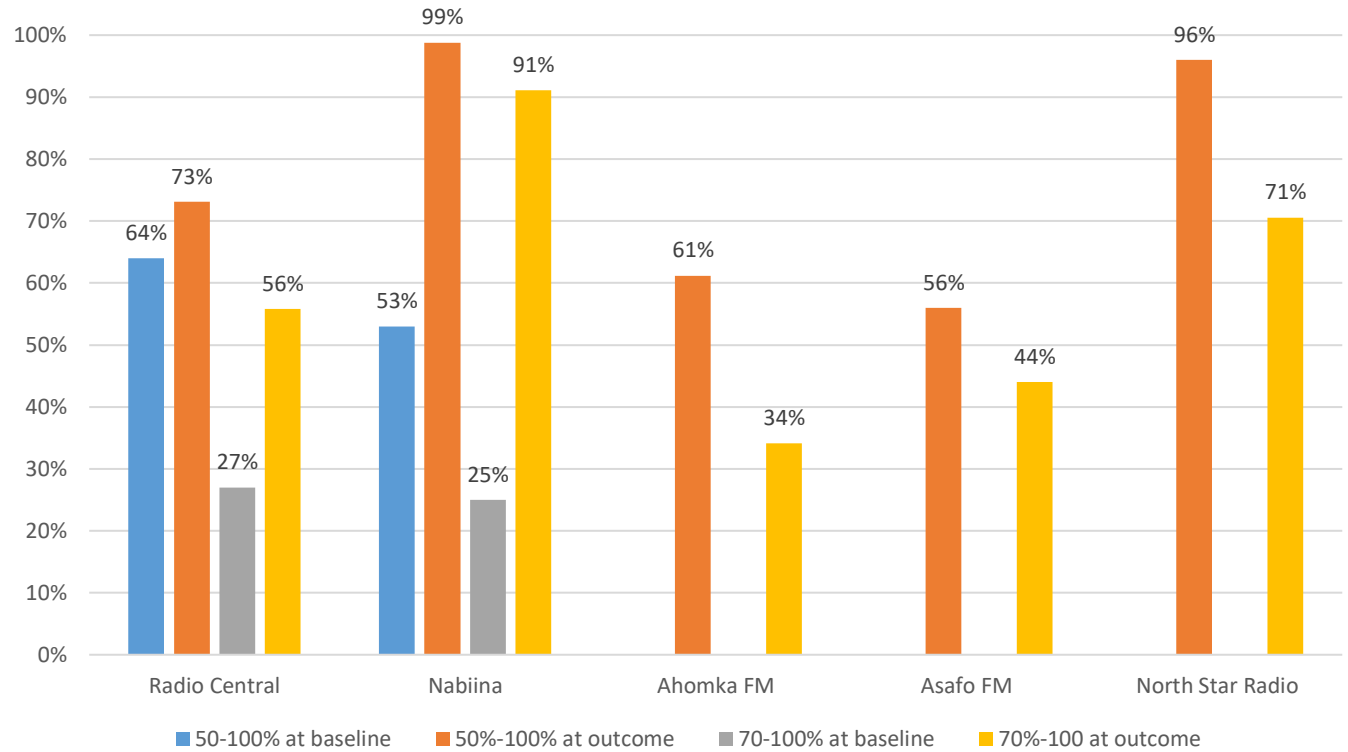


As mentioned above, only two regions were involved in both the baseline and the outcome survey. AS shown in **Figure 3-5**, the number of respondents in Radio Central's listening area who scored 50%-100% on the knowledge quiz increased by 14% between baseline and outcome surveys, while the number of respondents who scored 70%-100% more than doubled, from 27-56%.

At Nabiina FM, the number of respondents who scored 50%-100% increased 98% between the baseline and outcome surveys (from 50-99%), and the number of respondents who scored 70%-100% rose by a factor of 3.6 (from 25-91%).

Outcome scores were higher for the northern stations of Nabiina and North Star than at the other stations included in the survey.

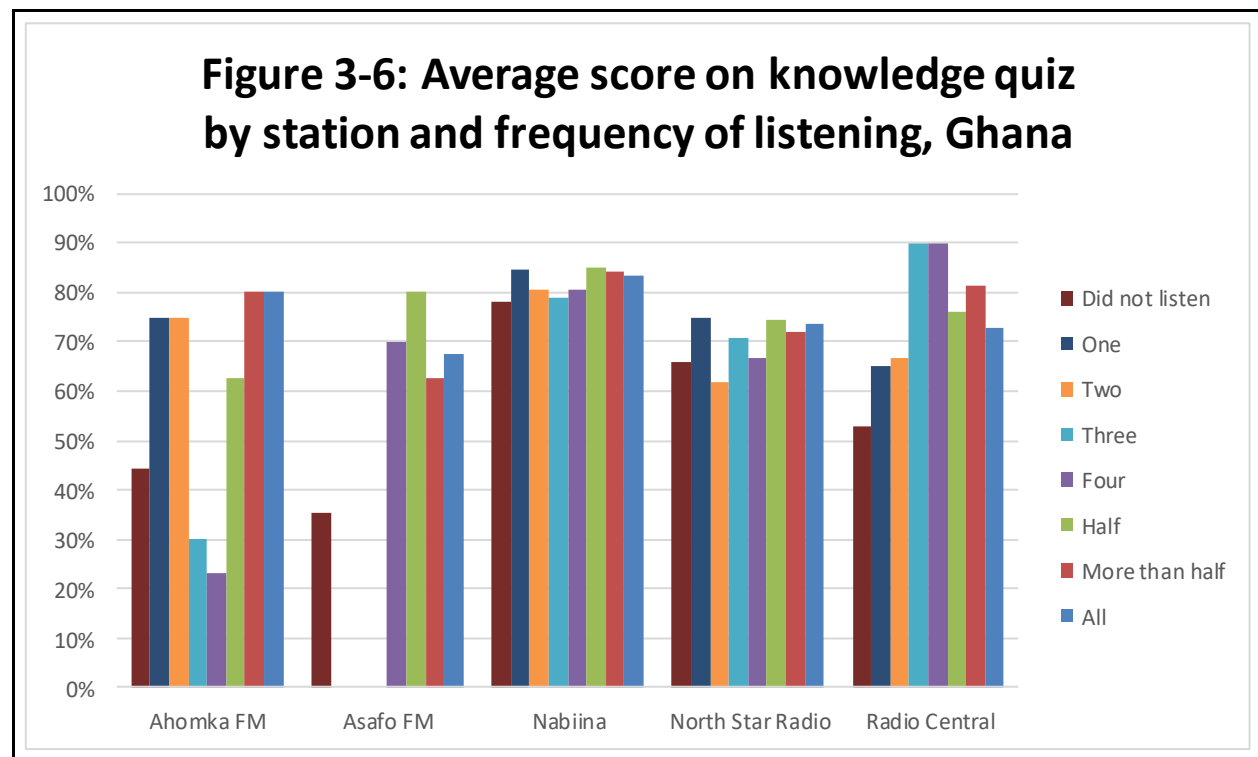
Figure 3-5: Percentage of respondents with average knowledge score from 50-100% and from 70-100%, baseline vs. outcome, by station, Ghana



As shown in **Figure 3-6**, more frequent listeners (those who listened to half or more of the episodes) generally scored higher than non-listeners.

At Ahomka FM, those who listened to all broadcasts had 82% higher scores than non-listeners. At Asafo FM, those who listened to all programs scored slightly more than double (103% higher) than non-listeners. Those who listened to all programs on Nabiina scored only 7% higher than non-listeners, and respondents who listened to all of the programs on North Star scored 12% higher than non-listeners. Respondents who listened to all broadcasts on Radio Central scored 38% higher than non-listeners.

The relatively small increases at Nabiina may well be due to the high background level of knowledge of OFSP because of previous exposure to OFSP promotional activities.



3.2.4 PRODUCTION

This section presents findings related to OFSP production, including:

- a comparison between the percentage of respondents who grew OFSP in the baseline and outcome surveys,
- a comparison between the percentage of respondents who grew OFSP in the different types of communities, and
- the reasons respondents chose not to grow OFSP.

As shown in **Figure 3-7**, the percentage of respondents who grow OFSP rose from 46-56% between baseline and outcome, while the percentage of respondents who grow yellow or white sweet potato dropped.

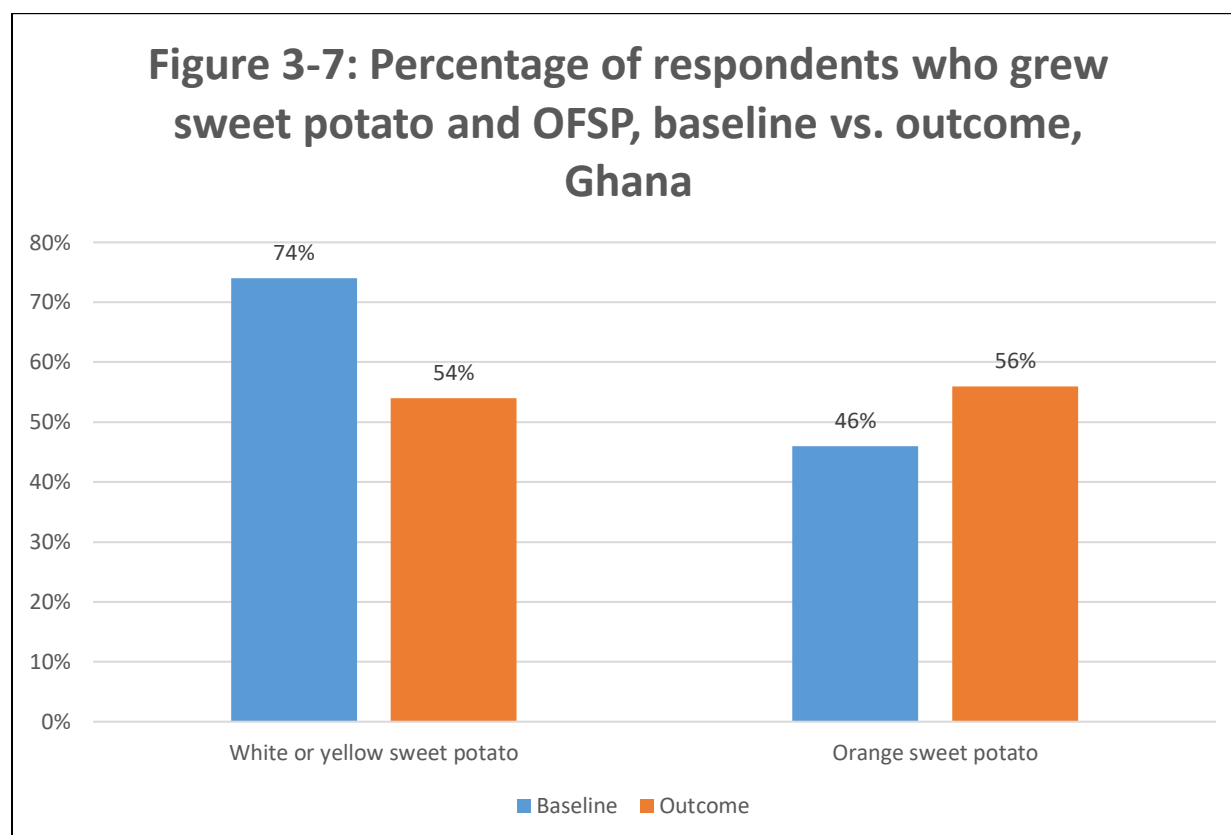


Table 3-6 extrapolated the increased rate of growing OFSP at outcome to the three radio station coverage areas where the outcome survey took place¹⁷, showing an estimated **34,400** new OFSP farmers.

Table 3-6: New OFSP farmers since baseline

¹⁷ The coverage areas for Radio Ahomka and Radio Asafo (both of which are small), are wholly contained within Radio Central's coverage area.

Country	Grow OFSP at baseline	Grow OFSP at outcome	Difference (in % of farmers growing OFSP)	New OFSP farmers
Ghana	46%	56%	(56%-46% =) 10%	34,400

Figure 3-8 shows that the percentage of respondents who grew OFSP was substantially greater in ALCs and PLCs than in CCs, and that very few farmers in CCs grew OFSP. This suggests that listening may have had a big impact on the decision to grow OFSP.

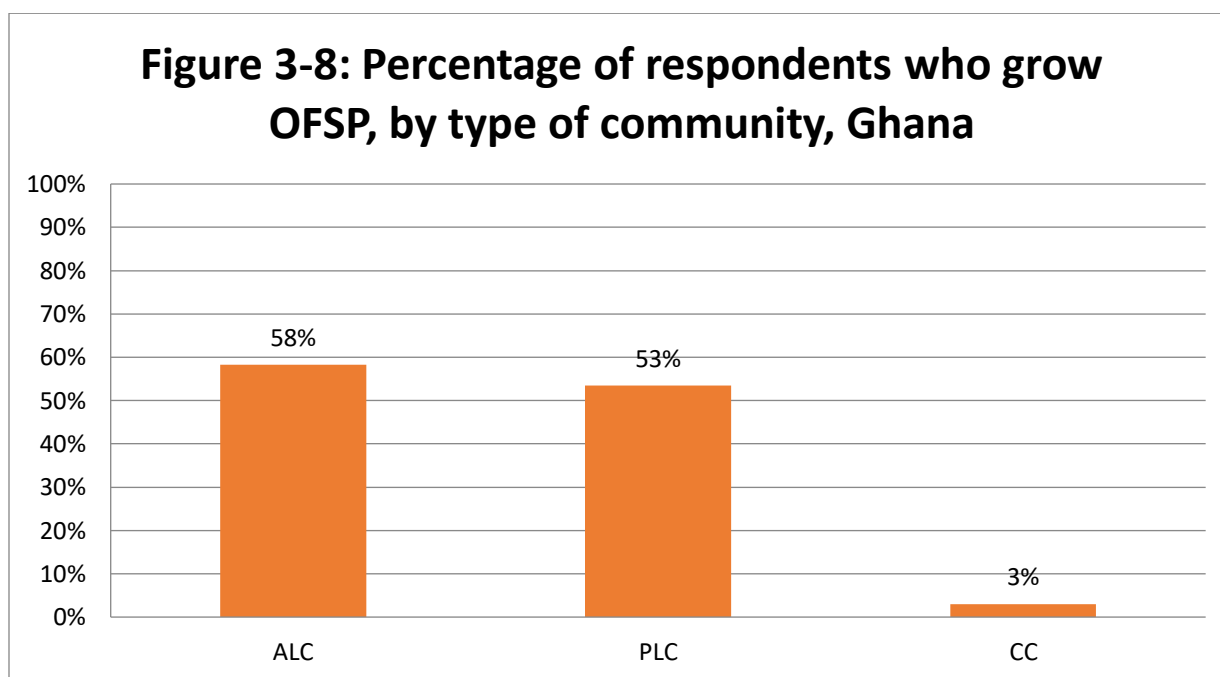
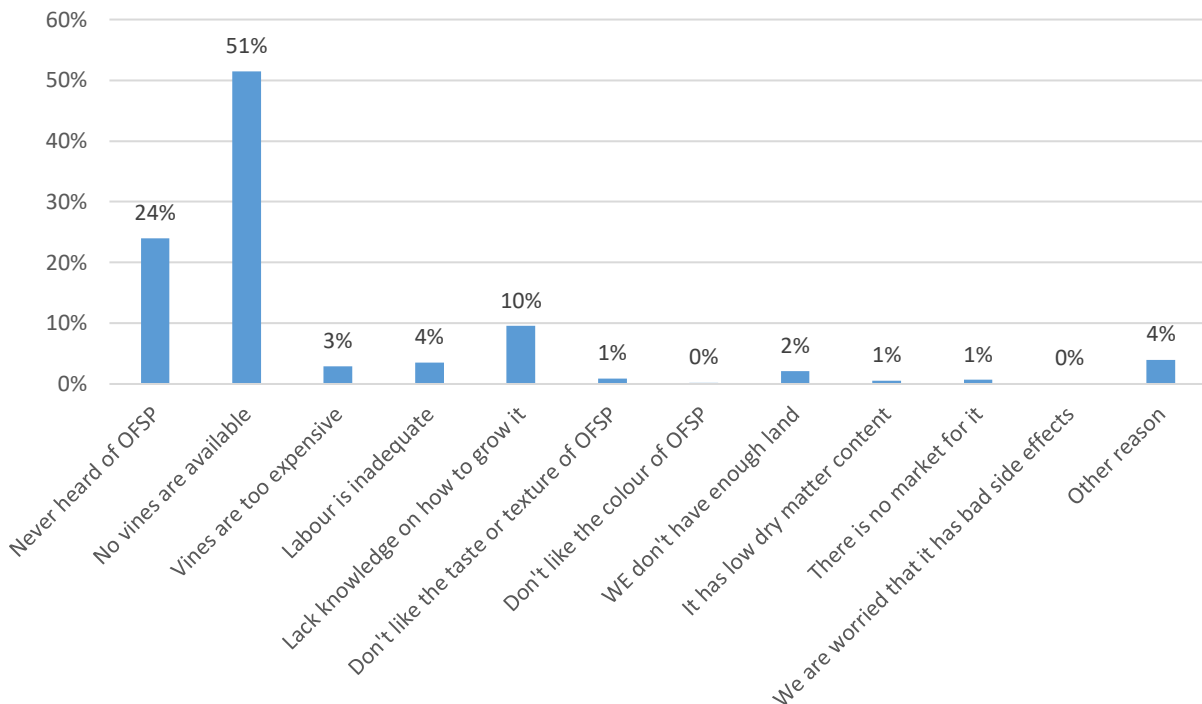


Figure 3-9 presents the findings on a question which asked respondents to identify the reason they did not grow OFSP. The main responses were, in order of frequency, “No vines are available,” “I’ve never heard of orange fleshed sweet potato,” and “Lack the knowledge on how to grow it.”

It should be noted that, in the baseline survey, by far the most common reason for not growing OFSP was that respondents had never heard of OFSP. Presumably, the radio programs familiarized many more people with OFSP. Lack of vine availability and lack of knowledge on how to grow OFSP were the second and third most common responses in the baseline survey.

Figure 3-9: Reasons why respondents don't grow OFSP, Ghana



Other production results

- A significant percentage of sweet potato farmers grow OFSP exclusively in the coverage areas for Ahomka FM (50% exclusive OFSP growers) and North Star (30%).
- North Star has the highest percentage of sweet potato growers who grow half or more of their sweet potato crop as OFSP at 69%, followed by Ahomka FM and Asafo FM at 50% and Nabiina at 39%. (It should be noted that Ahomka FM and Asafo FM had only 6 and 2 sweet potato growers, respectively.)

3.2.5 CONSUMPTION

This section presents the outcome survey findings on consuming OFSP, and a comparison of consumption patterns between baseline and outcome surveys.

As shown in **Figure 3-10**, the percentage of respondents who had eaten OFSP in the last 7 days before the outcome survey was much higher in ALCs than in PLCs, and much higher in PLCs than in CCs. It appears that listening to the OFSP programs increased consumption of OFSP.

As shown in **Figure 3-11** and consistent with other findings, the percentage of respondents who had eaten OFSP in the last 7 days was higher at stations in the Northern and Upper East Region (and much higher at North Star) than for stations in other regions.

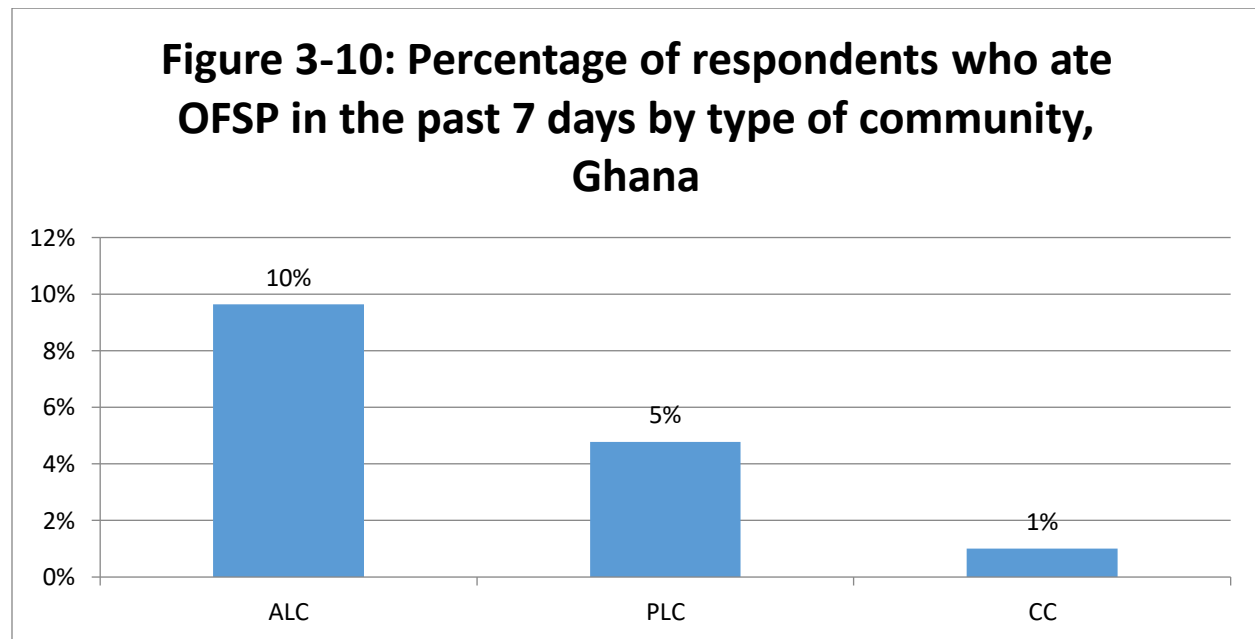


Figure 3-11: Percentage of respondents who ate OFSP within past 7 days, by station, Ghana

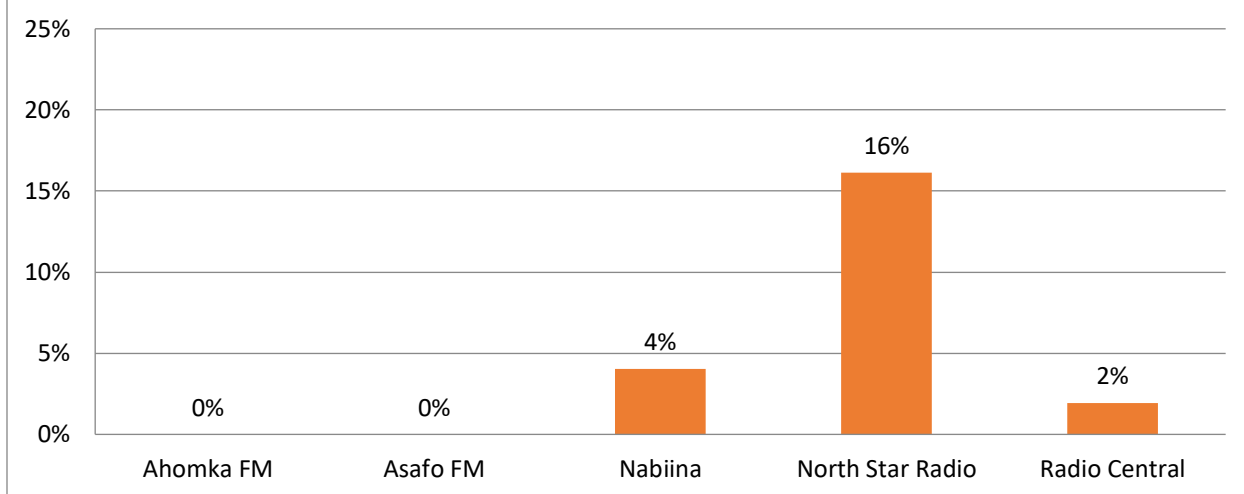
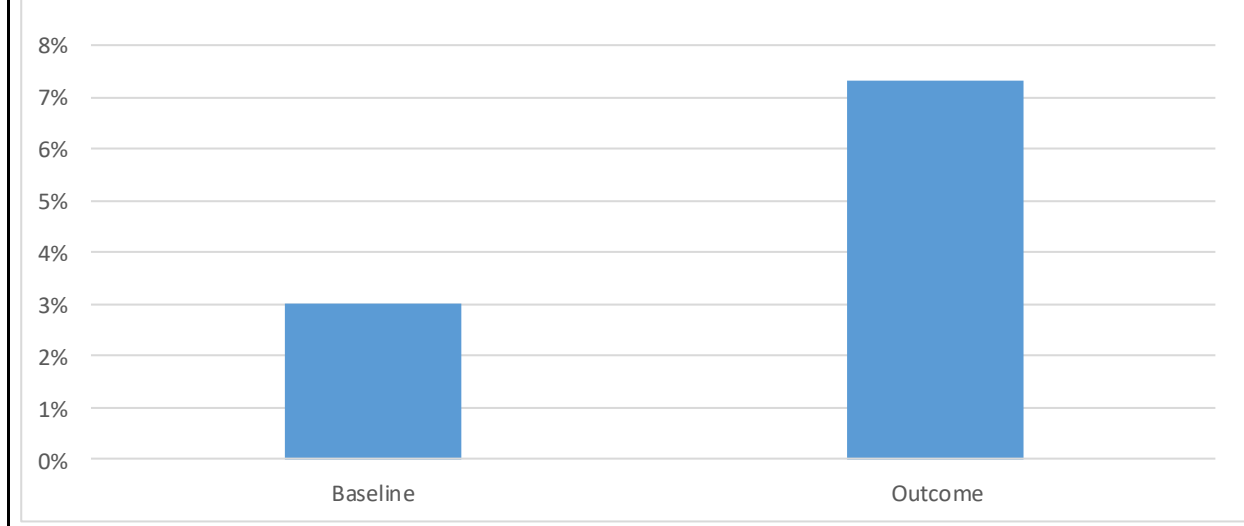


Figure 3-12 shows that the percentage of respondents who had eaten OFSP in the 7 days before the survey more than doubled from 3% to 7% between baseline to outcome.

Figure 3-12: Percentage of respondents who ate OSP in past 7 days, baseline vs. outcome, Ghana



As shown in **Table 3-7**, at the time of the outcome survey, there were an estimated 13,800 additional households consuming OFSP, when the survey results are extrapolated to the radio station's coverage areas.

Table 3-7 New households eating OFSP

Consume OFSP within 7 days of baseline survey	Consume OFSP within 7 days of outcome survey	Difference (in % of respondents who consumed OFSP)	New households eating OFSP (extrapolating % difference to total listening area)
3%	7%	(7% - 3% =) 4%	13,800

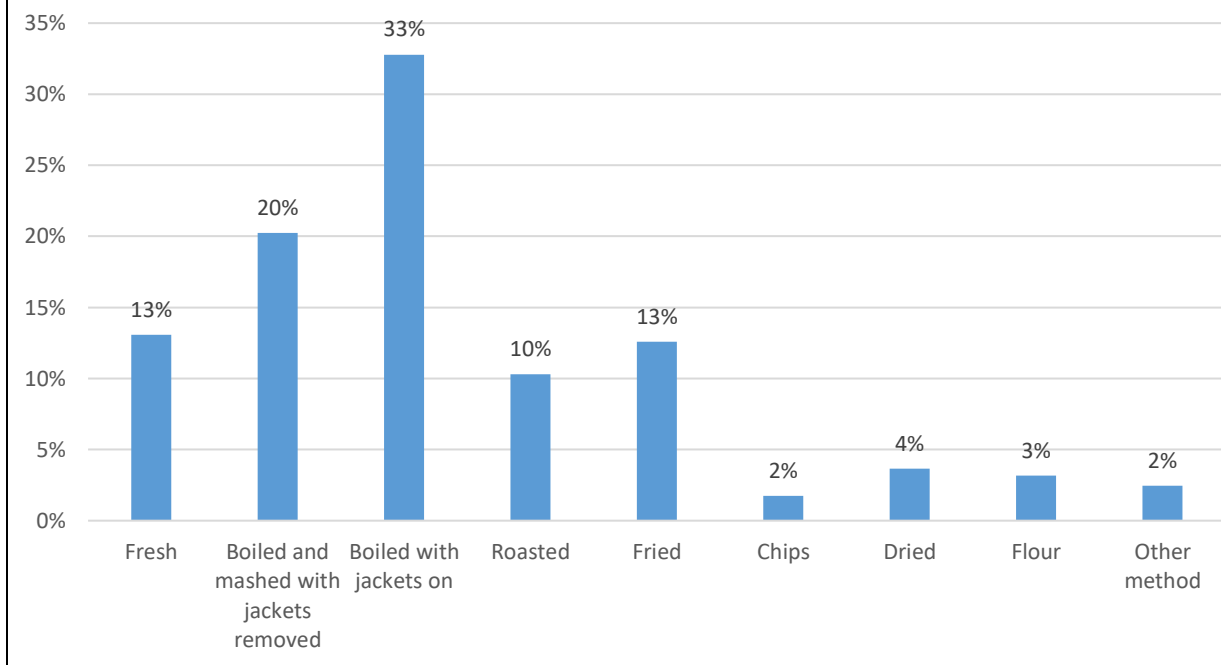
As shown in **Table 3-8**, respondents in listening communities eat OFSP much more frequently than respondents in non-listening communities. Also, there is a clear connection between more frequent listening and a higher rate of consuming OFSP.

