global forum for rural advisory services
forum mondial pour le conseil rural
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Republic of Rwanda
Ministry of Agriculture & Animal Resources

Rwanda Customized Module

E-extension for Extension Professionals in Rwanda

Student Guide

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In 2016 the Global Forum for Rural Advisory Services (GFRAS) developed the New Extensionist Learning Kit (NELK) modules https://www.g-fras.org/en/knowledge/new-extensionist-learning-kit-nelk.html on functional skills for individual extension staff, in response to the demand from its network. GFRAS continues to develop new set of modules covering different technical skills. The Learning Kit contains modules designed for self-directed, face- to-face, or blended learning and can be useful resource for individual extension field staff, managers, and lecturers.

Responding to the growing demand from extension and rural advisory service providers worldwide to adapt the modules to the local contexts, GFRAS has embarked on the journey to support the NELK Customization process. NELK Customization is understood as a **guided process as permitted by GFRAS** aimed as adapting the original module to suit the local context. Details on this process can be found on the NELK Customization Guide.

This e**-Extension for Extension Professionals Module** is development as part of the NELK Customized package adapted from *NELK technical E-Extension Module*.

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Before you begin

Target audience

This module is for extension practitioners who want to use electronic approaches to complement their physical face-to-face activities and paper-based approaches. This module will help you understand how electronic approaches can benefit both you and your farmers. It outlines what is involved and the advantages and disadvantages of several e-tools that you can use straight away.

These e-extension tools are especially helpful in overcoming the limits of physical distancing imposed as a result of COVID-19. This module has ideas and suggestions that will help you to embrace new and unfamiliar technologies, and includes guidelines and case studies that give examples of how these technologies have been used in various situations. The module covers both low-tech and high-tech solutions, so if you do not have stable internet connectivity, there is still something here that will be useful to you.

General instruction

This module should be used in conjunction with the workbook provided. As you read through the module, you will find different visual features that are designed to help you navigate the document.

Figure 1: Icons used to highlight important information throughout the manual

The module uses keywords (difficult or technical words that are important for you to understand). To ensure that you receive the module's full benefit, keywords will be marked the first time they occur and defined in a box containing the keywords symbol. Make sure that you read the definition of any words that you are unsure about.

Activities

Each session in the module will contain various types of activities to help you become knowledgeable and competent. The module contains three types of activities:

A **pre-assessment** is to be completed before reading through the module overview and introduction, and a **post-assessment** is to be completed once the entire module has been covered. This will measure the degree to which your knowledge has improved by completing the module.

Each session contains one or more **session activities** to be completed in the workbook, where indicated in the module. These activities measure your ability to recall and apply theoretical knowledge.

At the end of each study unit, a **summative assessment** needs to be completed. These assessments are longer than the session activities and will test your knowledge of all the work within the study unit.

Assessment instructions

Keep the following in mind before doing any of the assessments:

- All assessments are to be completed in the provided workbook.
- The manual contains all relevant information you will need to complete the questions. If additional information is needed, such as the use of online sources, facilities will be made available.
- Work through the activities in a study unit and make sure that you can answer all the questions before attempting the summative assessment. If you find that you are not sure of any part of the training material, repeat that section until you feel confident.
- The summative assessment must be done under the supervision of your trainer at the end Target of your learning period.

Introduction to e-extension

Module outcomes

After completing this module, you will be able to:

1. Explain the concept of e-extension as a core skill for extension professionals:
    - Provide a definition of e-extension
    - Describe the evolution of e-extension over time
2. Outline the purpose and major functions of e-extension:
    - Explain various online alternatives to face-to-face extension delivery
    - Describe the advantages and disadvantages of e-extension
3. Detail what is involved in undertaking e-extension activities:
    - Moving from physical to online activities
    - Developing an e-extension strategy
4. Outline the different key e-extension tools (both synchronous and asynchronous)
    - Describe the difference between synchronous and asynchronous tools
    - Compare and contrast the key synchronous e-extension tools
        - Telephone
        - Radio
        - Web meetings
        - Online polling
    - Compare and contrast the key asynchronous e-extension tools
    - Social media

- Direct messaging
- Mobile apps
- Short videos
- Podcasts
- Blogs
- Online document collaboration
- Online surveys
- eBulletins

5. Describe best practice case studies in e-extension
    - Understand e-extension experiences in different places
    - Be familiar with e-extension case studies and experiences
6. Outline the steps to success with e-extension in the real-world.

Module overview

This module introduces you to e-extension and how you can use online tools to complement or replace your physical activities. It covers:

1. A description of e-extension, its purpose, and advantages and disadvantages
2. Transitioning from physical to online delivery, and the range of tools available including best practice case studies from around the world
3. e-extension case studies
4. Concluding thoughts
5. Resources.

This module focuses on using online engagement tools and techniques to facilitate change. It does not cover the broader topic of digitisation for agriculture.

A personal welcome and introduction to the NELK e-extension module by John James: https://youtu.be/QyzSEzEP1c8

Introduction

Access to information is one of the key factors in accelerating agriculture technologies adoption among farmers. Technology transfer to farmers is achieved through agriculture extension and advisory interventions. The history of agriculture extension in Rwanda shows that Rwanda's extension system is based on physical meeting of farmers and extension agents. The technical information is mainly printed on flyers, brochures and booklets provided to extension workers and farmers.

The development of ICT has enabled the transfer of information using digital supported tools like Radio, mobile phones, TV, Internet based tools,. ... For instance in a study conducted by IFPRI (2020) in Rwanda, extension agents (FPs/FFS, Public and Private/NGO) revealed that SMS, WhatsApp and Google are the most popular digital tools used in extension. Digital tools

have demonstrated great potential in spreading agriculture technologies and information. E-extension is used in many countries to reach farmers where it is otherwise complicated like in very remote areas and in pandemic periods. Powering extension practitioners with digital tools and skills is vital to the advancement of farming technologies adoption and creates an environment of data driven agriculture systems.

The study conducted on digital capacities of Rwanda agricultural extension agents conducted by IFRPI revealed that digital assets, usage, and attitudes notably vary across the different demographics of extension agents (EAs). Younger EAs and EAs in the private sector are more likely to be more open to change, modernization, and digitalization. The study further observed that the vast majority of Farmer Promoters (FPs) and Farmer Field School Facilitators (FFSFs) do not have access to any digital assets and do not use any digital tools in their personal or work lives, which suggest that proximity extension workers need access to digital tools and knowledge to be able to succeed.

Rwanda's Strategic Plan for Agriculture Transformation (PSTA4) and the newly developed Customized Agriculture Extension System (CAES) both highlight the importance of mainstreaming ICT in agriculture especially in Extension and Advisory Services delivery as an essential tool to support extension services provision. CAES recommends digital enabled extension, which shall not be replacement to physical face-to-face extension mechanism but a supplement to make the existing methodologies more effective, efficient and economical.

Due to COVID-19 pandemic in 2020, many agricultural extension professionals around the world had to adjust their practices to avoid travel and accommodate physical distancing requirements. Many people have grappled with the problem of transitioning from delivering physical face-to-face activities to delivering activities online. In Rwanda, before COVID-19, extension workers rarely used electronic tools to transfer technologies to farmers. The COVID-19 imposed new practices

including physical distancing and limited to no physical gathering, which involves the adoption of electronic approaches to adjust communication behaviours in line with challenging situations.

The e-extension module is developed to train extension practitioners on how better digital tools can help in timely deploying technologies to farmers by reaching more with less physical interactions and reduced resources. As you work through this module, you will discover how to use the online tools in your day-to-day extension activities. This module is a customized version (Rwandan context) of the GFRAS e-extension module from the New Extension Learning Kit (NELK).

Target audience

This module is for extension practitioners looking for ways to use electronic approaches to complement physical face-to-face activities and paper-based approaches. This module will help you better understand how electronic approaches can benefit you and your farmers. It outlines what is involved and the advantages and disadvantages of several useful e-tools that you can use straight away.

If you feel limited by remoteness and pandemic periods like COVID-19 that impose physical distancing, this module has ideas and suggestions that will help you to embrace some of these new, unfamiliar technologies. This module includes best practice guidelines and case studies showing how to best use these technologies in your situation. The module covers both low

tech and high-tech solutions, so even if you do not have stable internet connectivity, there is something here that will be useful to you.

Complete the pre-assessment in your workbook.

Study unit 1: Introduction to e-extension

Study unit outcomes

After completing this study unit, you should be able to:

1. Explain the relevance of e-extension in the context of AIS
2. Explain the relevance and the reason to adopt e-extension in Rwanda
3. Describe the definition and evolution of e-extension
4. Discuss the purpose and major functions of e-extension
5. List the Advantages/ disadvantages of e-extension

Study unit overview

This study unit will help you understand how e-extension is relevant to the modern extension practitioner and can help improve your performance. You will be introduced to the purpose of e-extension and its advantages and disadvantages.

Study unit introduction

As an extension professional, you need to understand how e-extension tools can assist you with your work, enabling you to better connect and engage with your target audience.

Session 1.1: Background and context setting

Electronic tools are recommended by the Customized Agriculture Extension System (CAES) and Strategic Plan for Agriculture Transformation phase 4 (PSTA4) as one of the agriculture extension service delivery tools that enhances the communication in agriculture. They play a significant role in information access in remote areas where it is otherwise difficult to reach. Electronic communication has opened new opportunities and enabled extension agents to build networks of farmers and provide them with vital information on improved and effective practices, market and weather information and financial services etc.

The continuation of extension activities in challenging situations like COVID-19 is undiscussable the sudden and unexpected arrival of a pandemic period like the COVID-19 presented many extension agents wondering how to adjust their practices to avoid travel and accommodate physical distancing requirements. Since in the pandemic period people cannot meet in close proximity to each other, the use of tools that facilitate physical distancing was adopted like megaphones, SMS, IVR, Radios and the online collaboration is flourishing. For example, Zoom (the web conferencing software) jumped from 10 million daily meeting participants in December 2019 to 300 million in April 2020. This 30-fold increase in just six months demonstrates how quickly many people have changed their routines and work patterns. Other applications, such as WhatsApp, have also experienced increased use, with a 40 to 50% increase during the pandemic.

Many extension practitioners around the world are already using the new online tools available to them. The focus of this module is to help you effectively use e-extension approaches to complement the physical face-to-face approaches. This module includes best techniques, so you can benefit from the examples provided.

As an extension professional working in an Agricultural Innovation System (AIS), you will work with multiple stakeholders, each with their own information and communication requirements. You must be aware of the different actors in the system and use appropriate e-extension tools for their needs. The e-extension tools allow us quickly and often cheaply to provide targeted messages to different sectors.

Complete Activity 1.1 in your workbook.

Session 1.2: Definition and evolution of e-extension

GFRAS defines extension as "All the institutions from different sectors that facilitate farmers' access to knowledge, information, and technologies; their interaction with markets, research, and education; and the development of technical, organisational, and management skills and practices. Thus extension includes not only technical knowledge, but also functional elements such as communication, facilitation, and empowerment".

SELN's shorter definition states: "Extension is the process of enabling change in individuals, communities, and industries involved with primary industries and natural resource management".

In this module, e-extension is defined as "The use of electronic technologies to enhance traditional extension approaches (such as written and face-to-face) so as to enable change". This can include:

- Information dissemination (such as market and weather information and early warning on pests and diseases such as locust plague)
- Knowledge sharing (like a short video about an animal husbandry technique)
- Advisory services (such as when a farmer sends a photograph of tomatoes infected with Blossom-end rot and asks for control recommendations).

Take note: E-extension is the use of electronic technologies to enhance traditional extension approaches (such as written and face-to-face) to enable change.

E-extension complements traditional extension approaches instead of replacing them. Many extension practitioners used online approaches before the COVID-19 pandemic, and these

approaches are especially useful now, when physical distancing prevents close interaction.

The first use of e-extension can be traced back to the 1990s, when the internet and email were becoming popular around the world. Many extension organisations created websites to store and spread their information, but this generally only allowed a one-way flow of information from the creator to the user of the content. Bulletin boards became popular in the early 1990s, which allowed special interest groups to share information, marking the beginning of two-way online interaction.

In 1994, Listserv became commercially available, allowing people to send emails to groups of people who had subscribed to a Listserv group. This meant people could send and receive messages to others in their group, as well as review archived messages. Extension practitioners used these Listserv groups to form interest groups among local farmers around particular crops or management practices.

Web meetings, which allowed users to use a webcam to see each other while talking to each other remotely, arrived in the 1990s with products like NetMeeting (1996), WebEx (1999) and GoToMeeting (2004). Zoom was a more recent arrival in 2012, but is now a market leader.

The next explosion of online interaction occurred with the arrival of social media in the early 2000s, including Facebook (2004), YouTube (2005), Twitter (2006), WhatsApp (2009) and Instagram (2010)

In Rwanda, agriculture extension was mainly done through traditional ways of physical meetings and printed materials. E-extension was mainly based on Radio broadcasts until the recent ICT development and the introduction of the National Information Communications Infrastructure (NICI) policy (2000). Ever since the digitalization of the country had significant improvement, whereby the population accessing the internet increased from 10% in 2013 to 52% in 2018.

The Ministry of Agriculture and animal resources inspired by the increase of people accessing the internet started creating e-extension materials published on the web based platform (Noz'Ubuhinzi Bworozi). A number of organizations working closely with the National Extension system later adopted this approach. However, the e-extension was not given much priority and the Twigire Muhinzi national extension system had no specific department working on developing e-extension tools. The PSTA4 adopted in 2018 and the CAES developed in 2020 highlight the role of ICT in extension service delivery. The social media evolution in Rwanda increased the adoption of e-extension tools by the public extension as well as the private extension.


Complete Activity 1.2 in your workbook.

Session 1.3: Purpose and major functions of e-extension

E-extension includes a wide variety of information and communication technologies (ICTs) that can do the following:

- Communicate, create, store, disseminate and manage agricultural information.
- Provide information, raise awareness and conduct promotional activities.
- Conduct technology transfer, training activities and broader educational endeavours.
- Enhance agricultural skills, management practices and innovation capacities
- Create links between agricultural and rural development stakeholders

Follow these three basic steps to use e-extension effectively:

1. Know what you want to achieve from the extension project.
2. Determine specific objectives and identify the activities you need to undertake.
3. Determine which technology and platforms you can use for these activities.

This is a better approach than seeing a new technology and then trying to find a way to use it in your extension programme.

It is generally possible to conduct an in-person extension activity as an online activity. Table 1 contains a list of online alternatives (both low- and high-tech) to physical meetings.

Table 1: Online alternatives to face-to-face extension delivery

Traditional physical meeting	Online alternative (low-tech)	Online alternative (high-tech)	Comments
A one-on-one meeting with a farmer to build relationship with the farmer and so on.	Use a telephone to talk with the farmer.	Use video chat on a smartphone or a web meeting on a computer to talk with the farmer so you can see each other's faces or share a presentation.	A phone call can provide substantial support. To effectively build trust and a relationship, engage with your clients on a regular basis.
Meeting with a farmer to identify a pest or disease problem in their crop	1) The farmer sends the advisor a photo of the problem. 2) The farmer places a stake in the field where the problem is found, and the advisor visits the location to inspect the site without the farmer being physically present.	The farmer calls you using video chat on a smartphone, so they can show you the problem in the field. You can ask questions and ask the farmer to manipulate the specimen.	Farmers may need guidance about how to photograph the problem effectively for diagnosis.

