

The Effect of COVID-19 on Agricultural Extension in Western Kenya

International Centre of Insect Physiology and Ecology

Nairobi, Kenya



Bethany Starlin

2020 World Food Prize Borlaug-Ruan Intern

Logan, Ohio



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Personal Reflection

Mid-July, I received confirmation that I would be completing a virtual internship experience with the International Centre of Insect Physiology and Ecology located in Nairobi, Kenya. I was overcome with joy and excitement to begin this experience. In a time where you truly don't know what tomorrow holds, I finally knew that the days following held something to be excited for. The sense of joy and excitement, however, were quickly replaced with nerves and anxieties. When applying for the Borlaug-Ruan International Internship experience I prepared myself to be immersed in an unfamiliar culture, to overcome a language barrier, and to partake in research that would push me far out of my comfort zone. What I didn't prepare myself for was the fact I would do all of that from approximately 8,000 miles away. However, there was one other thing I wasn't prepared for, the fact that I would have a team of supporters who wanted me to succeed just as badly as I wanted to.

Acknowledgements

First and foremost, I would like to recognize those who made this experience possible long before I even knew of its existence. Dr. Norman Borlaug's dedication to food security through the exploration of science and agriculture has accredited him to being responsible for saving over a billion lives. John Ruan and family, thank you for making a difference in the lives of students like myself. The contributions you make to this program certainly do not go unnoticed. Ms. Barbara Stinson and Ambassador Kenneth M. Quinn's dedication to the World Food Prize Foundation and more specifically the Global Youth Institute. The Global Youth Institute was the first stepping stone to participation in this internship experience as well as the many other doors it has opened. The World Food Prize and Global Youth Institute ignited a

curiosity surrounding food security, sustainable agriculture, and agricultural advocacy within me, thus serving as a catalyst for my higher education aspirations. The work of Ambassador Kenneth M. Quinn continues to make both the World Food Prize and Global Youth Institute possible.

Lastly, I extend an immense amount of thanks to the staff at the International Centre of Insect Physiology and Ecology. In a time where it would have been easier to just say “let’s try again next year,” you found a way to persevere. You navigated a series of challenges, burdens, and hoops to jump through, still offering a meaningful and valuable experience for myself and my fellow interns. Professor Zeyaur Khan, your expertise in the push-pull technology and previous experience in research made you a wonderful resource throughout the experience. Mr. Jimmy Pittchar, your background in Social Science was crucial in the process of creating and editing the questionnaires that were used throughout our research. Matilda Ouma, none of this would have been possible if it weren’t for the work you put in daily. Our time spent together became more than a research project. You have become a true role model in my life and someone I will look up to forever. Thank you for encouraging myself and the other interns to be the “woman pioneers” that we are. Phil Orondo not only ensured that technological support was always provided, but also never failed to greet us with a smile; a blessing at three o’clock in the morning. Finally, I would like to thank those who worked behind the scenes to make everything a success logistically. This once in a lifetime experience would not have been possible if it weren’t for the village of supporters behind us every step of the way.

Abstract

When celebrating the New Year, we often find ourselves full of hope and excitement for what this next year has in store. 2020, however, has been filled with just about everything except hope and excitement. Beginning in January, the novel Coronavirus began to consume our lives. We found ourselves overcome with fear and anxiety. Countries began to shut down, travel restrictions were placed, and the way that we operate on a day-to-day basis was altered immensely worldwide. This study specifically explores the way agricultural extension has been effected in Western Kenya. Through surveys, focus group discussions, and key informant interviews, this study proves that the novel Coronavirus has impacted the way agricultural extension information is delivered in Kenya. This could put some groups at a disadvantage since male and female farmers have access to different platforms and different times in which they access them. In order to continue to close the gender gap between male and female farmers, it is imperative that an integrated information sharing approach is utilized.

Keywords: agricultural extension, Coronavirus

Introduction

International Centre of Insect Physiology and Ecology

A quote from Professor Thomas Risley Odhiambo, *icipe*'s Founding Director, states, "The idea was actually very simple: Get the very best people and then if you have more money, put buildings and equipment around them," (*icipe*, n.d.). Headquartered in Nairobi, Kenya, the International Centre of Insect Physiology and Ecology has continued to make Prof. Odhiambo's remarks stand true. They actively house some of the world's leading researchers in order to conduct progressive research to benefit African farmers. The Centre's mission accurately represents the work done and progress made. Key components of this mission include alleviating poverty, ensuring food security, and improving the health of those in the tropics (*icipe*, n.d.). The International Centre of Insect Physiology and Ecology's work goes beyond Kenya as they are actively working in over 40 countries across Africa.