Table 3-8: Other consumption results

Frequency of eating OFSP by type of community			
ALC: Daily: 20% More than twice a week: 58% Rarely: 6%	PLC: Daily: 26% More than twice a week: 61% Rarely: 8%	CC: Daily: 9% More than twice a week: 24% Rarely: 36%	
Percentage of respondents who eat OFSP, by number of episodes heard			
None: 1%	Two: 3%	Half: 13%	All: 11%

As shown in **Figure 3-13**, by far the most popular method of preparing OFSP was boiling the root “with jackets on.” This is consistent with the baseline survey, but much more marked. In contrast, the percentage of respondents who prepared OFSP by roasting dropped significantly between baseline and outcome, presumably in response to radio messages that this cooking method does not effectively retain vitamin A. Preparation methods were similar across all types of communities (not shown).

**Figure 3-13: Method of preparing OFSP, Ghana
(percentage of total number of methods
identified by respondents)**



3.2.6 MULTIPLYING, SELLING, AND MANAGING PESTS

This section presents FRI's findings on

- multiplying vines,
- using pest management practices,
- selling OFSP roots,
- processing OFSP before selling, and
- selling vines.

As shown in **Figure 3-14**, the percentage of growers who multiply vines is higher in listening communities for all radio stations. The only exception to this trend was North Star FM, but there was only 1 grower from a control community in this region. It should also be noted that the number of OFSP growers in Ahomka FM and Radio Central's coverage area is small, at 11 and 19, respectively, compared to 137 and 144 at North Star and Nabiina, respectively.

Figure 3-14: Percentage of respondents who multiply OFSP vines, by station and type of community, Ghana

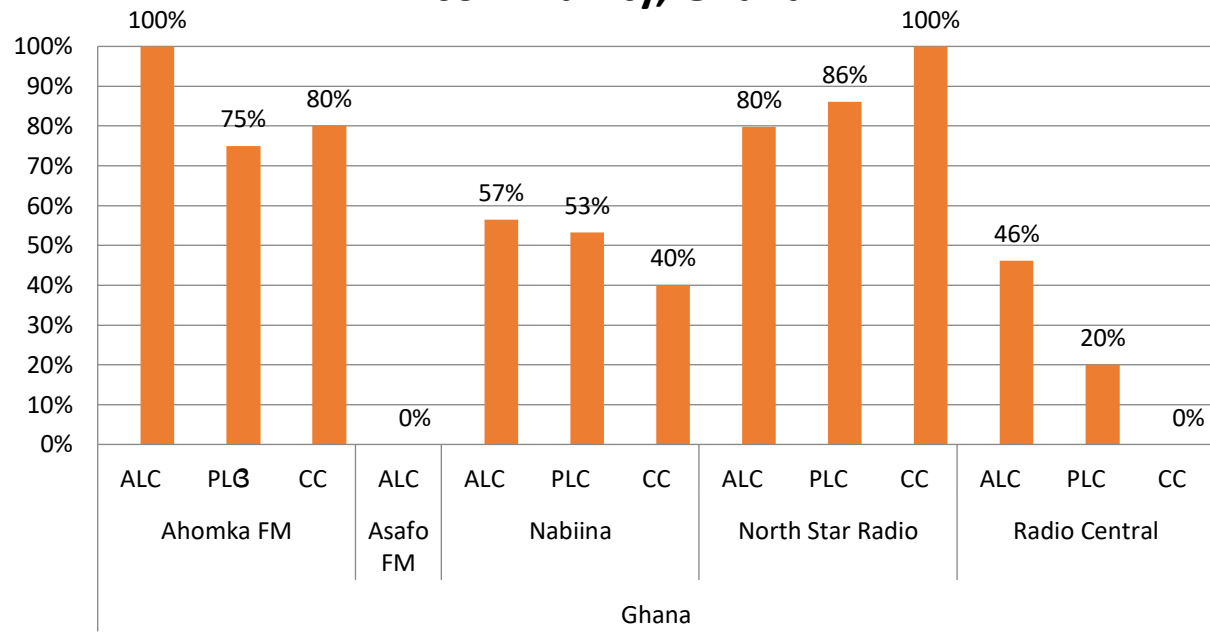


Figure 3-15 shows that respondents in listening communities were somewhat more likely to spray to control pests, and somewhat less likely to do nothing to manage pests, than respondents from CCs, though the number of OFSP growers in CCs was very small, at 13. These changes are consistent with the messages about pest management broadcast on the OFSP programs.

Figure 3-15: Actions taken to control pests by type of community, Ghana

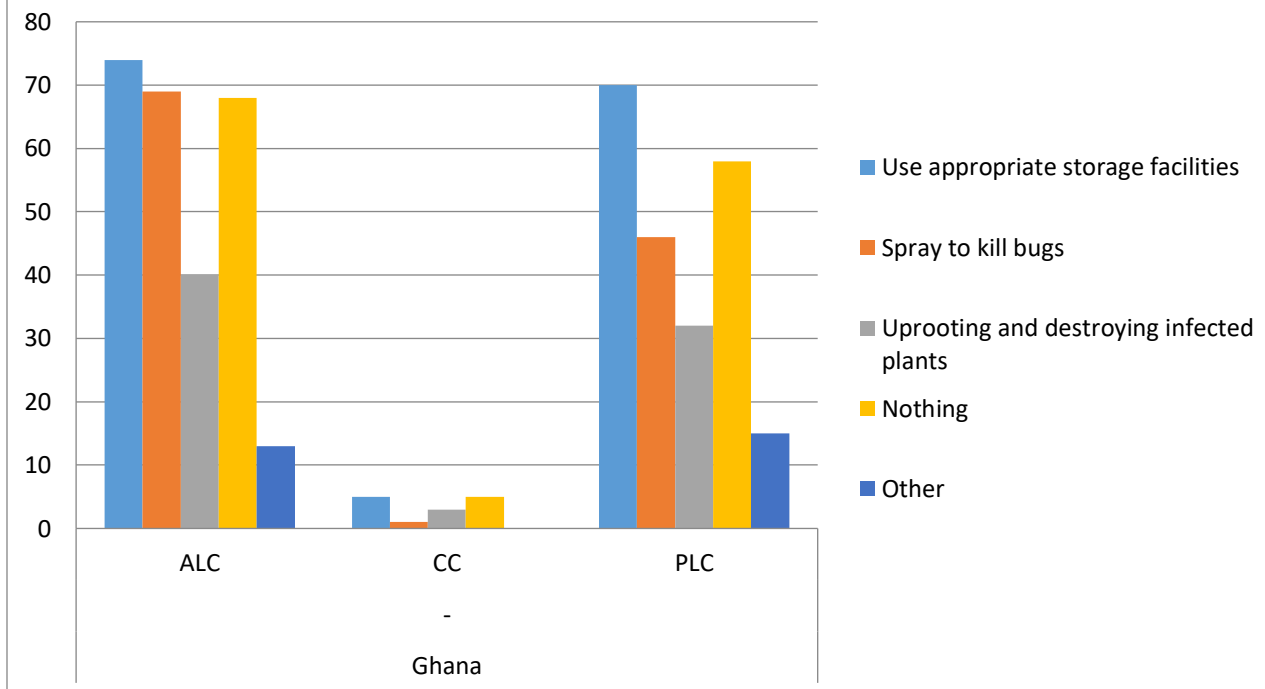


Table 3-9 shows that a much higher percentage of respondents in non-listening communities sell OFSP, process OFSP before selling, and sell vines, compared to respondents in listening communities. However, as mentioned above, the number of OFSP growers in CCs in Ghana is small (13).

The percentage of respondents who sell OFSP is much greater in ALCs than in PLCs.

Table 3-9: Other results

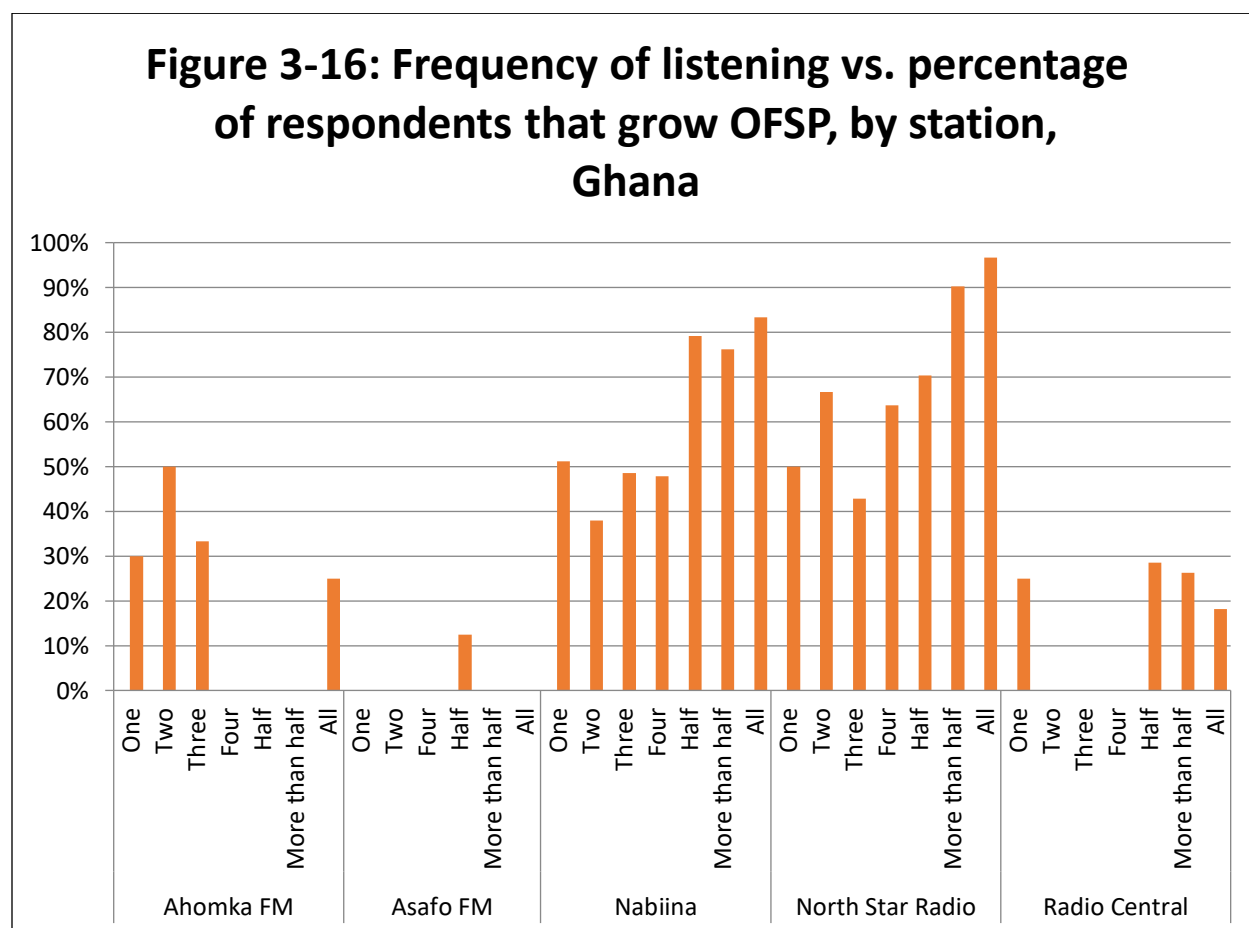
% of respondents who sell OFSP, by type of community		
ALC: 45%	PLC: 23%	CC: 46%
% of respondents who process their OFSP before selling, by type of community		
ALC: 26%	PLC: 29%	CC: 50%
% of respondents who sell vines, by type of community		
ALC: 17%	PLC: 16%	CC: 57%

3.2.7 LISTENING BEHAVIOUR AND SOURCE OF INFORMATION ABOUT OFSP

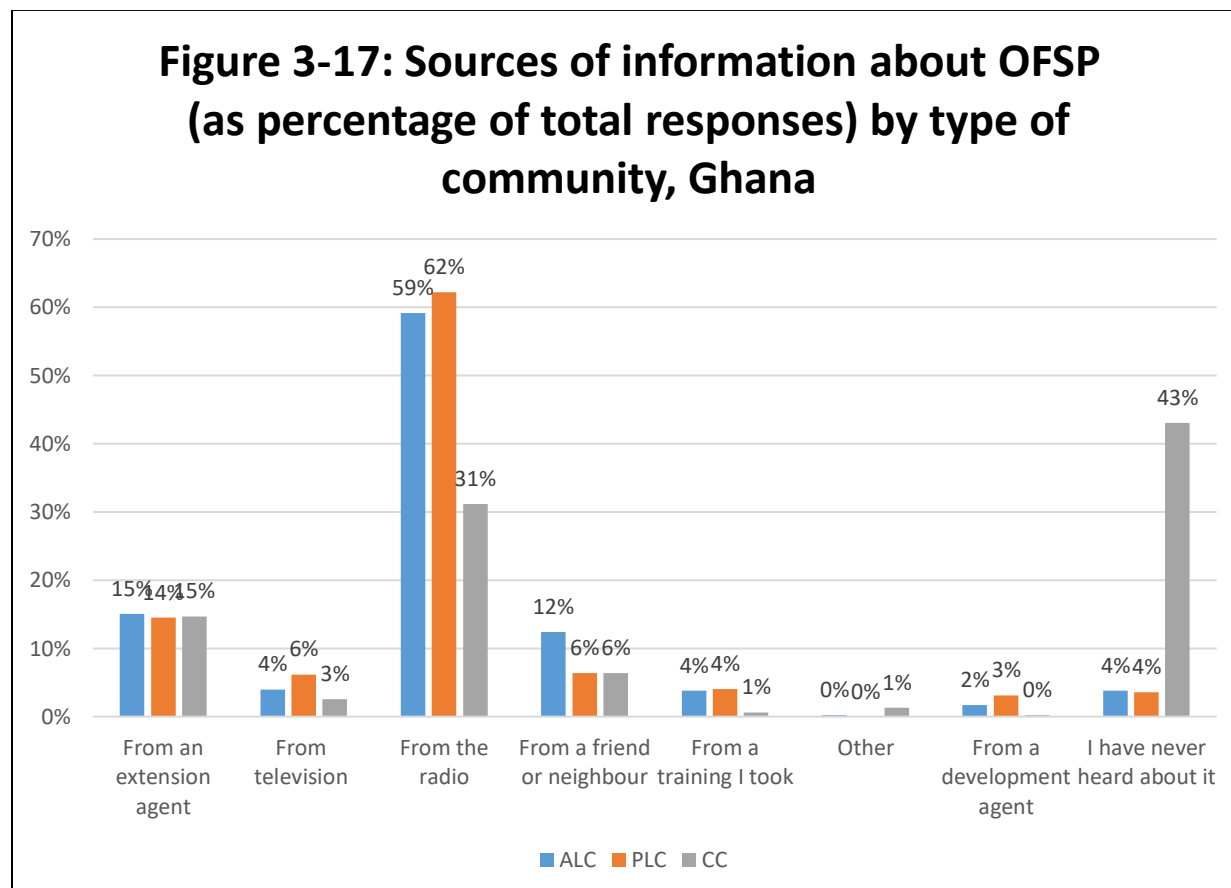
This section presents information about:

- the frequency of listening,
- awareness of the program among respondents,
- what percentage of those who were aware of the program actually listened,
- respondents' opinions on the most useful sources of information about OFSP, and
- the relationship between frequency of listening and both yield and production of OFSP.

As shown in **Figure 3-16**, the general trend at Nabiina FM and North Star Radio is that respondents who listen more frequently are more likely to grow OFSP. The trend is mixed at the other stations, and the numbers of respondents much smaller.

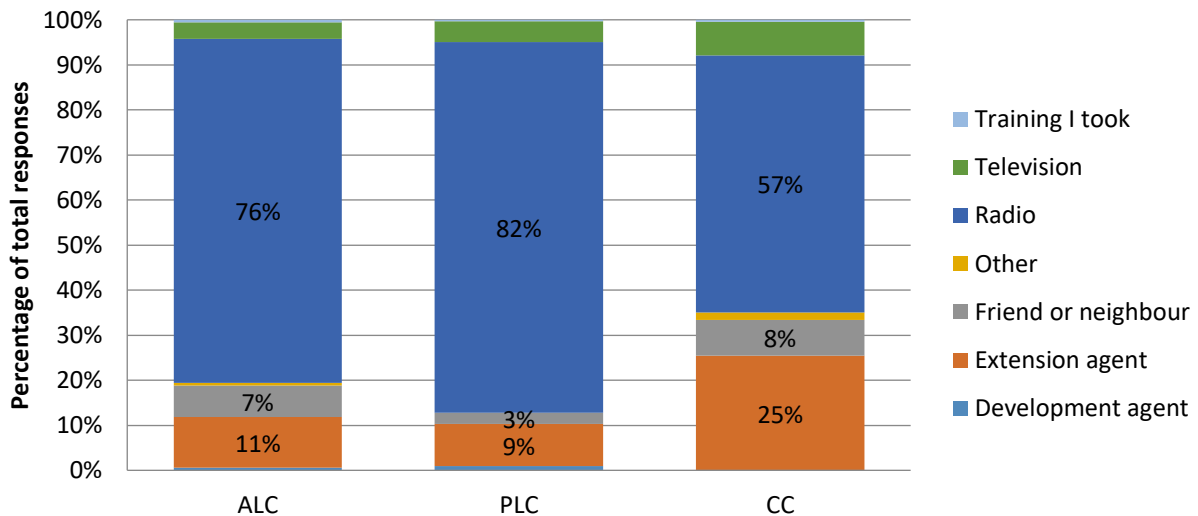


As shown in **Figure 3-17**, overall, radio is by far the most common source of information about OFSP in all types of communities. Breaking down the findings by station/region (not shown), radio is the most common source of information about OFSP at every station everywhere —overwhelmingly so at Nabiina, North Star, and Asafo, but only slightly so at Ahomka and Radio Central, where extension is much more important.



As shown in **Figure 3-18**, radio was considered the most useful source of information about OFSP by the vast majority of respondents in all types of communities. A larger percentage of respondents from CCs than from listening communities chose extension agents as the most useful source. It should be noted that, during the project, the Ministry of Food and Agriculture had few trained staff with adequate knowledge of OFSP.

Figure 3-18: Source with most useful information by type of community, Ghana



Other results

- As expected, a much higher percentage of respondents from listening communities was aware of the program, compared to respondents from control communities. Awareness of the radio program was generally greater in Nabiina and North Star's coverage areas than in the other stations' coverage areas.
- A very high percentage of respondents in ALCs and PLCs who were aware of the program (94% in each type of community) listened to it. The program was very well-publicized in both ALCs and PLCs, and the health benefits of OFSP triggered lots of publicity and demand.
- There is no clear relationship between frequency of listening and respondents' self-reported yield of OFSP at any station.

3.3 PROGRAM QUALITY

In the outcome survey, we asked respondents to rate the quality of the OFSP radio programs on five different measures. As shown in **Table 3-10**, respondents rated the programs very positively: the percentage of respondents who said the program was much better or somewhat, or who agreed or strongly agreed with the quality statements ranged from 91-98%.

Table 3-10: Program quality (N = 634) ¹⁸

	Much better (%)	Somewhat better (%)	About the same (%)	Somewhat worse (%)	Much worse (%)
Comparing the PRC program to other agricultural programs (N = 634)	82	9	9	0	0
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
The program was relevant to my needs as a farmer (N = 634)	66	32	2	0	0
The program came on at the scheduled time (N = 634)	64	34	2	0	0
I found the program entertaining (N = 634)	68	30	1	0	0
The program was relevant to women farmers ¹⁹ (N = 339)	61	32	2	4	0

¹⁸ Figures may not add up to 100 because of rounding.

¹⁹ This question was asked only to women.

3.4 MEDIA SCAN IN GHANA

There was a great deal of media interest and coverage of FRI's activities in Ghana on this project. This section includes a newspaper article and links to several FRI blog posts and YouTube videos.

Throwing an outdoor party for Vitamin A Sweet Potato

By Dr. Doris Dartey (from the Ghanaian Spectator, October 3, 2015)

It is not often that you get the privilege to attend a party for a farm produce. Say, you would not attend a cassava party, plantain party, or cocoyam party! Normally, parties are thrown for people, not for farm produce. So a farm produce that is celebrated and presented to Ghana in grand style at an outdoor party must be very special.

Last week, The Editors Forum Ghana and Farm Radio International teamed up to throw a grand outdoor party for Orange Fleshed Sweet Potato at the International Press Centre in Accra. Dear reader, you should have been there. You missed so much—the food was varied and yummy! And it was for free—an all-you-can-eat type of event. The attendance was superb and fun.

MY SWEET POTATO JOURNEY

I first heard of this special sweet potato four years ago; not by the name Orange Fleshed Sweet Potato! I was just told that there is a colourful sweet potato that is very nutritious. It is supposed to be fully-packed with vitamins; that it is nothing like any potato I had ever seen or eaten. This particular potato, I was told, is especially superb for children to enable them grow better. At the time, my granddaughter Nyarks had a certain health condition and needed something extraordinary to aid her growth.

Even the little I heard about this special potato got my full attention because it sounded like a wonder crop. So I began a search for this extraordinary sweet potato to feed my grandchildren; and for us grown-ups to possibly rejuvenate aging bones.

I searched every place I could think of where food crops are sold. Since it is potato, I expected it to be sold where tubers like yams are sold. I went to the markets; they had none—had not even heard of it. I went to shops, especially the modern-day supermarkets; they had none. Some said they had heard of it but had not seen it. Some presented me with the old-school local potatoes, which I knew very well because during my teenage years, I personally grew our local potatoes in my grandfather's garden.

My search for the extraordinary sweet potato was extended beyond Accra. On my travels to cities like Kumasi, Takoradi, Tamale and Bolgatanga, as well as to rural parts of the country, I asked people, 'Have you heard of the special sweet potato?' No one had a clue. I was amazed that the search for this sweet potato was turning out to be like searching for a needle in a hay stack; it was supposed to be there but it cannot be found.

It was not until last year that I met Ben Fiafor of Farm Radio in Cape Coast who more than knew how I could find the sweet potato; he had played a critical role in the promotion of growing the crop in Ghana. Through him, I was able to order for my first supply of Orange Fleshed Sweet Potatoes! With that chance encounter with Ben, my search came to an end and I had access to sources of sweet potatoes; and I got to know it by its real name and all that it does.

I had since struggled with the thought of how something that is supposed to be so good could be so difficult to find right here in this country. I later found out that there are farmers who are growing this crop in Ghana but people do not know of the crop let alone to hunger after it. The outdoor party last week was therefore a public statement to introduce the Orange Fleshed Sweet Potato to Ghana. Yes, you can get it too! The secret is out!

HOW GOOD IS ORANGE FLESHED SWEET POTATO?

The more I have learned about this sweet potato, the more I have become convinced that it is truly extraordinary. It is said to be ‘a powerhouse of Vitamin A’. It is estimated that Vitamin A deficiency affects seven out of ten Ghanaian children under five years of age, resulting in poor growth and development, with its attendant risks of infections, visual problems, and even death.

I have read several scientific research reports on the public health benefits of this sweet potato. Research suggests that Orange Fleshed Sweet Potato reduces the chance of diarrhoea and infections in children. It is also good for pregnant women toward the development of the foetus—the forming unborn child. They make a persuasive case for a nation-wide adoption for this potato.

It can be incorporated into our local meals. Cook the potato like you will cook yam, plantains and cocoyam. It can be cooked mashed into ‘mpotomponto’ with fish or meat. You can use the leaves for stew as your leafy green alternative.

As the name implies, it is sweet. Children love it and it is good for them. Even the colour is yummy—orange! Consuming an egg-size of Orange Fleshed Sweet Potato daily is adequate for a child’s daily Vitamin A needs. If a piece of Vitamin A Sweet Potato can improve the health of children, then why don’t we adopt it in Ghana’s school feeding programme? Wiesel-infested processed white rice does not compare with Vitamin A-enriched sweet potato.

At the outdoor sweet potato party, a variety of meals were on display. It was fried. It was boiled. It was roasted. It was made into soup, drinks/juices, chips, flour for bread and pastries for pies and cakes, cereal, yoghurt, ice cream, pudding, and many other delicacies. It was mixed with various things to create sumptuous mouth-watering dishes. My mouth waters as I remember the Vitamin A sweet potato party!

It is not surprising that the son of our land, former United National Secretary General Kofi Annan has asked Ghanaians to adopt this sweet potato to prevent child malnutrition with its associated stunted growth. Last year, I read online that Michelle Obama’s garden in the White House has Orange Fleshed Sweet Potato. If it is good for her, it must be good for us too. Or?

PLANT YOUR OWN SWEET POTATO AT HOME

You can grow your own sweet potato at home, making use of any small-sized land. You know what they say that God has so much blessed our homeland Ghana that we can grow just about anything. I have

planted the Vitamin A sweet potato in a small patch of land in my home. I have been harvesting the leaves for stew.

I am allergic to the almighty 'kontomire', the leaves of cocoyam. Although I love it very much, it makes my tongue and throat itch. That limits my consumption of greens since I am very suspicious of cabbages because of the way they are grown. You never can tell what very unholy gutter-water was used to grow vegetables you see around. So having my own Orange Fleshed Sweet Potato leaves to harvest fresh at home has brought greens into my otherwise lousy carbohydrate-loaded unhealthy diet.

BLOG ENTRIES AND YOUTUBE VIDEOS²⁰

Audio postcard: *Using cooking shows to talk about nutrition:*

<http://www.farmradio.org/ourblog/2015/04/06/audio-postcard-using-cooking-shows-to-talk-about-nutrition/>

Audio postcard: *Radio program helped farmers access vines to grow nutritious orange-fleshed sweet potato:* <http://www.farmradio.org/ourblog/2014/07/17/audio-postcard-radio-program-helped-farmers-access-vines-to-grow-nutritious-orange-fleshed-sweet-potato/>

Farm Radio International YouTube video: *OFSP Market sellers in Dzodze, Volta Region:*

<https://www.youtube.com/watch?v=F4o8ZFHRxk&feature=youtu.be>

Farm Radio International YouTube video: *Princess Francisca, OFSP chef from Volta:*

<https://www.youtube.com/watch?v=jVvJIrfzJFs>

Farm Radio International YouTube video: *Farmers Receive Solar Radio Sets.*

https://www.youtube.com/watch?v=E_QCJaY3guc

Farm Radio International YouTube video: *Farm Radio International launches orange-fleshed sweet potato in Ghana:* <https://www.youtube.com/watch?v=HY4qQYJG4RQ>

²⁰ All websites cited on this page accessed on June 2, 2016

3.5 REPORT ON FOCUS GROUP DISCUSSIONS CONDUCTED WITH LISTENING GROUPS IN GHANA

With the assistance of Ministry of Food and Agriculture extension workers, FRI staff conducted focus groups in ALC, PLC, and CC communities in the Upper East and Northern Regions. The results follow.

UPPER EAST REGION

Active Listening Communities (ALCs)

Of the 93 focus group participants in the two Upper East Region ALCs, 63 (68%) were aware of the PRC: 40 from Punyoro and 23 from Telania. Fifty-two farmers (56%) had tried practices promoted on the programs. These included:

- planting OFSP (20 in Punyoro, 7 in Upper Telania)
- consuming OFSP (32 in Punyoro, 23 in Telania)
- feeding children OFSP (32 in Punyoro, 23 in Telania)
- buying vines (15 in Punyoro, 2 in Telania)
- selling vines (5 in Punyoro, 2 in Telania)
- selling roots (20 in Punyoro, 7 in Telania)
- using only healthy vines
- preparing OFSP tubers and leaves in stews, soup, tea, and beverages
- multiplying vines
- planting on ridges and beds instead of mounds
- growing OFSP in the dry season
- cutting vines to the right size and length (3-4 nodes per cutting)

No respondents in either community processed OFSP for sale.