Traditional physical meeting	Online alternative (low-tech)	Online alternative (high-tech)	Comments
	3) The advisor phones the farmer to discuss the problem while on site or at their office.		
Field visits/ excursions	Conduct a tele-conference where you interview the farmer whose property you would have visited.	Hold a webinar where you interview the farmer and replay short videos you have created about the farm.	The webinar recording and its short videos can be uploaded to YouTube for people to watch later.
Small workshop with farmers (up to 15 people) like a farmer field school	Run a tele-conference with the farmers at their own farms or homes. If necessary, post or deliver workbooks to the farmers ahead of time.	Run a web meeting (using Zoom, Messenger video chat, Facebook room a similar service) with the farmers at their own farms or homes. If necessary, post or deliver workbooks to the farmers ahead of time, or send them by email.	Online meetings can be interactive and engaging. You can minimise the data used by asking participants to turn off their webcams when they are not needed. The workshop can be recorded for those who cannot attend the live event.

Traditional physical meeting	Online alternative (low-tech)	Online alternative (high-tech)	Comments
Large workshop with farmers (15 to 50)	Make audio recordings (e.g. on cassette tape, CD, USB stick, and so on) for the farmers to listen to on their own or with others. Distribute workbooks beforehand so the participants can read through them with the audio recording. You can work with a local lead farmer who can facilitate a live event while you provide support on the phone	Use a web meeting (Zoom, WebEx, MS Teams or a similar service) to engage with the farmers at their own farms or homes. Distribute workbooks beforehand by post, delivery or email.	Online meetings can be highly interactive and engaging. You can minimise the data used by asking participants to turn off their webcams when not needed. The workshop can be recorded for those who cannot attend the live event.

Traditional physical meeting	Online alternative (low-tech)	Online alternative (high-tech)	Comments
Seminar presentation (one-way communication)	Distribute pre-recorded audio (tape cassette, CD, USB stick, and so on) or video (DVD, USB stick, link to YouTube video and so on).	Use a web meeting (Zoom, WebEx, MS Teams or similar service) to present the information to the farmers at their own farms or homes. Yu can email a PDF of the presentation slides or a link to download the slides.	If the topic is very detailed, it is better to break it into shorter segments, ideally no longer than 20 minutes.
Highly interactive small group discussion (such as focus groups)	Use a tele-conference call and ask specific questions of the participants one by one. Summarise the responses for each question, ask if there are any further comments and if not, move to the next question.	Use a text-based online discussion forum (such as WhatsApp, Messenger, or Facebook group) or a web meeting to ask questions of the group.	This works better if group members have already met and know each other and the advisor.

Traditional physical meeting	Online alternative (low-tech)	Online alternative (high-tech)	Comments
Paper-based survey	Phone each farmer and ask them the questions and record their responses.	Create an online survey (using SurveyMonkey, Google forms or a similar service) and distribute the link by email, QR code or SMS.	Keep the survey short and simple, covering required questions only. Start with the easy-to-answer questions.

Complete Activity 1.3 in your workbook.

Session 1.4: Advantages and disadvantages of e-extension

Advantages

There are various advantages of e-extension, as follows:

Second, you can spend less time travelling to your clients and colleagues, especially when your clients live far away. This is currently especially relevant, as the COVID-19 pandemic forced many people to stop or reduce their travelling.

Third, you will save the time and money that you would have spent on transport and accommodation. You can now spend more time at home with your family and friends, and improve your work-life balance.

Many e-extension tools are affordable or even free. Some tools you have to pay for have entry-level plans where you can test the software for a short time before deciding whether to buy it. This means you can try out a range of tools and find out which ones work best for you.

A survey of extension professionals who used webinars showed that about 80% said they could engage with their clients better by using webinars. 78% said that webinars helped them to be more innovative with their work and almost 75% said they could be more responsive to their clients' needs (James 2015).

Disadvantages

The greatest disadvantage of e-extension is the digital divide. The digital divide is the fact that not all places have equal access to the internet. Even if an area has suitable access to the internet, not all extension practitioners or their clients have the devices they need (mobile phones or computers) or be interested in using e-extension tools. Consider the age of the users, as younger people are more likely to be familiar with newer technologies.

There can be a steep learning curve when you first use new technology including e-extension. Remember, you will not use these tools perfectly at first, but you will improve if you practice regularly. However, if you do not practice, you will probably find it difficult each time you use these tools.

Building trust and rapport can take more time in an online environment. Since it is harder to read someone's body language in a virtual interaction, you need to ask people directly how they are feeling and ask probing questions if you think there might be a problem. Informal social interaction is also more difficult between online participants, though Zoom breakout rooms can help with this.

Since many people are now attending far more online meetings than ever before, they may be overwhelmed by these meetings. These meetings can also become tiring.

Complete Activity 1.4 in your workbook.

Concluding remarks

In this study unit, you have learnt that e-extension complements traditional extension approaches and can help extension agents to continue engaging with their target audience (farmers) despite challenging situations like remoteness, pandemic situations and physical distancing. While not all our target audience may be able to use e-extension yet, we should still use it with those who do.

 Complete the summative assessment in your workbook.

Study unit 2: Undertaking e-extension activities

Study unit outcomes

After completing this study unit, you should be able to:

- Discuss the trend of extension professionals moving from physical to online activities;
- Explain the importance of developing an e-extension strategy;
- Explain the difference between synchronous and asynchronous tools;
- Compare and contrast the key synchronous e-extension tools; and
- Compare and contrast the key asynchronous e-extension tools

Study unit overview

This study unit will help you understand how to carry out e-extension activities and the why it is important to work strategically. You will be introduced to synchronous and asynchronous communication and a range of key e-extension tools for both types of communication.

Study unit introduction

As an extension professional, you must master both physical and online activities to best meet the needs of your target audience. You must be flexible and use the best approach for a situation. This means you need to understand the different types of e-extension tools available to you and their various advantages and disadvantages.

Session 2.1: Moving from physical to online activities

Many extension practitioners around the world use e-extension approaches in their daily work. If you do not use these tools yet, start small by using one or two applications. When you become familiar with those applications, try some others. Following this method, you will soon be able to use a variety of online tools.

For instance, a pig farmer in Rwamagana district who is connected through WhatsApp to the Pig Farmer Platform, joined WhatsApp to chat with his family members, later on she was informed of the Pig Farmer Platform on WhatsApp, which she joined and started interacting with experts and fellow farmers. One day, a zoom meeting for pig farmers was organized and the link of the meeting was shared in that Pig Farmer Platform, with a single click, she joined the meeting. During the meeting a google form was shared for farmers to provide some information, she filled the form and shared her/his information.

Some people are concerned that e-extension will replace the need for human involvement in extension. That is unlikely to happen for many decades, if at all. Humans will still be designing and driving the bulk of the extension work to be done. Electronic approaches enhance the traditional approaches and allow you could not achieve before.

Consider the example of eSurveys (James, 2010). If you currently use paper-based surveys with your clients, you know how much time it takes to design the questions, create the survey, test it with a small sample, and then print it and distribute it to your target audience. You then need to wait for the responses to be returned, then enter the data and analyse it. As you can see in Table 2, this might take 33 working days.

However, if you use an eSurvey, you still need to design the questions, but creating the survey is usually much faster than a

traditional paper-based survey. You can then test it with a small sample more quickly, as you just have to email it to your test subjects instead of mailing it and waiting for them to complete and mail it back. It is then quick and easy to electronically distribute it to your target audience. There is no need for data entry, because a digital survey does that automatically. You just need to analyse the data, as you would with a traditional paper-based. As detailed in Table 2, this might only take six working days, instead of over six weeks. Of course, this is just an example, to get you thinking about the possible time you might save using electronic approaches.

Table 2: The potential time difference between paper-based and electronic surveys

	Paper-based survey	**eSurvey**
Design	2 hours	2 hours
Create	4 hours	1 hour
Test	10 working days (print survey, address and stamp envelopes, post, complete, return post, data entry, analysis, modifications, possible retest)	1 hour
Distribute	20 working days (print survey, address and stamp envelopes, post, send reminder, complete, return post)	5 days
Analyse	2 days (data entry, analysis)	1 hour
Total time	33 days	6 days

Complete Activity 2.1 in your workbook.

Session 2.2: Developing a strategy

Before using a particular e-extension tool, know why you are using it. Start with an overall extension strategy that includes both physical and online activities. The strategy should be designed to suit

- The particular target audience,
- The problem to be solved, and
- Any particular technologies being implemented.

It is a good idea to do this in cooperation with the users so they will be more invested in the end product The extension strategy must include information about

- The overall outcomes desired;
- The relevant objectives;
- The deliverables required; and
- The activities to be undertaken.

You should include a mix of physical and online activities, as some people might prefer one to the other.

You should also develop an appropriate communication strategy for each extension tool. This is particularly important for tools like social media, so it is clear who can post and under what circumstances.

The following is a simple process for designing an extension strategy

1. Define the desired outcomes;
2. Identify the target audience(s) and their characteristics;
3. Define SMART (specific, measurable, achievable, relevant and time-bound) objectives;
4. Determine the various activities required; and
5. Design a monitoring and evaluation framework.

Complete Activity 2.2 in your workbook.

Session 2.3: Synchronous and asynchronous communication

This module focuses on some of the online tools that will help you most with your extension activities. Online technologies can be used by participants anywhere in the world, and they can participate either at the same time (synchronous) or at different times (asynchronous). The characteristics of physical and online meetings are summarised in Table 3.

Synchronous communication tools (like a phone call) allow you to interact with your target audience in real time so there is no lag time in the conversation. These can often be arranged quickly and finish as soon as the activity is over. This means quick decisions can be made by groups because everyone that needs to be there is present.

Asynchronous events (such as replying to an email or a blog post) allow people to participate in the discussion at different times. These events usually need to be planned in advance. The discussion can continue for weeks, months or even years, and different people can add to the conversation over time. This means a rich collection of ideas and information can be collected.

Table 3: Characteristics of physical and online meetings

	Location of participants	**Time of participation**
Physical event	Same	Same
Online synchronous	Different	Same
Online asynchronous	Different	Different

Synchronous and asynchronous communication: https://youtu.be/g3jE-7R_Vvw]

Complete Activity 2.3 in your workbook.

Session 2.4: Synchronous e-extension tools

Telephone

Overview

The most commonly used e-extension tool is a telephone. This can be either a landline phone or a mobile phone (both feature phones and smartphones). There are two main types of phone call:

- a phone call between two people, and
- a tele-conference call with multiple people.

A big number of extension practitioners in Rwanda use this method to transfer or collect information to/from farmers. This is one of the low tech facility that is widely used by farmers in Rwanda

Interactive voice response (IVR) system is often used by call centres and large organisations to help callers to a particular section or department. Because IVR systems are voice-based and

only require basic phone features, like dialling numbers, they can be used by people with low literacy skills or who only have access to basic technology. Some extension agents find IVR systems frustrating, as they can lead to long wait times before the caller speaks to a person.

Some practitioners find IVR systems frustrating, as they can lead to long wait times before the caller speaks to a person. However, IVR systems offer useful features for extension practitioners and complement existing extension services.

IVR systems can broadcast an audio message to many people at the same time. They can contact farmers in a specific geographic region or those growing a particular crop. This can be used to share information about a pest or disease outbreak.

IVR systems can allow two-way communication in the following ways:

- A caller leaves a message for a recipient;
- Feedback discussions between farmers and extension practitioners; and
- Creating a place where farmers can answer each other's questions.

There are many exciting developments other than those mentioned in this module.

Equipment required

There is a wide range of mobile phones available, so it is important to check their features, such as:

- Size,
- Screen resolution,
- Weight,
- Ease-of-use, and
- Cost.

Costs involved

There are a few options for how to pay for the cost of making calls, sending text messages or carrying out activities that need data. These include:

- Pay up-front to buy the phone (or use a phone you already have) and pay for a cheaper monthly plan;
- Purchase a more expensive monthly plan that includes the price of the phone; and
- Buy data and airtime as you need them.

Depending on the plan, there is usually a set amount of data and number of free calls and text messages included in the monthly plan and you pay separately if you need more minutes, messages or data.

Advantages and disadvantages

Telephones are widely available and can be used by people with low literacy skills. A recent study of mobile phone use in four rural communities in Tanzania indicated that farmers who used mobile phones reported greater maize yields, which lead to increased profits, and decreased costs and time invested in farming (Quandt et al. 2020). An advantage of IVR is that farmers can listen to messages in their local language, which can also be the voice of a trusted extension officer or farm leader. However, IVR technology usage is not quite popular in Extension in Rwanda but some organizations like Viamo have performed some work with IVR.

Not all farmers have access to phones, so you should use multiple communication methods to reach all of them. Best practice guidelines

One-to-one phone call

One-on-one phone calls are a very common form of communication used by extension practitioners. Here are some simple guidelines to use this form of communication effectively.

- When phoning a farmer for the first time, clearly state your name and organisation.
- After exchanging minor pleasantries, such as the weather or their health, clearly state the purpose of your call and the expected duration, and check whether this is a convenient time to talk. If so, continue with the conversation, and be careful to not go overtime.
- At the end of the call, check if there is anything you need to do, such as sending them a factsheet, and your timeframe for completing this task.
- Thank them for their time and contribution.

Tele-conference call

A tele-conference where multiple farmers will participate must be well organised. A tele-conference is similar to a physical meeting, and you can facilitate it in a similar way. If possible, send all participants an agenda before the meeting and include a list of the people invited to attend. As the host, join a few minutes early so you can welcome each person as they join and take note of their attendance. In the invitation, you can ask people to join a few minutes early so the formal meeting can start on time.

Once the meeting has started, mention the names of everyone already on the call. If people join late, continue talking and welcome them later, because if you pause to welcome each late person, it can be quite disruptive to those who arrived on time. It is better to acknowledge latecomers (and ask their names if necessary) at the next convenient pause in the conversation.

If you need responses from your tele-conference attendees, ask each of them by name to make a comment. That way you can facilitate the discussion and make sure everyone has a chance to speak. This can prevent the attendees from talking over each other, which causes confusion.

At the end of each agenda item and the end of the meeting, summarise the discussion just as you would do for a physical meeting. Clarify follow up activities that you or the attendees need to do. At the end, thank everyone for attending and contributing to the discussion. Make sure to finish the meeting on time.

Monitoring and evaluation

It is difficult to evaluate the effectiveness of phone use, but IVR systems provide a lot of information like the number of calls, call duration, and the most requested information.

