ICT4AgD & Soybean Farmers in Rural Ghana

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APRIL 2017
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Focus Group Discussion Results among Men and Women Smallholder Soybean Farmers in Ghana’s Northern Region

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The Feed the Future Innovation Lab for Soybean Value Chain Research: Soybean Innovation Lab (SIL) (Peter Goldsmith, PI) is funded by the United States Agency for International Development (USAID). The views expressed in this publication do not necessarily reflect the views of the U.S. Agency for International Development or the U.S. Government.

CITATION: Kathleen Ragsdale, Mary R. Read-Wahidi & Audrey Reid. 2017. ICT4AgD & Soybean Farmers in Rural Ghana: Focus Group Discussion Results among Men and Women Smallholder Soybean Farmers in Ghana’s Northern Region. USAID and the Feed the Future Soybean Innovation Lab. Social Science Research Center, Mississippi State University. doi: 10.13140/RG.2.2.13859.04646. Available at http://preview.tinyurl.com/y92qq8w8
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ACKNOWLEDGEMENTS
This study is made possible by the generous support of the American people through the United States Agency for International Development (USAID). Our deepest gratitude to USAID, the USAID/Ghana Mission, the University of Illinois at Urbana-Champaign, and Mississippi State University’s Social Science Research Center (SSRC), International Institute, and Division of Agriculture, Forestry, and Veterinary Medicine (DAFVM) for their support of this study, including community mobilization, data collection, and data analysis. We thank the Republic of Ghana Ministry of Food and Agriculture (MoFA), including MoFA District Directors and MoFA Agriculture Extension Agents for their generous assistance with community mobilization and focus group implementation. We gratefully acknowledge the Council for Scientific and Industrial Research, Savanna Agricultural Research Institute (CSIR SARI) of Ghana. We thank our in-country implementing partner, Catholic Relief Services/Ghana (CRS/Ghana) and our many CRS/Ghana colleagues for their invaluable commitment throughout the project, including co-development of the ICT4AgD Focus Group Discussion Guide. We also thank Catherine Sobrevega of the Mennonite Economic Development Associates (MEDA) for her valuable feedback on the Focus Group Discussion Guide. We gratefully acknowledge the MoFA Agriculture Extension Agents and the men and women smallholder soybean farmers of Ghana’s Northern Region who generously participated in the focus groups. The contents of this report are the responsibility of the authors and do not necessarily reflect the views of USAID or the U.S. Government.

FUNDING
This work is supported by the Feed the Future Innovation Lab for Soybean Value Chain Research (Soybean Innovation Lab) under the U.S. Government’s global hunger and food security initiative, Feed the Future. The Soybean Innovation Lab is managed by the University of Illinois at Urbana-Champaign through support from the U.S. Agency for International Development (USAID) (Award No. AID-OAA-L-14-00001; P. Goldsmith, PI) and provides support to the Soybean Innovation Lab’s Socioeconomic and Gender Equity Research (SGER) team at Mississippi State University (Grant No. 2013-04026-07; K. Ragsdale, PI).

ACRONYMS & ABBREVIATIONS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>CRS/Ghana</td>
<td>Catholic Relief Services/Ghana</td>
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<td>FTF</td>
<td>Feed the Future</td>
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<tr>
<td>ICT4AgD</td>
<td>Information &amp; Communication Technology for Agricultural Development</td>
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<tr>
<td>MoFA</td>
<td>Ministry of Food and Agriculture, Republic of Ghana</td>
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<tr>
<td>MMS</td>
<td>Multimedia Messaging Service</td>
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<td>NGOs</td>
<td>Non-governmental organizations</td>
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<td>SARI</td>
<td>Savanna Agricultural Research Institute</td>
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<td>SGER</td>
<td>Socioeconomic &amp; Gender Equity Research</td>
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<td>SIL</td>
<td>Soybean Innovation Lab / FTF Innovation Lab for Soybean Value Chain Research</td>
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<td>SMS</td>
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<td>SQSIR</td>
<td>Seed Quality &amp; Smallholder Innovation Research</td>
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BACKGROUND

Soybean production is expanding in food insecure and developing nations in sub-Saharan Africa—including Ghana and other Feed the Future (FTF) Focus Countries—due to its importance as a nutrient-rich food source for humans and livestock. Soybean is increasingly significant as both a cash crop and for household consumption among smallholder farmers in rural Ghana. However, important research questions exist around the viability of soybean production and marketing—particularly among women smallholder farmers in Ghana’s Northern Region—where approximately 73.7% of adults are engaged in agricultural production (Ghana Statistical Service, 2013). Understanding barriers to soybean production and marketing in Ghana’s Northern Region is particularly vital given that this region has some of the most extreme rates of poverty, food insecurity, and childhood undernutrition in the nation (Zereyesus, Ross, Amanor-Boadu & Dalton, 2014). Zereyesus and colleagues (2014) estimate that the Northern Region’s rate of poverty is 21.6%, rate of moderate-to-severe hunger is 31.1%, and rate of stunting among children 0-59 months is 39.2% (ibid.).