Barriers to trying OFSP included:

- busy schedule
- pest infestation
- drought
- initial distrust of messages
- misconceptions about OFSP
- lack of effective fencing for gardens
- destruction of gardens by animals
- lack of good markets

Respondents in the two communities considered the following benefits from listening to the radio program as the most significant:

- know how to grow OFSP and multiply vines
- know how to care for and maintain OFSP vines in the dry season
- cleared up misconceptions about OFSP
- increased yield to receive extra income

Passive listening communities (PLCs)

Ninety of 209 participants (43%) in the two Upper East PLCs were aware of the PRC program, and 81 (39%) had tried the promoted practices, including:

- planting OFSP (11 in Gia, 74 in Manchoro)
- consuming OFSP (27 in Gia, 108 in Manchoro)
- feeding children OFSP (26 in Gia, 108 in Manchoro)
- buying vines (6 in Gia, 32 in Manchoro)
- selling vines (3 in Gia, 13 in Manchoro)
- selling OFSP roots (4 in Gia, 14 in Manchoro)
- preparing tubers and leaves in stews, soup, tea, and beverages
- multiplying vines
- planting on ridges and beds instead of mounds
- cutting vines to the right size and length (3-4 nodes per cutting)
- weeding and maintaining OFSP farm
- storing roots to prolong shelf life
- using triple S system to ensure healthy vines and seeds
- clearing up misconceptions about OFSP

Barriers to trying OFSP included:

- scarcity of vines
- lack of access to radio
- lack of fertilizer
- unavailability of water/lack of rains/erratic pattern of rainfall
- lack of fencing for gardens and vine production
- financial constraints

Production challenges included:

- weevil infestation
- labour-intensity of creating raised beds
- pest and disease infestation
- low prices for roots

Respondents in the two communities considered the following benefits from listening to the radio program as the most significant:

- increased profit
- increased yield for extra income
- better health after consuming OFSP
- learn to eat leaves for health

Control Communities (CCs)

Nine of the 397 farmers (2%) in the two Upper East control communities of Kayoro and Yua were aware of the programming, as it is occasionally possible to hear Nabiina FM's signal in Kayoro. While these farmers knew the programs were about OFSP and a few were somewhat familiar with OFSP, none had tried any of the practices promoted through the PRC.

NORTHERN REGION

ALCs

One hundred and thirty of 203 participants (64%) in the two ALC focus group discussions in Tibali and Voggu were aware of the PRC programs, and 101 (50%) had tried some of the promoted practices, including:

- planting OFSP (18 in Tibali, 34 in Voggu)
- consuming OFSP (50 in Tibali, 74 in Voggu)
- feeding OFSP to children (50 in Tibali, 74 in Voggu)
- buying vines (9 in Voggu)
- selling vines (4 in Voggu)
- selling roots (6 in Voggu)
- using leaves to prepare soup, stews, and teas, and using tubers for other recipes
- planting on ridges and beds instead of mounds
- cutting vines to the right size and length (3-4 nodes per cutting)

No farmers in Tibali or Voggu processed and sold OFSP.

Barriers to trying OFSP included lack of access to vines and drought.

Respondents in the two communities considered the following benefits from listening to the radio program as the most significant:

- growing OFSP for consumption
- increased yield for extra income

PLCs

Ninety-six of 111 participants (86%) from the two PLCs in Gbumgbum and Sanvuli were aware of the PRC, and 38 (34%) had tried the promoted practices, including:

- planting OFSP (29 in Gbumgbum, 48 in Sanvuli)
- consuming OFSP (55 in Gbumgbum, 54 in Sanvuli)
- feeding OFSP to their children (55 in Gbumgbum, 54 in Sanvuli)
- buying vines (3 in Sanvuli)
- selling roots (1 in Sanvuli)
- preparing and planting on ridges rather than mounds
- weeding and maintenance of OFSP

Barriers to trying OFSP included:

- scarcity of vines
- lack of access to radio
- inappropriate type of soil
- unavailability of water/lack of rains
- weevil infestation
- scarcity of roots on the market
- financial constraints

Respondents in the two communities considered the following benefits from listening to the radio program as the most significant:

- increased production of OFSP
- learned that OFSP is rich in vitamin A, combats vitamin A deficiency, and that not all potatoes are the same
- regularly feed OFSP to children
- learned to consume the leaves to boost health

CCs

None of the 218 participants in the control communities in Makayili or Dimonayili could hear the programs as there was no radio signal available.

3.6 KEY FINDINGS AND CONCLUSIONS

The major findings in Ghana were increases in knowledge and consumption. There are also some new OFSP farmers. Respondents in listening communities had higher knowledge scores, grow OFSP more often, are more likely to eat OFSP, and eat it much more frequently than respondents in non-listening communities.

OVERALL

- Estimated number of listeners: 344,100
- Estimated number of new OFSP farmers since baseline: 34,400
- Estimated new household eating OFSP: 13,765

KNOWLEDGE

The most impressive results were gains in knowledge. The findings show that listening to the OFSP programs resulted in better knowledge of nutrition, vitamin A, and the nutritional benefits of OFSP. More frequent listeners scored higher than less frequent listeners or non-listeners.

There were gains in knowledge in both stations which participated in the baseline and outcome surveys.

PRODUCTION

Though the gains in production were not as dramatic or consistent as the gains in knowledge, there was a 22% increase in the percentage of farmers who grew OFSP from baseline to outcome, from 46-56%. The trend at Nabiina FM and North Star Radio is that respondents who listen more frequently are more likely to grow OFSP. Also, the percentage of respondents who grew OFSP was dramatically greater in listening communities, with 58% of ALC respondents, 53% of PLC respondents, and only 3% of CC respondents growing OFSP. This clearly links listening to the program with growing OFSP.

The main reasons respondents gave for not growing OFSP were, in order of frequency, “No vines are available,” “I’ve never heard of orange fleshed sweet potato,” and “Lack the knowledge on how to grow it.” This hints at significant unmet demand. With regard to the lack of vine availability, in future projects, radio could play a role in reflecting the demand for goods and services such as planting materials, and help match supply to demand by involving suppliers at the formative stages of the project.

It should be noted that, in the baseline survey, by far the most common reason for not growing OFSP was that respondents had never heard of OFSP. This option was chosen far less frequently in the outcome survey. Thus, the programs appear to have significantly raised awareness of OFSP.

CONSUMPTION

Consumption of OFSP increased between baseline and outcome, and listeners were much more likely to eat OFSP than non-listeners. Eating OFSP twice a week or more was more common in listening communities than in CCs.

Children’s consumption of OFSP

There were survey problems and, possibly, sampling problems associated with some of our questions on children’s consumption of OFSP. These problems unfortunately invalidated some of our research on

children's consumption. Thus, while we have data from the outcome survey on children's consumption of OFSP and the frequency of that consumption, we have no basis for comparison between baseline and outcome, and cannot determine whether children's consumption increased over the duration of the project.

In the outcome survey, a much higher percentage of households in listening communities reported that they fed OFSP to their children under 5, compared to control communities.

Differences between stations/regions

Respondents in the Northern and Upper East Regions had higher levels of knowledge of OFSP and vitamin A at baseline and there was, therefore, less room for improvement in these areas. Also, the percentage of respondents who grew and ate OFSP at baseline was much higher in these regions.

The Upper East Region is a sweet potato-growing area and already had an indigenous orange-fleshed variety, though they were unaware of its benefits and sold it in Burkina Faso. Through the radio program, growers learned the benefits and began to consume some of what they grew, while continuing to market it in Burkina Faso.

In the Northern region, the increase in consumption and production between baseline and outcome was triggered by the presence of community nurseries which helped almost everyone gain easy access to vines.

Differences between types of community

Listening communities had higher levels of knowledge, grew OFSP more often, were more likely to consume OFSP, and consumed OFSP much more frequently, clearly attesting to the impact of the radio programs.

Program quality: On five measures of program quality, 91-98% of respondents agreed or strongly agreed that the program was high quality.



CHAPTER 4: TANZANIA

4.1. INTRODUCTION

TARGET AREAS IN TANZANIA

The project focused on two zones in Tanzania: the Eastern zone, covering areas along or near the Indian Ocean coast and Zanzibar, and the Lake Zone, covering areas near Lake Victoria. Various organizations have conducted many activities promoting OFSP in these areas over the last several years.

For example, *Reaching Agents of Change* has worked mainly in the Lake Zone and Eastern Zone (Dar es Salaam, Tanga, and Zanzibar.) The organization mainly targeted farmer groups, but success has remained isolated to pilot areas. Because FRI used radio and ICTs in this project, we were able to reach many more people than earlier projects.

Eastern Zone

In the Dar es Salaam area (particularly in Temeke district, Kigamboni area), farmers have adopted OFSP largely for commercial purposes. Farmers in Morogoro Region are expressing increased interest in growing OFSP, particularly in Kilosa and Ulanga districts. Gairo district is famous for producing sweet potatoes on a commercial basis.

Lake Zone

Farmers in the Misungwi district of Mwanza Region have been successfully growing a lot of OFSP. As a result, farmers from areas such as Maswa and Kishapu districts visit Misungwi for vines. Ukerewe district in Mwanza Region grows a lot of sweet potatoes, especially now that cassava has been affected by cassava mealy bug. Farmers in the Dodoma and Singida Regions of central Tanzania are increasingly expressing interest in growing OFSP—a good example is Singida rural district, where the District Commissioner is an OFSP champion.

PRODUCTION STATUS

The Lake and Eastern Zones have different growing seasons. Areas along Lake Victoria have two rainy seasons when potatoes can be grown: the short rainy season from September to December, and the long rainy season from mid-February to April. Farmers near Lake Victoria can grow potatoes throughout the year with irrigation. February is the main planting season. In central Tanzania, Shinyanga, Singida, and Dodoma Regions have one rainy season and farmers plant sweet potato in December.

In the Eastern Zone, the main planting period is March. In Zanzibar, farmers can grow potatoes throughout the year because of the good rains.

Table 4-1: Details of project areas

Region	Radio stations	Community and District	Planting season	OFSP varieties
Coast	Times FM ²¹	<ul style="list-style-type: none">• Magoza, Mkuranga• Mataya, Bagamoyo• Kimbiji, Temeke	Zanzibar: Mar-June but year- round possible Elsewhere: March	Ejumla Jewel Dar carrot Kabodee

²¹ It was planned that Times FM, one of the stations originally involved in the project, would broadcast to the coastal areas, one of Tanzania's primary sweet potato-growing regions. Times FM is a commercial station with little experience in working with NGOs and research partners. After receiving training and support, the station's programs did not meet FRI's quality standards. We were unable to find an alternative station in the region, and substituted Aboud FM in Morogoro Region. Several months later, the original host of the Times FM OFSP program called FRI, requesting information and materials on OFSP to address listeners' requests. FRI sent materials, contacts, and copies of programs.

Mwanza	Radio Maria	<ul style="list-style-type: none"> • Mwasongwe and Mwalogwabagole, Misungwi • Nsola and Buhumbi, Magu 	<p>Short season: Sept-Dec</p> <p>Long season: Feb-April</p> <p>Year-round planting possible in areas around Lake Victoria</p>	<p>Ejumla</p> <p>Jewel</p> <p>Dar carrot</p> <p>Kabodee</p>
Singida	Standard FM	<ul style="list-style-type: none"> • Puma, Ikungi • Nkuninkana, Ikungi • Kipumbwiko, Ikungi 	<p>Short season: Feb-May</p> <p>Long season: Oct-Jan</p> <p>Serious dry spell between May and September</p>	<p>Only traditional white-fleshed varieties</p>
Morogoro	Abood FM	<ul style="list-style-type: none"> • Ibuti and Kiegea, Kilosa • Msingisi, Gairo 	<p>Short season: March-June</p> <p>Long season: Oct-Jan</p>	<p>Ejumla</p> <p>Jewel</p> <p>Dar carrot</p> <p>Kabodee</p>



4.2. FINDINGS IN TANZANIA

4.2.1. REACH

We extrapolated the outcome survey findings on listenership and the percentage of surveyed farmers who grow OFSP in order to estimate:

- 1) the total number of listeners in the coverage areas of the two stations, and
- 2) the total number of farmers in the coverage areas who grow OFSP

As shown in **Table 4-2**, an estimated **827,000** people listened to the OFSP programs, and an estimated **387,000** farmers are growing OFSP in the area.²²

Table 4-2: Listenership

Country	Radio station catchment area	Estimated adult population within radio coverage area	Estimated number of listeners	Estimated number of people growing OFSP in radio coverage area
Tanzania	Radio Maria	1,876,000	687,800	350,800
	Abood FM ²³	547,200	139,200	36,200
	Standard FM ²⁴	610,000		
Total in country		3,033,200	827,000	387,000

Table 4-3 shows all communities involved in the outcome survey, broken down by type of community.

Table 4-3 Communities involved in the outcome survey

ALC community/district/region	PLC community/district/region	CC community/district/region
-------------------------------	-------------------------------	------------------------------

²² For a description of the methods used to generate these estimates, see Chapter 1.

²³ After Times FM dropped out of the project, FRI decided to work in Singida Region with Standard FM. Since the baseline survey had already been done, it was decided to engage Standard FM without a baseline survey since communities in Singida were growing only ordinary sweet potatoes. Also, there were no OFSP initiatives in place. It was not expected that there would be an appreciable impact, so the outcome survey was not conducted in Singida.

²⁴ We did not conduct an outcome survey at Standard FM. Therefore, we do not have listenership numbers or any basis on which to extrapolate total listenership numbers. Thus, total listenership for Tanzania can be considered a conservative estimate.

Mwasonge, Sengerema, Mwanza	Mwajombo, Sengerema, Mwanza	Ilunda, Sengerema, Mwanza
Mwalogwabagole, Sengerema, Mwanza	Isamilo, Sengerema, Mwanza	Nyalwambu, Sengerema, Mwanza
Kiegea, Kilosa, Morogoro	Tabuhotel, Gairo, Morogoro	Masungu, Kilosa, Morogoro
Ibuti, Gairo, Morogoro	Madege, Gairo, Morogoro	Mkalama, Gairo, Morogoro

4.2.2. DEMOGRAPHICS

This section presents findings on the gender and age of respondents in Tanzania, and a breakdown of the number of respondents in ALCs, PLCs, and CCs.

As shown in **Table 4-4**, there were slightly more female than male respondents, and the largest age group was the 31-45 year-olds.

Table 4-4: Details of respondents

# of respondents by sex			
Women		Men	
369 (53.5%)		321 (46.5%)	
# of respondents by age group			
18-30	31-45	46-60	Above 60
147 (21.3%)	305 (44.2%)	158 (22.9%)	80 (11.6%)

As shown in **Table 4-5**, the number of respondents in ALCs, PLCs, and CCs was very similar.

Table 4-5: Respondents by type of community

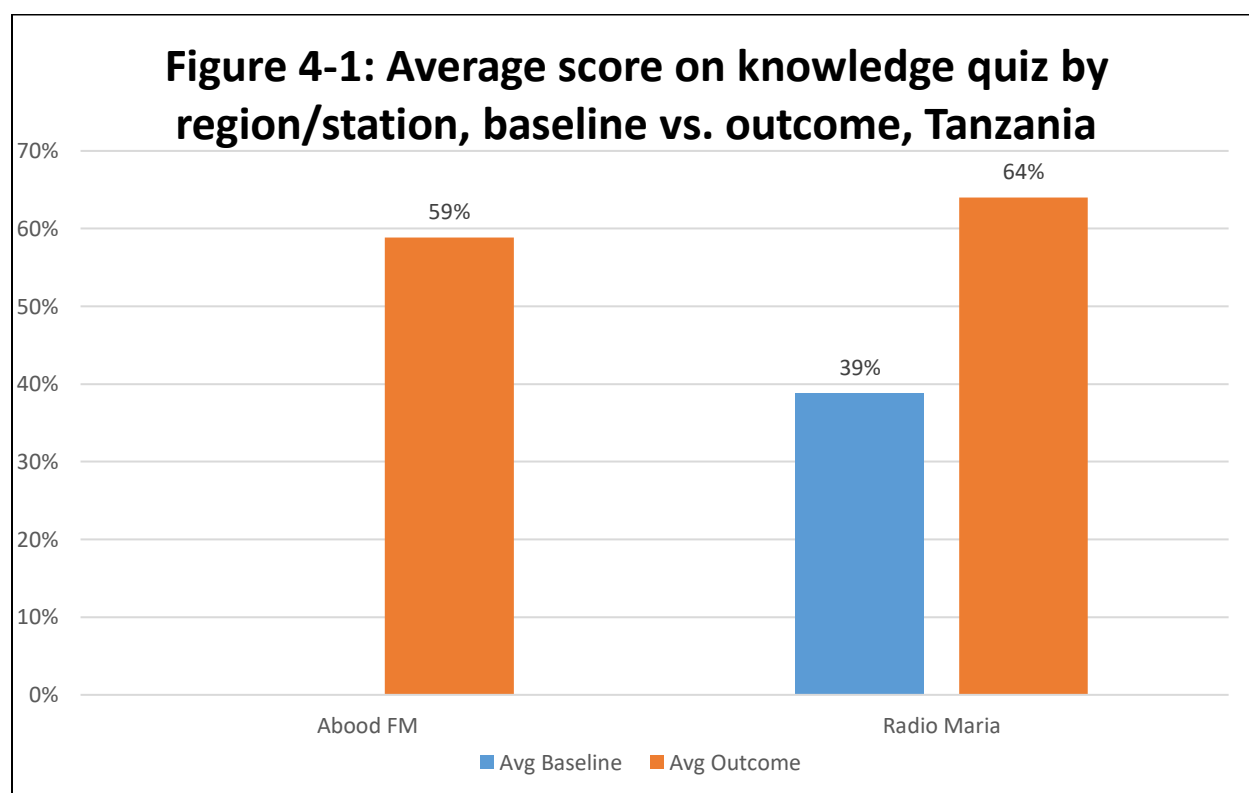
% of respondents in each type of community		
ALC: 33%	PLC: 34%	CC: 33%

4.2.3. KNOWLEDGE

The baseline and outcome surveys asked questions to test respondents' knowledge of nutrition, vitamin A, and the nutritional benefits of OFSP. Questions in the baseline survey were repeated in the outcome survey. This section presents the findings, including a comparison of scores on the knowledge quiz between baseline and outcome.

There was little difference in average score on the outcome knowledge quiz between male (56% correct responses) and female respondents (54%), with both answering slightly more than half of the questions correctly.

Figure 4-1 shows the average score by station/region, and compares scores on the baseline and outcome surveys. Only one region took part in both surveys—the Lake Zone, served by Radio Maria.²⁵ Respondents from that area improved their knowledge scores by 64% (from 39-64%) between baseline and outcome.



As shown in **Figure 4-2**, ALC and PLC communities scored significantly higher than CCs on the knowledge quiz. Thus, listening to the programs on OFSP clearly increased listeners' knowledge.

²⁵ In addition to not including Singida Region in the outcome survey (as explained in the footnote above), Abood FM in Morogoro Region was added to the project after the baseline had already been completed. Thus, only Radio Maria had both a baseline and outcome survey.

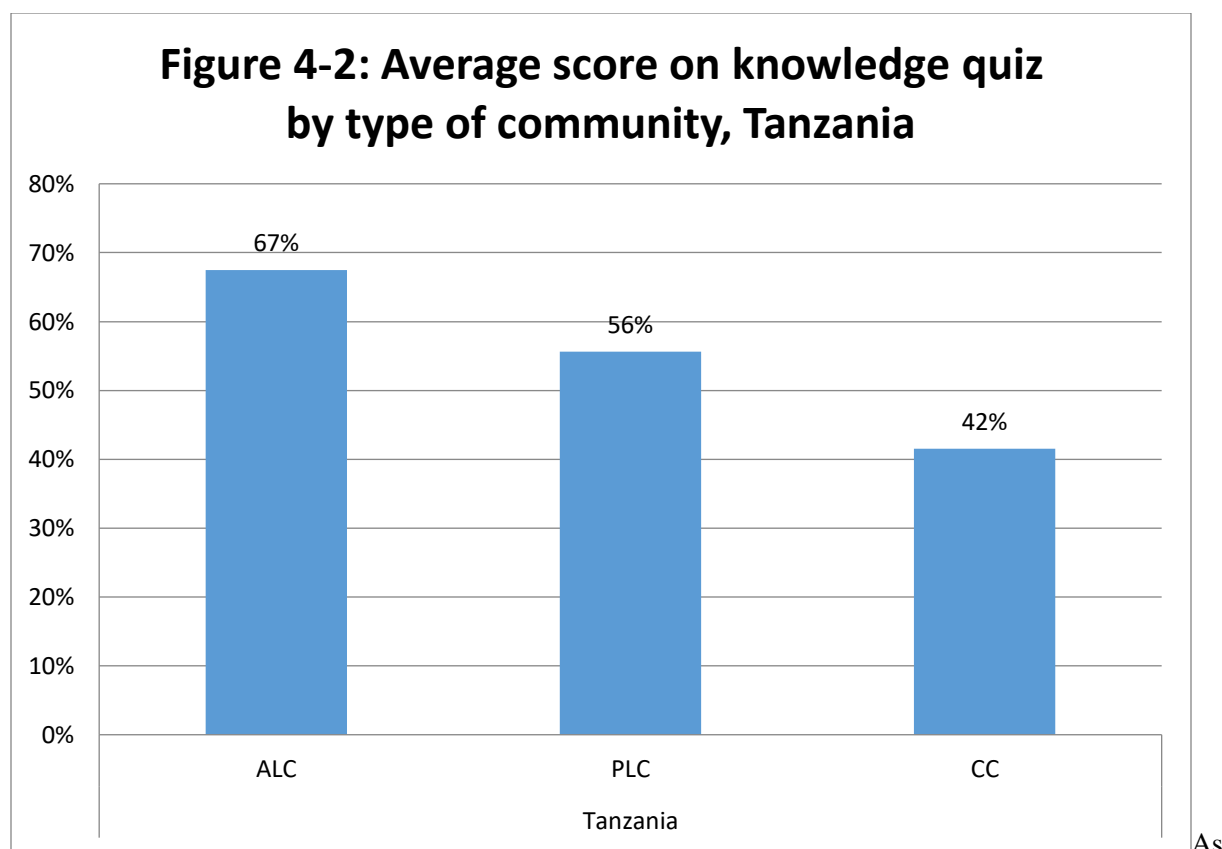


Figure 4-3 shows the percentage of respondents who answered each of the knowledge questions correctly, and compares the percentage of correct responses between baseline and outcome. With the exception of the first two questions, the percentage of respondents who answered correctly increased for all questions.

The increases ranged from 10-20% on a question on whether lengthy cooking destroys nutrients in foods (correct responses at baseline were very high at 72%), to more than double on a question related to the risks of consuming OFSP (from 30% at baseline to 68% in ALCs and 59% in PLCs). In other words, during the outcome survey, more than twice as many respondents correctly recognized myths about the risks of consuming OFSP (for example, that OFSP can make children's teeth turn orange, or that consuming OFSP causes impotency) as untrue.

A significantly higher percentage of respondents at outcome also:

- knew that pregnant women can safely eat OFSP (an increase from 41% at baseline to 81% and 77% in ALCs and PLCs)
- knew that OFSP is a dietary source of vitamin A (an increase from 38% to 75% and 53% in ALCs and PLCs)
- knew that a small portion of OFSP can meet a young child's daily requirement of vitamin A (an increase from 48% to 71% and 60% in ALCs and PLCs)
- correctly identified the best method of preparing OFSP to retain vitamin A (an increase from 23% to 54% and 45% in ALCs and PLCs)

- recognized the health-related risks of vitamin A deficiency (an increase from 30% at baseline to 68% and 59% in ALCs and PLCs)

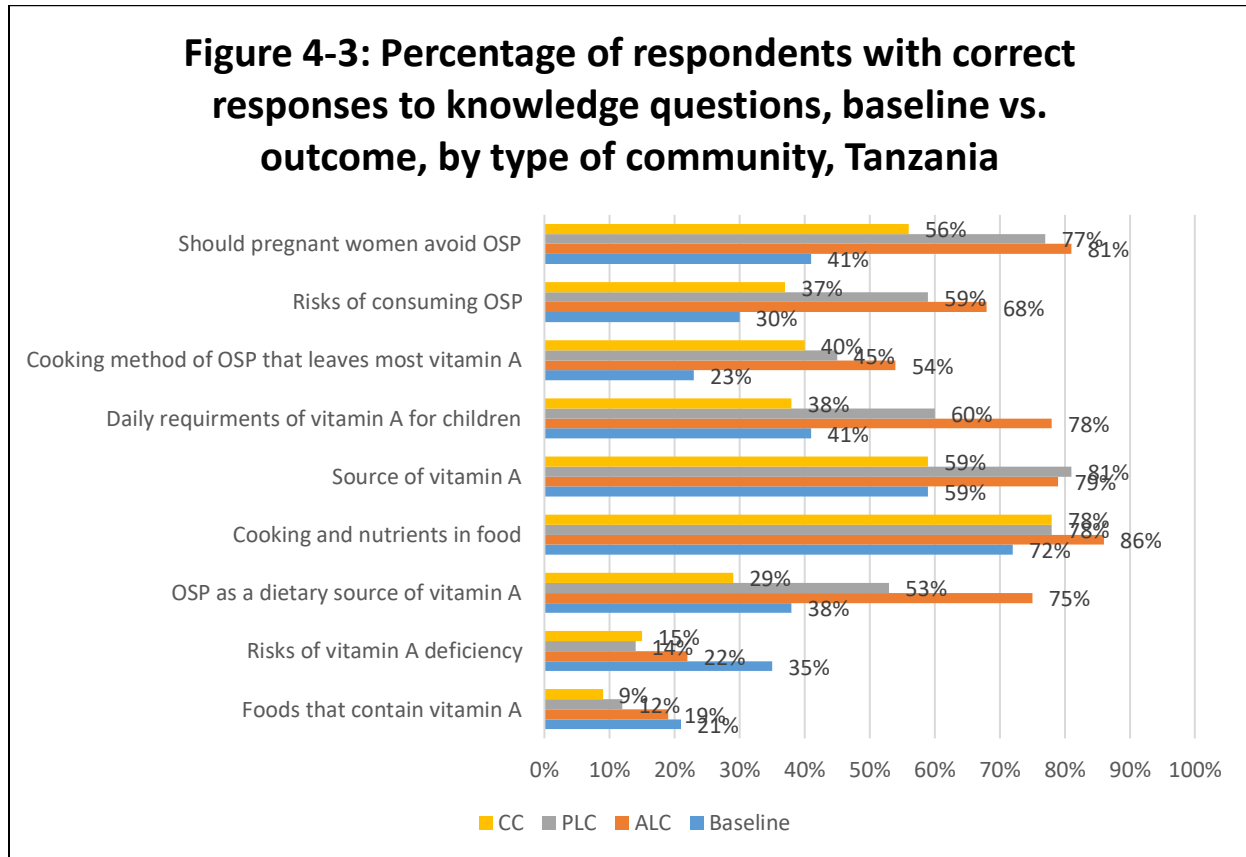
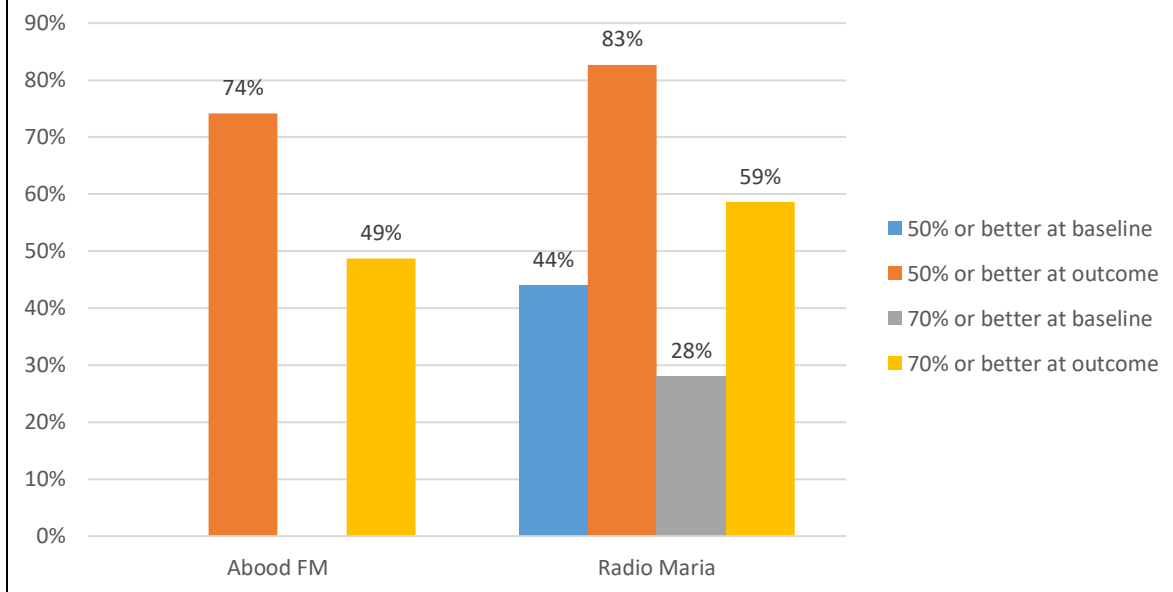


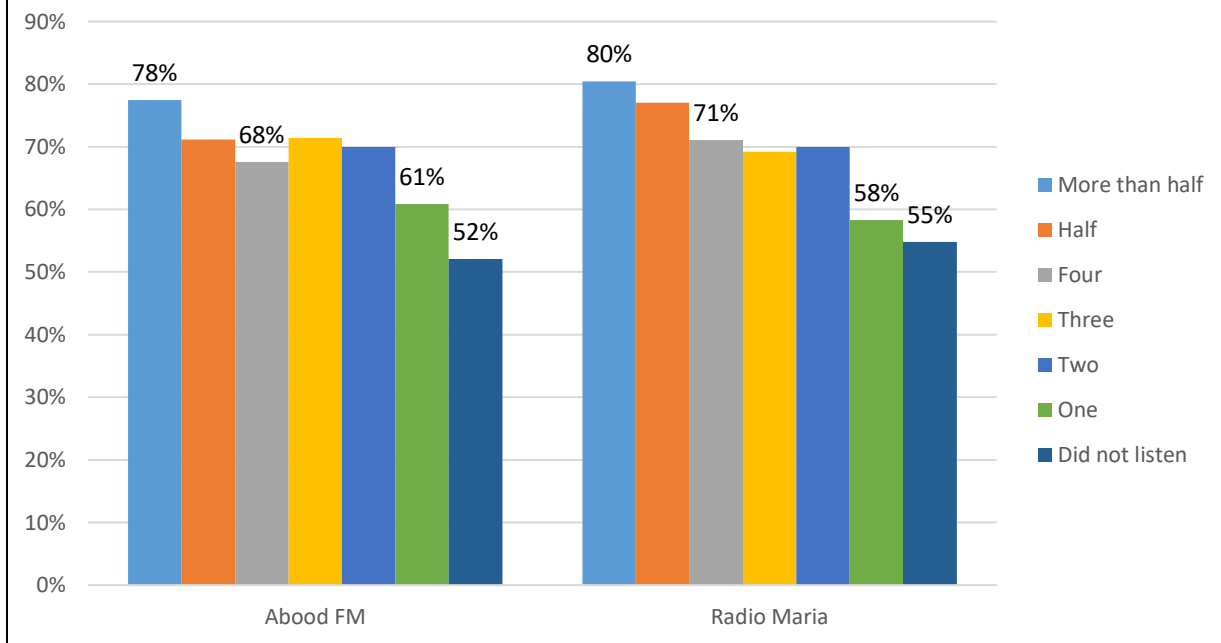
Figure 4-4 compares the percentage of respondents who scored 50%-100% or 70%-100% between baseline and outcome surveys, by station/region. Unfortunately, as mentioned above, only one region was involved in both the baseline and the outcome survey. The number of respondents in the Lake Zone (Radio Maria listeners) who scored 50%-100% almost doubled (from 44-83%) between baseline and outcome surveys, while the number of respondents who scored 70%-100% more than doubled, from 28-59%. The percentage of respondents who scored over 50% and over 70% on the outcome survey was roughly equal between the two stations.