Further resources

Global Good Practices: mExtension – Mobile Phones for Agricultural Advisory Services

Global Good Practices: Mobile Based Bundled Services

Radio

Overview

Radio is a one-way communication tool that allows extension practitioners to broadcast messages to their audience. IT is one of the oldest communication technologies, and it is still helping

extension practitioners today. Radio's success is due to its low cost, ease of access and low literacy requirements. It allows listeners to hear the latest information from a variety of sources, including technical specialists, researchers, advisors and fellow farmers. Two-way communication is also possible by inviting farmers and others to phone in and add to the discussion.

Traditionally, a radio programme involves a technical specialist sharing information, but technical specialists will often interview farmers and add their stories into the programme. Radio can be used to:

- Inform listeners about new techniques or products,
- Share best practice information, or
- Encourage behaviour change.

If you want to use radio as an extension tool, choose an appropriate radio station as a partner. Your audience should already listen to that station's broadcasts and be familiar with their content. There are benefits to partnering with a large national radio station, but it may be better to choose a local community radio station because they can effectively deliver local content.

Experiment with the format of the programme and find out what works best for your audience. Shorter, more frequent segments are better than one long segment. Consider what time of day will be best for your listeners to listen to your material.

Equipment required

You can use a voice recorder in the field to record farmers or other contributors. Talk to your radio station partner to find out their preferences and suggestions. They will help you work out the best way to phone farmers and interview them over the phone, and allow farmers to phone you to provide their input during your radio segment.

Costs involved

Some community radio stations may charge a small fee (or even nothing if they do it as a community service). National radio stations are likely to charge much more. Develop your proposal and talk to different radio broadcasters to find out which one will be most cost effective for your extension programme. Compared to farm visits and printed brochures, radio is usually much cheaper when calculating the cost per farmer reached.

Advantages and disadvantages

Radio is a low-cost opportunity to broadcast your message to a large audience with little lead time (the time between a project the start of a project and when it is completed). For example, if there is a disease outbreak, you can quickly record a programme

and broadcast it to your audience. There are few requirements for your audience, other than owning a radio or having access to one. No literacy skills are required, and you can broadcast your programme in local dialects. Radio works best when it is integrated with other extension approaches like farmer visits and farmer field schools.

However, a radio station may decide that another programme is more important than yours, and ask you to spend more money if you want them to broadcast your material. This is why you must build a good relationship with the radio station manager. While many farmers have portable radios, replacing the batteries can become expensive.

Best practice guidelines

There are many different types of radio programs, ranging from short informal sound bites that are only a few minutes long, to professional programs that can go for an hour. No matter which type you use, you need to be able to engage with your audience and maintain their interest. When you present, you must speak clearly, use greater vocal variety and sound excited about your material.

Interviewing other people and guiding the discussion toward the topics you need to talk about is an important skill for a presenter. You should talk to the interviewee a few days before the interview so they understand your expectations and the process you will use. Right before you start recording, help the person you are interviewing to relax and speak more naturally so they will sound natural and be pleasant to listen to.

Audio quality is extremely important, because it takes a lot of time to improve audio quality during post-production. Reduce background noise as much as possible, but this can be difficult in a rural setting. Reduce the echo that is likely to be heard in small rooms with flat walls. Sometimes people sit in their car or stand in their wardrobe to reduce echo. Experiment with your digital

audio recorder in different environments and see what works best for you.

Work closely with the radio station manager to understand their requirements. They are usually happy to work with you to improve your programme because that in both their best interests and yours.

Monitoring and evaluation

It can be difficult and expensive to determine the impact of your radio broadcast, but there are some easy ways to test the effectiveness. For example, you could promote an event only using radio and see how many people arrive at your event or express interest in it, or ask at your next event who listens to the radio programme and check whether they recall a recent segment.

Further resources

Global Good Practices: Using Radio in Agricultural Extension

Web meetings

Overview

Web meetings allow both audio and video communication using webcams, and both the presenter's and participants' face can be seen. The presenter can also display certain information to the participants, such as a presentation or document.

There are many we meeting platforms (such as Zoom, WebEx, Teams, Skype and Messenger video), the following principles apply:

- A web meeting is similar to a physical meeting around a table in a meeting room and are interactive online meetings where everyone can see everyone else, and

- Webinars are similar to seminars where the presenter delivers a presentation or speech to an audience, and these have fewer interaction opportunities.

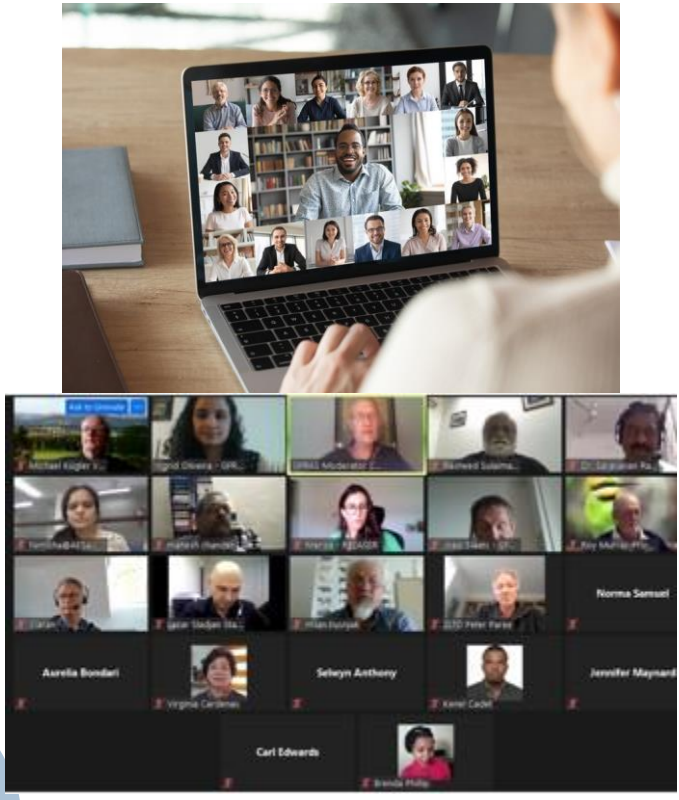


Image 3: GFRAS virtual annual meeting (Photo credit to GFRAS)

This module focuses on web meetings between extension practitioners and farmers, but web meetings can also be between two or more extension practitioners to sharing their ideas and approaches.

Equipment required

You can attend or host a web meeting using a mobile phone, tablet or computer with access to the internet. However, it is better to use a computer to host a web meeting because you will have access to more functions. Check the minimum requirements for the software, which are usually available on the provider's website. Generally, the more powerful the computer, the better. It is a good idea to use an external webcam and an audio headset because then you will have clearer video and audio.

Costs involved

There is usually no charge to attend a web meeting, other than the data used during the meeting and web meeting software compresses the data being transmitted to reduce the data costs.

For those hosting a web meeting, a free plan from Zoom allows up to 100 attendees to join for up to 40 minutes. For more attendees or longer meetings, you need to sign up for a paid plan for a licence with extra functionality.

Advantages and disadvantages

Web meetings allow you to hold a meeting with people from all over the world without anyone needing to travel. The meetings can be recorded and made available to those who could not attend. This means they are an affordable way to engage with your farmers, and they help you be more responsive to your farmers' needs, because you do not have to wait until the next time you visit their farm to discuss a particular problem with them.

However, not everyone has access to this technology, so you need to use multiple communication methods to reach your target audience.

Best practice guidelines

The three, simple steps you can use to be cool, calm, and collected in delivering your first web meeting or webinar are:

- Prepare
- Practice
- Present

You will now learn about each of these steps in more detail.

Preparing for an online meeting is very similar to a physical meeting.

- Be clear about who your target audience is and why they want to attend your web meeting or webinar.
- Designing the flow of your web meeting. The more engaging you can make an event, the more enjoyable it will be for the attendees. Some ways of doing this are:
- Ask attendees to raise their electronic hands in response to a question.
- Conduct a poll asking the attendees to indicate from the list displayed on screen what their industry is.
- Ask attendees type their town or city into the chat box to help you find out where your audience is located and target your presentation more effectively.
    - Ask attendees to indicate how much they already know about the topic you will be discussing to make your presentation more relevant to the audience.

If you are presenting, use an external webcam and a headset if possible. Avoid wireless headsets because they may run out of battery and their audio quality is not as high. Test your equipment before the webinar to make sure it is working properly. If you are having other presenters at your webinar, they must also have the correct equipment and test that it is working properly.

It is a good idea to break your presentation into two or three shorter sections and pause for questions and comments at the end of each section because this gives the audience an opportunity to engage with you and ask questions before they

lose interest. This engagement is far less likely to happen if your presentation is one long speech and you only allow the audience to ask questions at the end.

When you design your presentation, keep the slides simple. Use few words and large pictures that you can then talk about. If there are too many words on your slides, people read the words instead of listening to you, so aim to have less than six words on a slide. Aim to move to a new slide every minute to keep the audience interested in your presentation.

Practice

If you want to be a good presenter, practice your presentation in full at least three times before your online event. This helps you become comfortable with the content and the timing.

You need to be comfortable using the webinar platform. While you may have read about the various features and seen others use them in webinars you have attended, it is very different when you use them yourself, especially when you are doing several activities like speaking, reading comments, and trying to conduct a poll.

If you want to become a good presenter, you must practice often. If you try once and then do not try again for a month, it will take longer for you to become competent and confident.

As a webinar presenter, you must be prepared for the fact that you will not receive much feedback from your audience unless you go out of your way to get it. With a face-to-face presentation, you will receive subtle nonverbal cues from your audience that they are listening and agreeing with you. A webinar is like a radio interview — you need to carry on and assume that the audience is listening to your every word.

Present

Login to the webinar platform 30 minutes before the actual webinar will start, load your presentation and get any polls ready. Type a welcoming message for your attendees to see as they join. If you have other presenters joining as panellists, make sure they join 15 minutes early so you can do a soundcheck and practice changing the presenter role.

Encourage attendees to arrive ten minutes early to make sure their technology is working well. If they have not attended a webinar using that particular platform before, it may take a few minutes to download and install. Even if they have used it

previously, they may need to download and install an updated version. Like a physical meeting, make sure you start and finish on time. After your first webinar, try to run another one within a few weeks, as each session will become less nerve-wracking and more enjoyable.

Monitoring and evaluation

A webinar platform usually provides information like the number of attendees, the duration of your meeting and may even track their attention. Some webinar platforms allow you to conduct a quick post-event survey, the question types are usually limited so it is better to send a separate digital survey afterwards together with any further information for your audience, like products mentioned during the webinar.

Online polling

Overview

While polls are often used for monitoring with monitoring and evaluation activities, they can be used in many ways. Online polls (such as Poll Everywhere and Sli.do) help you to interact with your audience and keep them engaged in both physical meetings and online meetings, your audience can answer questions to help you understand their background and motivation. This is a great way to take questions at the end of the session, as you can just ask the audience to type them into the poll. Then other audience members can vote for the questions they want answered, or add their own.

There are a variety of question types, such as multiple-choice questions, open questions, and clickable images (like a map to indicate where people are located). As the presenter, you can share the live results with your audience, either on the screen at the front of the room for a physical event, or as part of your presentation.

Equipment required

To respond to a poll, you just need a mobile phone or a computer with a web browser and access to the internet. Depending on the poll program, you can also respond to a poll by sending a text message. To create a poll, you need to use a computer with a web browser.

Costs involved

Most online poll programs offer a free plan, but limit the number of questions or responses. PollEverywhere currently allows unlimited questions but is limited to 25 participants. Sli.do allows up to five questions for up to 100 participants. For more functions, you need to sign up for a paid plan.

Advantages and disadvantages

Online polls allow you to easily engage with your audience to maintain their attention during your presentation. They can also provide you with insights into your live audience so that you can adjust your presentation to their needs.

However, not everyone has access to the technology required, and then you should include low-tech options for soliciting feedback, such as raising hands in response to your questions.

Best practice guidelines

To create polls, go to the poll website, which should have explainer videos for both organisers and attendees. You can create various types of questions, including:

- Multiple choice questions;
- Word clouds; and
- A map for people to indicate where they are located

There are many templates you can use and you can change the words and graphics as needed.

You can add the poll questions into your PowerPoint presentation so that when you display that slide, it activates the poll and displays how people can respond. The audience usually does not need to sign in or download an app to respond. There are apps for most of the poll software, and if you are engaging with people during a two- or three-day conference, it might help for them to download and configure the app. However, the website option is still effective.

Monitoring and evaluation

Poll software allows you to examine the number of people who voted on each question. You can download the final poll results for inclusion in reports.


Complete Activity 2.4 in your workbook.

Session 2.5: Asynchronous e-extension tools

Social media

Overview

Social media is the term used for a group of electronic applications where users can interact and share content. Common platforms in Rwanda include Facebook, Twitter, Instagram, WhatsApp, Pinterest, Snapchat, and TikTok. As this is only an introductory module, these technologies will be covered together as many of the principles are similar.

Equipment required

Anyone with a mobile phone with internet connectivity or a computer able to browse the internet can access social media.

Costs involved

Social media apps are free to download and use, and the cost is the data required to download and upload information. This will vary depending on the number of photos and videos viewed and uploaded, and their size.

You can pay to boost your posts on certain sites so that more people in your target audience see them in their social media feeds. This investment allows you to reach people you did not previously reach through other communication channels.

Advantages and disadvantages

In Rwanda 52% of the population use the Internet (FAO,2020). Even though this number is still low many people already actively use social media, so little education about the social media apps is required. It is usually very cost effective for extension agents to use social media as an additional method for communicating with their clients. It is convenient to post to social media, as you can do it almost anywhere and at any time.

Some social media posts attract unwanted attention. For example, if you promote an event about cattle nutrition, and vegan activists bombard your site with messages condemning meat consumption.

For this reason, some government departments and other agencies do not allow their staff to directly post material to social media. Instead, they will work with their official communication staff who have the authority to post messages. This risk averse approach is slowly changing as the agencies realise that their staff are often in the best situation to communicate with their clients. In addition, most of people are using social media platforms to market their services and

products and they post everywhere anytime which might disturb people who are not interested with their services or products; you need to target your audience and keep monitoring the platform you created (in case of Facebook and WhatsApp groups) to avoid off-topic posts.

Best practice guidelines

It is best to have a social media strategy in place before you start using it. This strategy identifies

- Your target audience;
- Your key messages; and
- Who is authorised to make the posts and add comments?

You should also develop a procedure to follow if your posts attract the negative attention, and you receive negative comments. Often it is better to respond quickly and calmly, and take the conversation offline. It is usually better to respond with a neutral response rather than deleting the comment, as that can cause more problems.

Spend as much time, if not more, responding to the positive comments. When responding, personalise your responses by using the person's name. Avoid using the same generic response, as that looks insincere.

Monitoring and evaluation

One of the advantages of social media is that it is relatively easy to track various metrics in real time, such as the number of people who have liked or shared your posts. The level of engagement is a very important. The aim of social media is usually to build a closer relationship with your target audience and become a trusted deliverer of information.