Right now, the world is closer than ever before to ending global hunger, undernutrition, and extreme poverty, but significant challenges and opportunities remain... Food security is not just an economic and humanitarian issue; it is also a matter of security, as growing concentrations of poverty and hunger leave countries and communities vulnerable to increased instability, conflict, and violence. — USAID, 2017
Launched in 2013, the goal of the USAID-funded Feed the Future Soybean Innovation Lab is to provide the science necessary for men and women smallholder farmers in sub-Saharan Africa to share in rising demand for soybean as a cash and household food crop, thus further enabling developing countries to address economic development, food insecurity, and protein malnutrition. The goal of the Soybean Innovation Lab’s Socioeconomic and Gender Equity Research (SGER) team is to better understand how gender equity and other socioeconomic factors within the agricultural sector impact men and women smallholder soybean farmers in rural Ghana in order to help transition farm families towards better food security, household nutrition, and economic development through sustainable soybean production.

In March-April 2015, the Soybean Innovation Lab’s Seed Quality and Smallholder Innovation Research (SQSIR) team collaborated with Catholic Relief Services/Ghana (CRS/Ghana) and the Savanna Agricultural Research Institute (SARI) to produce and distribute the first round of Soybean Success Kits to 1200 men and women farmers in rural Ghana. The free Soybean Success Kits—whose motto is ‘Eat Some, Save Some, Sell Some’—were distributed across villages in Districts in Ghana’s Northern Region in which SGER conducts Soybean Innovation Lab activities.

The Kits were designed to be a “starter pack for soybean production including all needed inputs and educational training” (SIL, n.d.: para. 1) and contained 2.5 kilos of locally produced Jenguma seed supplied by SARI, 2 kilos of fertilizer supplied by Yara Ghana, and inoculant and donated gloves from the CRS/Ghana’s Philip Atiim and MoFA Agricultural Extension Agent Amida Adam lead a Soybean Success Kit Workshop among villagers in Tolon District. Photo: Samuel Bonsu / CRS
US, and sugar to help the inoculant adhere to the seed. These were placed in a poly bushel bag printed with pictographic instructions on inoculating, planting, harvesting soybean as well as pictorial reminders to ‘Eat Some, Save Some, Sell Some.’ SQSIR collaborated with CRS/Ghana and MoFA to conduct on-site Soybean Success Kit Workshops among men and women farmers, who each received a free Kit for his or her attendance. The Workshops included training and hands-on demonstrations of best agronomic practices for high soybean yield, such as how to inoculate soybean and proper row spacing and planting density for soybean.

In June 2016, SGER and CRS/Ghana used the Kits’ motto of ‘Eat Some, Save Some, Sell Some,’ to frame the ICT4AgD Focus Group Discussion Guide (see Appendix 1) to collect exploratory data among smallholder soybean farmers for the following research questions:

1. What types of knowledge do smallholder farmers need to improve soybean production?

2. What types of knowledge do smallholder farmers need to improve soybean processing and marketing?

3. What types of knowledge do smallholder farmers need to their family prepare soybean food for household consumption?

4. How would smallholder farmers prefer that such knowledge to be passed on to them (e.g., field demonstration, radio programs, text messages, etc)?

5. What is the current state of mobile phone ownership/access and use among smallholder farmers?
In June-July 2016, SGER collaborated with CRS/Ghana to conduct four gender-disaggregated focus group discussions among men and women smallholder soybean farmers in two villages in the Districts of Karaga and Tolon in Ghana’s Northern Region. These villages are part of the 12-village catchment area that includes the four Northern Region districts of Chereponi, Karaga, Saboba, and Tolon in which SGER is currently conducting Soybean Innovation Lab activities.

**METHODS**

To encourage the fullest participation of women soybean farmers, all focus groups were disaggregated by gender. Conducting homogenous focus groups among local soybean farmers that were stratified by gender was advisable due to the fact that sociocultural norms and customary practices legitimate male dominance in the public sphere among farming household (Apusigah, 2009; Britwum & Akorsu, 2016; Lambrecht, 2016). As Keown states, “Homogeneous groups…are generally more comfortable and open with each other, whereas mixed sex, ethnic, or
socioeconomic groups make it more difficult to achieve a high degree of group interaction” (Keown, 1983: 66; see also Krueger, 1998). All focus groups were conducted on-site by SGER and CRS/Ghana. MoFA Agricultural Extension Agents and others fluent in the local language and in English served as the focus group moderators/ translators.

The focus group discussion guide’s six sections included 1) seven questions on agricultural knowledge of soybean cultivation, 2) six questions related to soybean value chain and marketing, 3) four questions related to the processing of soybean to improve nutrition at the household level, 4) four questions related to preferred mode of agricultural knowledge transfers, 5) two questions related to mobile phone ownership/access, and 6) six questions related to mobile phone usage. Each focus group discussion lasted approximately one hour. The ICT4AgD Focus Group Discussion Guide is included in Appendix 1.

FOCUS GROUP RESULTS

Thirty-five soybean farmers participated in the four focus groups, of whom 15 were men and 20 were women. The two focus groups held in the village in Karaga District included a total of 19 participants, of whom eight were men and eleven were women. The two focus groups held in the village in Tolon District included a total of 16 participants, of whom seven were men and nine were women. One of the most interesting results across the focus groups (N=35) was that 93.3% of male participants (n=15) owned a mobile phone as compared to 55% of female participants (n=20). In fact, while only one of 15 male participants reported that he did not own a mobile phone, 11 of 20 female participants reported that they did not own a mobile phone.