Figure 4-4: Percentage of respondents who scored above 50% and 70% on knowledge quiz, baseline vs. outcome, Tanzania



As shown in **Figure 4-5**, more frequent listening was clearly associated with higher knowledge scores. Respondents who listened to more than half of programs on Abod FM scored 47% higher than non-listeners. For Radio Maria, listeners who heard more than half of the programs scored 46% higher than non-listeners.

Figure 4-5: Average score on knowledge quiz by frequency of listening and station, Tanzania

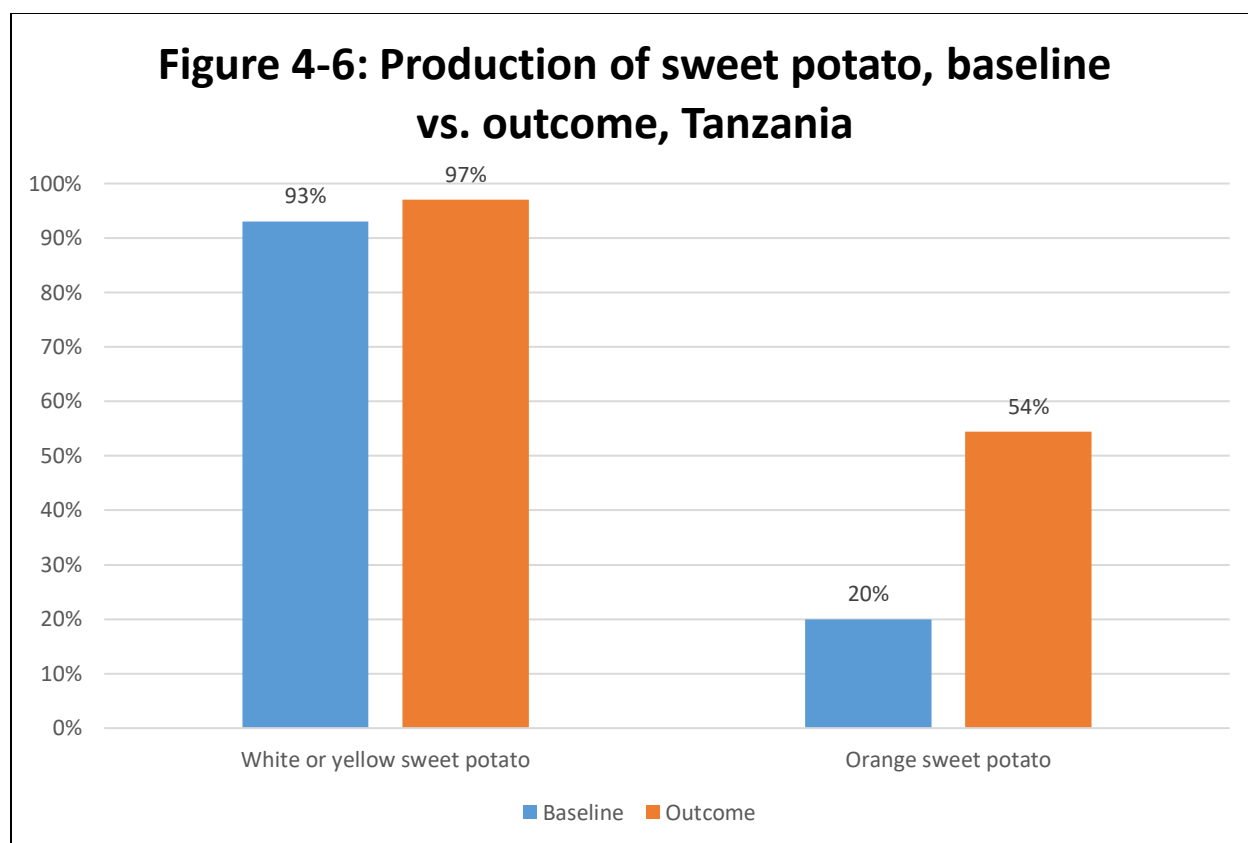


4.2.4. PRODUCTION

This section presents findings related to production of OFSP, including:

- a comparison of the percentage of respondents who grew OFSP at baseline and outcome,
- a comparison of the percentage of respondents who grew OFSP in each type of community, and
- the reasons respondents chose not to grow OFSP.

As shown in **Figure 4-6**, the percentage of respondents who grow OFSP rose by a factor of 2.7 between baseline and outcome, from 20-54%, while the percentage of respondents who grow yellow or white sweet potato rose marginally.



As shown in **Table 4-6**, the percentage of respondents who grow OFSP rose from 20% of at baseline to 54% at outcome. If this difference was extrapolated to the two stations' listening areas, there would be an estimated **281,200** new OFSP farmers.

Table 4-6: New OFSP farmers since baseline

Country	Grow OFSP at baseline	Grow OFSP at outcome	Difference	New OFSP farmers
Tanzania	20%	54%	34%	281,200

Figure 4-7 shows that communities that listened to Radio Maria, and particularly PLCs, grew OFSP at a significantly higher rate than Abood FM communities. This might be explained by the fact that Radio Maria broadcast OFSP programming for 2 years, while Abood broadcast the programs for only 1 year. Perhaps broadcasting the programs for a longer period of time is required for more significant uptake. Alternatively, the small difference between ALCs in Radio Maria and Abood FM might suggest that it is unnecessary to run programs for such a long time if you include other more direct activities. This interpretation is reinforced by the finding that ALC respondents scored much higher than PLC respondents on many indicators (see *Key findings* section below).

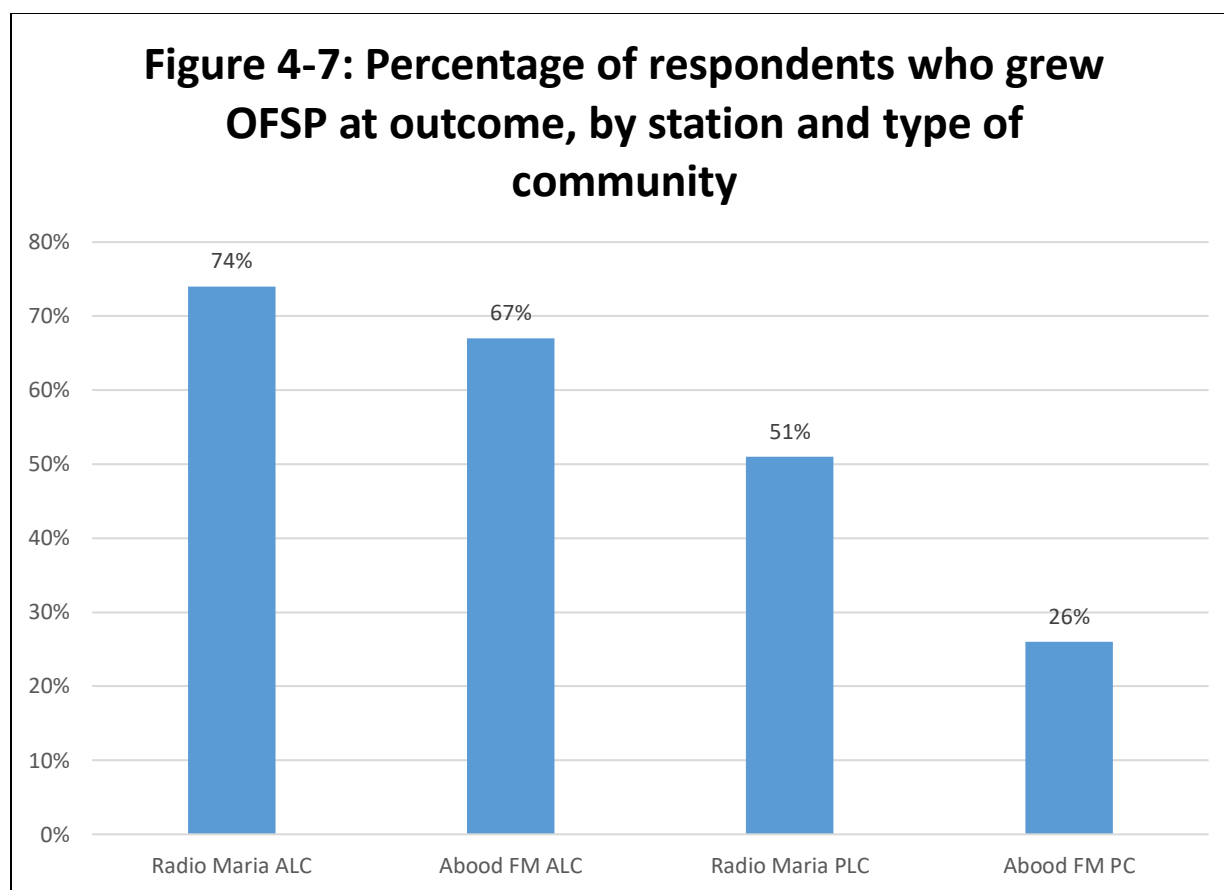
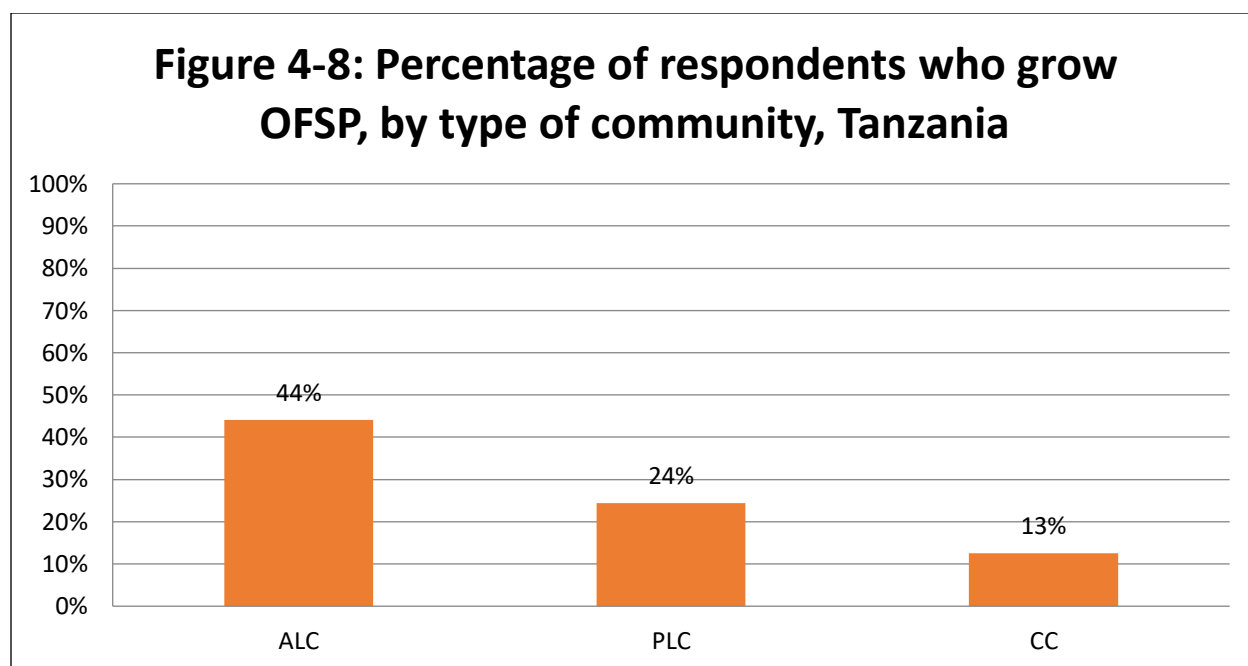


Table 4-7: OFSP production by station and type of community

In contrast to FRI's findings in this project, in 2012, CIP's baseline study for the Marando Bora reported only a 4% uptake of orange-fleshed sweet potato varieties.²⁶

Figure 4-8 shows that a substantially greater percentage of ALC respondents grow OFSP, compared to PLC respondents. The percentage of CC respondents who grow OFSP is considerably lower than other communities. Thus, listening to the PRC programs is strongly associated with planting OFSP.

²⁶ Sindi and Wambugu, 2012. Going to scale with sweetpotato vines distribution in Tanzania. Marandon Bora Baseline Study. <http://www.sweetpotatoknowledge.org/files/going-scale-sweetpotato-vines-distribution-tanzania-marando-bora-baseline-study/>



Other results (figures not shown):

- Only a small percentage of sweet potato growers grow OFSP exclusively in any region in Tanzania.
- In the Lake Zone (Radio Maria), and in Abood FM's Kilosa district, approximately 50% of sweet potato growers harvest half or more of their sweet potato crop as OFSP. The percentage of sweet potatoes which are OFSP in Gairo District is slightly lower.
- The main reasons respondents gave for choosing not to grow OFSP were, in order of frequency: lack of availability of vines, and lack of knowledge on how to grow OFSP. In the baseline survey, the three main reasons that respondents didn't grow OFSP were, in order of frequency: lack of availability of vines (52% of respondents), that they'd never heard of OFSP (43%), and lack of knowledge on how to grow OFSP (30%). There was a large decrease between baseline and outcome in the percentage of respondents who hadn't heard of OFSP. Thus, the PRC programs appear to have contributed to respondents' familiarity with OFSP.

4.2.5 CONSUMPTION

This section presents the findings from the outcome survey on consuming OFSP, and a comparison of consumption patterns between baseline and outcome surveys.

As shown in **Figure 4-9**, the percentage of respondents who had eaten OFSP in the 7 days before the survey was much higher in ALCs than in PLCs, and much higher in PLCs than in CCs. As well as the radio programs, OFSP promotional activities in ALCs and contact between ALC and PLC farmers may have contributed to these differences. CC communities were not located near ALC or PLC communities, so contact was unlikely.

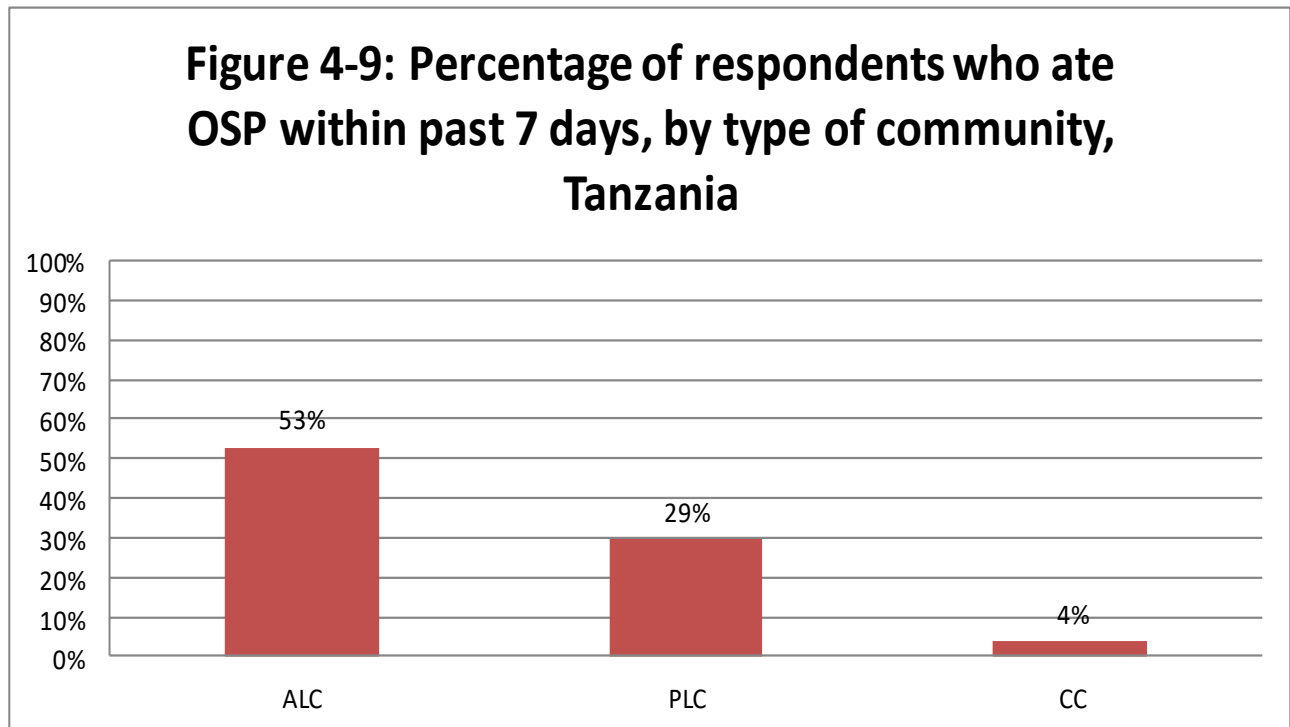
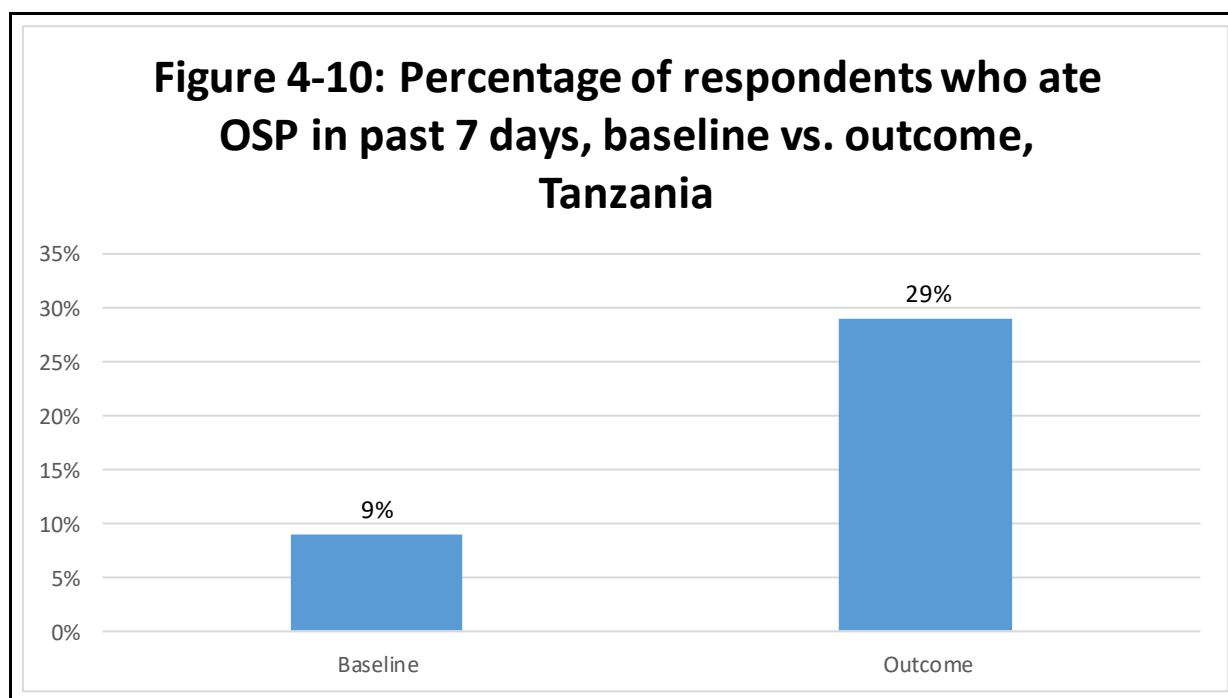


Figure 4-10 shows that the percentage of respondents who had eaten OFSP in the 7 days before the survey rose dramatically between baseline and outcome, from 9% to 29%.

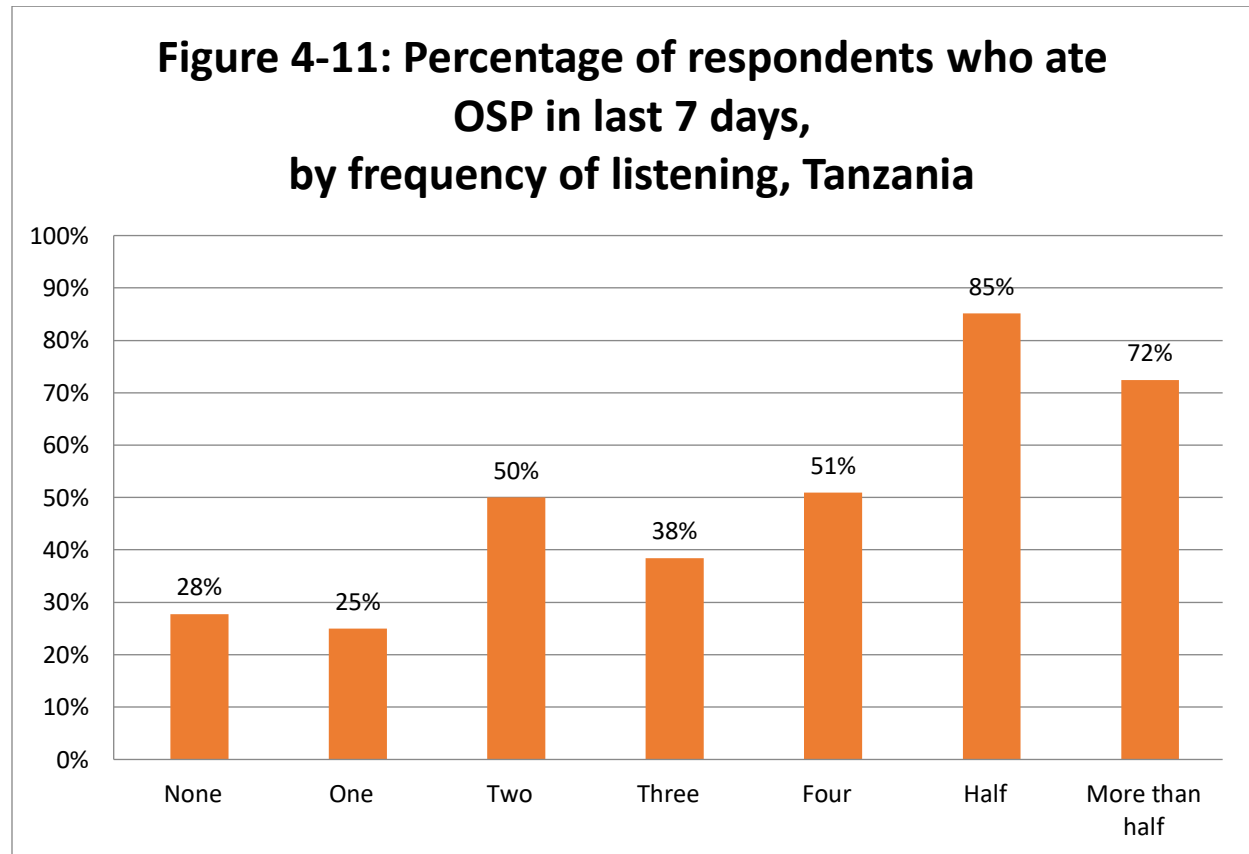


As shown in **Table 4-8**, if we extrapolation the findings from the outcome survey to the total radio coverage area in Tanzania, there would be an estimated **264,600** additional households consuming OFSP at the time of the survey.