Push-Pull Technology

A major development made at the International Centre of Insect Physiology and Ecology by Professor Zeyaur Khan is push-pull technology. Push-pull technology incorporates intercropping repellent plants such as desmodium within cereal crops (*Push-Pull Technology*, n.d.). This technology increases yields of cereal crops like maize, millet, and rice. These crops are the staple of many diets for those in sub-Saharan Africa thus making this technology a major breakthrough for many families. Seeing that this technology can make a major impact in many lives, *icipe* has been diligent in disseminating this information to smallholder and subsistence farmers (*Push-Pull Technology*, n.d.). Agricultural extension efforts have been imperative in spreading the needed information to farmers in order to successfully improve their operations.

Agricultural Extension

Agricultural extension is defined as “the application of scientific research and knowledge to agricultural practices through farmer education,” (*Agricultural Extension*, n.d.). Although agricultural extension is important everywhere in the world, it is especially imperative in societies that rely heavily on subsistence agriculture and where smallholder farmers are extremely prevalent. Building on that idea, it is increasingly important in societies that do not have regular access to information sharing platforms such as YouTube, Facebook, etcetera. Albeit this is a reality for many countries around the world, for the purpose of this research, one will look specifically at the prevalence these factors have in the country of Kenya.

Agricultural extension is no new concept to the country of Kenya, however, the methodology in which it is conducted must be altered in order to be relevant in current times. Previously, agricultural extension was primarily done through farm visits by government extension officers and non-governmental organizations (NGOs). When COVID-19 hit mid-March, heavy travel restrictions were placed on the country of Kenya, thus halting typical agricultural extension methods. In attempts to continue information sharing with smallholder farmers, the potential of platforms like phone, radio, television, and social media were explored. Although these platforms can be instrumental in information sharing, there are several factors that raise potential concerns. This research analyzes how male and female farmers have varying degrees of accessibility to these platforms and differing times in which they utilize them. It is possible that male and female farmers not only have access to different platforms, but also consume information at different parts of the day, thus proving an integrated system of information sharing must be adopted to provide equal opportunities for all.

This research explored the following objectives:

1. Understand how COVID-19 has affected Agricultural Extension.
2. Explore the agricultural extension needs of varying age groups.
3. Explore the difference of needs in agricultural extension between genders.
4. Explore solutions for the future.

These objectives were explored to gain further insight into whether or not male and female farmers have access to differing media channels and if so, the times in which they utilize them throughout the day varies. If this is the case, an integrated system of information sharing must be developed to prevent the gender gap from widening within the farming community.

Methods

Participants

Completing this experience virtually made for the selection process of participants to be left completely up to the staff at *icipe*. Participants were selected from four counties in western Kenya; Homa Bay County, Kisumu County, Migori County, and Vihiga County. As mentioned previously, *icipe* has done a great deal of information dissemination regarding push-pull technology. Many of the participants in this research had received education around the push-pull technology, meaning they were familiar with the staff at *icipe*. This factor allowed for the participants to trust the interns and in turn be open and honest throughout communication. Since research was conducted alongside two others who had different research objectives, some audiences were targeted that didn't necessarily affect this research. Towards the end of the project, specific participants were chosen in order to get data from underrepresented populations. In this case, the underrepresented populations were youth farmers.

The participant pool represented multiple age groups, various levels of education, and different genders. Of those interviewed, three were under the age of 20, nine were between the ages of 21 and 40, ten were between the ages of 41 and 60, and seven were between the ages of 61 and 80. Ensuring that the participants represented many ages was important because age is a factor in accessibility to media platforms. For example, a twenty year old is much more likely to have a smartphone than a seventy year old. Figure 1 found below shows a visual representation of the age spread of participants.