Having access to real time data allows you to run small experiments to see which headline or photo works better with your audience. This ongoing experimentation and being able to monitor results allow you to quickly improve your performance.

Further resources

Global Good Practices: Social Media for Rural Advisory Services

Direct messaging

Overview

Many people use short message service (SMS) text messages on their mobile phones. The messages are usually limited to 160 characters, though you can send longer messages. Services like EcoFarmer and Esoko use SMS technology to deliver current market prices, weather forecasts and extension messages across Africa. The SMS technology is also used by the Rwanda Ministry of Health to allow CHW (Community Health Workers) to track pregnant women, new-borns.

Smartphones have special direct messaging apps like WhatsApp and Messenger. Some of these apps can be used as computer applications and web browsers.

Esoko: Ghana's Innovative Text Messaging System That Empowers Farmers - Talking Heads: https://www.youtube.com/watch?v=vGjOicZfGb4]

Equipment required

For SMS text messages, the user needs a mobile phone to receive the messages. When sending bulk messages, the extension agent can use a high-volume SMS gateway service such as MessageMedia that sends a personalised message to be sent to a list of recipients, a geographic district or even an entire country.

For apps like WhatsApp and Messenger, the user can access them through their mobile phone or computer. Bulk messages can also be sent to inform your target audience of your activities.

Costs involved

SMS messaging is cheap compared to field visits and printed flyers. There is a small cost per message sent. For apps like

WhatsApp and Messenger, there is no cost to send the messages beyond data costs.

Advantages and disadvantages

Direct messaging (using both SMS and apps) allows very quick messages to be sent to a large audience. This could be particularly useful during an emergency, like a disease outbreak. It allows two-way communication, as farmers are able to reply and ask for or provide information as necessary. The messages can also be used to raise awareness or remind farmers to attend events.

However, not all your target audience may have mobile phones or computers, so it is best to use a mix of communication channels. Even though the mobile-cellular telephone subscription is 76.4% (RURA, 2020), a significant number of people use the mobile phone for calling and receiving calls. It is repeatedly reported that few farmers read or reply to messages they receive due to their capacity to use mobile phones

Best practice guidelines

It is important to send your message at the right time. Consider when your target audience will most likely be able to stop and read your message. Some may prefer to receive a message early in the morning, but others may prefer late afternoon. Talk to your farmers and find out what works best for them.

Avoid sending long text messages because they are difficult to read. Rather send several shorter messages over a period of time. Be careful not to send too many messages, or your target audience may start to ignore them.

Monitoring and evaluation

It is difficult to directly evaluate the impact of your direct messaging, but there are some ways to test the effectiveness. For example, you could promote an event using direct messages

and see how many people attend your event. Or at your next event, you can ask who received your message and check to see whether they recall a recent message.

Mobile apps

Overview

Mobile apps are applications that run on mobile phones, especially smartphones that can connect to the internet. The Apps designed for extension services are used in Rwanda. However, most of them are developed in other countries and are available in foreign languages including English and French. Agriculture extension Apps developed in Rwanda with content available in Kinyarwanda are rare. CAB International collaborated with CNFA Hinga Weze project to pilot the Digital learning solution for extension in Rwanda; the App is designed to facilitate extension training with digital content and a monitoring system. There are many agricultural-related apps, and this section will focus on the example of the Kurima Mari developed in Zimbabwe for farmers and extension practitioners. It aims to improve farming production for crops and livestock and links farmers to advisors in their local area.

Kurima Mari version 2 mobile farming app explainer:
https://youtu.be/r2zXwBQLCK8.

Agriculture e-Extension in Zimbabwe: Kurima Mari Mobile Application and SMS Extension: https://youtu.be/Wtbe-QXJOvY

Equipment required

The user needs mobile phone and access to the internet. Some apps are designed to offline and update when they are reconnected to the internet.

Costs involved

Most apps are either free or are quite cheap, though the more complex ones have monthly subscriptions. Creating apps can be expensive and is usually done in partnership with a funding agency.

Advantages and disadvantages

Apps are becoming more and more common as more people get access to smartphones. They are usually easy to use and can include text, photos and videos to spread information. Some apps collect data and exchange information. Some others are micro-finance orientated.

However, some people in your target audience may not have mobile phones or computers, so it is best to use a mix of communication channels.

Best practice guidelines

Apps should run on both iOS and Android devices so they can be used by more people. They may need to be updated by the developers to make sure they are compatible with the latest phones and software updates.

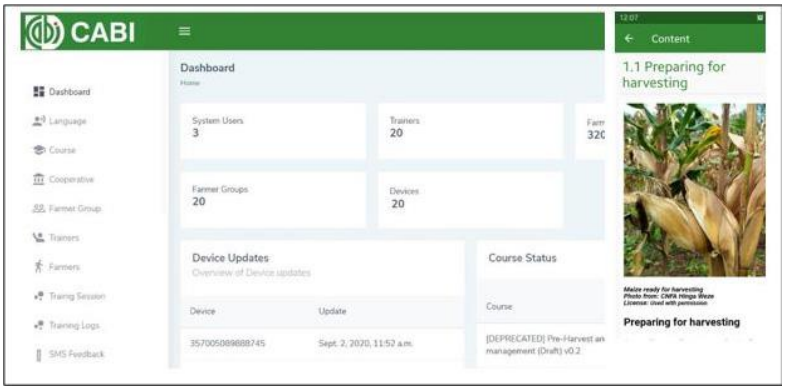
Monitoring and evaluation

App development platforms can usually gather usage data so you can determine who uses the app and how often they do so.

CABI digital learning solution

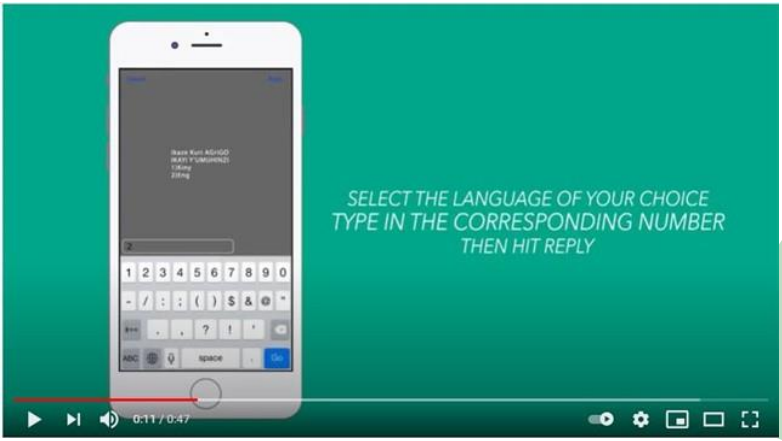
In partnership with Cultivating New Frontiers in Agriculture (CNFA) and the Rwanda Agriculture and Animal Resources Development Board (RAB), CABI developed and piloted a digital learning solution for extension trainings in Rwanda. It is a web-based administration portal and an Android app for end users based on a custom-built software application, whose content can be accessed both online and offline. Its content is available in Kinyarwanda and English languages and will use Google analytics to track usage and user actions and journeys through the App.

The App also includes mechanisms to record attendees at training events and produces training reports automatically and any data is synchronized when the device is online again. In addition, training content can be updated anytime and the users are notified for new content. The digital learning tools has content in text, pictures, videos and can host audio files. The App is equipped with an SMS based feedback platform integrated into the system that automatically sends assessment questions to farmers on their understanding of course objectives upon completing the training sessions.



Source: https://blog.cabi.org/2021/03/16/strengthening-extension-trainings-through-digital-tools-in-rwanda/

The AgriGo mobile App



The AgriGo mobile app: https://youtu.be/E5HhkCZ4Cmg

The AgriGO application, developed by the Rwandan company GO, helps farmers improving their agricultural returns thanks to customised SMS in local languages. The farmers subscribed to the AgriGO service are notified on the evolution of the prices of foodstuff to better negotiate their sales while knowing all the necessary elements. They also receive advice on cultivation

techniques that could help them optimise their production. The information is transferred to the farmers via the USSD (Unstructured Supplementary Service Data) technology: there's no need for an Internet connection or a smartphone to receive this data.

Short videos

Overview

Short videos uploaded to YouTube or similar services are increasingly being used by extension agents to share information or explain their work. Videos can raise awareness, educate and change behaviour. They are particularly useful to share your message with a geographically dispersed audience. The format of videos can range from simple voice-overs of PowerPoint presentations, explanatory videos using animations (such as Powtoon), or presenter discussing a topic with cutaway shots. Some examples of short videos can be seen on channels like Access Agriculture, Rwanda Agri , Agtube, Digital Green,and SAWBO.

Image 4: Rural women in India watching a video using a pico projector (photo credit: Digital Green)

You can upload your video to YouTube, and you also copy it onto a DVD or USB stick and send it to farmers with poor internet access. You can store the video on your phone and plug a battery operated pico projector (which is pocket sized) into your phone and display the video on a screen for your farmers to watch with you.

Watch this short video to learn about Digital Green and Access Agriculture and the work they are doing to empower smallholder farmers with farming technologies to lift themselves out of poverty by harnessing the collective power of technology and grassroots-level partnerships.

Digital Green: https://youtu.be/LdV_7BRs3XQ

Access Agriculture:
https://www.youtube.com/watch?v=8D1RJeXPkmc&t=5s

Equipment required

In the past, expensive video cameras and sophisticated microphones and lighting were required to make videos, but now most high-end mobile phones can produce suitable quality videos. However, it is a good idea to use a tripod to keep the camera steady. While you can edit the video on the phone, it is usually better to edit the video to your computer using a video editing program like Camtasia.

Audio quality is very important, If people cannot clearly hear the narration, they will stop watching the video. If possible, use a small clip-on lavalier microphone attaches to the shirt of the person speaking. A small foam windshield can be useful to reduce wind noise.

Costs involved

Depending on the number of views your video receives, it can be a very cost-effective way to communicate your message, especially compared to visiting individual farmers and repeating the same information over and over again. If you hire a video production company to create your video, it will usually be very expensive (approximately 1,000,000 RWF per minute of final video), but the result will look good. If you do it yourself, it will cost far less but it may not look as good.

Advantages and disadvantages

Videos can be watched and easily understood by those with low literacy skills. They can be watched over and over again if the concepts are difficult to grasp. Videos can save you from repeating the same message over and over again to different people. You could ask your farmers to watch the video first when they have time and then visit their farm to discuss it further.

While not everyone has the equipment to create and watch videos, the price is steadily declining, so that may improve the situation soon. If your video relies on footage of a seasonal activity, such as a crop fruiting, you may need to have to wait for when that happens.

Best practice guidelines

Involve your farmers in designing and scripting the video because they will often have very good insights. Before you start filming, it is a good idea to create a storyboard that outlines the story you are going to tell. You can use simple sketches to illustrate the

type of shots to record for each segment of your story. Test the storyboard with some other farmers to ensure it communicates the right message.

Instead of recording technical experts telling farmers what they be do, it is more effective to record farmers sharing their success stories with other farmers. Involve farmers with a range of ages, backgrounds and different genders. Those involved will have greater ownership of the final video and are likely to promote it to their peers.

Try to keep the videos as short as possible. People are more likely to watch a whole five minute video than a whole 20 or 30 minute one.

If you are recording a video of a given farming practice and that practice has more than one term used to describe it, it is better to keep the standard and commonly used terms and mention that such practice has a local term used in other areas.

Monitoring and evaluation

When you upload your video to your platform, such as YouTube, you can monitor the number of unique views, and the average amount of the video time that is viewed before the video is stopped. YouTube also provides demographic information about the viewers, such as their age and gender. You could survey the audience after they have watched the video to determine what they learnt and if they plan to change their farming practices as a result.

Further resources

Global Good Practices: Video for Agricultural Extension

Global Good Practices: Video for Agricultural Extension (https://youtu.be/C-An0VjE5_s)

Podcasts

Overview

Podcasts are audio recordings that can be downloaded to a smartphone or other device to be listened to later. They are like short radio episodes that you can listen to at any time. Podcast apps notify listeners about new episodes and can download them automatically.

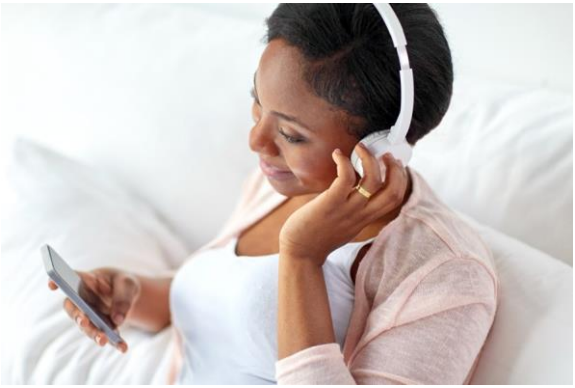


Figure 1: Extension worker recording a podcast (photo credit: YEAN)

Podcast formats vary widely. The length can range from one minute (for a short news update) to several hours long (for an in-depth interview). They can have a single presenter, a presenter who interviews guests, or a team of presenters discussing a topic. They can be released regularly (daily, weekly, or monthly) or periodically. They can be easily shared by other means, such as WhatsApp, and can be listened to at community resource centres. Enablers of Change is a podcast for extension practitioners.

Equipment required

To listen to a podcast, you just need a mobile phone or computer that has access to the internet. You can use a podcast listening app such as Pocket Casts. To record a podcast, you need a digital audio recorder, which could be your smartphone or a microphone plugged into your computer. To edit the audio file, you use an audio editing program such as Audacity. You can then upload the episode to a podcast hosting site such as Podbean.

Costs involved

To listen to podcasts, you need a smartphone or computer that is connected to the internet. Subscribing to a podcast is usually free. To broadcast a podcast, you may need to subscribe to a podcast hosting site such as Podbean.

Advantages and disadvantages

Podcasts can be listened to and understood by those with low literacy skills. They can be listened to over and over again if the concepts are difficult to grasp. They can save you from repeating the same message over and over again to different people. You could ask your farmers to listen to your podcast first at their leisure and then visit their farm to discuss it further.

Podcasts are simpler and cheaper to create than videos. It is relatively easy to allow a group of up to 50 people to listen to a podcast by setting up an MP3 player connected to an external speaker.

Not everyone has the equipment to create and listen to podcasts. However, the price is steadily reducing, so that should hopefully improve the situation soon.

Best practice guidelines

Audio quality is very important, otherwise it can be too difficult for people to understand what is being said. Some podcasts include background music and sound effects, but others find this distracting.

Involve your farmers in designing and scripting the podcast episodes, as they will often have very good ideas and insights. Before you start recording, you should have an outline of what you are going to talk about. This could be a list of headings and bullet points to guide you and the people you interview. While some people create scripts, it is important to the audience that the delivery of the words sound natural, otherwise it is off putting.

You can interview successful farmers who can describe their approaches in their own words. Involve farmers with a range of ages, backgrounds and different genders. Those involved will then have greater ownership of the final recording and are likely to promote it to their peers.