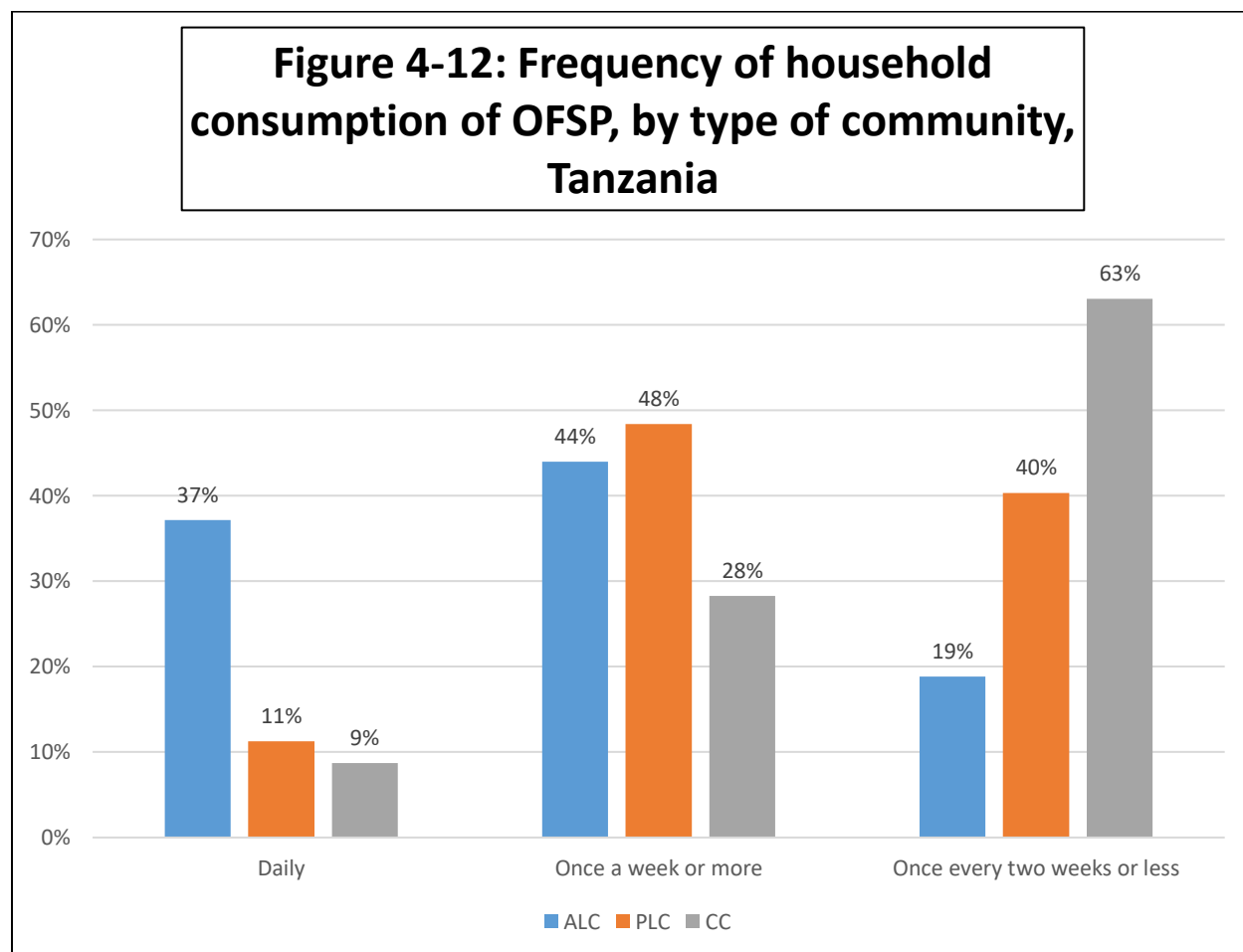
Table 4-8 New households eating OFSP

Consume OFSP within 7 days of baseline survey	Consume OFSP within 7 days of outcome survey	Difference	New household eating OFSP (extrapolating % difference to total listening area)
9%	41%	32%	264,600

Figure 4-11 shows a clear trend associating higher frequency of listening with higher rates of OFSP consumption. This trend was evident in both station/regions; there was very little station/regional difference on this indicator.



As shown in **Figure 4-12**, eating OFSP daily was far more common in ALCs than in PLCs or CCs, while eating OFSP once a week or more was more common in listening than non-listening communities.



Other results

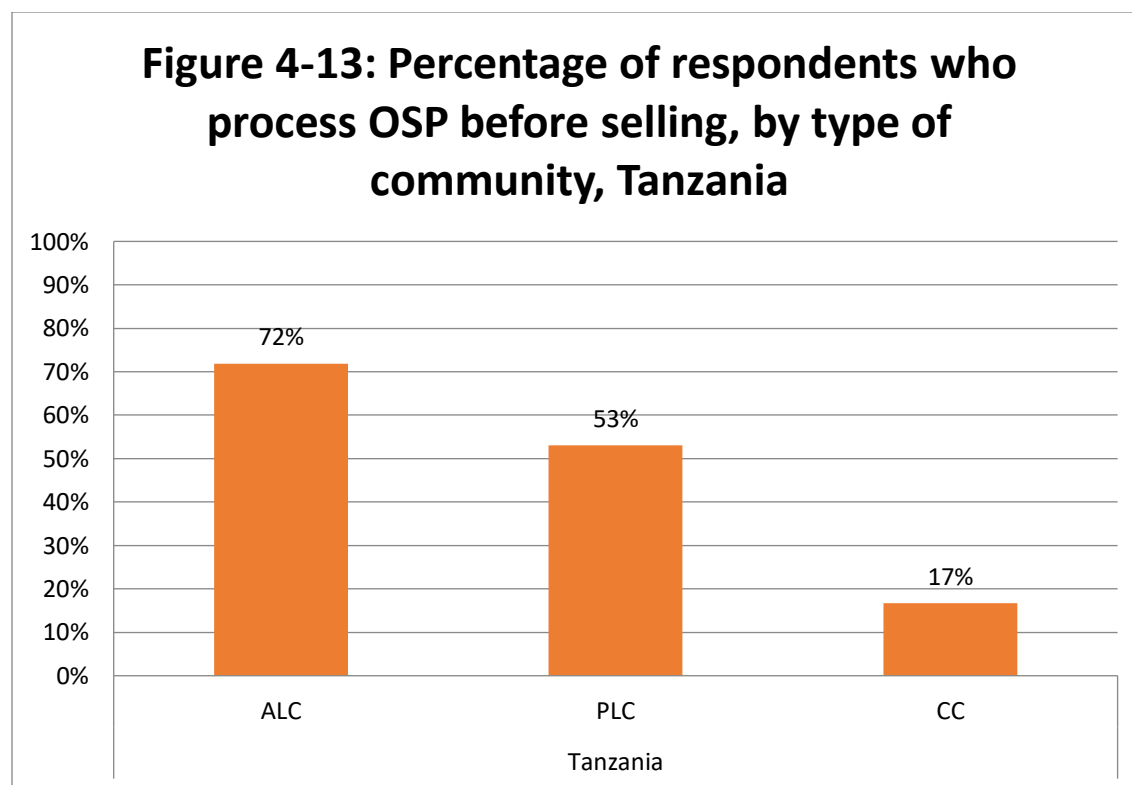
The two most popular methods of preparing OFSP are: boiling and mashing with jackets removed, and boiling with jackets on. This showed no change from baseline.

4.2.6 MULTIPLYING, SELLING, AND MANAGING PESTS

This section presents FRI's findings on

- multiplying vines,
- using pest management practices,
- selling OFSP roots,
- processing OFSP before selling, and
- selling vines.

As shown in **Figure 4-13**, a much higher percentage of respondents in ALCs and PLCs process their OFSP before selling. It should be noted that the percentage of respondents who processed OFSP before selling was much greater for all types of communities in Radio Maria's coverage area, perhaps because the PRC programming ran for a longer period of time than the programming on Aboud FM.



As shown in **Figure 4-14**, a higher percentage of ALC respondents multiply vines compared to respondents from PLCs or CCs. The difference is small in Radio Maria’s coverage area, but very marked in Aboud FM’s coverage area.

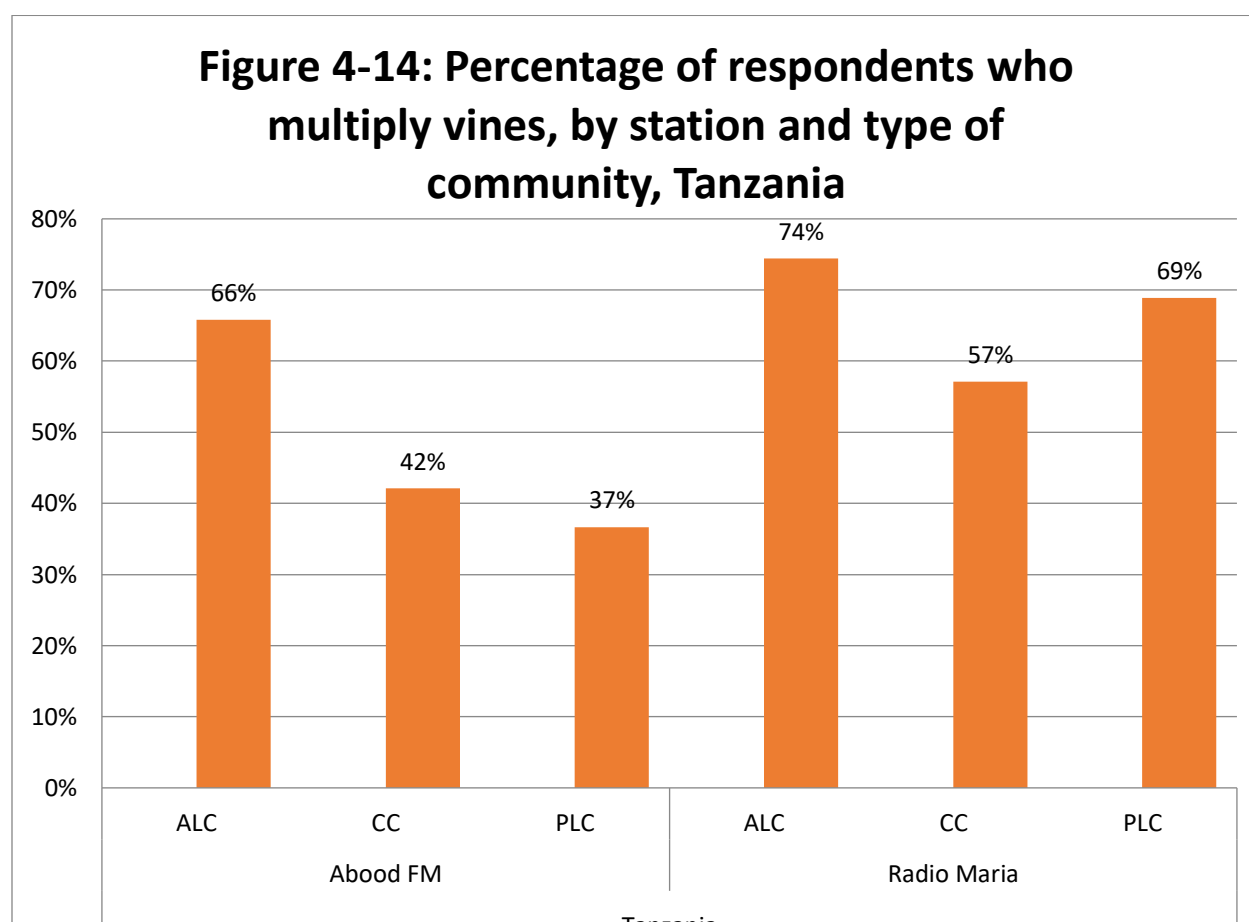
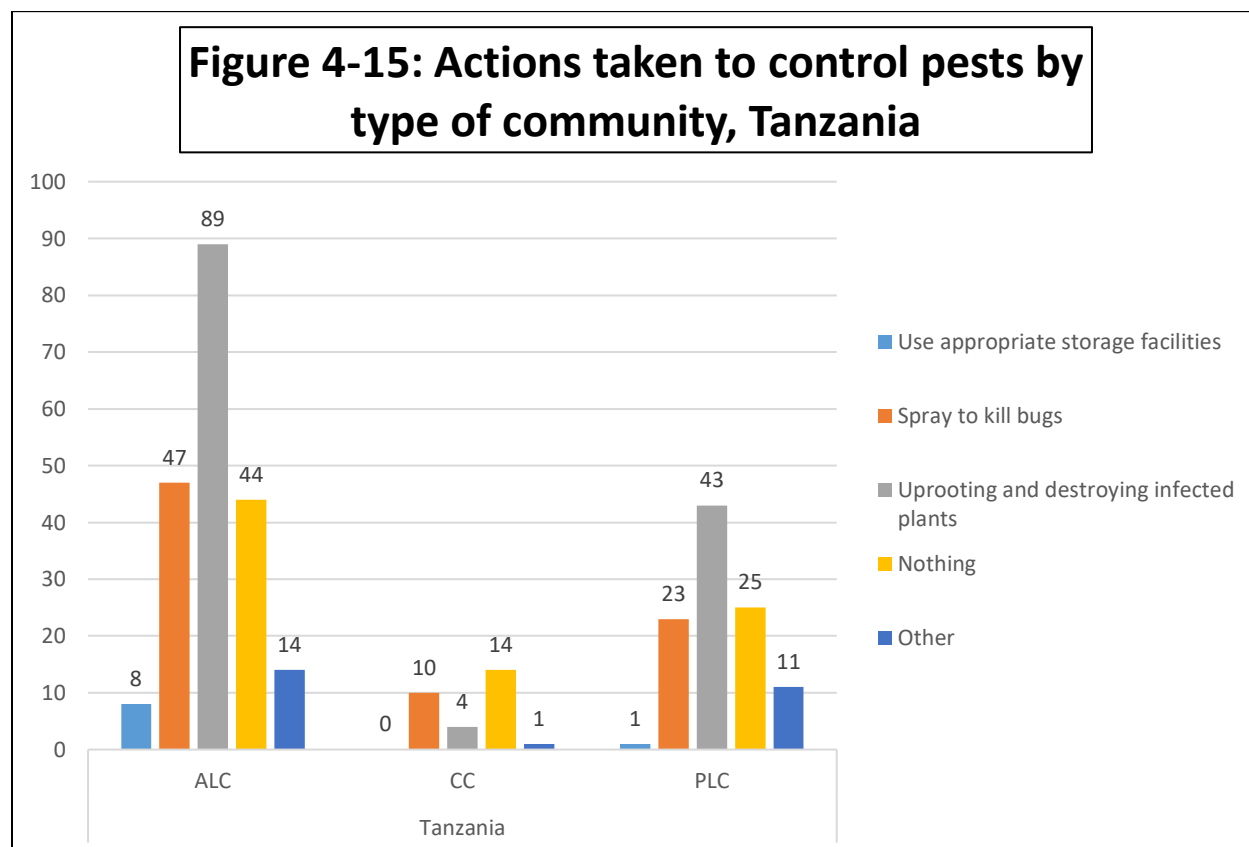


Figure 4-15 shows that the most popular pest control actions in both ALCs and PLCs are uprooting and destroying infected plants, following by spraying, and no action. By comparison, relatively few OFSP farmers in CCs uproot and destroy infected plants. The radio programs recommended uprooting and destroying infecting plants.



As shown in **Figure 4-16**, respondents in Radio Maria’s coverage area were much more likely than respondents in Abood FM’s coverage area to uproot and destroy infected plants and less likely to do nothing.

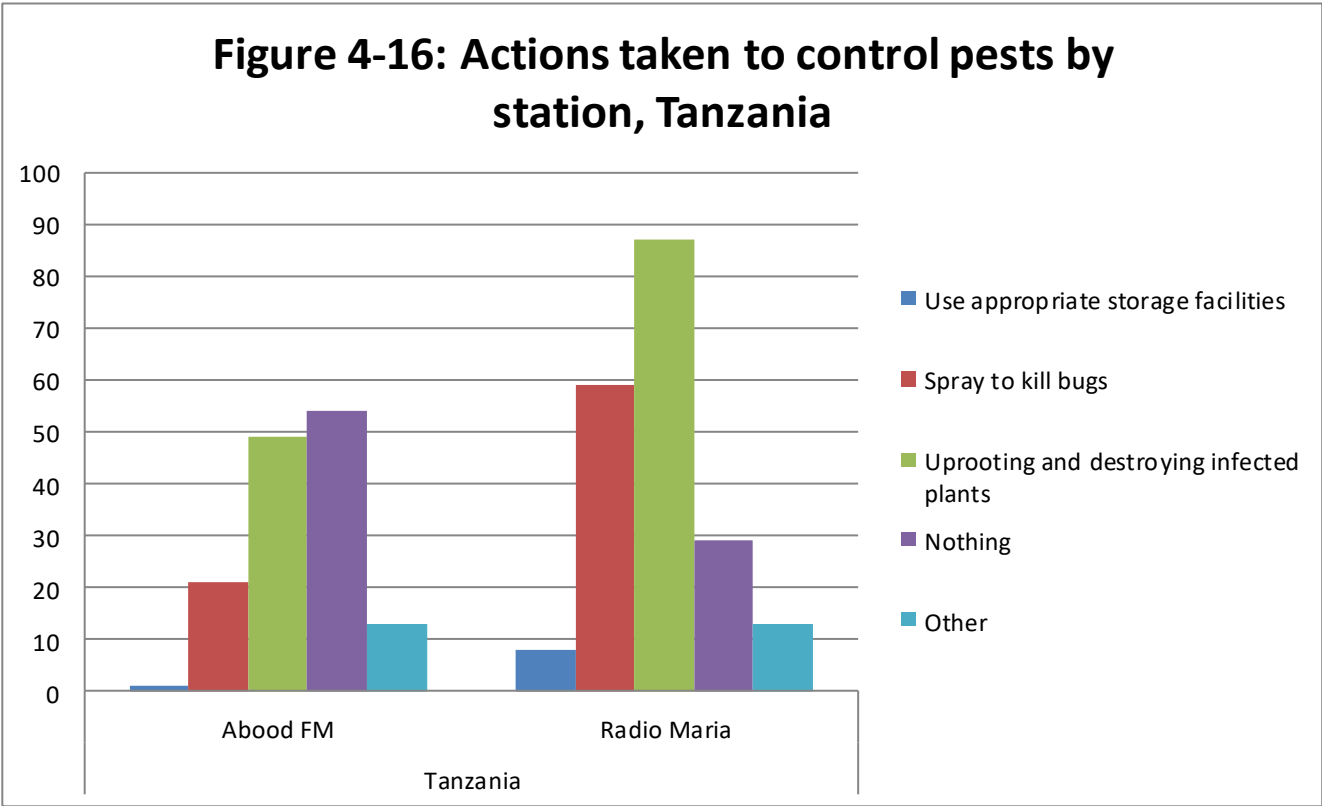


Table 4-9 shows that a higher percentage of respondents in ALCs sell OFSP than in other communities. It should be noted that the number of respondents to this question in CCs was quite small (26). The percentage of respondents who sell vines is higher in Radio Maria in PLCs and CCs than in Abood FM’s coverage area, and roughly equal in ALCs.

Table 4-9 also shows that the percentage of OFSP growers who sell vines is highest in ALCs, followed by PLCs and CCs. It should again be noted that the total number of CC respondents to this question was quite small (12). The percentage of respondents who sell vines is much greater in Radio Maria than in Abood FM across all types of communities, but especially for ALCs.

Table 4-9: Other results (figures not shown):

% of respondents who sell OFSP, by type of community		
ALC: 72%	PLC: 54%	CC: 69%

% of respondents who sell vines, by type of community		
ALC: 69%	PLC: 55%	CC: 50%

4.2.7 LISTENING BEHAVIOUR AND SOURCES OF INFORMATION ABOUT OFSP

This section presents information on:

- frequency of listening,
- respondents' awareness of the program,
- the percentage of those who were aware of the program who listened to it,
- respondents' opinions on the most useful sources of information about OFSP, and
- the relationship between frequency of listening and both yield and production of OFSP.

As shown in **Figure 4-17**, *radio* and *friends and neighbours* were the most frequent sources of information about OFSP in all communities, with radio being more important in ALCs, and friends and neighbours a more important source in PLCs and CCs. All other sources were much less common, and generally diminished in importance from ALCs to PLCs to CCs. Radio was a more important source in Radio Maria's coverage area than in Abood FM's area. The high percentage of respondents who heard about OFSP from friends and neighbours underlines the need to consider friends and neighbours as a important source of info and possibly of adoption when designing projects.

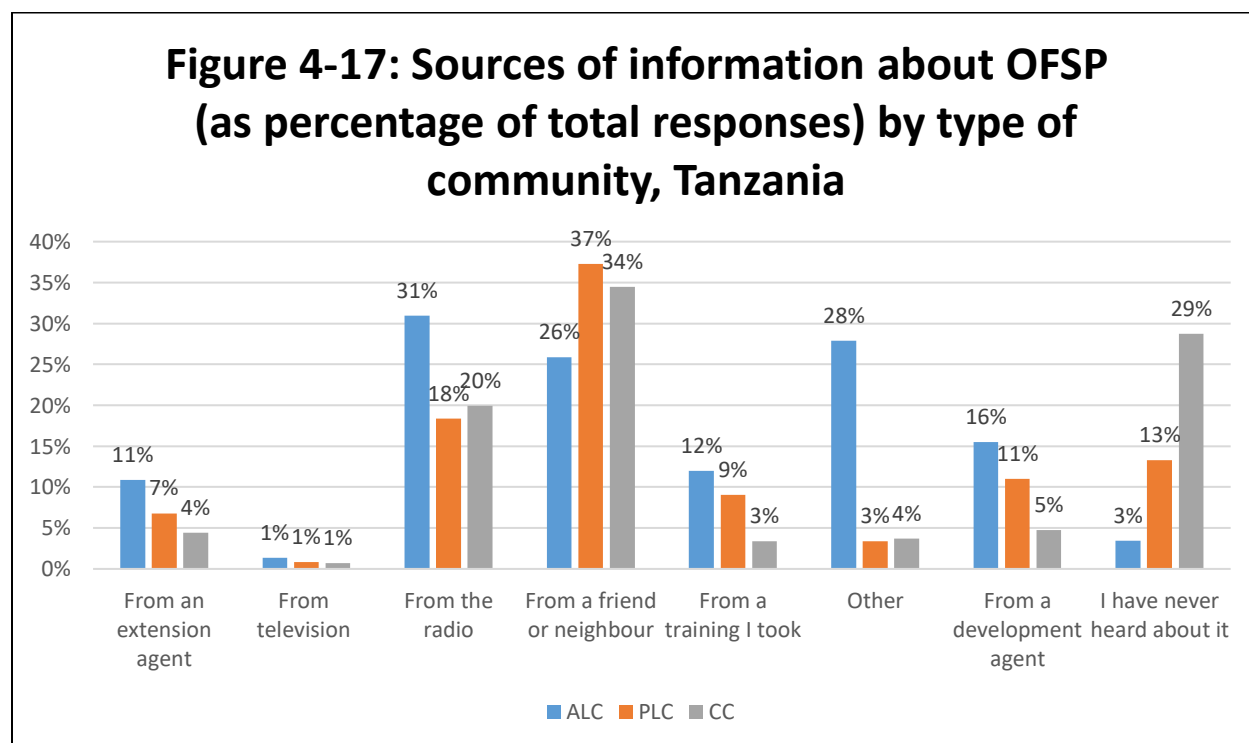
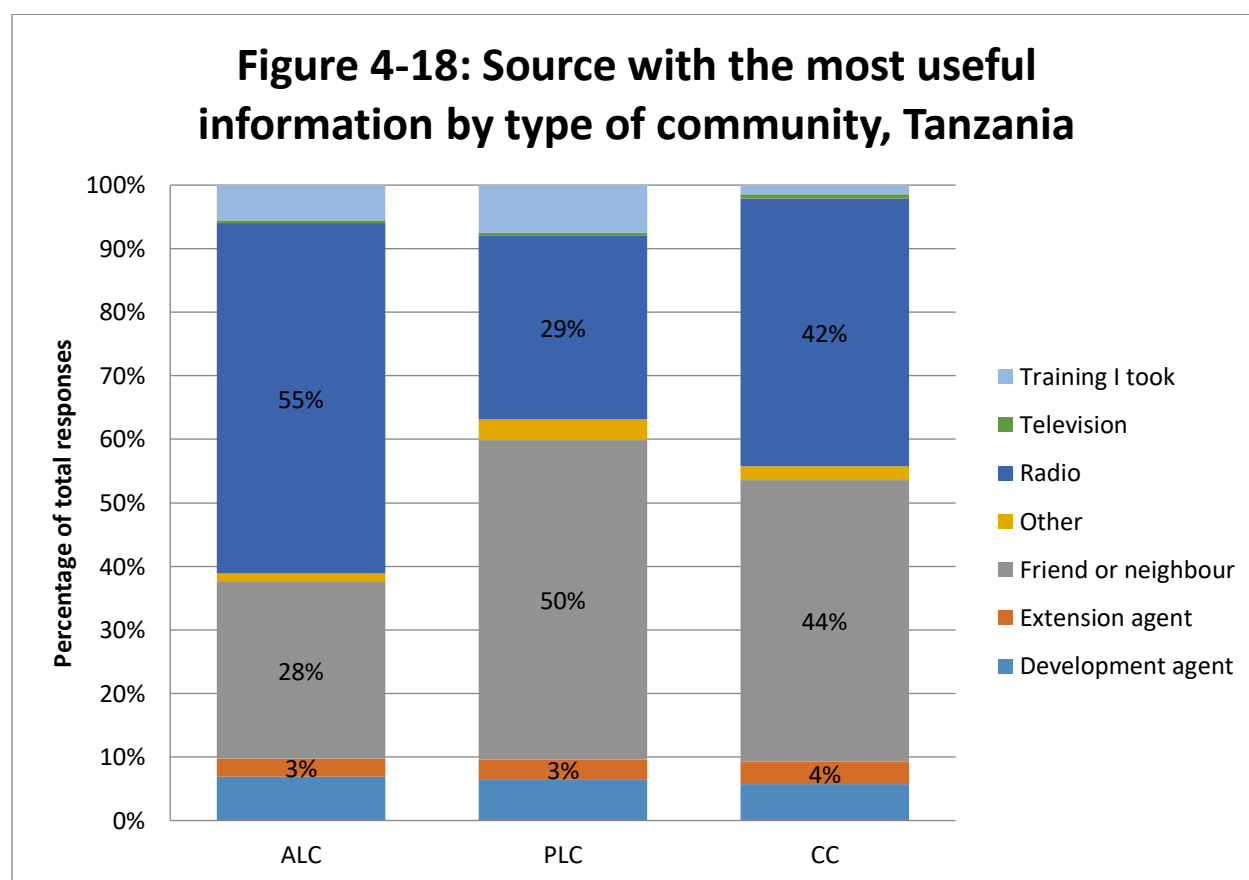


Figure 4-18 shows that *radio* and *friends and neighbours* were considered the most useful sources in all communities. Radio was the most useful source in ALCs, significantly more so than in PLCs. Friends and neighbours were considered the most useful source in PLCs and CCs, but many in ALCs also considered them the most useful source. Radio was more frequently considered the most useful source in Radio Maria's than in Abood FM's coverage area.

We can identify three reasons why radio might be considered so much more important in ALCs than in PLCs: Firstly, broadcasters have a lot of interaction with ALCs, for example, through recording programs, collecting stories and testimonials, and participating in project competitions and other events. Secondly, Community Listening Groups are always in ALCs, which bumps up overall respondent interest in the programs. Thirdly, the baseline survey was conducted in the ALC communities, and the ALC communities became attached to the radio programs through their involvement in designing the radio programs and raising issues for the programs to deal with.



As shown in **Table 4-10**, a much higher percentage of respondents in ALCs were aware of the program than in other communities. A high percentage of respondents in ALCs and CCs who were aware of the program listened to it.²⁷

Table 4-10 shows a clear association between more frequent listening and higher rates of growing OFSP.

Also, respondents who listened to more than half of the episodes on either station had generally higher yields.

Table 4-10: Other results (figures not shown):

% of respondents who were aware of the program, by type of community		
ALC: 67%	PLC: 38%	CC: 29%
% of respondents in ALCs and PLCs communities who were aware of the program and who listened to it		
ALC: 91%	PLC: 82%	
% of respondents who grow OFSP by frequency of listening (number of episodes heard)		
More than half: 93%	4 episodes: 74%	1 episode: 42%

4.2.8 PROGRAM QUALITY

In the outcome survey, we asked respondents to rate the quality of the OFSP radio programs on five measures of quality. Between 86% and 96% of respondents answered positively for all quality parameters, as shown in **Table 4-11**.

Table 4-11: Program quality (N = 272)

	Much better (%)	Somewhat better (%)	About the same (%)	Somewhat worse (%)	Much worse (%)
Comparing the PRC program to other agricultural programs (n = 272)	57	29	14	0	0

²⁷ As noted above, respondents in control communities in Tanzania could listen to the OFSP programming, unlike other countries.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
The program was relevant to my needs as a farmer (N = 272)	45	46	8	1	0
The program came on at the scheduled time (N = 272)	47	41	10	1	0
I found the program entertaining (N = 272)	55	41	4	0	0
The program was relevant to women farmers ²⁸ (N = 127)	54	39	4	3	0

²⁸ This question was asked only to women.

4.3 BEEP4VINE

The beep4vine service in Tanzania was designed to respond to a growing need to identify sources of planting material for farmers interested in growing sweet potato, an interest which was encouraged by the PRC programs. The service is based on the various “beep-to” services developed by Farm Radio International which allow listeners to respond to questions posed by broadcasters covered on a radio show. The concept is simple: Radio hosts ask their listeners questions during the show. The host presents a number of different responses, and phone numbers are assigned to each. Listeners call a number and leave a “missed call,” or what is often called a “beep” without being charged for the call. Radio hosts tally the number of beeps for each response and announce the results at the end of the program.