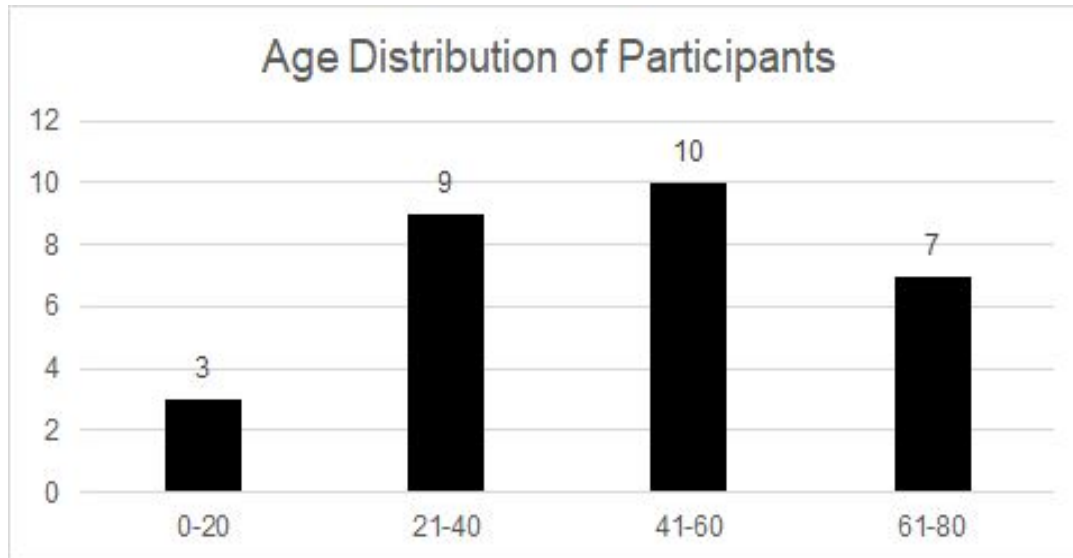


Figure 1.

Ensuring that the participant pool represents varying levels of education plays an important role in guaranteeing that the subset is an accurate representation of the greater population. Of those interviewed, some had little education, some had completed the equivalent to high school, and some had completed college. It was imperative that the participant pool represent a variety of levels of education since socioeconomic status played a role in the data. Whether or not one has access to certain media channels can be correlated to income. Higher level of education means a greater income, which in return means a greater likelihood of having access to a smartphone, television, etcetera.

Since the overarching goal of this research was to prove that men and women have access to different media platforms and that their access to those platforms consisted of varying times throughout the day, it was important that both male and female farmers were interviewed. Of those interviewed, 13 were male and 16 were female. There was no intentionality in determining whether the youth farmers were to be male or female. The gender breakdown of participants was

completely randomized. This research could be improved by including equal male and female representation in the participant pool. Figure 2 shown below visually represents the gender breakdown of participants.

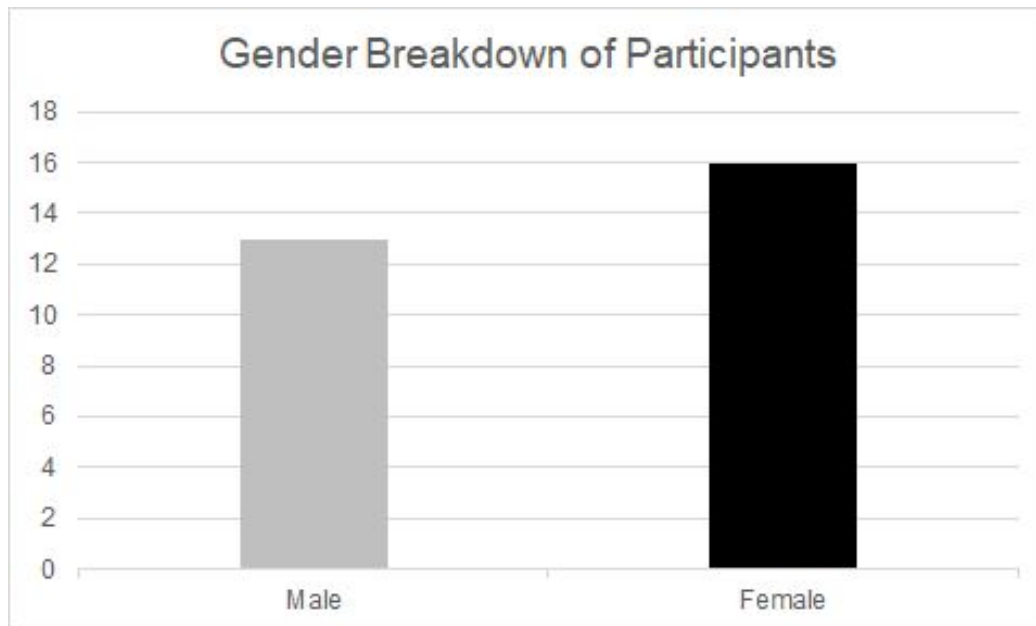


Figure 2.