If you are recording a podcast of a given farming practice and that practice has more than one term used to describe it, it is better to keep the standard and commonly used terms and mention that such practice has a local term used in other areas.

Monitoring and evaluation

When you upload your podcast to the hosting site, you can monitor the number of people who have downloaded each episode. You could also survey your target audience after they have listened to your podcast to determine what they learnt and if they plan to change their farming practices as a result.

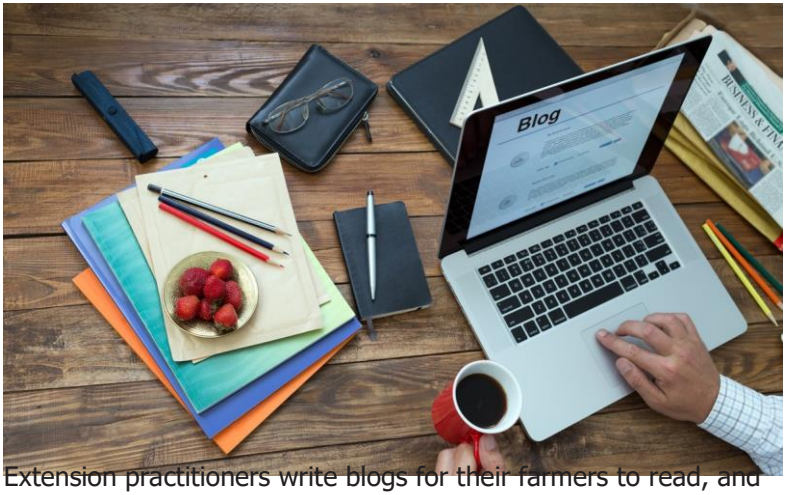
Further resources

Podcasting: Recording and Using Local Voices for Knowledge Sharing Practical Action factsheet and SciDev.

Blogs

Overview

Blogs are specialised websites that allow articles to be published and commented on by readers. This allows a two-way interaction and discussion about the topic. The articles are usually displayed in reverse chronological order, so the most recent article is displayed at the top of the page. While blogs are usually text-based, they can include photos, videos and audio files. New articles can be added regularly (daily, weekly, or monthly) or periodically. Examples include AgriFarming (India), YEAN (Rwanda) The Farmer's Daughter (USA), Agri4Profits (Nigeria), and Farming First (international). Enablers of Change is a blog for extension agents.



Extension practitioners write blogs for their farmers to read, and include timely material like pest and disease control or nutrition. Farmers also use blogs to inform potential consumers about their products and how they differ from similar products (such as being chemical free or organically produced). As the social licence to farm is being implemented in some countries, blogs provide a way for farmers to tell their side of the story. This builds consumer trust and confidence in their products.

Equipment required

To read a blog, you need a device (smartphone or computer) that can connect to the internet. To create a blog, you need a computer connected to the internet and access to a blogging platform, such as WordPress or Blogger.

Costs involved

To read blogs, you need a smartphone or computer that can connect to the internet. Reading blogs is usually free. To create a blog, you may need to create your own website and purchase a domain, but most of the software required is free.

Advantages and disadvantages

Blogs allow you to share your thoughts and ideas with the world, or you can target a smaller group. They enable two-way conversion with your readers and allow a rich collection of information about topics to build over time. Blogs are easier and quicker to create than videos or podcasts. They can save you from repeating the same message over and over again to different people. You could ask your farmers to read your blog post first at their leisure and then visit their farm to discuss it further.

Not everyone has the equipment to create or read blogs. However, the price of smartphones and computers are steadily reducing, so that should hopefully improve the situation soon.

Best practice guidelines

It is helpful if you have a good writing style that appeals to your audience. Use short, simple sentences and communicate your message clearly. Encourage your readers to respond by including a question towards the end of your blog post. Add photos, videos and other elements to complement your message and add interest.

Your readers can sign up for email notifications so they will know when new articles are available.

Monitoring and evaluation

Your blog platform usually records the number of views and downloads for each blog post, so you can track your performance.

Online document collaboration

Overview

One of the few positive legacies of COVID-19 will most likely be the increased ability of people to work from different locations

and not be limited to the traditional office. People can collaborate with anyone virtually anywhere in the world. This has led to increased use of online tools for collaborative writing, such as Google Docs and Office 365.

These programs allow different people to work on the same document at the same time. They are generally accessed through a web browser on your computer, but are also accessible through apps on your mobile phone or tablet. You can create, edit and view files online simultaneously with those whom you given permission. You can usually share by clicking on the share icon and entering the email addresses of your collaborators, or creating a link to send to your collaborators. Anyone with that link can then access the shared document.

While extension agents will often use this with their colleagues, it can be a way for a group of farmers to collate their ideas. For example, each farmer could add their thoughts about potential crops to grow. They can all see the ideas their peers have suggested and can add comments. The document could be a starting point for when you meet with them, either online or at a physical meeting.

Equipment required

Anyone with a computer able to browse the internet, or mobile phone with internet connectivity, can collaborate online.

Costs involved

There is no cost to use Google Docs but there is a small monthly charge to use Office 365. There is the cost for the data used to access the online document.

Advantages and disadvantages

Online collaboration allows you to work on the same document with anywhere else in the world. You can see the changes that have been made and see who made them This is more efficient than emailing one document back and forth to different collaborators. Online collaboration is faster and more efficient.

However, not everyone has access to a computer or mobile phone, which could limit which people you could collaborate with.

Best practice guidelines

It is helpful to use styles in your document. For example, set the style for Heading1 as Arial, bold, 16pt and use that for all your major headings. That makes it easy to change the formatting for all the headings at once by changing the style instead of changing it for every heading separately.

With Google Docs, you can dictate your material and its voice recognition converts your words to text, which is helpful for users with low literacy levels or who have trouble typing.

Monitoring and evaluation

With any new technology, check with your collaborators to see how they are adjusting to the technology. The number of online documents created in a given time period will help you judge the effectiveness of the technology.

eSurveys

Overview

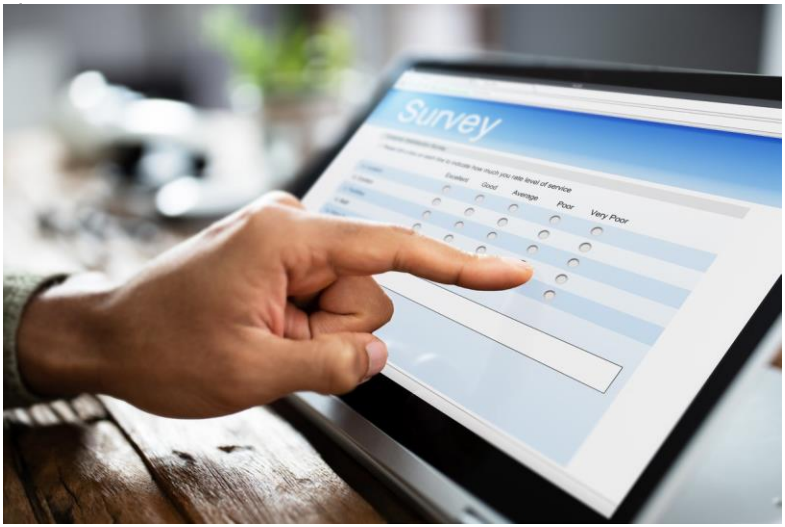
Instead of using a Word processor or typewriter to type and format your survey, you can use an online survey program (such as SurveyMonkey or Google Forms) to do it much more easily.

Equipment required

Anyone with a computer connected to the internet can create and use eSurveys. If the link to an online survey is sent to you and you can access it with your mobile phone and respond to it.

Costs involved

Google Forms is free to use and SurveyMonkey hasoffers a free option that limited to ten questions and 40 responses per survey. If you need more functions, you will need to purchase a paid



Advantages and disadvantages

Using an eSurvey reduces the time it takes to create and distribute a survey from over six weeks to just six days. Online surveys offer a quick and easy way to receive feedback or other information for which you would use a survey.

However, not everyone has access to a computer or mobile phone, or the required literacy skills, which could limit the people you could use this with.

Best practice guidelines

When designing your online survey it is better to ask a few, clear questions. The more questions you add, the fewer responses you will receive. Start with questions that are easy to answer, like multiple choice and progress to more difficult questions such as open ended questions. Avoid questions with yes/ no answers and use rating scales of five or seven units instead for more meaningful feedback. It is a good idea to send a follow up reminder about a week after sending the initial request.

Many people complain about receiving too many surveys. Everyone wants to evaluate how effective they are, which can lead survey fatigue, where people just do not want to complete another survey. So be careful about how many surveys you send out and how often you send them.

Monitoring and evaluation

Online surveys are a good way to monitor and evaluate your activities. When you evaluate the effectiveness of your online surveys, consider the response rate. Some companies are happy with a 10% responses rate, but because extension agents tend to have better relationships with our farmers, we look for a 30 to 50% response rates.

eBulletins

Overview

With the move to digital communication, more people are reading material online. Instead of producing physical newsletters and brochures, more people are using eBulletins, which are similar to eNewspapers, eLeaflets, digital news journals and digital magazines.

eBulletins can be created by sending an email to the subscribers.

The formatting is limited, and some email systems prevent you from sending emails to more than 100 people at once. An if you use a specialist program (like Mailchimp) that allow you to create good looking messages. This improves the chance that your message will be delivered successfully and allows you to personalise your message with items like the name of the recipient.

Equipment required

You will need a computer with a web browser able to access the internet.

Costs involved

Mailchimp has a free plan that allows you to send your message to up to 2000 recipients and up to 10 000 messages per month. If you need to exceed those limits, or access more functions, you need to upgrade to a paid plan. You will also need to pay for your data usage while accessing the program.

Advantages and disadvantages

eBulletins allow you to focus on creating good content to send to your contacts. Your contacts can subscribe and leave your list on their own, so you do not need to spend time managing the list. Inbuilt analytics show you how many people opened your message, and which links they clicked on. There are many template designs to choose from, and you can customise them with your branding (like your logo and colours). You can divide your audience into smaller groups and send customised messages to each group according to their interests.

Like any new computer program, it can take a while to become familiar with the eBulletin system. However, there are many useful short educational videos and FAQs on their website.

Best practice guidelines

To avoid being seen as a spammer (someone who sends unwanted email messages), encourage your farmers to sign up for your eBulletin themselves by clicking on a link you send them, or using a pop-up on your webpage. It is a good idea to enable a double opt in-process, where receive an email with a link to confirm that they did indeed want to subscribe to your eBulletin. They will only be added to your list after they have clicked that link.

Personalise your message by inserting the relevant name field as a greeting at the beginning of your message. You can also add photographs to your eBulletin to reinforce your message. For example, if you are inviting your farmers to an event, add a photograph to highlight the focus of the event.

Finally, make sure you are familiar with the data protection laws in your country and that you follow them. For example, in Europe you can only send information to people who have explicitly agreed to receive information from you.

Monitoring and evaluation

The eBulletin software automatically monitors the delivery of your messages, providing statistics around the open rate and links clicked. This is very useful as you can then compare the effect of different headlines or layouts.

Complete Activity 2.5 in your workbook.

Concluding remarks

In this study unit you have learnt how to undertake e-extension activities and the importance of working strategically. You were introduced to synchronous and asynchronous communication, and a range of key e-extension tools for each. You should now be able to appreciate and understand the different types of e-extension tools available and their various advantages and disadvantages.

 Complete the summative assessment in your workbook.

Study unit 3: e-extension case studies

Study unit outcomes

After completing this study unit, you should be able to:

1. Describe several real-life applications of e-extension, and how they were used to achieve the desired project outcomes:
2. Explain the different challenges and solutions that were used to overcome them; and
3. Outline several COVID-19 challenges and how the wise use of e-extension tools helped overcome them.

Study unit overview

This study unit will help you understand how e-extension has been used in different situations in different countries around the world. It will give you an insight how the pandemic periods such as COVID-19 has affected the wellbeing of communities and changed the way we can engage with our target audiences.

Study unit introduction

E-extension tools can be useful in normal as well as pandemic situations. For instance, COVID-19 has been an unforeseen and dramatic disruptor of business as usual. This unit will help you understand how the use of e-extension tools have enabled extension practitioners to respond in a timely and responsive manner. E-extension tools can be adopted in any place; given that, e-extension tools in Rwanda are few and less documented, we are going to profile case studies from Rwanda

and others from different countries. We believe that it might help and inspire in creating local tools for e-extension.

The case studies are as follows:

1. Agricultural Information and Communication Programme (AICP) (Rwanda)
2. 1917 iTEAMS (Integrated Technology Enabled Agri-Management System), Meghalaya State, India
3. Farm Radio International, Africa
4. YEAN Farmer Platform, Rwanda
5. UPTAKE Project, Tanzania
6. Khushaal Zamindar- A mobile agriculture service by Telenor Pakistan
7. Social Media- WhatsApp, Kerala, India
8. Social Media- YouTube, India
9. Network for Information on Climate Exchange (NICE), India
10. Online Surveys: ICT4RAS interest group of GFRAS- Global Survey on Social Media
11. Farmer Query System mPower Social Enterprises Ltd. Private Sector, Bangladesh
12. RegoPantes, 8villages Private Sector, Indonesia
13. Smart Farmer/ Young Exporter: Online Access to Global Markets New Economy Academy (NEA) The Department of International Trade Promotion, Ministry of Commerce Government, Thailand
14. Zimba Women Zimba Mart, Uganda
15. E-KOKARI Interactive Voice Response (IVR) platform, Niger

Session 3.1: . Agricultural Information and Communication Programme (AICP) (Rwanda)

a) e-Extension tools used:

Call Center, Web-based extension platform (Noz'ubuhinzi), Agriculture Market information system (E-soko), Radio and TV Programs, Social Media

b) Stakeholders (roles, capacities required and cost involved):

The Agriculture Information and Communication Programme (AICP) is the key communications unit functioning under the Single Project Implementation Unit (SPIU) of the Ministry of Agriculture and Animal Resources. Its role is to ensure that agricultural knowledge and information is regularly and timely collected and then produced, processed, adapted, stored, shared and disseminated to its audiences.

Established in 2016, the AICP works in collaboration with the ministry's two implementing agencies, the Rwanda Agriculture and Animal Resources Board (RAB) and the National Agricultural Exports Development Board (NAEB). They are responsible for providing technical input into communications products, whilst AICP is the centre of excellence for communications.

c) Strength, weakness, challenges and opportunities:

AICP is the main information channel for e-extension material and content. The program uses already existing extension structures and developed content and avail them to the general public including farmers, private extension and value chain actors. This is a government supported program that has all potentials to reach a wider audience through channels and

partners of the Ministry of Agriculture and animal resources (MINAGRI) including the Rwanda Broadcasting Agency (RBA), Telecommunication companies and MINAGRI's implementing agencies (Rwanda Agriculture and Animal Resources Board (RAB) and the National Agricultural Exports Development Board (NAEB)). The program uses different languages spoken in Rwanda including Kinyarwanda, French, English. However, Kinyarwanda remains the main communication language with farmers across the country. The program uses its channels to communicate the most updated information in crop production, livestock, market and weather information. It is reported that farmers trust the information provided by the program, as it was certified and validated by the Ministry of Agriculture and animal resources.

d) Solutions (initiatives/ innovations):

Through it platforms and programs including call center (Toll free number :4127), live and recorded radio and TV Shows, Radio Drama and sketches, Short video, Agriculture market information system, Social media (Youtube, twitter, facebook, WhatsApp), Web based extension platforms, the AICP enables farmers and agriculture value chain actors to access accurate and timely information and advices. The farmer can call the MINAGRI's call center to ask information, report incidents and provide feedback to extension services. On the other side, the call center agents can call back or respond to farmers if the issue raised was not answered immediately.