FRI’s blog features several examples which illustrate how we have used beep-to services. For example, we have collected information on farmers’ crop preferences, on seed selection, and on current agricultural practices. A beep-to-vote service also collected farmers’ opinions on various farming topics (see Agripoll audio postcard at:

<http://www.farmradio.org/ourblog/2014/06/09/agripoll-tanzania-using-radio-and-mobile-phones-to-listen-to-farmers/>).

The beep4vine service for the OFSP project took a slightly different approach. Radio hosts informed listeners who were unable to find vines in their area about the service. Listeners beeped the number that corresponded to the area where they lived. The station then sent these listeners contact information for vine suppliers in their area.

This allowed interested buyers to directly contact vine suppliers. Some suppliers sold roots and flour in addition to vines. Sellers and buyers decided on how payments would be made, either through M-Pesa (mobile money transfer), or through cash. Some suppliers simply gave vines away to those who were interested.

FRI conducted a follow-up study to see how well the service had worked and to determine whether or not listeners were able to access and use the service and receive and use vines from suppliers. The study also recorded the income earned from suppliers in each region.

The results were as follows:

Of the possible 689 buyers (from a list of registered numbers), 257 were randomly contacted by our “call centre.” Of these, 68 (26%) contacted suppliers when provided with their contact information.

Buyers made 47 requests for vines, and there were 22 transactions between buyers and sellers. (Other requests could not be fulfilled for various reasons – sellers were too far from buyers, vines were too expensive, too few vines were available, etc.) In all, 455 bundles of vines were sold through beep-to-vine.

In Pwani, six sellers sold 330,000 TSh worth of vines. (As of November 30, 2016, \$1 US = 2130 TZ shillings)

In Mwanza, three sellers sold vines worth 360,000 TSh.

In Hai/Kili, the only seller made 1,585,000 TSh. (This high number is explained by the fact that buyers asked for very large orders—100 and 150 bundles.)

4.4 KEY FINDINGS

The most impressive results in Tanzania were gains in knowledge and increases in consumption. There were also a significant number of new OFSP growers.

OVERALL

- Estimated number of listeners: 827,000
- Estimated number of new OFSP farmers since baseline: 281,200. (The percentage of respondents who grow OFSP rose by a factor of 2.7 between baseline and outcome.)
- Estimated number of new OFSP-eating households: 264,600

KNOWLEDGE

As in Ghana and Burkina Faso, the most impressive results were gains in knowledge. The findings show that listening to the OFSP programs resulted in better knowledge of nutrition, vitamin A, and the nutritional benefits of OFSP.

Female and male respondents scored equally on the outcome survey.

Knowledge scores increased 64% in Radio Maria's coverage area between baseline to outcome.

There was a clear trend that the more frequently respondents listened, the higher their knowledge scores. For example, those respondents in Radio Maria's coverage area who listened to more than half of the episodes scored 38% higher than those who listened less frequently.

PRODUCTION

Between baseline and outcome, there was a very strong increase in the percentage of farmers who grow OFSP, from 20-54%. Extrapolating these results to the total radio coverage area, we estimate that, compared to baseline, there were **264,600** new OFSP growers in the radio coverage areas at the time of the outcome survey.

Other production-related findings include:

- Only a small percentage of sweet potato growers exclusively grow OFSP in any region. This may suggest that the project successfully promoted OFSP to existing growers.
- The percentage of respondents who grow OFSP was significantly higher in PLCs and, especially, in ALCs, than in CCs.
- The two main reasons respondents provide for not growing OFSP were, in order of frequency, lack of availability of vines and lack of knowledge on how to grow OFSP. This suggests a large, unfilled demand.
- More frequent listeners were more likely to grow OFSP.
- There was a large decrease between baseline and outcome in the percentage of respondents who hadn't heard of OFSP. Thus, the PRC programs appear to have contributed to respondents' familiarity with OFSP.

CONSUMPTION

There were large increases in consumption of OFSP over the course of the project. Specifically:

- The percentage of respondents who had eaten OFSP in the 7 days before the survey more than tripled from baseline and outcome, from 9% to 29%.
- The percentage of respondents who had eaten OFSP in the 7 days before the survey was much higher in ALCs and PLCs.
- There is a clear trend associating higher frequency of listening with higher rates of consuming OFSP.
- Eating OFSP daily or more than twice a week was much more common in ALCs than in PLCs or CCs.

Children's consumption of OFSP

There were survey problems and, possibly, sampling problems associated with some of our questions on children's consumption of OFSP. These problems unfortunately invalidated some of our research on children's consumption. Thus, while we have data from the outcome survey on children's consumption of OFSP and the frequency of that consumption, we have no basis for comparison between baseline and outcome, and cannot determine whether children's consumption increased over the duration of the project.

At outcome, a higher percentage of respondents in listening communities fed OFSP to children under 5.

OTHER

- *Radio* and *friends and neighbours* are the most frequent sources of information about OFSP in all communities, with radio being more important in ALCs, and friends and neighbours more important in PLCs and CCs. These two sources were also considered the most *useful* sources in all communities. Radio was the most useful source in ALCs, significantly more so than in PLCs.
- On many indicators, ALCs scored much higher than PLCs or CCs. For the most part, PLC numbers were closer to CC numbers. There are a few different possible interpretations of this finding. It may suggest that, while radio was effective, the combination of radio and more direct interaction with community members had the biggest impact on consumption, production, and commercial practices such as selling, multiplying, and processing. However, it should also be noted that listenership was much greater in ALCs than in other types of communities, which may account for the higher scores.
- More frequent listening was associated with higher rates of consuming OFSP, greater knowledge, and a greater likelihood of growing OFSP.



CHAPTER 5: UGANDA

5.1 INTRODUCTION

TARGET AREAS IN UGANDA

PRODUCTION STATUS

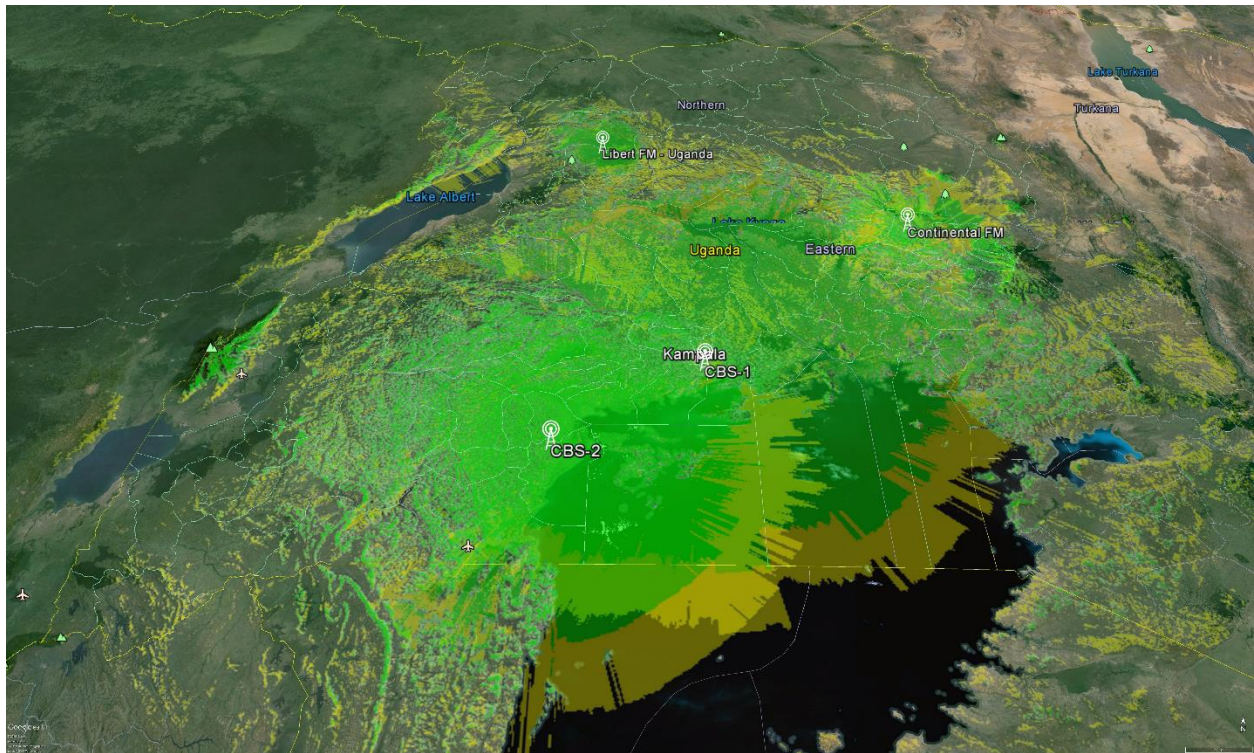
Farmers grow OFSP in all corners of Uganda. FRI implemented the OFSP project in the Northern, Eastern, and Central Regions. The National Advisory Group prioritized these areas because of the availability of inputs and services.

HarvestPlus promoted OFSP during a pilot project and in their new Developing and Delivering Biofortified Crops (DDBC) project. The DDBC project is ongoing in central, western, and northern Uganda, where the project has expanded to reach more subcounties. There were no NGOs promoting OFSP in eastern Uganda, but, because it is the most commercialized area in the country, there was marketing and commercialization work happening with OFSP farmers there—hence the recommendation from the National Advisory Group to have FRI work there.

Eastern Uganda has many commercial and individual vine multipliers, due in part to HarvestPlus' efforts to develop and distribute vines in the region. Vines are also readily accessible to farmers in central and northern Uganda, where there is free provision by HarvestPlus.

Table 5-1: Details of project areas

Region	Radio stations	Communities	Planting season	OFSP varieties
Central	CBS-1 and CBS-2	Mukono, Masaka, Rakai, Gomba, Mityana	2 seasons: March to June, September to December	Vita, Kabode, Kakamega, Ejumula, Naspot 12/13
Northern	Radio Wa	Lira, Oyam, Kole	2 seasons: March to June, September to December	Vita, Kabode, Kakamega, Ejumula, Naspot 12/13
Eastern	Continental FM	Kumi, Ngora, and Bukedea districts	2 seasons: March to June, September to December	Vita, Kabode, Kakamega, Ejumula, Naspot 12/13
Western	Liberty FM	Kibaale and Hoima districts	2 seasons: March to June, September to December	Vita, Kabode, Kakamega, Ejumula, Naspot 12/13



Map of radio station coverage areas in Uganda

5.2 FINDINGS IN UGANDA

5.2.1 REACH

We extrapolated the outcome survey findings on listenership and on the percentage of surveyed farmers who grow OFSP in order to estimate:

- 1) the total number of listeners in the coverage areas of the three stations, and
- 2) the total number of farmers in the coverage areas who grow OFSP.

As shown in **Table 5-2**, an estimated **2,327,400** people listened to the OFSP programs on the three Ugandan radio stations, and an estimated **1,906,400** farmers are growing OFSP in these radio stations' coverage areas.

Table 5-2: Listenership

Country	Radio station catchment area	Estimated adult population within radio coverage area	Estimated number of listeners	Estimated number of people growing OFSP in radio coverage area
Uganda	Liberty FM	337,900	189,200	166,500
	CBS FM-1	3,272,200	2,090,700	1,714,200
	Radio Wa	98,100	47,500	25,700
	Continental FM	142,400		
Total in country		3,850,600	2,327,400	1,906,400 ²⁹

Table 5-3 shows all communities involved in the outcome survey, broken down by type of community.

Table 5-3 Communities involved in the outcome survey

ALC communities and district	PLC communities and district	CC communities and district
Onying highland, Agago	Apuki West village, Lira	Pakor parish, Kole
Lokalaga, Agago	Adwar village, Lira	Pacer parish, Kole
Kitagali village, Rakai	Nsambya village, Rakai	Bwase village, Kamuli

²⁹ While Continental FM broadcast the OFSP programs, we did not conduct an outcome survey in the Eastern Region, and therefore do not have listenership numbers or, therefore, any basis on which to extrapolate total listenership numbers for the Eastern Region. However, CBS' signal covers the entire country, including the Eastern Region. CBS-2 was removed from population estimates because CBS-1 covers the entire CBS-2 zone as well as some additional areas.

Buyiisa village, Rakai	Nsege village, Rakai	Itukulu village, Kamuli
Kyantale village, Kibaale	Mpongo village A, Kibaale	Kiramago village, Kibaale
Kyabusingye village, Kibaale	Mpongo village B, Kibaale	Kiterede village, Kibaale

5.2.2 DEMOGRAPHICS

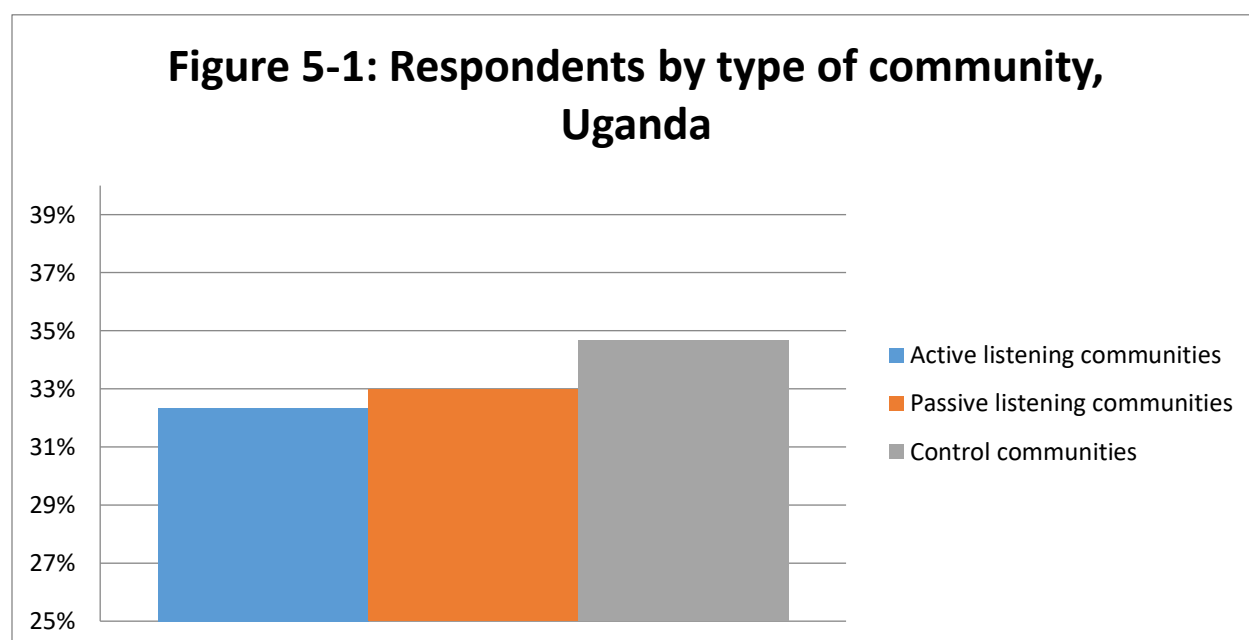
This section presents details on the gender and age of respondents in Uganda, and a breakdown of the number of respondents in ALCs, PLCs, and CCs.

As shown in **Table 5-4**, there were more female than male respondents, and the largest age groups were the 18-30 and the 31-45 year-olds.

Table 5-4: Details on respondents

# of respondents by sex			
Women		Men	
607 (53.3%)		532 (46.7%)	
# of women respondents by age group			
18-30	31-45	46-60	Above 60
193 (31.8%)	231 (38.1%)	129 (21.2%)	54 (8.9%)
# of men respondents by age group			
18-30	31-45	46-60	Above 60
156 (29.3%)	204 (38.3%)	111 (20.9%)	61 (11.5%)

As shown in **Figure 5-1**, there were slightly more respondents in CCs than in ALCs or PLCs.



5.2.3 KNOWLEDGE

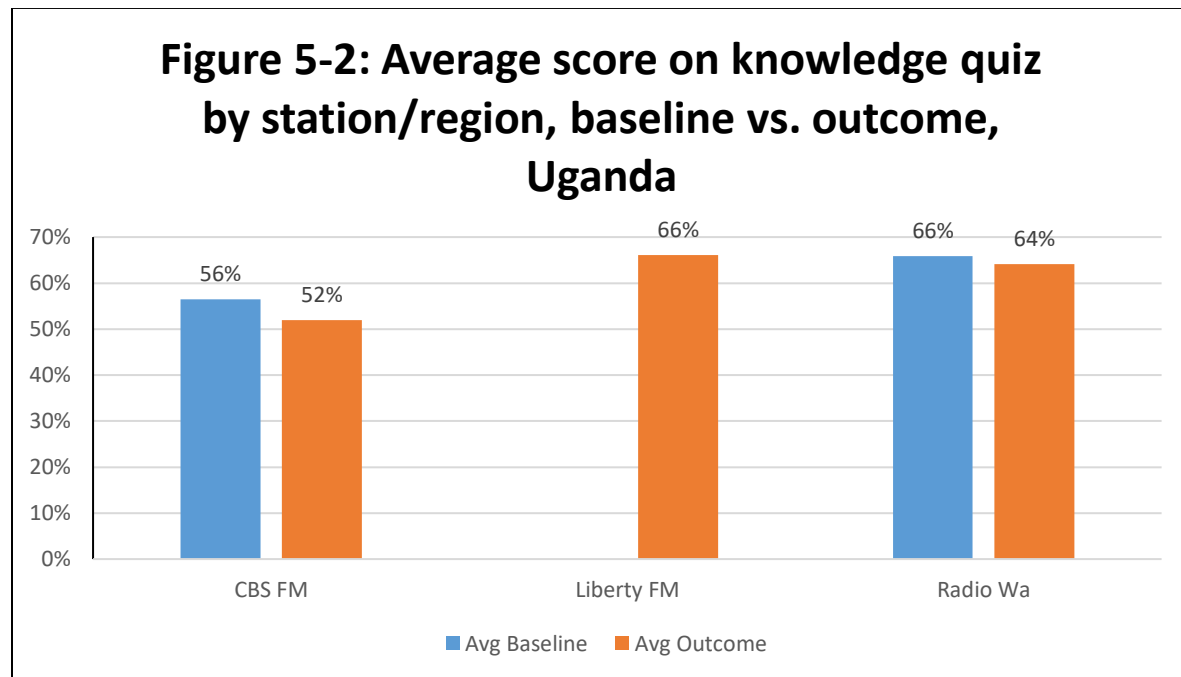
The baseline and outcome surveys asked questions which tested respondents' knowledge of nutrition, vitamin A, and the nutritional benefits of OFSP. Questions in the baseline survey were repeated in the outcome survey. This section presents the findings, including a comparison of scores on the knowledge quiz between baseline and outcome.

As shown in **Table 5-5**, there was little difference in average scores between male and female respondents, with both averaging a little over 60% correct responses.

Table 5-5 Average knowledge score on outcome survey by sex

	Average score
Female respondents	63%
Male respondents	61%

Figure 5-2 shows the average score by region/station, and compares scores between the baseline and outcome surveys. Only two regions/stations took part in both surveys. Knowledge scores were essentially flat from baseline to outcome: Respondents from CBS's listening area scored 4% lower on the outcome, and scores of respondents from Radio Wa's listening area decreased by 2%. The average score in the CBS-FM's listening area was slightly lower than the scores in other areas.



As shown in **Figure 5-3**, respondents in listening communities scored slightly higher than respondents in non-listening communities.

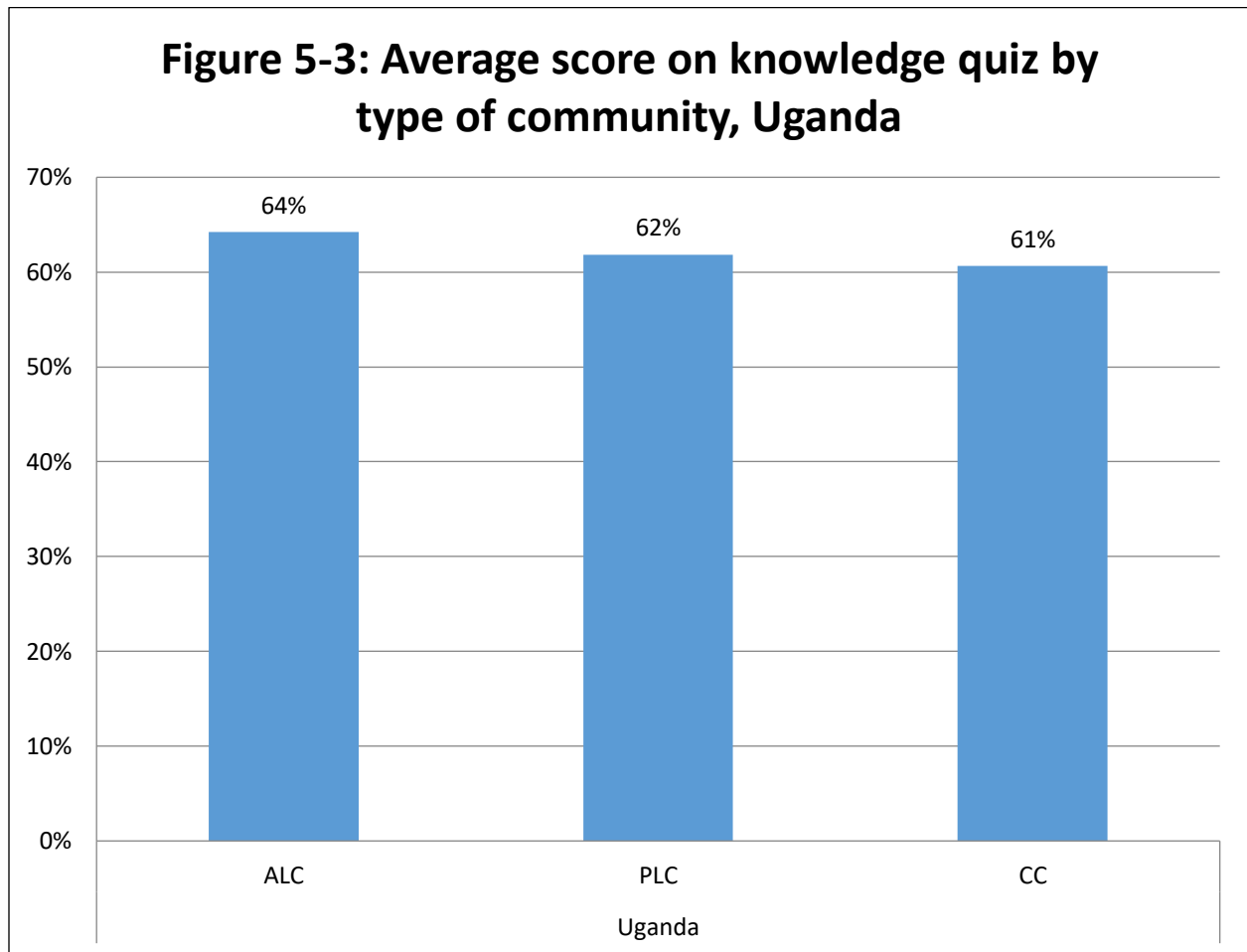


Figure 5-4 shows the percentage of respondents who answered each of the knowledge questions correctly, and compares the percentage of correct responses between baseline and outcome. The percentage of respondents who answered correctly increased slightly for some questions and dropped slightly for others. It should be noted that, in Uganda, for all questions except one, the baseline level of knowledge was high.

On one question, the percentage increase was more significant. The percentage of respondents who correctly identified myths about the risks of consuming OFSP as untrue (that OFSP can make children's teeth turn orange, cause impotency, etc.) increased by 34%, from 59% to 80% in ALCs and 79% in PLCs.

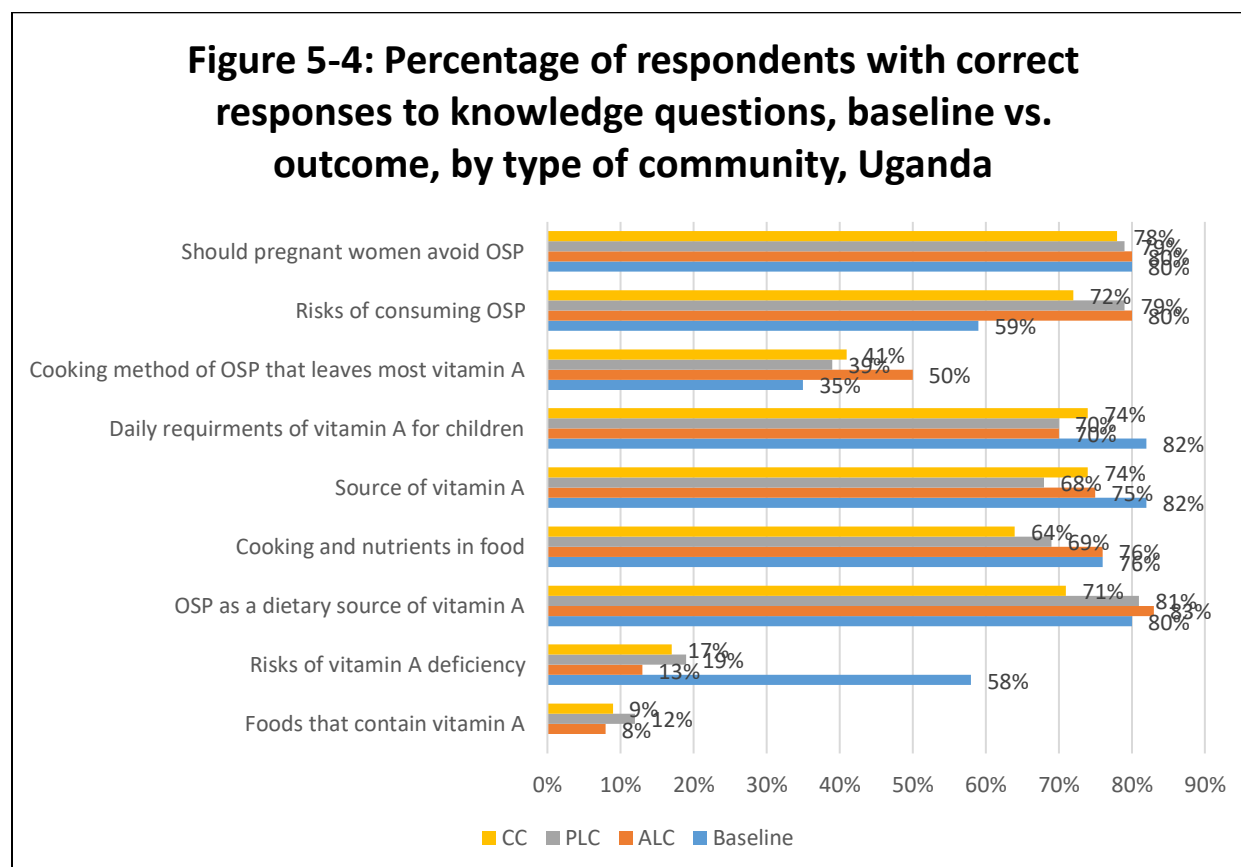
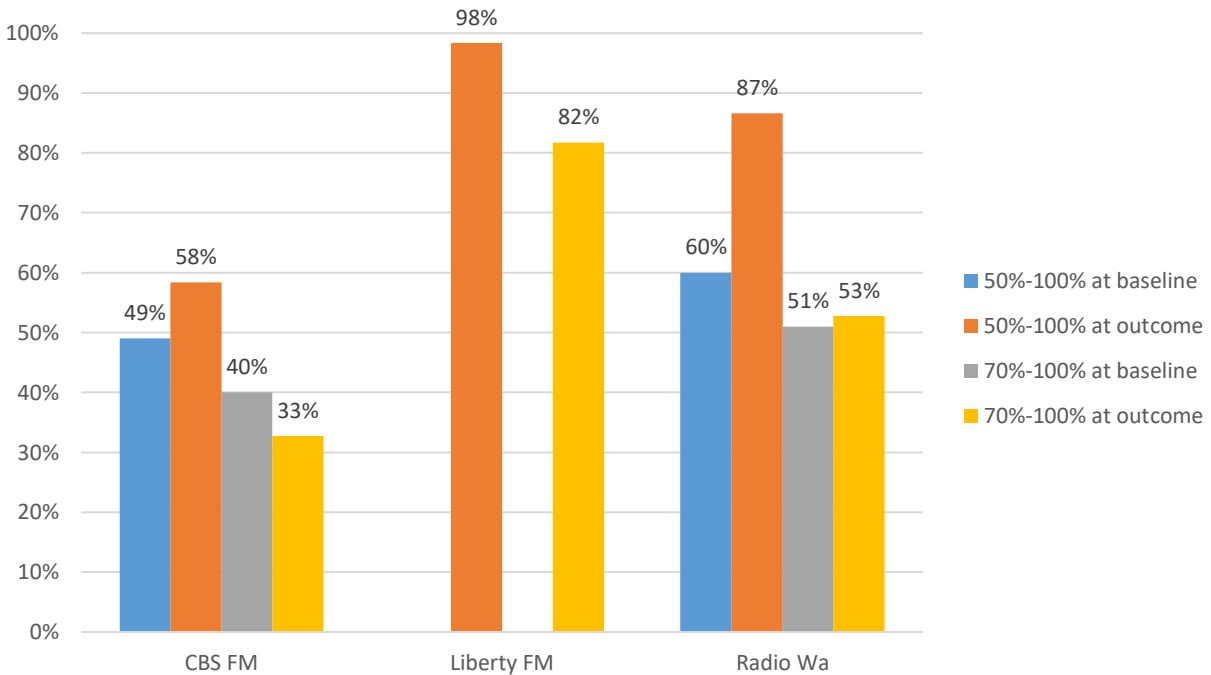


Figure 5-5 compares the percentage of respondents who scored 50%-100% and 70%-100% between baseline and outcome surveys, by station/region. As mentioned above, only two stations were involved in both the baseline and the outcome survey.