Apparatus and Materials

Since this research was conducted virtually, there were minimal materials needed to make it successful. However, since it was virtual and two different parties in differing locations conducted the research simultaneously, some materials among the groups are independent. For the interns conducting research from the United States, basic materials needed were the Zoom software program, access to a constant supply of reliable internet, and note paper to record research findings. Once each intern established a research title, they had to then determine the objectives of the research and create questionnaires to support those objectives.

Three different questionnaires were used in the data collection process of this research. The questionnaires were specific to the various groups of people interviewed. One questionnaire

was used to collect data from the farmers, Questionnaire A. This questionnaire gathered background information, explored what agricultural extension looked like for each farmer, determined each farmer's accessibility to media platforms, and offered a time for farmers to suggest solutions for the future now that COVID-19 has changed the way agricultural extension is traditionally done. The second questionnaire, Questionnaire B, was used during the Focus Group Discussions. This questionnaire summarized the findings of the research done in each county, therefore it asked a simplified version of the questions in Questionnaire A. The third and final questionnaire utilized, Questionnaire C, was used to collect data during the Key Informant Interviews. The Key Informant Interviews were done at the end of the project to gain information from experts in agricultural extension.

Procedure

This research is different in design from other research because it was not conducted in person. Due to this, the procedure was quite simple and can be broken down into three main steps. Step one consisted of determining a research topic and title, then identifying the objectives of the research, and finally creating questionnaires that would yield results to support the objectives. Although short in nature, intentionality was important in this step to ensure that the time spent in the field was utilized well. With the help from Mr. Jimmy Pittchar, a social scientist at the International Centre of Insect Physiology and Ecology, the objectives and questionnaires were revised several times in order to be beneficial in the information gathering process.

Step two consisted primarily of time spent “in the field.” By this point, the objectives and supporting questionnaires had been finalized and were ready to be put into action. In order to effectively gather the information needed in a timely manner, Matilda Ouma from *icipe*

scheduled each interview with the farmers. Matilda and Phil Orondo would then travel to each farm with the help from others at *icipé*. Once there, Phil would join the Zoom call which the interns were already on. Before asking questions, the interns opened up a time for the farmers to tell about themselves and their farm. The interns would then interview each farmer as well as tour the farm if the internet was stable enough to support it. Once each intern had exhausted the questions they had for the farmer, the call would end, and then *icipé* staff would travel to the next farm. The final step, step three, consisted of the analyzing and compiling of the data. The data was entered into a spreadsheet in order to better visualize the findings.

Results and Discussion

Results

The purpose of this research was to prove that male and female farmers have differing degrees of accessibility to media platforms and different times in which they consume those platforms. The questionnaires and objectives were tailored in order to yield the information needed to draw conclusions on this topic. In order to gather research on which platforms farmers had access to, they were told a list of media channels and asked to determine if they had access to it. The list of media channels inquired about include smartphone, radio, television, and phone (without internet).

Data collection showed that 100% of the participants had access to radio. This was of no surprise considering that radio has been prevalent in Kenya since 1953 (Okoth, 2015). The platform with the next highest rate of accessibility was a phone without internet. Of the male farmers interviewed, only one did not have access to a phone without internet. Of the female farmers interviewed, three did not have access to a phone without internet. This statistic marked the beginning of seeing gender as a factor in accessibility to media channels. This factor became prevalent when looking at accessibility rates to smartphones between male and female farmers. Only two of the male participants did not have access to a smartphone whereas eight of the female participants did not have access. In other words, 85% of male farmers had access to a smartphone while only 50% of their female counterparts did. This is a concerning statistic considering that farmers are starting to receive information through smartphones now more than ever. Since COVID-19 has prevented agricultural extension agents from traveling from farm to farm, information sharing has transferred to a digital platform. Farmers with access to

smartphones can get information from applications such as Whatsapp, Facebook, and Youtube. With no access to a smartphone, farmers lose the opportunity to receive information from these platforms. The final channel farmers were asked about was television. Only 38% of male and female farmers had access to a television. Although agricultural extension programming is being administered through televisions, this research proves it is not a reliable information sharing source when attempting to close the gender gap. A visual representation of accessibility to media channels broken down by gender is shown in Figure 3.