MINAGRI leverage the good coverage of Rwanda Broadcasting Agency (Rwanda) daily and weekly radio and television to broadcast Agriculture information through live and recorded radio and TV shows, TV segments and radio mentions, dramma and sketches. In addition, MINAGRI gathers and shares daily market information through the e-soko system.

e) Constraints and lessons:

Digital extension being in its infancy stage in Rwanda, the biggest challenge is the capacity of farmers to consume digital information; apart from radios, farmers do not have access to digital tools like smartphones, computers and internet that allows access to platforms of information sharing including social media, website, Apps,.....There is a need of empowering frontline extension agents in digital literacy. In addition, most Rwandan farmers are old and their capacity to use digital tools and consume digitized information is very limited, it is important to engage more youth in extension and advisory services provision.

f) Results (outcome/ impact):

The e-extension tools and programs of AICP such as call center and radio programs offer free services and information to farmers. Given the coverage penetration of radio in Rwanda and the ministry's main target audience, radio was the most widely used channel of communication to disseminate agricultural messages. In this respect, community-based radio stations played a great role in reaching out to community farmers in different parts of the country. For instance from July 2017-June 2018, 312 live radio talk shows were aired on Radio Rwanda, RC Musanze, RC Rubavu, RC Rusizi, RC Huye, RC Nyagatare and Radio Isango Star. In addition, 50 pre-recorded radio shows were aired on Radio Rwanda and rebroadcast on RC Musanze, RC Rubavu, RC Rusizi, RC Huye and RC Nyagatare. Moreover, in the same fiscal year, 109 digital green projectors were distributed in 8 districts as part of 'ICT enabled for agricultural development in rural communities' project.

Source:

https://www.minagri.gov.rw/fileadmin/user_upload/Minagri/Publications/Annual_Reports/MINAGRI_ANNUAL_REPORT_FY_2017-2018.pdf

https://www.minagri.gov.rw/fileadmin/user_upload/Minagri/Publications/Annual_Reports/Annual_report_2019-20_FY_.pdf

Session 3.2: 1917 iTEAMS (Integrated Technology Enabled Agri-Management System), Meghalaya State, India

a) e-Extension tools:

Phone call, IVRS, Mobile-SMS, Mobile applicationPurpose

b) Purpose:

- Facilitating agro-advisory
- Farm produce marketing support for the small and marginal tribal farmers.

1917 iTEAMS is a market-oriented e-extension programme that connects farmers to markets, and vice versa, through real time agro advisories. It uses cloud technology, affordable logistics and market information (www.1917iteams.in).

An earlier version, m4agriNEI, was pilot tested from 2012 -1017 as a research project by the Central Agricultural University (CAU) and Digital India Corporation (DIC). It was an integrated information dissemination system using

- Interactive voice response (IVR) system,
- Mobile application,
- Web portal,
- SMS and MMS messages.

The advisory service was aimed marginal and small land holding farmers of Meghalaya State of North-East India and Andhra Pradesh State of South-India.

c) Stakeholders

The programme was established by the Department of Agriculture in collaboration with

- The Department of Animal Husbandry
- Meghalaya Small Farmers Agri Business Consortium (MgSFAC)
- Department of IT

- Meghalaya Institute of Entrepreneurship (MIE)
- Central Agriculture University (CAU), and
- Digital India Corporation (DIC).

To use the service, any person who needs the service can call the Agriculture Response Centre's (ARC) toll free number 1917, from 7am to 7pm, Monday to Saturday, which is manned by incoming call officers (ICO Level 1) and vehicle despatch officers (VDO).

d) e-Extension application

IVRS-toll free number, mobile calling, online knowledge management system, SMS, vehicle response system, agri-response centre.

All the calls made to iTEAMS go to an IVR system through a 32 primary rate interface (PRI) line system. The system is multilingual and is linked to a farmer database of 24 000 farmers connected and registered from across the state.

Callers are routed to different incoming call officials (ICO) based on their reason for calling. Those who need an agri-response vehicle (ARV) are diverted to the vehicle despatch team. Those who need advisories are routed to an ICO level 1 expert. If the query is not resolved by the L1 expert, it is sent to a level 2 domain expert for resolution. The ARV operations are tracked by a GPS system and vehicle tracking software developed locally, which keeps a tab on the trips, distance, time and location of the vehicles.

e) Stakeholders

Multi-stakeholder partnership is the essence of the project, including:

- The Digital India Corporation (DIC),
- Ministry of Electronics and Information Technology (https://dic.gov.in// https://www.meity.gov.in/),
- Directorate of Agriculture, Meghalaya,
- Directorate of Horticulture, Meghalaya,

- Integrated Basin Development and Livelihood (IBDLB), Meghalaya,
- Central Agricultural University (CAU),
- CPGS, Meghalaya,
- Small Farmers Agri-Business Consortium (SFAC), Meghalaya http://meghalayasfac.nic.in/,
- Meghalaya Institute of Entrepreneurship (https://www.miemeghalaya.org/about/),
- 1917 iTEAMS team,
- Registered farmers and registered buyers.

f) Solutions (initiatives/ innovations)

1. **Agro Advisory:** Provide farmers with timely and accurate information for to help them make good decisions. Farmers can call the toll-free number (1917) for any queries on

   - Agriculture,
   - Horticulture,
   - Fisheries,
   - Animal husbandry,
   - Apiculture, and
   - Sericulture.

   Farmers can call and ask questions about:

   - A package of practices,
   - Pest/disease management in crops,
   - Health management in livestock, or
   - Any other information pertaining to departmental schemes and training.

2. **Logistics Solutions:** Provide farm produce transportation logistics solutions to farmers and buyers who want to transport their goods to any farms or markets of their choice through a network of pickup trucks, called agri-response vehicles (ARVs), at a highly competitive rate of INR0,02 per kg/km (Transport charges are INR2,00 per Km per Quintal).

3. **Market Connection:** Provide information about potential

markets and sellers, and make farmers and buyers aware of the different selling/buying options available to them. 1917 iTEAMS connects the registered farmers with commodities to sell to the registered buyers looking to buy the same commodities, but does not participate in the buying or selling negotiations (Shabong, 2020).

g) Constraints

- Creating awareness among the farmers about the services
- Registering and collecting farmers' data
- Ensuring multi-stakeholder partnership
- Addressing rural connectivity and language issues
- Updating the knowledge management system continuously

h) Lessons

- Integrating both agri-advisory and market linkage are crucial
- Logistics support is essential for transporting farm produce
- Entrepreneurs and agri-business firms' partnership is essential to ensure better market prices for farmers
- Results (outcome/ impact)
- The total numbers to use the service were:
- 51047 registered farmers
- 3551 (11 districts) villages covered
- 309 farm produce buyers and sellers.
- 4 346 416 SMS messages and 1 64 600voice messages since 2019.

Results (outcome/ impact)

The total numbers to use the service were:

- 51047 registered farmers
- 3551 (11 districts) villages covered
- 309 farm produce buyers and sellers.
- 4 346 416 SMS messages and 1 64 600voice messages since 2019.

COVID-19: Experiences

From the third week of March 2020 onwards, a national lockdown was imposed due to COVID-19. As a result, it was difficult for farmers to sell their farm produce in the market, and consumers were also unable to get essential food items.

Challenges

- Perishable commodities, like vegetables and fruits, need quick action
- Huge consumer demand for vegetables and fruits
- Connecting farmers and consumers
- Ensuring market linkage
- Logistical support for farmers to reach markets with their farm produce

Solutions

- The Agricultural Technology Management Agency (ATMA) assessed farm produce and supply status.
- The village tribal headmen and Dorbar Shong (village level democratic institution) of different villages were asked to facilitate and provide support for connecting farm produce to consumers.
- Local administration issued passes to the iTEAMS 1917 team members and ARVs.
- Local online e-commerce players were connected to this initiative to take orders from the consumers and provide home delivery. All these online players' delivery vehicles were also provided with curfew passes from the district administration.
- District administration facilitated the entire process of connecting producers and consumers
- Separate hotline number were circulated via WhatsApp and SMS

ICT Deployment: During the COVID-19, the backend team worked from 7 a.m. until 11 p.m. and the Agri Response Hotline received about 700 calls on its hotline and team project management numbers, which were opened via various social media channels like WhatsApp groups and SMS messages.

The entire operation was managed by a cross functional team composed of government officials, domain experts, and market experts who worked remotely and from their homes due to the lockdown.

The entire 1917 iTEAMS systems is cloud-based, and its core technology system is hosted remotely on servers in Delhi.

Lessons

4. An online toll-free line and SMS based system has been pilot tested and refined since 2012. The impact assessment and online system was scaled-up for a large number of farmers by the Department of Agriculture of Meghalaya, India.
5. Before the COVID-19 pandemic, the system was run as a government scheme to reach farmers for advisory, logistics and market connection, but during the pandemic, it partnered several public-private players and created the business environment of a corporate sector agency with the flexibility of a private agency along the lines of a Private-Public Partnership (PPP) model.
6. During the COVID-19 pandemic, the iTEAMS1917 team partnered with different stakeholders to connect farmers and consumers.

Impact

Before COVID-19, 17 ARVs made one trip per day carrying loads of 2,5 - 3 MT per vehicle per trip, mostly from progressive farmers with medium or large holdings. This benefitted 20 - 25 farmers per day. During COVID-19, ten vehicles were added, and these vehicles made 27 - 30 trips each day. These vehicles are carried produce from medium and large farmers, and also from farmer collectives (groups of 20 - 25 farmers who aggregate their produce in one place where the ARVs come to collect the produce). Produce is now collected from about 500 farmers every day and each vehicle collects up to 4 - 5 MT per vehicle per trip. While only five districts were covered (East Khasi Hills, West Khasi Hills, West Jaintia Hills, Ri-Bhoi and West Garo Hills), the area of operation has expanded to 11 districts.

Source:

Shabong, Canning S (2020). 1917 iTEAMS – How department of agriculture & farmers' welfare, Meghalaya, is supporting farmers during the covid-19 lockdown, COVID-19 & EAS Insights from Practitioners, Field Notes 1 (April 2020), Agricultural Extension South Asia (AESA), https://www.aesanetwork.org/wp-content/uploads/2020/04/AESA-COVID-19-FIELD-NOTES-1-.pdf

Others useful links

http://www.megagriculture.gov.in/PUBLIC/schemes_ShowSchemesA.aspx?schid=83

https://negd.gov.in/sites/default/files/iTEAMS_MeitY01-05-2019.pdf

Extension for Integrated information to Market linkage https://www.youtube.com/watch?v=az9AFTfXMJE&t=276s

Further resources

Global Good Practices: Navigating ICTs for Extension and Advisory Services

Session 3.3: Farm Radio International, Africa

a) e-Extension tool:

Radio

b) Purpose:

Broadcasting relevant information and creating awareness among community members.

Each year, Farm Radio International shares resources with more than 1 000 stations in 41 countries and works with more than 100 stations on projects in 11 countries Burkina Faso, Ethiopia, Ghana, Kenya, Malawi, Mali, Mozambique, Nigeria, Senegal, Tanzania, and Uganda.

c) Stakeholders:

For women farmers, radio on demand approaches may be effective, as they can choose when to listen to the programmes each week through pre-recorded mp3 versions delivered to women's groups. Some groups may be able to purchase radio sets. Young listeners may be motivated by interactivity and the integration of smartphone use. For example, using text messages, voice messaging, or beep-to-vote messages may facilitate their participation For women farmers, radio on demand approaches may be effective, as they can choose when to listen to the programmes each week through pre-recorded mp3 versions delivered to women's groups. (Rao, 2015).

d) Strengths and weaknesses

Radio provides an open, two-way dialogue that is inclusive, accessible, and affordable. It has the potential to reach vulnerable and resource-poor communities, while also establishing a feedback and monitoring system using other technologies. It

provides an opportunity for information and resource provision on a large scale, but can also be available in local languages (Rao, 2015).

Radio is a powerful tool for development and is primary source of information for rural African farmers. Radio programmes can be combined with newer technologies like cell phones to make it more powerful than ever before. Radio can reach hundreds of millions of African farmers with life-changing information. Radio is widespread and the world's most popular mass medium, reaching billions of people each year, even in the most remote villages of Africa.

Accessible to all: As programs are broadcast in local languages that everyone can understand, radio reaches everyone — men and women, young and old — whether or not they can read or write.

Convenient to use: Radio is plentiful, portable and reaches people where they live and work, and even while they travel. It enables them to multitask, as they can tune in while they cook dinner, do housework or tend to their gardens.

Inexpensive: Radio is affordable for listeners and broadcasters, so it is a cost-effective way to share important information with a large audience.

Nimble: Radio is immediate and can deliver information quickly, which is especially useful in emergency situations.

Interactive: Radio can be combined with devices like cell phones, making it a two-way communication tool where listeners can ask questions, provide feedback and amplify their voices over the airwaves.

High adoption rate: Forty percent (40%) of farmers who learn about a new practice through a radio programme supported by Farm Radio International apply it on their farm.

Less expensive cost information dissemination: It only costs about 50 cents to provide one of these programmes to a farming family.

There is a lot of variability in the capacities of radio stations to work with extension practitioners and other agricultural development actors. Many community stations may not be able to run the programme beyond the initial project duration or funding cycle. Commercial stations may not know the appropriate language for a farming audience. It does not replace face-to-face interaction and is almost always more effective when it is a part of a larger extension and communications strategy (Rao, 2015).

e) Solutions (initiatives/ innovations)

Innovative Radio programming formats: These programmes included:

- Farmer and expert vox pops,
- Mini-dramas,
- Phone-ins,
- Community discussions and debates,
- Field interviews, and
- Quizzes.

Innovative digital solutions: Radio is continuously evolving with the emerging technologies, such as cell phones for facilitating two-way communication.

f) Uliza- based tools

Uliza (uliza means ask in Swahili) was first developed as a tool for audience polling. It has evolved into a suite of services that combine radio, cell phones and interactive voice response systems to enable listeners to communicate and exchange information with their radio station quickly, easily and free of charge.

1. Beep2Vox: Helps broadcasters capture farmers' voices without leaving the station. After leaving a free missed call, the farmer is called back and asked to share their opinion on the question.