However, it is also important to point out that all 35 participants reported that they had access to a mobile phone—whether that of a household member, friend, or neighbor—should
they need to use one. It is also noteworthy that among all participants who reported mobile phone ownership (n=23), only one soybean farmer—a male participant—owned a smartphone as compared to a basic mobile phone.

For Section One (knowledge of soybean cultivation), we first asked participants if they knew where to acquire soybean seed that grow well in their area. In the Karaga District focus groups, women reported that they have “bought seed from the market” and they have “saved seed from Salintuya-I and -II,” and men reported getting this information from MoFA. In Tolon District focus groups, women noted that they lacked knowledge of the different varieties of soybean and how they perform locally, while men reported getting this information from SARI.

Second, we asked whether participants needed knowledge about ‘best practices’ for soybean cultivation. In the Karaga District focus groups, women reported that they do not know about best practices while men reported that reported that they would like to know the best time to plant soybean and informed us that they usually employ crop rotation. In the Tolon District focus groups, women reported that “we mostly farm small plots, but mostly farm with our husbands. We get our seed from our husbands, sometimes from the market and NGOs—who have also introduced us to inoculants that we have never seen again,” while men reported that they applied manure, plowed, and then planted their soybean plots.

Third, we asked participants if they needed weather-related information, such as expected rainfall, drought information, and local temperatures. In the Karaga District focus groups, women and men reported that they currently receive weather-related information from FM radio programs, while men added that they also receive some weather-related information from MoFA Agricultural Extension Agents in their area. Men also noted that they would like to receive more of this kind of information in order to plan ahead for the “best time to plant” and to help ensure they “don’t run out of water,” particularly during the dry season. In the Tolon District focus groups, women reported that they lack accurate rainfall information, while men reported
receiving weather-related information from Innovations for Poverty Action (IPA), an NGO that operates in their area.

Fourth, we asked participants if they needed more information about plant diseases and pests that commonly affect soybean. The responses between districts were strikingly different. In the Karaga District focus groups, women reported receiving this information from the “market lady who sells pesticides,” while men reported receiving this information from other farmers and from MoFA Agricultural Extension Agents in their area, although they noted that “soya doesn’t have too many pests, compared to cowpea.” In the Tolon District focus groups, both women and men reported that they lacked knowledge regarding diseases and pests that affect soybean. The women’s group specifically stated that they also do not know how to manage diseases and pests that affect their soybean crops.

Fifth, we asked participants if they knew where to acquire the correct inoculant, fertilizer, or pesticides for their soybean crops. In Karaga District, women reported that they specifically needing to know what kind of fertilizer they should apply to their soybean crops. They stated that they “don’t get inoculant because we don’t know where to get it” and “don’t use fertilizer because we don’t have cash to buy it.” In contrast, men in Karaga District reported getting this kind of information from their local MoFA Agricultural Extension Agents. They further explained that inoculant is “currently out of stock, so we can’t get it” but they “are interested in knowing
where to get it” alternatively. Further, they are interested in acquiring more fertilizer because they know that “more fertilizer equals a higher yield.” In Karaga District, the mens’ responses concurred with their female counterparts that they do not always have money to purchase needed fertilizer. In Tolon District, women reported that they need information on what type of fertilizer to purchase and training in how to apply it. In contrast, men reported receiving inoculant from SARI and fertilizer from a local agro-chemical company and did not express a need for additional information on where to locally acquire fertilizer.

Sixth, we asked participants if they knew how to save soybean seed for the next planting season. In the Karaga District focus groups, women reported that storing soybean seed was easy because “soya doesn’t rot as easily as maize,” while men reported needing more knowledge on this subject, as they are currently doing “what makes sense to us,” as experienced farmers. In the Tolon District focus groups, data is not available on women’s responses, while men reported that they had been taught proper soybean seed storage by CRS/Ghana, which they described as follows, “Get a rubber bag [plastic bag], put some seeds in it, and put the rubber bag [plastic bag] in a fertilizer sack. After that, put it on top of wood or a table.”

Finally, we asked participants if there was any other agricultural knowledge related to soybean production that farmers would like. In the Karaga District focus groups, women requested information about when they need to start plowing their plots in preparation for sowing soybean, while men requested additional technical “programs involving cultivation” of soybean and stated that “we need information on tractors” as well as on “financial institutions and banks to get small loans” in order to enhance their soybean production. In the Tolon District focus groups, women did not request additional information, while men requested more information about improved soybean cultivation practices.

For Section Two (soybean value chain and marketing knowledge), we first asked whether participants needed additional knowledge about soybean marketing, such as how
soybean prices are set. All participants enthusiastically confirmed that, “Yes! We want this knowledge.” The women’s group in Karaga District stated the price they receive from their local aggregator for their soybean crop “is not good” and, therefore, they do not believe they are receiving fair market value for their soybean. As one participant state, “During harvest, it was 100 Ghana Cedis per 100 kg. Now it is 80 Ghana Cedis per 100 kg. She [the aggregator] doesn’t give a good price, but we don’t have another option. The market woman would drive new buyers [aggregators] away.” The men’s group in Karaga District concurred with their statement that “there is a woman from Tamale who comes here to buy [soybean]” but “she wants to buy cheap.” Both groups of participants in the Tolon focus groups concurred that local aggregators determine the price that farmers receive for their soybean crop.