The number of respondents in CBS FM's listening area who scored 50% or better rose by 18% between baseline and outcome surveys, while the number of respondents who scored 70% or better decreased by 21%. For Radio Wa, the number of respondents who scored 50% or higher rose 45% between baseline and outcome surveys, and the number of respondents who scored 70% or better rose by 4%. The percentage of respondents who scored at these levels was greater at Radio Wa than at CBS FM, and highest of all at Liberty FM. This might be explained by the fact that the NGO partner in Liberty FM's coverage area who conducted outreach to the community—Hoima Caritas Development Organization— was very active and committed.

Figure 5-5: Percentage of respondents with average scores from 50-100% and 70-100% on knowledge quiz, baseline vs. outcome, Uganda



Other knowledge results (figures not shown)

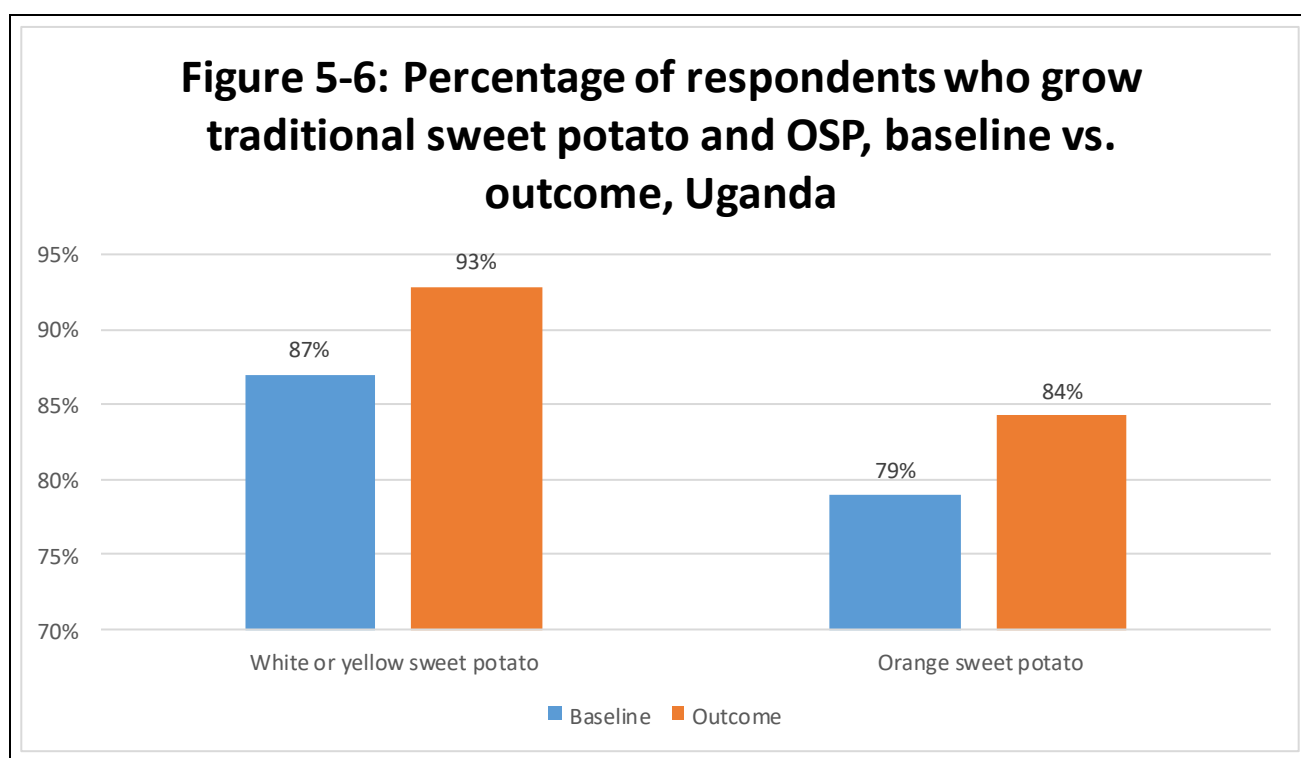
There was no clear relationship between frequency of listening and knowledge of nutrition as measured by scores on the knowledge quiz. However, more frequent listeners (half or more episodes) generally scored higher than those who listened to less than half of episodes at all three stations.

5.2.4 PRODUCTION

This section presents findings related to production of OFSP, including:

- a comparison between the percentage of respondents who grew OFSP at baseline and outcome surveys,
- a comparison of the percentage of respondents who grew OFSP in the different types of communities, and
- the reasons respondents chose not to grow OFSP

As shown in **Figure 5-6**, the percentage of respondents who grow OFSP rose slightly from 79-84% between baseline and outcome, while the percentage of respondents who grow yellow or white sweet varieties of potato rose from 87-93%.



If this difference between baseline and outcome is extrapolated to the total radio station coverage in the three stations' listening areas, there would be an estimated **116,300** new OFSP farmers, as shown in **Table 5-6**.

Table 5-6: New OFSP farmers since baseline

Country	Grow OFSP at baseline	Grow OFSP at outcome	Difference	New OFSP farmers
Uganda	79%	84%	5%	116,300

Figure 5-7 presents responses to a question which asked respondents to state the reasons they did not grow OFSP. By far, the most common reason respondents didn't grow OFSP was that no vines were available. A much smaller number of respondents had never heard of OFSP.

Almost all responses to this question in the baseline survey cited “other reasons.” Only a handful of respondents (5) indicated that they did not grow OFSP because no vines were available, and even fewer respondents chose any of the other reasons listed above in **Figure 5-7**. It is very likely that the radio programs on OFSP helped to increase demand for vines to the point where lack of vine availability became an important constraint to production.

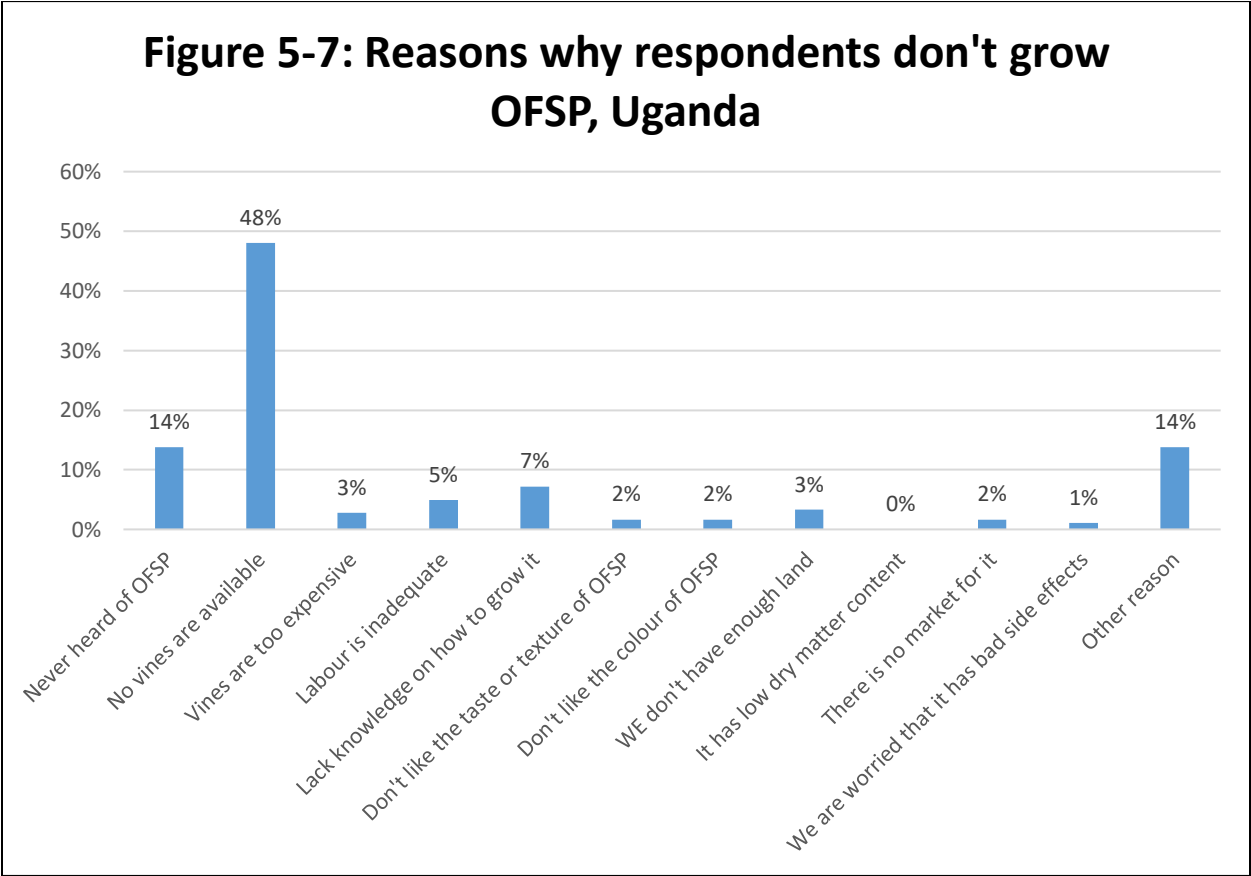


Table 5-7 shows that the percentage of respondents who grow OFSP was greater in ALCs than in PLCs or CCs.

Table 5-7 also shows that, with the exception of Agogo district, more than 50% of sweet potato growers in all districts grow more than half of their sweet potato crop as OFSP. The highest percentage was in Kamuli district, where 75% of respondents grow OFSP as half or more of their total sweet potato crop.

Table 5-7: Other production results

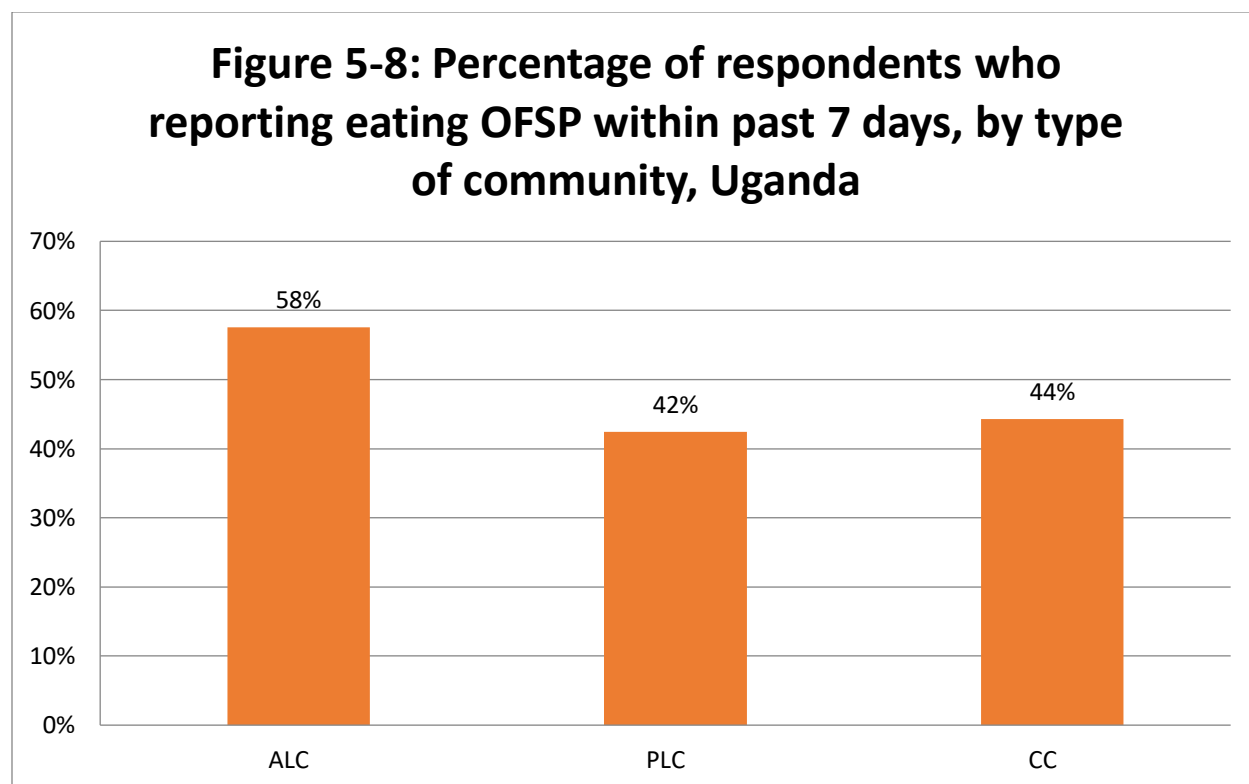
% of respondents who grow OFSP by type of community

ALC: 94%	PLC: 75%	CC: 84%
% of respondents who grow OFSP as 50% or more of their SP production, by station and district		
Radio Wa/Kole: 69% Radio Wa/Oyam: 69% Radio Wa/Agogo: 33%	Liberty FM/Kibaale: 67%	CBS FM/Rakai: 60% CBS FM/Kamuli: 75%

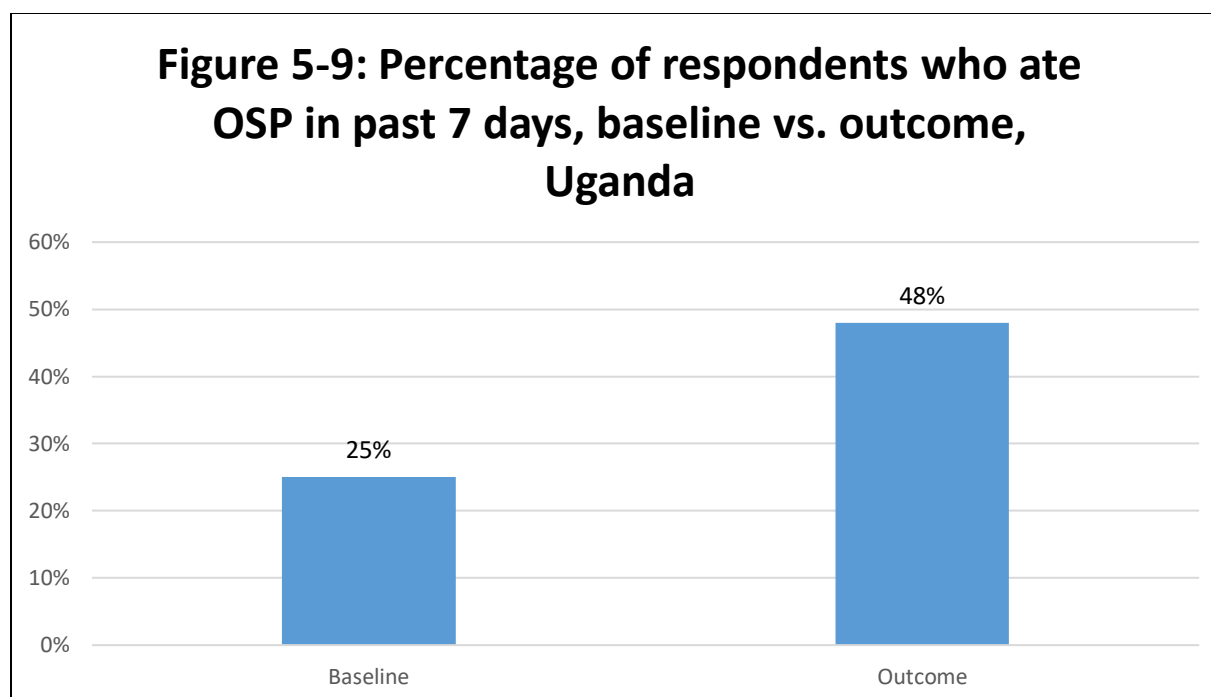
5.2.5 CONSUMPTION

This section presents the findings from the outcome survey on consuming OFSP, and compares consumption patterns between the baseline and outcome surveys.

As shown in **Figure 5-8**, the percentage of respondents who had eaten OFSP in the last 7 days was higher in ALCs than in PLCs or CCs.



As shown in **Figure 5-9**, the percentage of respondents who had eaten OFSP in the 7 days before the survey rose sharply between baseline and outcome, from 25% to 48%.

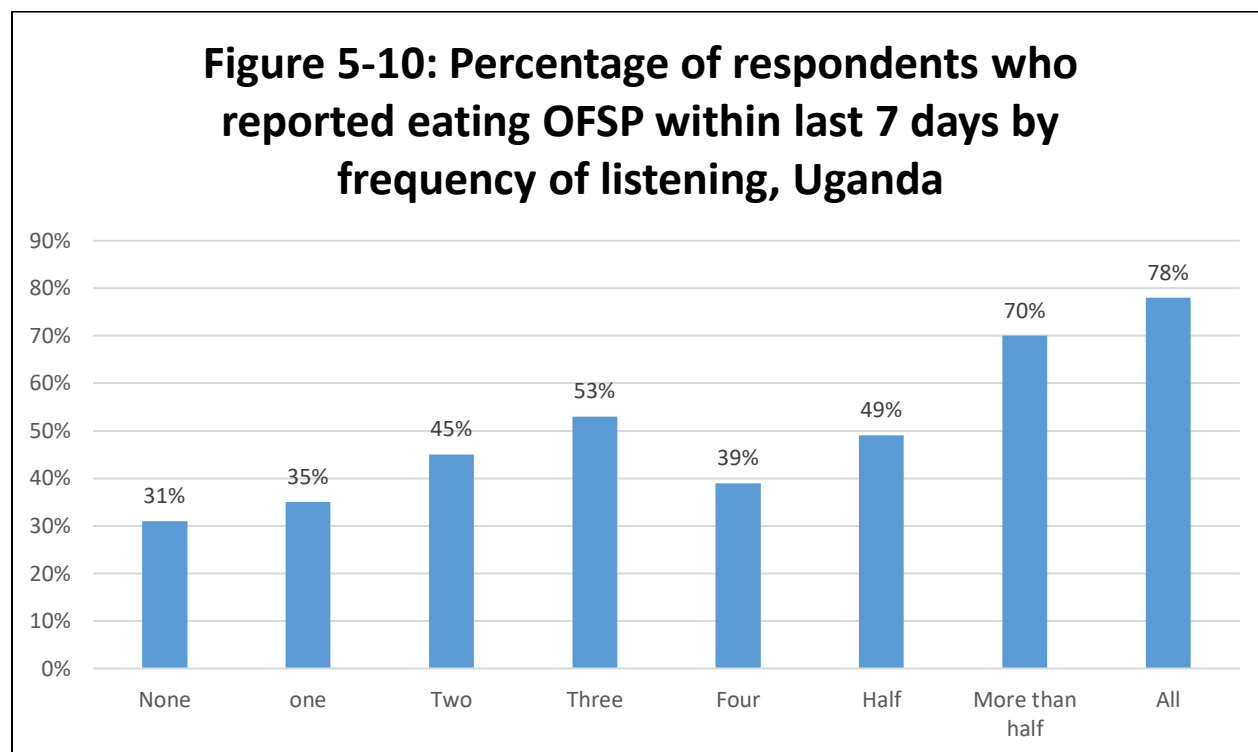


As noted in **Table 5-8**, by extrapolating these results to the total coverage area for the three radio stations, we can estimate that there are more than 370,000 new OFSP-eating households.

Table 5-8 New households eating OFSP

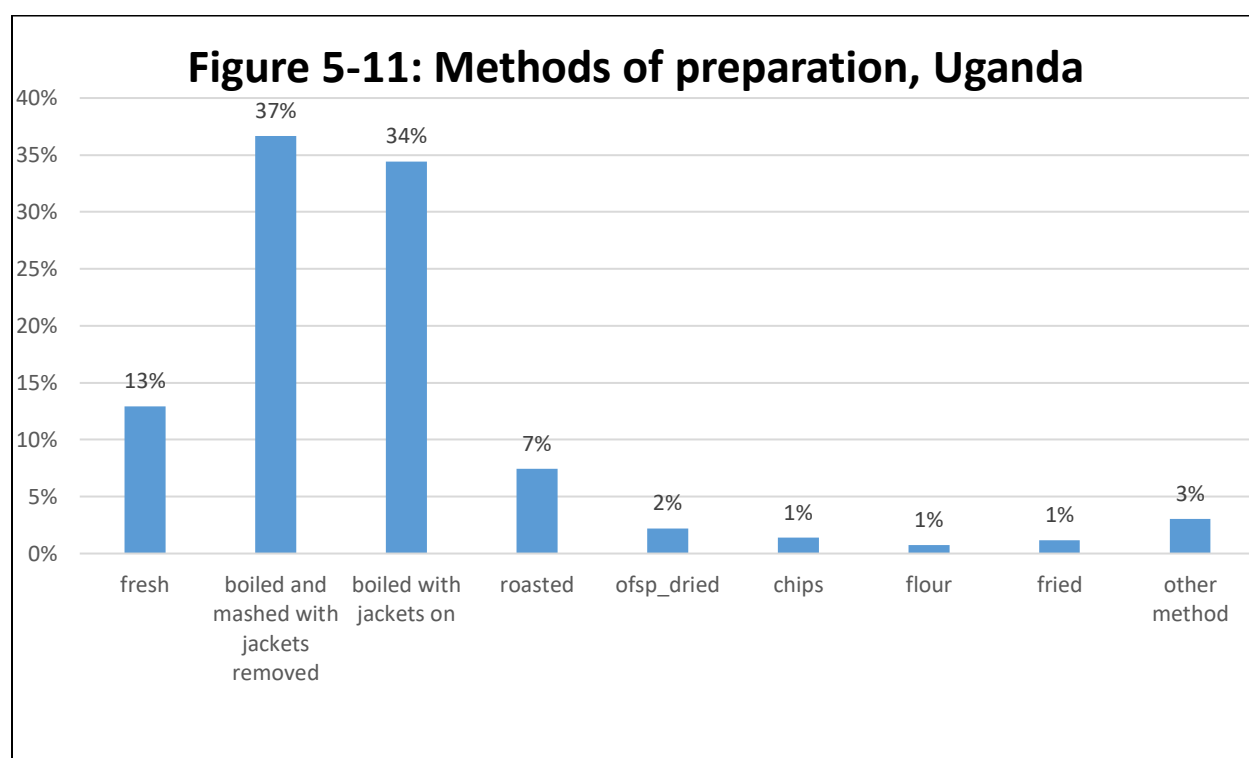
Consume OFSP within 7 days of baseline survey	Consume OFSP within 7 days of outcome survey	Difference	New households eating OFSP (extrapolating % difference to total listening area)
25%	41%	16%	372,000

Figure 5-10 shows a clear association between more frequent listening and increased consumption of OFSP.



Overall, boiling OFSP and mashing with jackets removed, or boiling with jackets on are the most common methods of preparing OFSP. As shown in **Figure 5-11**, Liberty FM has a much higher rate of preparing with jackets on, the method which best retains vitamin A.

By comparison, in the baseline survey, the most common method of preparing OFSP was with jackets removed: more than double the number of respondents preferred preparing OFSP with jackets on to jackets off. The radio programs on OFSP may have contributed to increased adoption of cooking methods which better retain OFSP.



Other consumption results:

There is a slight trend towards eating OFSP more frequently in ALCs, compared to PLCs and CCs. In all types of communities, respondents from Liberty FM's listening area consumed OFSP more frequently. This may be because Liberty FM serves Kibaale district, one of the primary sweet potato-growing regions in the country.

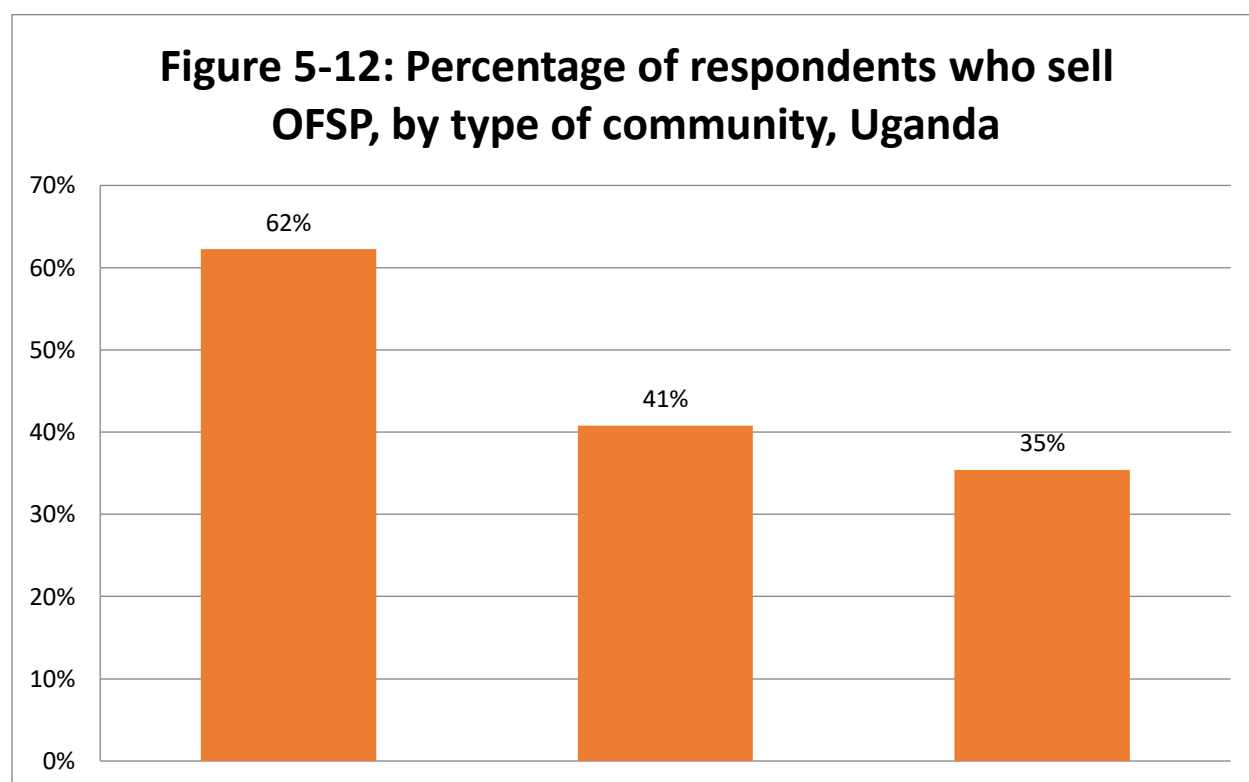
Also, there was little difference in the percentage of respondents in listening and non-listening communities who fed OFSP to their children under 5.