2. Beep2Vote: Allows listeners to answer a poll question by calling a designated number and hanging up. Generally, a separate number is assigned to each potential response so the missed calls can be tallied. Broadcasters can access the poll results in real time and share them live on the air.

3. Beep4Weather: Provides critical weather forecasts on demand. Farmers beep the number and an interactive voice response system returns the call, providing weather information and agricultural tips for their region. Local broadcasters gather this information, record it and promote the system on their radio shows.

4. Beep4Inputs: Connects farmers with local suppliers of things such as seeds, vines and specially designed storage bags. After making a missed call to a designated phone number, farmers receive a call back and a recorded message provides them with access to a directory of suppliers based on their location, free of charge.

5. Beep4Tips: Allows farmers to catch up on important information that they may have missed. Broadcasters' record highlights from their show to share with listeners. Callers beep the number shared by the radio station, and an interactive voice response system returns the call to play the summary. Beep4Tips also helps farmers who tuned in but want a reminder of the key advice shared in the latest programme.

6. Uliza Answers: Questions from farmers are sent to subject matter experts who provide answers in voice recordings that make their way back to the farmers.

7. Uliza Log: Uliza Log is a web-based application used by the radio programme staff, broadcasters, knowledge partners and other project stakeholders to monitor and evaluate radio programme content and production techniques. Users can give feedback on programme quality and engage in discussions about individual episodes.

8. Uliza Live: Farm Radio's Voxbox technology provides radio hosts and studio operators with an interface for managing on-air listener interactions, including incoming and outgoing calls, conference calls and SMS. Voxbox is powered by the Raspberry Pi mini-computer and USB modems, equipped with ordinary GSM SIM cards. The application runs on any device with a web browser, including computers, smartphones and tablets. Voxbox is compatible with most studio equipment found in radio stations in sub-Saharan Africa and does not require an active internet connection.

9. Uliza Join: This opt-in registration captures information like a listener's name, location and demographic data (such as age, gender and occupation). This information is used to build a database of subscribers that helps the radio station better understand their listeners and meet their needs.

10. SMS reminders: Radio programmes use text message alerts that remind listeners about the time and focus of upcoming broadcasts.

More information can be found on the website: https://farmradio.org/uliza-services/

g) Key Observations on Radio in Extension and Advisory Services

1. The use of radio enhanced by ICT in extension delivery can contribute to an increase in farmers' knowledge and change in practices.
2. Use of radio in agricultural extension and advisory services is more effective when it complements and increases demand for better performance from existing extension services and other agricultural support services
3. Radio is more effective when programmes are developed with and for farmers: a "farmers first, farmers throughout and farmers last" approach.
4. The use of radio in extension and advisory services can

contribute to an increase in gender awareness

5. Participatory radio campaigns facilitate the implementation of demand-driven and multi-faceted extension policies
6. Skills buildings for radio personnel is a precondition of effective farm radio programmes
7. Use of ICT such as cell phone and MP3 greatly enhances effectiveness of radio programmes (Chapota, et al., 2014).

h) Lessons Learned

- To achieve the desired impact, farm radio programming should include all the relevant partners and service providers engaged in responding to farmers' needs.
- Specific steps need to be taken to ensure that women and other segments of the population are not disadvantaged and that the radio content and broadcast timing are gender-responsive.
- To ensure high quality and impact, interventions promoted in radio-aided extension must be based on proven and recommended technologies; participatory action research involving listeners is one way this can be achieved.
    - Men and women farmers as well as the radio station staff, and other stakeholders should be empowered through capacity building focusing on specific skills that enhance effective programming and use of the radio in extension and advisory services.
    - The use of multiple programming formats, and the integration of other ICTs creates richer, more interesting and more interactive radio programs. The inclusion of farmers' perspectives and voices is particularly important (Chapota, et al., 2014).

i) VOICE standards for effective farm radio programming

V – The programme **values small-scale farmers, both women and men**. It respects farmers for their hard work

producing nutritious food for their families and the markets, often in the face of major challenges. It reaches out to farmers to understand their situation, and is supports them in their farming work and their efforts to improve rural life.

O – The programme provides farmers with the **opportunity to speak and be heard** on all matters. It encourages small-scale farmers to voice their concerns, discuss them, and organize to act on them. It holds to account those with a duty to hear farmers and serve their needs.

I – The programme provides farmers with the **information** they need, when they need it. Farmers need specific information, and they need it in time to act on it.

C – The programme is **consistent and convenient**. It is broadcast at least weekly, at a time when both women and men farmers can listen.

E – The programme is **entertaining and memorable**. It appeals to the interests and tastes of a wide range of local farmers. Complicated material is presented in a way that helps farmers remember (Farm Radio International, 2020).

j) Results (outcome/ impact)

Together with partners, the project reached an estimated 20 million people across rural Africa with life-changing information last year and helped 4 million of them make positive changes.

Radio Resources

Provided 132 resources to 2 389 broadcasters across sub-Saharan Africa.

Radio Projects

Implemented 33 projects with 131 broadcasting partners.

Radio Innovations

Helped 55 radio stations interact with more than 47 488 listeners.

Broadcasters play a critical role during a crisis. Making sure they have the right support, resources and information is key so that the communities they serve get the same.

Reaching more than 1 000 radio partners in 41 countries and in at least four different languages, FARM Radio International team got to work designing resources for radio stations and broadcasters to help them as they deliver COVID-19 programming to hundreds of thousands of listeners in rural communities.

COVID-19 response by the Farm Radio International

1. Uses trusted sources of information to create awareness among the community members
2. Develops broadcasting guidelines to support other broadcasters during the emergencies and also to support communities.
3. Combats fake news about COVID-19 through community connections and moderating WhatsApp groups of the broadcasters from 12 countries.
4. Answers questions related to COVID-19 regularly.
5. Broadcasts regular programmes for the benefit of community members.

Source:

https://farmradio.org/

https://farmradio.org/our-work-on-covid-19-so-far/

https://farmradio.org/supporting-radio-journalism-during-covid-19/

References

Rao , Sheila, (2015). Using Radio in Agricultural Extension, GFRAS good practice note for extension and advisory services, NOTE 18: https://www.g-fras.org/en/download.html?download=357:ggp-note-18-using-radio-in-agricultural-extension&start=20

Chapota, Rex, Fatch, Paul and Mthinda, Catherine, (2014). The Role of Radio in Agricultural Extension and Advisory Services – Experiences and Lessons from Farm Radio Programming in Malawi –MEAS Case Study # 8, February 2014. https://publications.farmradio.org/wp-content/uploads/2017/07/MEAS-CS-Malawi-Farm-Radio-Chapota-Fatch-Mthinda-Feb-2014.pdf

Radio and COVID-19 Related resources

Answers to your frequently asked questions on COVID-19

Working remotely as a radio broadcaster

Further resources

Global Good Practices: Using Radio in Agricultural Extension

Session 3.4: YEAN Farmer Platform, Rwanda

a) e-Extension tools used:

Website, Social Media (WhatsApp, Facebook,)

b) Stakeholders (roles, capacities required and cost involved):

YEAN Farmer Platform is a platform of farmers created and hosted by Youth Engagement in Agriculture Network (YEAN) an agriculture extension social enterprise providing extension and advisory services in Rwanda. Farmers join platforms created on WhatsApp and Facebook to receive information and tips being shared by experts on those platforms. In addition, farmers discuss with each other about posted topics, questions and inputs provided to exchange knowledge and learn from their peers. This platform brings together experts from different organizations that work in agriculture and farmers. Joining the platform is free provided that you have access to the internet either on your computer or smartphone.

c) Strength, weakness, challenges and opportunities:

Leveraging the use of internet and smartphone usage among extension workers and farmers, YEAN created the Farmer Platform to facilitate farmers and extension workers get accurate and timely information in their activities at the tip of their fingers. Having a smartphone is enough to drop a question on the platform and receive hundreds of responses according to your situation. The Farmer Platform has helped extension workers and farmers get information since 2014 when it was first launched on Facebook. However, not every farmer or extension agent has access to digital tools. Most rural farmers and some frontline extension agents do not own a smartphone or access the internet but due to an increasing

government focus on a digital agenda, it is expected that the use of digital tools will increase in rural areas.

d) Solutions (initiatives/ innovations):

The Farmer Platform allows farmers to interact with extension workers and their peers, share knowledge and information without physical meeting. Through its commodity specific extension model, YEAN creates a specific platform for each commodity to allow farmers get tailored information only on that commodity and farmer join platform according to their commodity of interest. Through the Farmer Platform, farmers get information on crop production technologies, livestock production technology tips, weather information, market information, agriculture inputs and news and official agriculture updates.

e) Constraints and lessons:

The farmer platform uses internet supported tools like smartphones and computers; however, a big number of farmers do not have access to these digital tools to access the Farmer Platform. It was observed that the lack of digital tools prevented farmers from getting timely information. If farmers and proximity extension agents are powered with digital tools, they can interact and share knowledge with their peers as well as getting close contact with extension workers.

f) Results (outcome/ impact):

WhatsApp:

WhatsApp has recently gained popularity among farmers given its effectiveness in delivering the message to a wider range of people in a group. YEAN, since 2015 has explored this tool to connect farmers and now 2636 farmers meet on YEAN Farmer Platform on WhatsApp. The data of almost 2 years period of 5 general Farmers Platforms and 2 commodity specific platforms (Pig and Rabbit randomly selected) shows that 159,751 messages, 16,728 pictures, and 3,905 web-links were shared

through these 5 groups. Farmers and extension workers post messages interacting with their peers. Pictures are shared to ask help in identifying diseases and make awareness or report an incident happening in x farm or sharing good practices with others. Sometimes farmers or extension experts can share a web-link to more information outside of the group in case they want to know more about the issue. YEAN has over 2636 farmers on 27 commodity specific platforms on WhatsApp.

Facebook:

The YEAN Facebook Farmer Platform started in 2014 and has reached 18,000 farmers on Facebook in March 2021. In the interval of 6 months (July-December 2020) the platform received 713 posts (questions asked), 5058 comments (responses provided). Averagely the posts to this Farmer platform reach 1000 people. This platform has gained popularity due to its monitoring and sector specific content. Anyone can publish a post but it has to be approved by one of the admins to avoid inappropriate content.

Source:

https://blog.gfar.net/2016/12/08/whatsapp-for-agriculture-digital-farming-highlights-the-need-for-digital-agriculture-extension/

https://impakter.com/informed-farmers-successful-farmers-eradicating-hunger-youth-led-agriculture-extension-rwanda-2/

https://web.facebook.com/groups/farmerplatform

Session 3.5: UPTAKE Project, Tanzania

Upscaling Technologies in Agriculture through Knowledge and Extension (UPTAKE) project

a) e-Extension tool:

Short Messaging Service (SMS)

Stakeholders (roles, capacities required, and cost involved)

b) Stakeholders:

Smallholder farmers, extension practitioners, research institutes, maize seed companies, government, Esoko, CABI, USAID, AGRA, FRI.

c) Beneficiaries:

Farming communities in the Southern Highlands and Eastern Zones.

The project aims to reach at least 1 000 000 smallholder farmers (with 3 ha or less) and facilitate the adoption of good practices by 150 000 farmers. At least 40% of the targeted farmers are women. Inclusion is promoted by deliberately seeking out women during the registration process. Enumerators visit women's groups to enlist their members, and addition to holding public awareness campaigns and public meetings. Enumeration is also organized at times and places where women are available. During registration in public meetings, women are encouraged to sign up and their partners are reassured about their registration to receive agricultural information by SMS.

d) Strength, weakness, challenges and opportunities

The project applied a collaborative approach. All value chain stakeholders were brought together to agree on relevant techniques to be promoted and appropriate messages for

dissemination were developed together. This meant that the information disseminated has a stamp of approval from critical stakeholders, which helps the farmers feel confident about the information they received.

UPTAKE provides a platform to increase awareness and adoption of improved maize varieties, developed under the Scaling Seeds Technologies Partnership (SSTP) for the southern highlands of Tanzania. SSTP worked with private and public sector partners to transform agriculture in Tanzania by promoting technologies to improve production. Maize is one of SSTP's target crops, because of its important contribution to livelihoods of both subsistence and commercial farmers. SSTP, through its partnership with research institutions and maize seed companies, made sure that high yielding maize varieties were bred, commercially bulked and released to make sure they were available on the market. A key aspect of CABI's[1] role included enhancing links between the research institution and private companies to promote four seed varieties.

e) Solutions (initiatives/ innovations)

UPTAKE introduced an SMS service through a private mobile valued added services provider (mVAS) Esoko, to provide farmers with quality information to:

- Enhance maize production,
- Reduce farmer exposure to risks, and
- Minimize post-harvest losses.

Farmers received information about improved maize varieties adapted to their geographical areas. They also learnt about the benefits of using improved seeds, how to identify genuine seeds and where to buy them. Good agricultural practices, covering the entire cropping cycle, were disseminated to ensure the use of improved seeds was put in the proper context.

1 https://www.cabi.org

f) Constraints and lessons

The foundation of success is continuous learning and improvement of the campaign strategy, collecting and integrating lessons from:

- Farmers,
- Extension practitioners and
- The entire maize value chain.

Some lessons relate to the type of information that farmers find constructive and easy to implement. Other lessons relate to how to better engage women to participate in the campaign. For example, the enumeration process suggests women are more likely to be registered into the database when enumeration is done through a platform for women or community development group meetings rather than public meetings, which were initially the main forum used to raise awareness and register users. Therefore, enumeration efforts are now more targeted for more effective representation of women. Deep dive studies are planned to improve understanding of women's use of cell phones and their responses to the SMS service.

g) Lessons learned

- Farmer profiling activities were initially targeted at registration of the head of the household, but it is still unclear how the information is shared within the household and this needs further investigation.
- The effort to bring more female farmers on board should take into account low literacy levels and women's decision-making roles in farming.
- Efforts to target women must pay more attention to their social roles, exemplified by their inability to participate in activities like farmer profiling or feedback sessions at short notice.
- Subject matter specialists must ensure that
  - Messages contain locally tested/agreed upon technologies according to the technology brief,
  - Messages are farmer friendly and understandable by the

target audience,
    - Bias is not introduced, for example by input suppliers promoting their products, and
    - A compromise is achieved between the number of SMSs the scientists would like to send, and what is practical and cost-effective.
- SMS delivery to the farmer needs to be separated according to agroecological zones. In its current approach, the project focuses more on administrative structures as the basis for dissemination, but villages within a district may be in different agroecological zones.
- Backstopping visits should be organized and collaboration with extension practitioners should be increased to guide on cropping schedules.

h) Results (outcome/ impact)

UPTAKE's principal aim is to complement extension services. Tanzania has a thinly spread extension system with limited government support, weak links to research and a limited capacity amongst extension workers. 2012 data on extension shows that, for a population of 6 million farming families in Tanzania, there were 10 891 extension officers, of whom 6 925 were crop-focused, while 3 966 were livestock-focused (Tanzania Country Profile 2015 – ASHC, CABI). It is estimated that only ten percent of the farming families are reached by extension services. The SMS model introduced by the project is a novel one in regard to reaching thousands of farmers in a timely manner with up-to-date information. It is resource effective compared to demonstration plots and farmer field schools.