Second, we asked if participants needed information on where to market their soybean crop locally. In the Karaga District focus groups, women reported that they “need knowledge on how to market soya for a better price,” and men concurred. In the Tolon District focus groups, both women and men reported that Nyankpala market is the only market where they know they can sell their soybean crop. Women also noted that market prices in Tamale are sometimes better than in Nyankpala.

Third, we asked if participants needed information on where to find a local soybean aggregator. In the Karaga District women’s focus group, the discussion among participants circled back to the important role of their local ‘market woman’ (aggregator)—and that managing conflict in this buyer-seller relationship was difficult due to tension surrounding lack of trust in these commercial transactions. Indeed, as USAID (2015), the World Food Programme (2015), and others have noted, this issue is common among smallholder farmers in developing countries (see also Amani, 2014; Mudege, et al, 2015). In Karaga District, women stated that they did not always want to sell their soybean crop to their local aggregator, but felt that they had no other option. Data is not available on the Karaga men’s responses. In the Tolon District focus groups,
both women and men were extremely responsive to this question. Men stated that they do not have any knowledge on aggregators and women expanded on this by stating that they “need linkages with aggregators. We want a contract or agreement system with traders to guarantee that what we produce will be bought” at a fair price.

Fourth, we asked if participants know where to find a soybean processor in their local area. In the Karaga District focus groups, women reported that they needed more information on “how to process and how to sell it [soybean]” and men reported that they need more information about processing soybean. They noted that khebab—cubed fried tofu in a spicy powder (see photo)—is the only soybean food with which they are familiar.

Fifth, we asked if participants, themselves, knew how to process soybean into various foods that they can sell at the market. We provided several examples, including khebab, soymilk, wagashi (donut made with soy flour) (see photo), and dawadawa (an essential soup ingredient traditionally made from pods of the African locust bean tree, Parkia biglobosa). In the Karaga District focus groups, women expressed a desire to learn how to process soybean into soy oil. Men reported that—although they had never seen or
tasted soymilk—they knew that soy flour can be added to dawadawa. In the Tolon District focus groups, women requested more information on how to process soybean into different food products, while men reported that they currently possess a small amount of knowledge related to processing soybean into different foods, but would be willing to acquire additional knowledge in the area. They said they know how to process soybean into khebab, dawadawa, and gabli (steamed cakes made from soybean and/or other beans; also known as tubani in the Hausa language).

Finally, we asked participants if there was anything else they would like to know about processing, marketing, and selling their soybean crop. Across all four focus groups, data is only available for men’s responses in Karaga District. They reported that “we need access to markets” and “we need scales so that we can also weigh and sell” their soybean crop. They also reported that farmers need access to a “standardized sack, so we don’t get cheated” when selling their soybean crop, because some aggregators use larger bags and “pay based on bag, not weight.” They stated that a standardized sack would also address the issue that some aggregators will “bring bags that expand” in order to increase the buyer’s profit on the transaction. The men’s group in Karaga District also noted that farmers require “some help in the form of fertilizer because we need larger yields so that we can organize a group to sell” their soybean crops. Such strategies to increase the actual production of a particular crop and thereby experience gains in “the ability to sell increased volumes… [and] reduced volatility in volumes demanded and prices offered” (USAID, 2015:8) have proven to be important avenues to increase smallholder farmers’ livelihoods.

For Section Three (household-level soybean processing), we first asked if participants needed more knowledge about how to process soybeans at home. In the Karaga District focus groups, women reported that they need more of this knowledge, while men specified that they need to know “how to prepare it better so they can eat it instead of selling most of it.”
Tolon District focus groups, women reported wanting more knowledge about processing soy "because of poor prices, we now eat much of our soybean crop" and data is not available on men’s responses.

Second, we asked if participants needed more information about how to combine soy with other foods to prepare nutritious food at home for their children. In the Karaga District focus groups, data is not available on women’s responses and men reported that they would like this information. In the Tolon District focus groups, women reported that "not everyone knows how to prepare the dishes," using soybean and data is not available on men’s responses.

Third, we asked participants what kinds of food they often make from soybeans. In Karaga District, women focus group participants reported that they use soybean to produce tofu (made from soymilk curds) that are further processed into khebabs (see photo). They reported adding soy flour to other flour to make TZ (tuo zaafi, a thick ball of porridge traditionally made with corn flour or millet flour) to eat with staple soups such as ayoyo, dried okro, or groundnut stew. They also reported adding soy flour to other flour to prepare gabli / tubani, to dawadawa, to groundnut paste and fish to prepare Tom Brown (a nutritious porridge given to children for breakfast and lunch, also known as zimbiaw), and to groundnut paste for soup. In Karaga District, men focus group participants reported that soy flour is added to other flour to prepare gabli / tubani, to dawadawa, to Tom Brown / zimbiaw porridge, and to groundnut paste for soup. In the Tolon District focus groups, women reported that they use soy flour to prepare gabli / tubani, to dawadawa, to Tom Brown / zimbiaw porridge, and to various soups, while men reported that soybean is used in zimbiaw, which they explained as "Tom Brown with soybean, groundnut, and corn.”