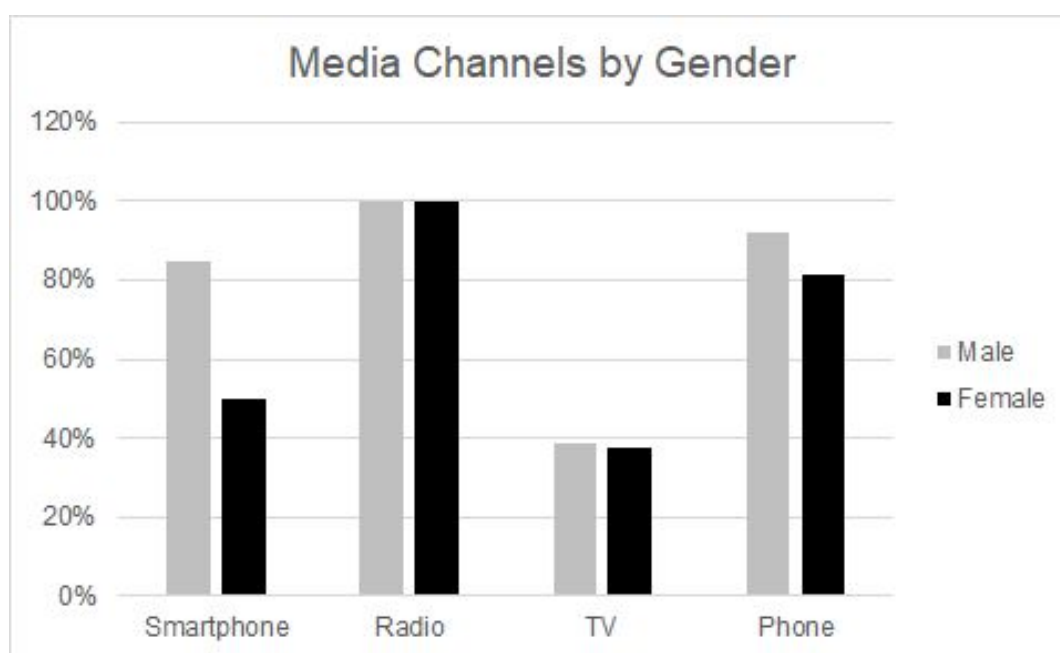


Figure 3.

When looking at Figure 3, it is apparent that radio is a viable option for closing the gender gap in farming through equal information sharing on agriculture related topics. Although data collection showed that 100% of the participants had access to radio, it is important to note that male and female farmers still consume that service at slightly different times. Figure 4 included below shows how male and female farmers have access to the radio at slightly different

parts of the day.