5.2.6 MULTIPLYING AND SELLING OFSP, AND MANAGING PESTS

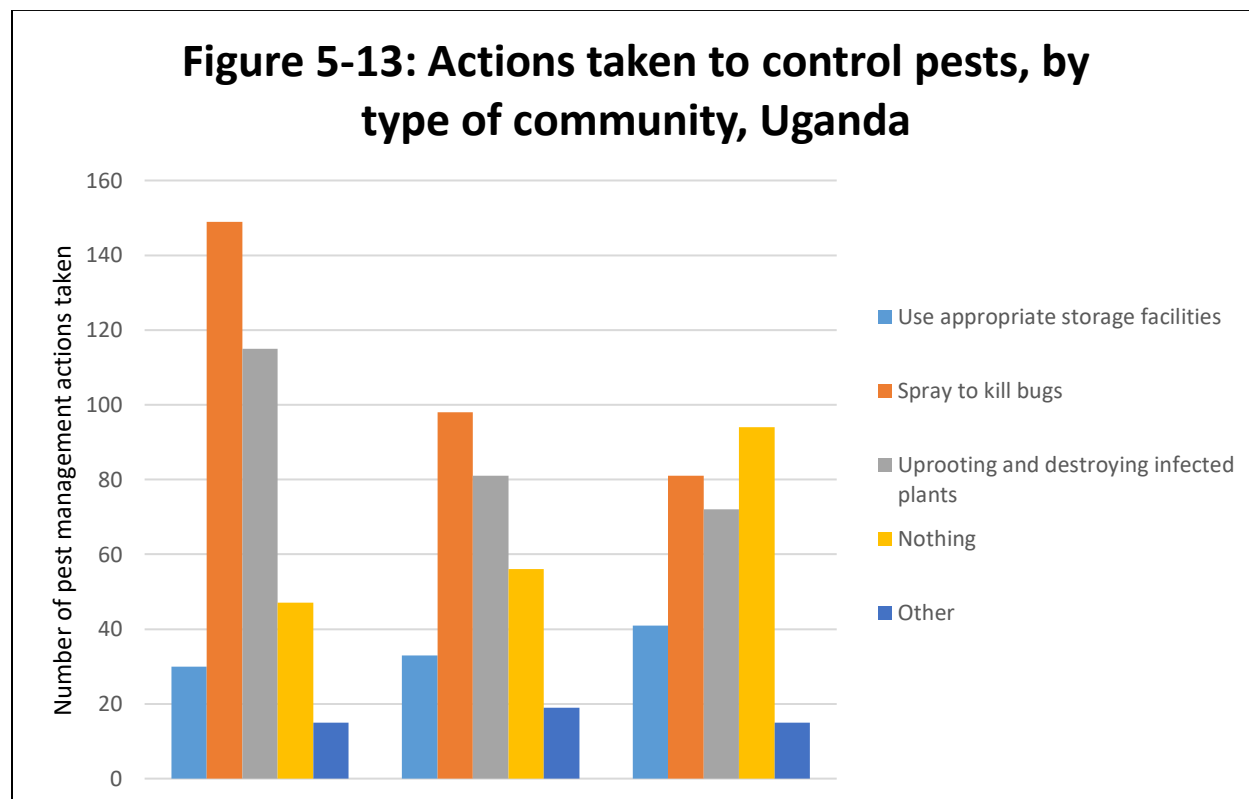
This section presents FRI's findings on

- multiplying vines,
- using pest management practices,
- selling OFSP roots,
- processing OFSP before selling, and
- selling vines.

Figure 5-12 shows that ALC respondents sell OFSP at a much higher rate than respondents in PLCs or CCs.



As shown in **Figure 5-13**, respondents in listening communities were somewhat more likely to spray to control pests, and somewhat less likely to do nothing, than respondents in CCs. In all types of communities, CBS' respondents were more likely to spray, and Radio Wa respondents were more likely to uproot and destroy infected plants. The tendency of CBS' respondents to spray more may be due to easier access to pesticides in the Central Region.



As shown in **Table 5-9**, a higher percentage of respondents from CCs than from listening communities a) process their OFSP before selling, and b) sell vines.

As shown in **Table 5-9**, the findings on which type of community most often multiplies vines are mixed. For Radio Wa and Liberty FM, ALC respondents (or ALC and PLC respondents in Liberty FM's case) more often multiply vines than CCs respondents.

In CBS FM's area, respondents from CCs are more likely to multiply vines. Overall, the percentage of respondents who multiply vines was greater in Radio Wa's listening area than in other listening areas.

Table 5-9: Other results

% of respondents who process their OFSP before selling, by type of community		
ALC: 28%	PLC: 23%	CC: 41%
% of respondents who sell vines, by type of community		

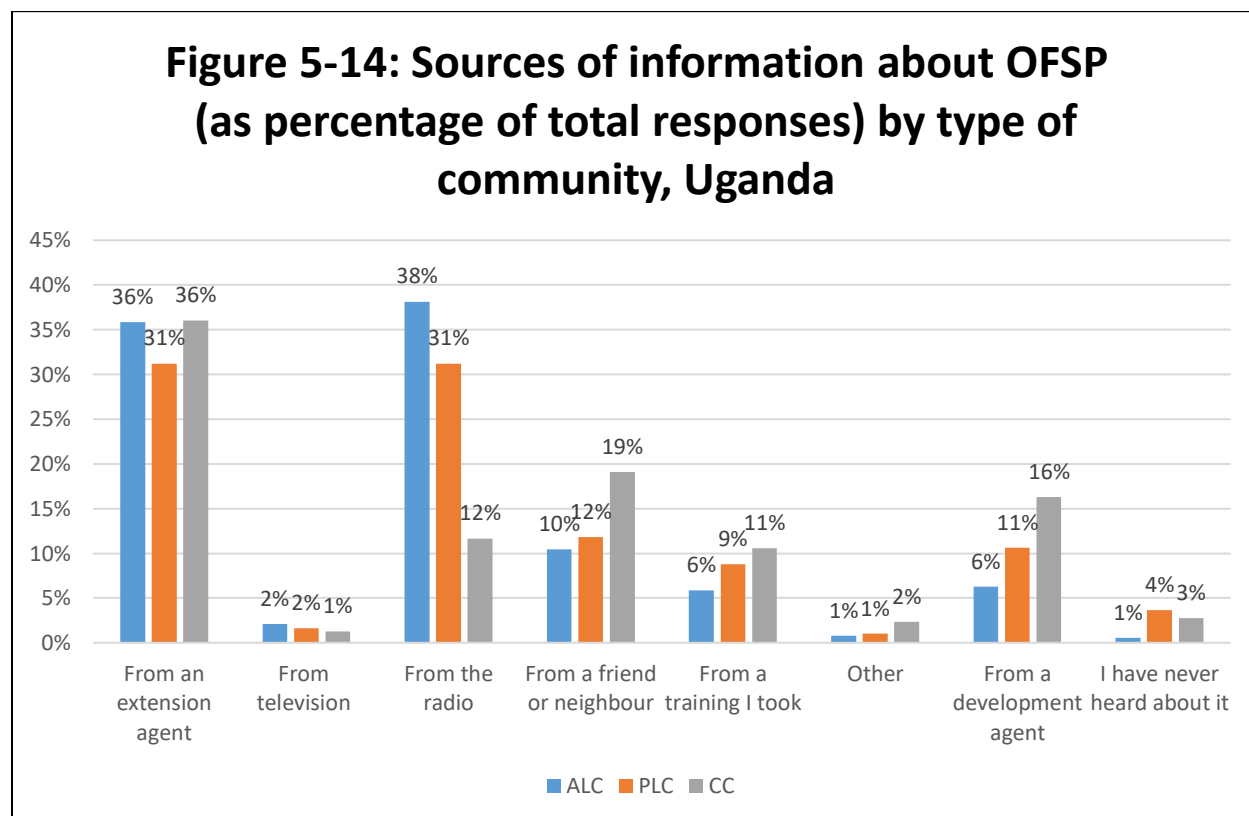
ALC: 19%	PLC: 14%	CC: 41%
% of respondents who multiple vines, by station and type of community		
CBS: ALC: 43% PLC: 37% CC: 57%	Liberty FM: ALC: 30% PLC: 30% CC: 20%	Radio Wa: ALC: 66% PLC: 49% CC: 48%

5.2.7 LISTENING BEHAVIOUR AND SOURCES OF INFORMATION ABOUT OFSP

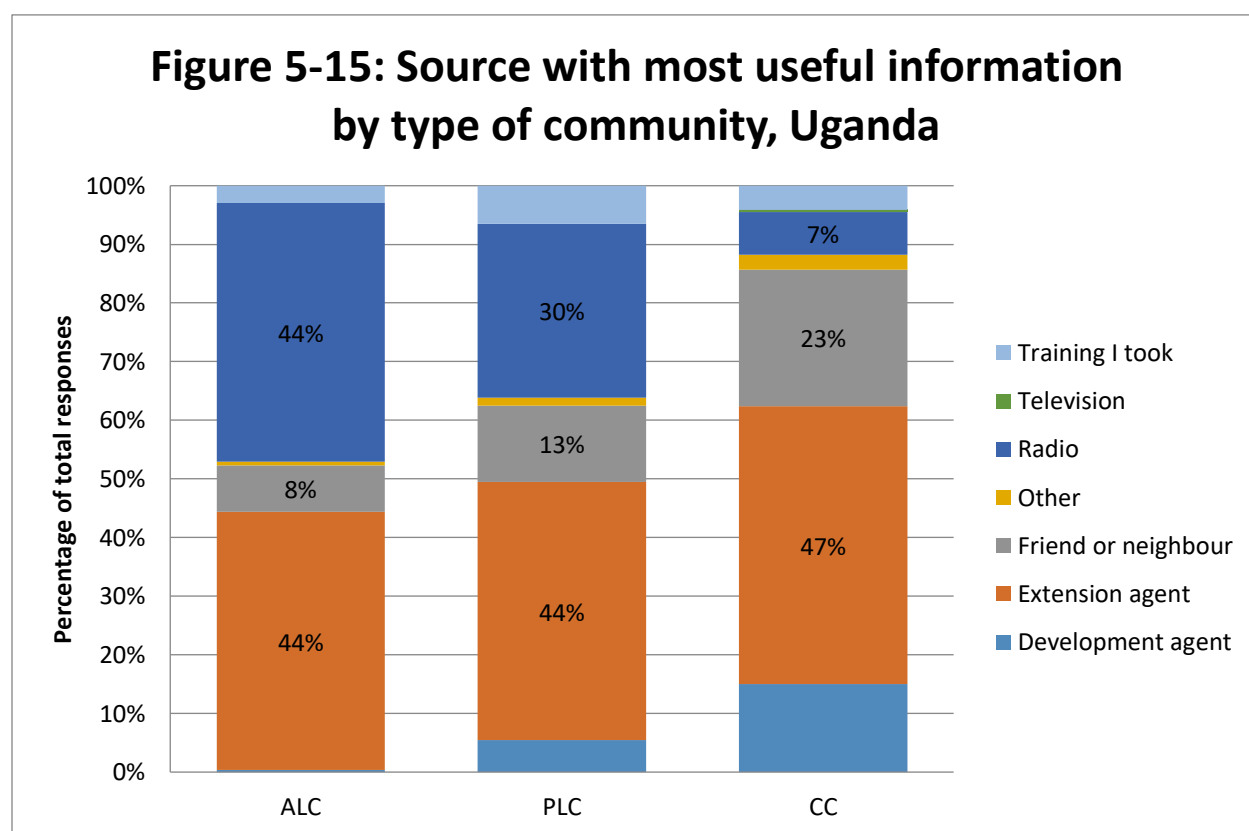
This section presents information about:

- sources of information about OFSP,
- respondents' opinions on the most useful sources of information about OFSP,
- the relationship between frequency of listening and both yield and production of OFSP,
- the percentage of respondents who were aware of the program and, of those, what percentage actually listened to it

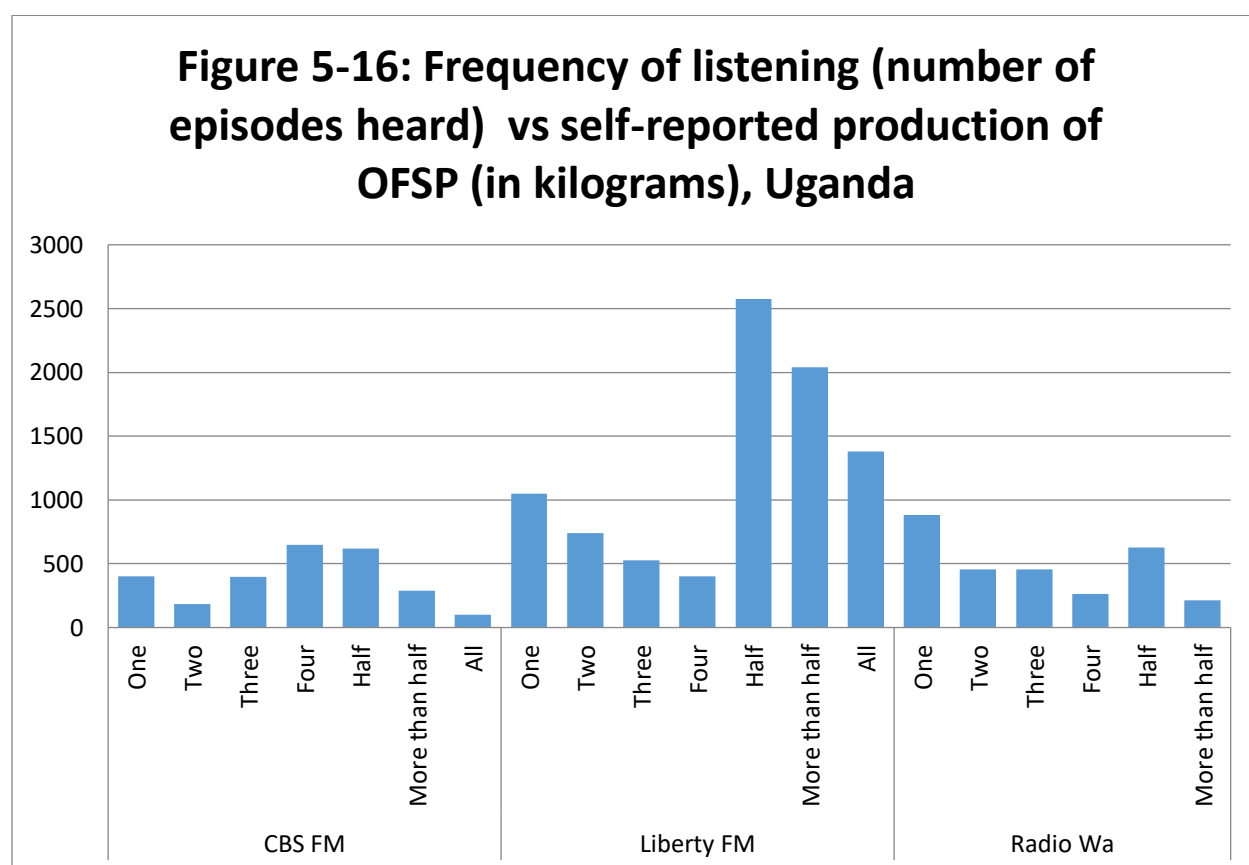
Figure 5-14 shows that radio was the most common source of information about OFSP in listening communities, closely followed by extension agents. In CCs, extension agents were the most common source of information. Extension and radio were equally mentioned at Liberty FM, extension slightly more frequently at Radio Wa, and extension was mentioned significantly more often at CBS.



As shown in **Figure 5-15**, extension agents and radio were considered the most useful sources for information about OFSP in listening communities. Radio was not as important in CCs, and development agents and friends and neighbours were more important. Consistent with **Figure 5-14**, radio was relatively more important in Liberty FM's listening communities, and extension agents were relatively more important in CBS FM's listening communities. In Uganda, extension agents were a much more important source of information on OFSP than they were in other countries. This suggests that strategies to increase OFSP production in Uganda could benefit by working closely with extension agents. It also suggests that, once OFSP is more common in other countries, it will be important to work with extension agents in these countries too.



As shown in **Figure 5-16**, Liberty FM listeners who heard half or more of the episodes had higher yields of OFSP than less frequent listeners. There was no clear relationship between frequency of listening and yield of OFSP at the other stations.



As shown in **Table 5-10** below and as expected, a much higher percentage of respondents from listening communities were aware of the program compared to respondents from control communities. **Table 5-10** also shows that a very high percentage of respondents in ALCs and PLCs who were aware of the program listened to it. This percentage was somewhat lower in Radio Wa's listening communities.

As also shown in **Table 5-10**, the general trend at Radio Wa is that respondents who listen more frequently are more likely to grow OFSP. This trend is not evident at the other stations, though every respondent who listened to all of the programs grew OFSP.

Table 5-10: Other listening results:

% of respondents who were aware of the program, by type of community		
ALC: 82%	PLC: 64%	CC: 16%
% of respondents who were aware of the program who listened to it, by type of community		
ALC: 88%	PLC: 89%	
Percentage of respondents who grow OFSP by frequency of listening (number of episodes heard), by radio station		
CBS:	Liberty FM:	Radio Wa:
1 episode: 100%	1 episode: 100%	1 episode: 69%
3 episodes: 90%	3 episodes: 77%	3 episodes: 92%
Half of episodes: 91%	Half of episodes: 100%	Half of episodes: 96%
All episodes: 100%	All episodes: 100%	All episodes: 100%

5.2.8 PROGRAM QUALITY

In the outcome survey, we asked respondents to rate the quality of the OFSP radio programs against five measures. As shown in **Table 5-11**, respondents rated the programs very highly on all parameters, with 90-98% saying that the program was much better or somewhat better than other agricultural programs, and agreeing or strongly agreeing with all statements of quality.

Table 5-11: Program quality N = 437³⁰

	Much better (%)	Somewhat better (%)	About the same (%)	Somewhat worse (%)	Much worse (%)
Comparing the PRC program to other agricultural programs	70	20	10	0	0
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
The program was relevant to my needs as a farmer	52	46	2	0	0
The program came on at the scheduled time	46	50	4	0	0
I found the program entertaining	52	46	2	0	0
The program was relevant to women farmers ³¹	58	40	1	1	0

³⁰ Figures may not add up to 100 because of rounding.

³¹ This question was asked only to women.

5.3 FOCUS GROUPS (WITH COMMUNITY LISTENING GROUPS)

In August 2013, FRI worked with Community Enterprises Development Organization (CEDO) to establish 14 Community Listening Groups (CLGs) in the Rakai and Masaka districts of Uganda's Central Region. We also set up six other groups in Mukono district, with the help of Volunteer Effort Development Concerns (VEDCO).

To form the CLGs, partners identified existing farmer groups, briefed the members, and equipped them with radio sets to enable them to discuss, give feedback, and take action on OFSP-related issues. FRI asked CLG secretaries to charge radio sets, record the weekly programs, and replay them to the group during meetings. Secretaries completed standardized feedback forms and returned them to the FRI office via field extension workers.

FRI conducted three field visits between September 2013 and July 2014 to engage CLGs connected with Radio Wa and CBS FM.

In September 2013, Farm Radio staff, accompanied by staff from Radio Wa, HarvestPlus, and World Vision, visited listening communities in Lira and Kole districts. The field work focused on establishing and helping to facilitate 20 CLGs for each radio station.

During the first monitoring visit, FRI discovered that few people were listening to the PRC program. After sharing this feedback with radio management, FRI suggested that the stations run more promos for the PRC during other programs. Extension workers from partner organizations agreed to remind farmers about the PRC during extension visits.

In November 2013, FRI met with nine CLGs in Lira and Kole districts and 12 groups in the Central districts of Rakai and Masaka in order to monitor listenership and assess the relevance of the programs broadcast by Radio Wa and CBS FM.

Findings from this second visit include the following:

- Farmers were aware of the timing of the program and said the radio signal was consistently strong.
- Farmers said the program repeats helped them understand topics and themes discussed in previous programs and catch missed programs.
- Farmers were satisfied with program duration and timing.

Feedback from the CLGs indicated that the PRC had the following impacts:

- an increase in demand for OFSP vines among listening farmers in both active and passive listening communities
- an increase in knowledge of nutrition and health
- increased knowledge of best agronomic practices
- awareness of the economic value of OFSP and consequent plans for large-scale commercial production
- knowledge of how to add value to OFSP by, for example, making cakes, biscuits, and chapattis

Other findings include:

- The popularity of the PRC was driven by the strong demand for vines, and the fact that the program connecting farmers to vine multipliers.³²
- Some listeners called in to ask questions or provide comments regarding OFSP. However, many listening farmers lack cell phones (or airtime) and could not participate in the interactive components of the programs.

On the third monitoring trip, FRI met with four listening groups and three vine multipliers in Rakai and Masaka districts. FRI staff were accompanied by a CBS broadcaster and CEDO staff.

This visit gathered a lot of feedback from listeners, reflected in the following quotes:

Buyondo Fuluje is a vine multiplier, who said:

“The program has made me known and [made me] earn money; every day I get not less than five deals to supply vines... That’s why I will keep on thanking FRI, HarvestPlus and CEDO for making me known.”

Tebandeke John is also a vine multiplier:

“I didn’t know that villagers can spend their money on buying vines, but after my contacts were given out to listeners during the PRC program, the demand is very high now. I have so far sold 500 sacks of vines and am in business now.”

The CLGs are planning the following activities for next year:

- establishing a joint OFSP garden for the group
- buying a motorcycle to transport people and generate income for the group
- opening a canteen to sell OFSP products in the community

Listeners were able to interact with the radio program in several ways: First, they could leave a missed call on a number that was announced on-air to express their views on questions posed by the broadcaster on the program. Second, they received SMS alerts before the broadcast time to tune into the radio program. Third, the beep-to-vine service connected interested vine buyers with vine multipliers by allowing them to beep their interest to the station and receive a SMS list of vine multipliers in their area, along with the multipliers’ contact info.

³² Interested listeners were invited to send messages to specific phone numbers and, in response, receive a message with the contact information of vine multipliers. Alternatively, broadcasters read a list of vine multipliers on air.

Table 5-12: Number of ICT-mediated interactions

Radio Station	Incoming/Missed calls	Outgoing/SMS	Total
CBS	63,907	5,412	69,319
Liberty FM	13,296	12,068	25,364
Continental FM	14,103	8,562	22,665
Radio Wa	5,780	585	6,365
Total			123,713

The table above shows the total number of ICT-mediated interactions for all Ugandan radio stations involved with the project.

5.4 KEY FINDINGS

Unlike other project countries, there were few improvements in knowledge in Uganda, which is to be expected, given the variety of projects that have promoted OFSP in recent years in many parts of the country. However, there is evidence that more frequent listeners scored higher than less frequent listeners.

The outcome evaluation suggests that, between baseline and outcome, there were many new OFSP farmers.

Consumption of OFSP during the 7 days before the survey rose strongly between baseline and outcome, and there was a clear trend associating more frequent listening with increased consumption of OFSP.

OVERALL

- Estimated number of listeners: 2,327,400
- Estimated number of new OFSP farmers since baseline: 116,000
- Estimated new household eaters: 372,400

KNOWLEDGE

As mentioned, knowledge scores in Uganda were essentially flat, presumably due to the relatively high existing levels of knowledge. However, there was a strong increase in the percentage of respondents who correctly identified myths associated with consuming OFSP as untrue, and more frequent listeners generally scored higher than less frequent listeners.

PRODUCTION

There was an increase in the percentage of farmers who grew OFSP from baseline to outcome, from 79-84%. The general trend at Radio Wa is that respondents who listen more frequently are more likely to grow OFSP. This trend is not clear at the other stations, though the rate of growing OFSP is 100% for all respondents who reported listening to all programs.

By far the most common reason respondents didn't grow OFSP in Uganda was that no vines were available. In the baseline survey, only a handful of respondents (5) indicated that they did not grow OFSP because no vines were available. It is very likely that the radio programs on OFSP helped to increase demand for vines to the point where lack of vine availability became an important constraint to production.

CONSUMPTION

There were strong increases in OFSP consumption between baseline and outcome, and more frequent listeners were more likely to eat OFSP than less frequent listeners or non-listeners.

- The percentage of respondents who had eaten OFSP in the 7 days before the survey rose 64% between baseline and outcome, from 25% to 41%.
- There is a clear association between more frequent listening and increased consumption of OFSP.
- The percentage of respondents who had eaten OFSP in the last 7 days was significantly higher in ALCs than in PLCs or CCs.
- There was an increase in adoption of cooking methods which better retain vitamin A between baseline and outcome.

Children's consumption of OFSP

There were survey problems and, possibly, sampling problems associated with some of our questions on children's consumption of OFSP. These problems unfortunately invalidated some of our research on children's consumption. Thus, while we have data from the outcome survey on children's consumption of OFSP and the frequency of that consumption, we have no basis for comparison between baseline and outcome, and cannot determine whether children's consumption increased over the duration of the project.

Program quality: On five measures of program quality, 90-98% of respondents agreed or strongly agreed that the program was high quality.

Differences between stations/regions

Respondents at Liberty FM had higher knowledge scores, consumed OFSP more frequently (in all types of communities), had a much higher rate of preparing OFSP with the cooking method that best retains vitamin A, and considered radio a more important influence than at other stations.

As noted above, this could well be explained by the strong commitment and involvement of the NGO partner who conducted outreach to the community in the area, Hoima Caritas Development Organization.

Also, the fact that Liberty FM serves Kibaale district, one of the primary sweet potato-growing areas in the country, may have contributed to higher levels of knowledge and consumption in Liberty FM's coverage area.

Sources of information about OFSP:

Along with radio, extension agents were considered the most useful sources for information about OFSP in listening communities. While radio was relatively more important in Liberty FM's listening communities, extension agents were relatively more important in CBS FM's listening communities.

CONCLUSIONS

Between 2012 and 2015, Farm Radio International and its partners launched a radio campaign focused on orange-fleshed sweet potato (OFSP), a vitamin-A rich staple crop in the four campaign countries (Burkina Faso, Ghana, Tanzania, and Uganda). An estimated 3.5 million households tuned into to the programs. The campaign significantly increased knowledge of nutrition, vitamin A deficiency, and the health benefits of OFSP, and resulted in hundreds of thousands of families beginning to grow and eat OFSP.

The project worked with 15 radio stations in the four countries, produced 481 hours of programming on OFSP, and employed a variety of ICT strategies to share and exchange information on consumption and production, including a variety of *beep4 services*³³.

The campaign demonstrated that, when used effectively, radio is a valuable tool to educate listeners about nutritional messages, and to drive consumption and production of crops which can help address nutritional deficiencies.

RESULTS

- Estimated number of listeners across four countries: **3.5 million**
- Average gain in knowledge (as measured by difference in score on knowledge quiz between baseline and outcome survey): **35%**
- Estimated number of new OFSP growers: **432,000**
- Estimated number of new households eating OFSP: **650,000**
- Number of people registered as ICT subscribers and using FRI's beep4services or beep2vote service during the radio campaigns: **47,216**
- Number of hours of OFSP promotional programs over the three years of the project: **481**
- Number of hours of information on nutrition for parents and caregivers: **149**

There were gains in knowledge in all four countries. In Burkina Faso, Ghana, and Tanzania, gains were substantial. In Uganda, gains were more modest, but the programs helped to build knowledge in particular areas such as dispelling myths about OFSP. In all cases, listening communities (ALCs and PLCs) had higher knowledge scores than the control communities, though the difference was marginal in Uganda, where OFSP promotional activities had achieved most penetration. *Listening to the radio programs was clearly associated with higher knowledge of nutrition, vitamin A, and OFSP production.*

There was a clear relationship between more frequent listening and more frequent consumption of OFSP in Uganda, Tanzania, and Ghana. In all countries, consumption of OFSP was higher in listening communities. *This demonstrates the capacity of effectively designed and produced radio programs to drive consumption of nutritionally important crops.*

Radio was the preferred source of information in both baseline and outcome surveys in Burkina Faso, Ghana, and Tanzania, while respondents in Uganda found radio and extension sources equally useful. The

³³ *Beep4 services* allow individuals to flash a number (phone and hang up) to a radio station, and, in return, receive an SMS or phone call with various types of information. For example, in the OFSP project, the *Beep4vine* service sent contact information for vine suppliers in the caller's local area.

radio programs provided farmers with a valuable opportunity to discuss topics with a variety of actors involved in OFSP promotion.

Feedback from the outcome evaluation and the radio programs showed that the most common challenge farmers faced in growing and eating OFSP was the availability of vines. Demand for vines expanded beyond the original target areas because of the broad geographical coverage of the radio programs. *This underlines the success of FRI's radio campaigns at increasing demand and planting.* Both men and women are interested in growing OFSP if demand increases, and further investments in processing and value-adding initiatives are expanded.

In future projects, radio could play a role in reflecting the demand for goods and services such as planting materials, and help match supply to demand by involving suppliers at the formative stages of the project. The beep4vine service in Tanzania represents a step in this direction. The service allowed local vine buyers and multipliers to connect through the radio. A follow-up found that, in all, 455 bundles of vines were sold through beep4vine.

Overall this project achieved its objectives of increasing knowledge, production, and consumption of OFSP in the four project countries. Future projects in the area of nutrition and crop production can learn from this project, and in particular, from the capacity of radio programming to help communities improve household nutrition.