Finally, we asked if participants had anything else to add to this section. In the Karaga District women’s focus group, participants expressed great interest in learning how to produce soymilk for household consumption. They stated that "we don’t know [how to make] soymilk, but
we want it [this knowledge] because our children would like it.” Men in Karaga District requested more agricultural trainings and “demonstrations by MoFA through SARI” of soybean and stated that “we need information on tractors” as well as on “financial institutions and banks to get small loans” in order to enhance their soybean production.

For Section Four (preferred mode of agricultural knowledge transfers), the research team in Karaga District and Tolon District posed this initial question differently. Therefore, the results for Section Four are presented disaggregated by District and then by gender. The research team in Karaga District first asked if participants would prefer to receive agricultural knowledge through a plot demonstration in their village. In the Karaga District focus groups, both men and women reported that they would like to receive information this way.

Second, we asked if participants would like to receive agriculture-related information through watching agriculture-related videos. In the Karaga District focus groups, women reported that this strategy would be good, and suggested that it be a “long video” of up to an hour or more. They stated that “we want it to show [run] for a long time so that we can look at it and discuss it.” Men reported that “we like the idea of it [a demonstration video] being on TV, but not everyone has a TV.” In response the moderator suggested projecting the videos onto
the side of a building and participants responded positively to this suggestion. The participants also requested that videos be “relevant to the current season.”

Third, we asked if participants would like to receive agriculture-related information via text messages. In Karaga District, women participants reported that voice messages are preferred over text messages, as they are non-literate and when they receive text messages they require the assistance of another person to read text messages to them. In Karaga District, men participants also noted that they are non-literate and commented that upon acquiring mobile phones, “at first, no one even knew ‘1, 2, 3’” but they have expanded their math skills through using their mobile phones.

For Section Four, the research team in Tolon District asked the question, “How would you like soya agric knowledge to be passed on to you?” and then gave all the options (e.g., plot demonstration, watching a video, text messages). In each focus group, the farmers gave feedback on the ones they thought would be best. In the Tolon District focus groups, women reported that “plot demonstrations, radio, and face-to-face” are the most preferred methods. They also stated that “night videos are also good and will serve to entertain us whilst we learn.” The term “night videos” refers to screening videos and other multimedia presentations that are delivered by computer or other electronic media in the evenings. Screening agricultural presentations in the evenings increases the ability of more farmers of both genders to attend. Women stated that they appreciated having such agriculture-related screenings held in their local community. Men reported that they face-to-face plot demonstrations “because seeing is believing. We will better understand when we see through the demonstrations.” For the final question in Section Four, no participants in the Karaga District or Tolon District focus groups had further comments.

For Section Five (mobile phone ownership/access), we first asked if participants owned their own mobile phone. In Karaga District, 4 of 11 women reported owning their own mobile
phone, while 7 of 8 men reported owning their own mobile phone. In Tolon District, 7 of 9 women reported owning their own mobile phone, while all 7 men reported owning their own mobile phone. Next, we asked if those who do not own a mobile phone have access to a mobile phone any time they want or need to use one. All participants across all focus groups confirmed that they have access to a mobile phone any time they want/need one. In the Karaga District women’s focus groups, participants specified that “we borrow a phone from our neighbor. We keep [phone] numbers on a piece of paper that we will carry to the neighbor’s house.” Women in the Tolon District focus group reported that “we all have access to our neighbors’ and family members’ phones to make and receive calls.”

For Section Six (mobile phone usage), we first asked if participants made calls using mobile phones. In Karaga District, 4 of 11 participants in the women’s focus group affirmed that this was the case as compared to all 8 participants in the men’s focus group. In the Tolon District focus groups, all 9 participants in the women’s focus group and all 7 participants in the men’s focus group affirmed that this was the case. Second, we asked if participants receive calls via mobile phone. In Karaga District, 4 of 11 participants in the women’s focus group affirmed that this was the case as compared to all 8 participants in the men’s focus group. In
the Tolon District focus groups, all 9 participants in the women’s focus group and all 7 participants in the men’s focus group affirmed that this was the case.

Third, we asked if participants receive text messages (e.g., Short Message Service or SMS). In the Karaga District focus groups, women reiterated that they receive SMS texts but “we have to get a school boy to read it to us,” and their response was echoed by their male counterparts, who reported that they also receive SMS texts but “cannot read or write, so we can’t access the messages.” In Tolon District, 6 of 9 participants in the women’s focus group reported that they receive SMS texts, but also stated that they are “afraid of scammers, as two women in the community nearly fell victim.” Although all 7 men in the Tolon District focus group reported that they receive SMS texts, they noted that “we can’t read, so we give the phone to someone who can read the text messages,” which echoed the responses of the female focus group participants in Karaga District.