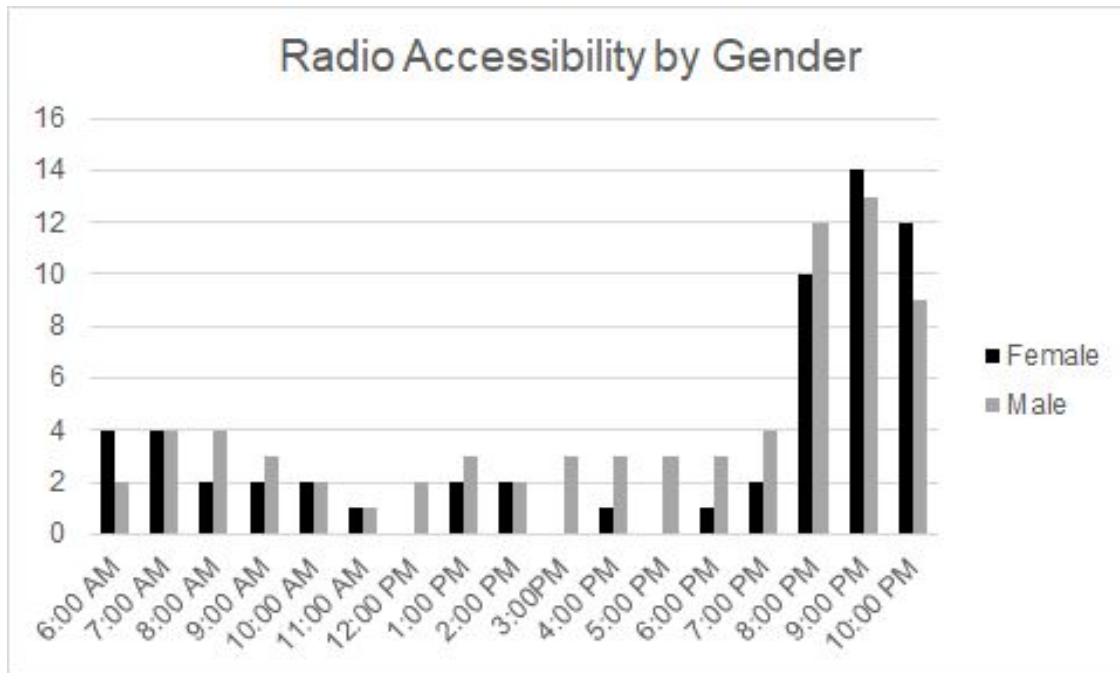


Figure 4

Of the male farmers interviewed, it was evident that they were much more likely to listen to the radio throughout the day whereas female farmers were localized moreso to mornings and evenings. If useful information is being shared throughout the day, female farmers are less likely to listen, which makes them less likely to improve their farming practices, and in return, further widens the gender gap in the farming community.

Discussion

Albeit the results yielded prove the thesis of this research to be true, it does not effectively offer a solution for this problem. In order for male and female farmers to have equal access to new information, an integrated system of information sharing must be adopted. Although this research only supports the revealing of this trouble area, it is important to note that the country is taking steps to improve the situation for all. While the farmers were being

interviewed, they each were asked what solutions they recommended for the future. Most of the farmers recommended that they receive the information through multiple channels. For example, the same program is aired on the radio in the morning, on the television in the evening, and through a social media platform throughout the day.

The world is currently navigating uncharted waters and at times like this it's important to give grace to everyone involved. Does this research prove that if changes aren't made immediately, the gender gap in farming will only widen? Not necessarily. However, it does bring awareness to the potential trouble area and shed light on the situation. It is hard to predict what the new normal will look like post worldwide pandemic. What we do know is that the way everyday things are done, including agricultural extension, won't be the same as what they once were. As time continues to progress, it is imperative that we continue to strive for equality in farming in order to ensure a more food secure world.

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Appendices

Appendix 1

Provided below is Questionnaire A:

Objectives-

1. Understand how COVID-19 has affected Agricultural Extension.
2. Explore the agricultural extension needs of varying age groups.
3. Explore the difference of needs in agricultural extension between genders.
4. Explore solutions for the future.

Background information

1. What is your name? Gender? Age? Level of education?
2. What is your main occupation? (*Tick accordingly*)
 - Food crop farming Cash crop farming Livestock rearing Fishing
 - Off-farm casual work Petty trade Off-farm permanent employment
 - Remittances Food aid Other (please specify)_____

How COVID-19 has affected Agricultural Extension

3. From what sources have you received agricultural extension information in the past? (*Tick accordingly*)
 - Government Extension Officer NGO *icipe* Neighbor
 - Seed companies Agro-vets Local Government e.g. Chief
 - Relatives and friends Other (please specify)_____
4. How frequently did you receive agricultural information from the main source?
5. Have the sources and frequency of communication changed since COVID-19 hit in mid-March? If yes, what has changed?

Agricultural extension needs of varying age and gender groups

6. What is your main agricultural activity? Which crops do you regularly grow for food? As cash crops for sale? What animals do you manage on your farm?
7. What are your defined roles in these activities? Are these roles related to your gender or age group?, or any one can perform them?
8. What information/knowledge do you need most to successfully produce crops and/or animals?
9. What are the best communication channels for you to receive extension information or new agricultural knowledge? Do you have access to these channels? If not, what are the hindrances? How can they be resolved?

10. What is the best time for receiving extension information or new agricultural knowledge through your most preferred channels?
11. Do you have access to a phone with the internet?
12. Do you have access to radio and/or television? If yes, what time of the day are you most likely to receive radio or television programming?

Solutions for the future

13. How would you like to learn about farming practices in the future? What opportunities can be harnessed? What challenges could hinder success? What solutions do you propose?

Appendix 2

Provided below is Questionnaire B:

Objective-

Ensure that the data collected thus far is consistent among participants.

1. What sources did you receive agricultural extension from in the past? (*Tick accordingly*)
 - Government Extension Officer NGO *icipa* Neighbour
 - Seed companies Agro-vets Local Government e.g. Chief
 - Relatives and friends Other (please specify)_____
2. How has communication with those sources changed since COVID-19 hit in mid-March? Have you continued to receive information from extension or has all communication ended for the time being?
3. How would you like to learn about farming practices in the future now that COVID-19 prohibits researchers from traveling to your farm? (Example: radio, phone, etc.)
4. Do you have access to the following communication channels? (*Tick accordingly*)
 - Radio Television Phone Phone with Internet
5. What is the best time to receive information through those communication channels? Does that change for the other members of your family?