Fourth, we asked if participants can receive MMS (Multimedia Messaging Service). In the Karaga District focus groups, no women reported that they have MMS access, but all confirmed that “we would like that [MMS]—we could watch a show from there [a mobile phone].” Although only one Karaga man reported that he has MMS access, all other men in that focus group confirmed that they would like MMS access. In the Tolon District focus groups, all participants confirmed that they do not have MMS access. Fifth, we asked if participants go online/use the internet to look for agriculture-related information. In the Karaga District men’s focus groups, one participant had access to the internet on his phone, but stated that he “rarely looks things up” on his smartphone. No participants in the other three focus groups had internet access on their mobile phones.

Finally, we asked if participants had anything else to add about how they used their mobile phone. In the Karaga District focus groups, women reported that “we use it for mobile money. We send and receive money through our mobile phone,” while men reported that “we
have learned our numbers from mobile phones. Because most of us did not go to school, we have learned a lot from having mobile phones.” In the Tolon District focus groups, participants did not have anything to add to this section.

General comments made by participants that did not fit neatly into a section included: Karaga women reported that “we get most of our agric knowledge from the radio. We have two programs per day, about an hour in total. One program is held in the morning and one program is at night. Baka Alhassan [a MoFA Agricultural Extension Agent] from Saboba is on the FM radio show.” The Karaga moderator/translator added that “In 1994, we started growing soya in this area and had no pest problems. We have pest issues now.” Tolon men reported that “we would like additional knowledge on soybean farming. Assistance in the form of tractors for ploughing and fertilizing would also be helpful. We would be happy if there was an aggregator who would come to purchase our soybean in bulk. That way, we can get better prices than going to the market with small bowls of soybean to sell.” In addition, they stated that “knowledge on soybean diseases and treatment would also be beneficial.”

SUMMARY OF RESULTS

Four overarching themes emerged from the analysis of the focus group discussions including 1) current agricultural knowledge and areas identified for knowledge transfers, 2) barriers to fair soybean markets, 3) current soybean-based food production, and 4) ICT for agricultural knowledge transfers. Each of these four themes is discussed in detail below and this report concludes with key takeaway points from these themes.
THEME I: CURRENT AGRICULTURAL KNOWLEDGE & AREAS IDENTIFIED FOR KNOWLEDGE TRANSFERS

The soybean farmers who participated in the four focus groups reported that they primarily receive soybean-related information from MoFA Agricultural Extension Agents, key NGOs, and other organizations operating in the area, such as CRS/Ghana, SARI, and IPA. Another major source of agricultural related information is from FM radio programs. Women farmers reported getting information and soybean seed from their husbands and that they have “bought seed from the market” and “saved seed from Salintuya-I and –II.” Men farmers reported that they would like more training on how to best store soybean seed for the next cropping season as they currently doing “what makes sense to us” and follow practices based on their past experience and knowledge with soybean and other crops.

Farmers were eager to learn about all areas of soybean production. They were especially interested in gaining knowledge related to business strategies for selling their soybean crop at a fair market price and in gaining knowledge related to making soybean into products such as soybean oil and soymilk for household consumption and to sell at their local market. As with all farmers, these focus group participants reported a pressing need for up-to-date local weather information to help mitigate
against unusual rainfall patterns and drought and to better plan cultivation activities such as preparing their plots for planting. In addition, farmers were eager for more information on best practices for growing soybean, such as optimal row spacing and optimal inoculant and/or fertilizer applications to increase yield and to maximize the effectiveness of agricultural inputs and labor.

Farmers suggested that tailoring agricultural information to coincide with planting, growing, and harvest seasons will allow them to immediately implement agricultural recommendations. They requested information on 1) the best time to plow and plant soybean, 2) weather-related information, particularly rainfall forecasts, 3) diseases and pests common to soybeans and how to treat them, 4) which types of fertilizer are best for soybeans, 5) where to get supplies such as inoculant and fertilizer at fair, 6) which soy varieties are best for their area, 7) nearby markets that will give a fair price for soybeans, and 8) how to process soybean into other products. They also requested business information, such as where they can borrow small loans and how to negotiate a contract or agreement with aggregators to guarantee their soybean crop will be bought.

**THEME 2: PERCEIVED BARRIERS TO SELLING SOYBEAN CROPS AT FAIR MARKET VALUE**

One of the major issues that participants brought up across all four focus groups was the belief that farmers have very little control over negotiating the selling price of their soybean crop. Instead, aggregators tell the farmers the price that they will pay. As a consequence, farmers felt that they were often forced to sell their soybean crop at less than a fair market value.

Farmers reported being afraid to argue with aggregators to get a higher price for their soybean crop. They believed that having access to up-to-date market prices for soybeans would help them be able to better negotiate the selling price of their soybean crop, as would increasing
crop yields and building producer collectives. Men farmers in Karaga District suggested that having access to a reliable scale to weigh their soybean crop would also help them better negotiate prices with aggregators and ensure that they were receiving adequate monetary compensation for their soybean crops. They also discussed the need to have a “standardized sack, so we don’t get cheated.” Women farmers in Tolon District reported that their household consume a larger portion of their soybean crop than they would prefer, given that they cannot get good prices at the market. Expanding access to soybean markets is especially important for women farmers who—due to sociocultural norms and constraints—often lack the same access to agricultural markets as their male counterparts.

One issue that emerged from the focus groups is that organizations may supply farmers with agricultural inputs such as certified seed, fertilizer, or inoculant, but once the supply has been depleted farmers “have never seen [the inputs] again.” This issue is not specific to soybean production in developing countries, nor is it surprising given that supply chains in Ghana’s Northern Region are not robust due to issues such as transportation logistics. Farmers also noted that—although they understand that agricultural inputs such as certified seed, fertilizer, or inoculant would help them increase their soybean yields—agricultural inputs are often too expensive to purchase.

THEME 3: CURRENT SOYBEAN-BASED FOOD PRODUCTION

Farmers are most familiar with tofu (soymilk curds) that is further processed into khebabs (see photo), as well as soy flour that is incorporated into many staple dishes. These include gabli / tubani (steamed cakes made from beans including soybeans), dawadawa, and Tom Brown / zimbiaw (a nutritious children’s porridge of groundnut paste and fish). Women farmers also reported adding soy flour to other flour to prepare TZ (tuo zaafi, a thick ball of porridge
traditionally made with corn flour or millet flour) to eat with staple soups such as ayoyo, dried okro, or groundnut stew. Farmers requested more information on how to produce soybean oil and soymilk. Learning to make soymilk was of particular interest to women farmers—as they believed their children would like to drink soymilk. Farmers expressed the belief that soy-based food products would be very profitable when sold at local markets.

**THEME 4: ICT FOR AGRICULTURAL KNOWLEDGE TRANSFERS**

As stated previously, 14 of 15 male participants (93.3%) owned their own mobile phone, as compared to 11 of 20 female participants (55%). The majority of these mobile phones owners reported being able to receive text messages via short message service (SMS), but all reported having to rely on someone else (i.e., a “school boy”) to read the text message to them. Only one (male) participant—the only smartphone owner—reported that he was able to receive multimedia messaging service (MMS) and access the internet, although he uses those services rarely. In terms of ICT for agricultural knowledge transfers, MMS has advantages over SMS as it allows users to send and receive 1) text messages longer than the SMS 160 character length, and 2) messages that include multimedia content to and from a mobile phone over a cellular network. Just over one-half of women farmers owned their own mobile phone, yet all participants reported having access to a relative’s or neighbor’s mobile phone “if they needed it.” Women explained that they either memorize phone numbers or keep them on a piece of paper that they can carry to their neighbor’s house, while men reported that they had actually “learned their numbers” from using mobile phones. Participants reported that transferring funds via mobile money transfer services was one of the most popular ways they used their mobile phones.

Although all participants reported having access to mobile phone (whether through direct ownership or by borrowing a relative’s or neighbor’s mobile phone), the majority reported that
they received most of their agricultural information through FM radio programming. As women in Karaga District explained, “we get most of our agric knowledge from the radio. We have two programs per day, about an hour in total” and these radio programs feature a MoFA Agricultural Extension Agent. Participants reported that they enjoyed these radio programs and found them beneficial, although they would like more local weather information.

When asked what forms of receiving agricultural information would be most beneficial, farmers preferred face-to-face demonstrations, but also liked receiving information through radio programs. They also liked the idea of receiving agricultural information through videos shown at night during community-wide events. They noted that the videos could be projected on the side of a building so that a large number of village residents could watch and discuss them together, or that videos could be shared via smaller tablets brought to the village. While the idea of text messages was interesting to farmers, they did not see receiving an agricultural-related text message as an effective form of communication given that “we have to get a school boy to read it to us.” A second concern that emerged is that farmers are understandably “afraid of scammers” and, therefore, may be apprehensive of text messages (as well as voice messages) that they deem suspicious. Consequently, it will be important to maintain the trustworthiness/integrity of ICT-based agricultural information provided to farmers. Partnerships with MoFA, CRS/Ghana, and other trusted organizations operating in the region will be important to implementing ICT for agricultural knowledge transfers. Although—at the time the focus groups were conducted—only one participant owned a smart phone and reported that he could receive MMS, participants expressed enthusiasm for MMS as an effective way to receive agriculture information.

In sum, farmers were keen to receive more soybean-related information, particularly via radio, video, and face-to-face plot demonstrations. They were also very interested in the possibility of owning or having access to MMS-capable mobile phones to receive multimedia
agriculture-related information, as they recognize the value of such communications. Strategies such as SMS, radio, video, and face-to-face plot demonstrations can be effective in disseminating critical soybean production and technology adoption information in Ghana’s Northern Region. Adding MMS communications to this mix is also promising (IFDC, 2016), although the lack of access to MMS-enabled mobile phones among both men and women smallholder soybean farmers in this region must be considered.

Regardless of the chosen communication strategy, practitioners must take into account low literacy rates among men and women smallholder soybean farmers in Ghana’s Northern Region and carefully consider how best to transfer agricultural knowledge. Interestingly, lack of connectivity may not be a barrier to disseminating agricultural communications to rural farmers in the Northern Region. Both the community in Karaga District and the community in Tolon District in which the focus groups were conducted are reported to have good network connectivity and are served by three major networks—including Vodafone, MTN and Tigo—that are currently operating in these communities (P. Atiim, personal communication, April 13, 2017).

According to IFDC, “Realizing the tremendous benefits of showing videos of trusted community members presenting important agronomic messages” the Feed the Future Ghana Agriculture Technology Transfer Project “supported Digital Green to train representatives of the Ghana Ministry of Food and Agriculture (MoFA) and the Savanna Agricultural Research Institute (SARI) to produce videos.”
(IFDC, 2016). The project has also partnered with CountryWise Communication to “screen GAP and ISFM videos to approximately 8,000 farmers in remote communities” (ibid.) using Technology Dissemination Vans (see photo).

**KEY TAKEAWAY POINTS**

- Farmers primarily received soybean-related information from MoFA Agricultural Extension Agents, key NGOs, and other organizations operating in the area, such as CRS/Ghana, SARI, and IPA.
- Farmers were eager for more information on best practices for growing soybean, such as optimal row spacing and optimal inoculant and/or fertilizer applications.
- FM radio programs were a major source of agricultural related information.
- Farmers reported a pressing need for up-to-date local weather information to better plan cultivation activities and mitigate against unusual rainfall patterns and drought.
- Farmers reported have very little control over negotiating the selling price of their soybean crop with aggregators.
- Access to up-to-date market prices for soybeans would help farmers better negotiate the selling price of their soybean crop, as would increasing crop yields and building producer collectives.
- Expanding access to soybean markets is especially important for women farmers who—due to sociocultural norms and constraints—often lack the same access to agricultural markets as their male counterparts.
- Farmers requested more information on how to produce soybean oil and soymilk.
Learning to make soymilk was of particular interest to women farmers—as they believed their children would like to drink soymilk.

Farmers expressed the belief that soy-based food products would be very profitable when sold at local markets.

14 of 15 male participants (93.3%) owned their own mobile phone, as compared to 11 of 20 female participants (55%).

Although the majority of mobile phones owners reported being able to receive text messages via SMS, all reported having to rely on someone else (i.e., a “school boy”) to read text messages to them.

Strategies such as SMS, radio, video, and face-to-face plot demonstrations can be effective in disseminating critical soybean production and technology adoption information in Ghana’s Northern Region.

Adding MMS communications to this mix is also promising, although the lack of access to MMS-enabled mobile phones and low literacy among men and women smallholder farmers in this region must be considered.
REFERENCES


APPENDIX 1: FOCUS GROUP DISCUSSION GUIDE

ICT4AgD* Focus Group Discussion Guide
('Information & Communication Technology for Agricultural Development)

Developed for the USAID Feed the Future Soybean Innovation Lab by
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SCRIPT: The Soya Bean Innovation Lab’s motto is EAT SOME, SAVE SOME, SELL SOME. We hope that you will EAT SOME soya bean within your family because it’s good for your children. We hope that you will SAVE SOME soya seed back for your next planting season. And we hope you will SELL SOME soya seed so you have cash for your family’s needs. So we want to ask you some questions about soya.

1. What types of agric knowledge do you need to grow soya better that you don’t have now?
   1a. Where to get soya seed that grows well in your area?
   1b. Best soya cultivation practices?
   1c. Rainfall, drought, temperature?
   1d. Soya plant disease knowledge?
   1e. Where to get the right inoculant, fertilizer, or pesticides for your soya crop?
   1f. How to save soya seeds for the next planting season?
   1g. Is there anything else you’d like to add?

2. What types of agric knowledge do you need to help process and market (sell) your soya that you don’t have now?
   2a. Knowledge about soya prices?
   2b. Where to market your soya crop nearby?
   2c. Where to find a soya aggregator / trader nearby?
   2d. Where to find a soya processor nearby?
   2e. How to process soya into other foods that you can sell at market -- like khebabs, soya cow milk, soya wagashie (doughnut), dawa dawa?
   2f. Is there anything else you’d like to add?

3. What types of agric knowledge do you need to help your family prepare soya to eat that you don’t have now?
   3a. How to process soya at home?
   3b. How to combine soya with other foods to prepare nutritious food for your children?
   3c. What foods do you often make from soya?
3d. Is there anything else you’d like to add?

4. How would you like soya agric knowledge to be passed on to you?
   4a. In-person at a plot demonstration in your village?
   4b. Watching a video (on TV)?
   4c. Text messages?
   4d. Any other ways?

5. Now we would like to ask you some questions about using mobile phones:
   5a. Do you yourself own a mobile phone? IF YES, please raise your hand.
   5b. IF NO: Do you have access to mobile phone anytime you want one?
       IF YES, please raise your hand.

6. IF YOU OWN OR HAVE ACCESS TO A MOBILE PHONE: What are the different things you do with your mobile phone?
   6a. Do you make calls? IF YES, please raise your hand.
   6b. Do you receive calls? IF YES, please raise your hand.
   6c. Do you receive texts (SMS messages)? IF YES, please raise your hand.
   6d. Do you receive MMS messages (Media Message Services)? IF YES, please raise your hand.
   6e. Do you go online to look at things (use the Internet)? IF YES, please raise your hand.
   6f. Is there anything you like to add about how you use your mobile phone?

Thank you so much for sharing your important opinions and information with us. [End Focus Group]