Source

http://www.fao.org/3/I9191EN/i9191en.pdf

Gakuo, Stephanie and Karanja, Lucy (2018). e-Agriculture Promising Practice UPTAKE: driving adoption of agri-technologies through information and communication technologies (ICT)- SMS

campaign drives adoption of improved seed varieties in Tanzania, http://www.fao.org/3/I9142EN/i9142en.pdf

Related References

https://africasoilhealth.cabi.org/about-ashc/ashc/uptake/

https://www.cabi.org/Uploads/CABI/about-us/Scientists%20output/WP10_mobile_landscapes.pdf

Session 3.6: Khushaal Zamindar - A mobile agriculture service by Telenor Pakistan

a) e-Extension tool:

Mobile phone-based value-added service

b) Purpose:

Aims to improve yields and save farmers from disaster

Khushaal Zamindar (Prosperous Landlord) is an agricultural value-added service (Agri VAS) launched by Telenor Pakistan in December 2015 to offer a three-layered value proposition to farmers:

- Improve yields,
- Save them from disaster, and
- Encourage greater social recognition.

c) Stakeholders:

The Telenor Pakistan and the GSMA through the mNutrition Initiative, which is funded by UK aid from the UK government (DFID), Planet Beyond, VAS aggregator/tech provider, CABI Pakistan and ILRI as content partners, and Abacus to house the call centre and farmers.

d) Solutions (initiatives/ innovations)

Users dial 7272 (numbers chosen because they sound the same as the Urdu words meaning "work together") to gain access to various content categories, including

- Wheat,
- Sugarcane,
- Carrots,
- Cattle,
- Alfalfa,

- Buffalo, and
- Maize.

Content is delivered in the form of short conversations between members of a local farming family. Daily outbound dialling (OBD) and SMSs including weather forecasts and agricultural and livestock advisory, are also available through automated interactive voice response (IVR).

The operator uses OBD marketing to explain the service and show users how to sign up. OBD marketing messages target potential users based on Telenor's own business intelligence (BI). One-click registration assigns the user an automated profile (using language preference and location data extracted from internal Telenor BI). The user profile can be changed through the IVR menu or by speaking to the customer support team.

The IVR channel is also a gateway to weekly live shows, where local experts answer farmers' questions live on air. The service is free of charge for the end user

e) Key insights from the field

- Farmers are sociable and regularly discuss agricultural issues.
- Middlemen play a key role in the ecosystem as investors.
- Farmers expect a high level of understanding of their land, especially soil and water analysis and, based on analysis, they request advice through mobile.

f) Impact

Of farmers who used the service for a minimum of six months:

- 77% reported at least one on-farm change
- 42% reported changes to planting practices
- 20% reported changes to post-harvest and storage, and
- 53% of them reported increased income as a result.

Source

GSMA (2017). Khushaal Zamindar- A mobile agriculture service by Telenor Pakistan, https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/07/Khushaal-Zamindar-A-mobile-agriculture-service-by-Telenor-Pakistan.pdf

Further resources

Global Good Practices: mExtension – Mobile Phones for Agricultural Advisory Services.

Session 3.7: Social Media- WhatsApp, Kerala, India

a) e-Extension tool:

WhatsApp

b) Purpose:

Using WhatsApp to link the vegetable producers to markets in Kerala

The Kerala State Department of Agriculture Development and Farmers' Welfare (DADFW) started a programme for cultivating vegetables and fruits in all homesteads and other available cultivable areas in public and private institutions in January 2020.

c) Stakeholders (roles, capacities required and cost involved)

The Kerala State Department of Agriculture Development and Farmers' Welfare (DADFW) is a facilitating and financial support agency for farmers who use the cluster approach to aggregate at least five hectares of land for vegetable cultivation. NGOs also provide financial assistance according to the project guidelines to increase vegetable production in their institutional premises.

d) Market facility:

DADFW created marketing facilities for the farmers to sell their vegetables at eco-shops, cluster markets, agro-service centres and farmers' markets.

COVID-19: Experiences

Vegetable production coincided with the national lockdown. Groups of farmers and NGOs cultivating vegetables were unable to reach markets to sell their produce. The government strengthened all the markets that were aided by the government and started farmers' retail outlets in all Krishi Bhavans (the office of the agricultural department at village level) with minimum arrangements so that farmers could sell their produce. The existing markets were strengthened and 38 new farmers' retail outlets (FRO) were set up as Jeevani Sanjeevani Markets in the Krishi Bhavan premises. Even though all the markets started functioning, product movement did not happen as expected due to the lockdown**.**

Solutions (initiatives/ innovations)

To facilitate marketing by connecting the producers and sellers, the agricultural officers created WhatsApp groups with

- Farmers, Buyers, Agricultural officers, and Officers from the marketing department.

Farmers started to post the availability of the vegetables with photographs and videos and buyers negotiated a price. As the group, members were in different levels such as village to district level. Surplus vegetables could be sold in the other districts.

Impact

Forming groups in all the blocks enhanced farmers' access to buyers and markets. The majority of farmers those who cultivated vegetables through the cluster approach posted details of their surplus, including images of the produce, and their contact number, and these were shared with all other groups to generate orders from residential associations and traders. The trader or consumer can directly contact the producer and buy produce on a mutually agreeable price after considering the base price fixed for that day. This price is based on formal data available through eco-shops, agro-service centres, and so on. Data is not available for sales that happen directly between producers and traders and housing societies. Department officials facilitated while performing all their other routine work. The district level monitoring committee can monitor the product surplus and movement within the district as

well as in and outside the district as required, as they have access to all the groups as well as the state level monitoring committee.

Source

Dileepkumar, T (2020), Exploiting the Potential of WhatsApp to Help Farmers Market During COVID- COVID-19 & EAS Insights from Practitioners -Field Notes 6 (May 2020), Agricultural Extension South Asia (AESA), https://www.aesanetwork.org/wp-content/uploads/2020/05/AESA-COVID-19-FN-6.pdf

Further resources

Global Good Practices: Social Media for Agricultural Extension and advisory Services

Session 3.9: Social Media: YouTube, India

a) e-Extension tool:

WhatsApp, Telegram and YouTube

Kalnadai Nanban (Livestock friend) Telegram Group

Kalnadai Nanban started as a WhatsApp group for livestock farmers in 2016. This group grew into 12 WhatsApp groups by 2019. Since it was a very difficult task to manage 12 separate groups, a Telegram group was started, and all the members were shifted from WhatsApp to Telegram in 2020. The main aim of the group is to share information related to first aid and management techniques in livestock farming. Livestock owners in the group posted their questions as text, voice or video messages and answers were given by the experts in the group.

b) Audience (Stakeholders)

The audience (147 352 members) includes:

- Livestock owners, varying from small farmers to large farmers
- Entrepreneurs willing to start a new venture,
- Veterinary graduates,
- Veterinary assistant surgeons,
- Scientists, and
- The general public.

The majority (85%) of the viewers were male (125 250), and the remaining 22 102 (15%) were female. The majority of the viewers (87%) were between the ages of 18-44, of which 41,2% were in the age group of 25-34, which is a clear indicator that younger people were keen on gaining livestock farming information through this forum. Most of the viewers were from different regions but they had a common identity through language (Tamil). Most of them were from Tamil Nadu. The other states were Kerala and Andhra

Pradesh. The other countries were the United Arab Emirates, Saudi Arabia, Sri Lanka, Malaysia, Singapore, Kuwait, USA and UK, amongst others.

Livestock Friend (Kalnadai Nanban) JTK YouTube channel – 127.6 K subscribers worldwide

The YouTube channel was started in March 2018 to document the frequently asked questions repeated in the WhatsApp/Telegram groups and share the answers to these questions through short videos. Videos on general management practices were also uploaded. These videos are produced and uploaded every week for the benefit of the group members. This group has more than 127 650 members worldwide.

c) Editing of videos

Videos are made using smart phones and no extra accessories were used to record videos. The videos are spontaneous and feature a talk captured in a single take. After the videos are completed, pictures are added to the video in appropriate places to keep it lively. Sometimes short video clips pertaining to the topic are added to give better understanding to viewers. The videos are edited using two programs, Kinemaster and Power Director. Editing the video mostly involves:

- Boosting the video's volume,
- Adding a watermark logo/ channel name,
- Inserting pictures/video clips, and
- Revising the video thoroughly for final output.

Editing takes more time than recording the video. YouTube Creator Studio is an effective tool to edit content, but it was only used to update end screens, cards, and thumbnails for the video. Adding subtitles was easy, but lack of time restricted prevented subtitles from being added to all the uploaded videos

Every comment received on the videos was addressed on a daily basis. Regularly replying to all the comments received on the site added credibility to our efforts, and this led us a to make

videos specifically based on the questions that came from the comments. On average, 20 - 30 comments were received every day. A few of the members communicated through email. The number of comments varied from video to video – ranging from 45 to 1028. Many would ask for the contact number and Telegram link. Most of the comments contained questions pertaining to the problems faced by the farmers, and thereafter came comments of appreciation. Every comment is acknowledged by clicking on the like and heart buttons

YouTube's advisory service started with the aim of sharing videos – initially from our WhatsApp group – but later when the channel became popular with the audience, the videos began to be shared since viewers liked the content. The main objective was to convey the message in a way the audience could understand easily. At first it was really difficult as the channel did not have many views or subscribers.

The video that changed the fate of the channel was titled "Mastitis and how to control it". The number of views increased for the channel as it pulled in many viewers. Another video that attracted many viewers was "Which breed of cow to select if you want to start a new farm". From this point onwards, the channel's recognition increased among the audience. A dairy farmer, Mr Raj Kumar from Puducherry, used to call the creators every weekend to find out what video the were going to upload next. He also gave lots of input on how to title of the video, and what important tags should be added to a video. The habit of documenting each and every case when the creators was a practitioner helped him to make effective videos. He did not use any feature made available by YouTube in the beginning. After reaching a milestone of 100 000 subscribers and receiving a silver button Creator Award from YouTube, he was greatly encouraged to upload more videos. The creators planned to upload videos in a series, but they could not due to lack of time. Instead, they followed their earlier plan of uploading videos related to farmers'

queries. Recently the videos were updated with all the features available on YouTube, such as community posts, cards, end screens, and these have further increased viewership.

d) Common features in YouTube

- A playlist is similar to the playlist on a music platform where videos are grouped together based on their similarity.
- Community posts is a section in the channel where short video clips, pictures and polls can be shared to involve the audience in channel activities.
- Cards are interactive templates that can be used anywhere in the video to provide an additional link to the content discussed in the video.
- An end screen is a YouTube feature that appears in the last 5 - 20 seconds of a video. It is used to promote videos, playlists, external websites, and help viewers subscribe to the channel.
- Analytics are auto generated, and they provide a clear picture of the channel and its contents. Using this resource, creators identify which video is liked the most, what viewing duration gets the most viewer attention, and the details of cards, end screens and playlists.

e) Challenges

Getting responses and viewership: Initially the videos did not get much response. The YouTube Creator Studio was very helpful as it provided advice on how channel views could be improved. The title, thumbnail and description made a huge impact in the viewership of any video. This particular activity required a survey on how the audience for searched the content. If the title, thumbnail and description are made based on the viewers' needs, the video gains the desired recognition.

Creating farmers' preferred content: Most of the videos that had good viewership were not viewed by the farmers. The title and thumbnail of a video played an important role in determining the number of viewers for a particular video. The general

perception about farmers is that they preferred to see videos which would benefit them financially –for example, videos such as "How to increase milk production".

Specific need-based content: Although there were several videos uploaded on general problems and farmers' probable needs, the audience was more interested in the specific information they were searching for and not interested in looking at other videos on the channel. One illustration of this is of a farmer who searched for content on mastitis, and once he found that he did not look at other playlists on the channel unless he had a specific need.

Recording and editing and uploading takes time: Editing videos required more time compared to recording videos. A lack of time for the editor limited the number of videos edited per week to one video.

Regular responding and interacting with viewers: Many videos that the viewers required were already uploaded on the site, but the viewers preferred not to search for them, and rather wanted a link to the video directly from the comment section. Responding to the comments on a daily basis was very time consuming.

Increasing active users' demands relevant and current of audience interest: Even though there were over 100 000 subscribers to the channel, the average views per video was only 4000, which indicated that all who had subscribed to the channel did not regularly view its videos. Randomly 4000 viewers were active and viewed the videos uploaded on a weekly basis. The views increased if the topic was of interest to the audience.

Varied and farmer specific needs: Identifying the needs of the viewers was also difficult, as everyone has their own problems. As the viewers came from various parts of the world, the creators could understand the different constraints they faced, but regional actions were difficult to address.

Adding subtitles in another language: Adding subtitles to the uploaded videos was another challenge, which was time consuming. Livestock owners and veterinary graduates from other states wanted subtitles for all the videos to understand them better.

Adding search and user-friendly elements: Though the audience knew how to search for content on YouTube, they do not understand the nuances of using a channel. The Creator Studio helps creators by placing cards and end screens to promote other videos from the channel and to connect videos in the channel.

f) Benefit and Impact

The biggest advantage of YouTube is that if a video is liked, it will be shared by more viewers with their friends and peers. This helps to spread it to many people and the content will eventually get shared to a much bigger audience.

It benefits all the viewers who searched for answers to their specific queries from YouTube. Their feedback, through comments, provided clarity about the help they received from YouTube. This was especially true for the entrepreneurs who wanted to venture into this business.

The impact was worldwide, as many viewers from other countries regularly saw videos from the channel. One example is of a farmer living in London who owns a dairy farm in Sri Lanka and had all his doubts cleared through the channel's videos.

g) Impact

For many new entrepreneurs the knowledge shared through YouTube motivated them to start a farm and some have already started their farms. Many members have commented, and personally contacted the creators, to ask them to continue this method of educating them, as they have learnt a lot from this platform

The overall impact of the channel can be gauged from the number of people subscribed to the channel. Over two years and three months, the channel gained 147 352 subscribers, which clearly indicates that there is a huge need for extension advisory services through YouTube.

The impact, particularly during a disaster, clearly shows that it is very helpful to livestock owners. The network offers advice on what to do in crisis situations, as well as what to do to prevent problems during a crisis. Examples of these crises include the Gaja Cyclone in Nagappattinam, Thanjavur, Thiruvarur, Pudukottai, Karaikal, Trichy and Ramanathapuram districts of Tamil Nadu, Southern India and also during the COVID-19 lockdown.

h) Sustainability and Scaling up

The sustainability of the channel is based on viewership. The channel must stay active and upload videos regularly. Innovative ways of connecting the viewers will generate the rapport required to sustain the channel. Lectures will bore the audience, so knowledge needs to be updated from time to time and presented in more effective ways to sustain this platform.

New ideas, shown in a presentable way, will enrich the contents uploaded onto the channel. On average, the channel gains 143 206 views, 6,3 to 9,4 thousand hours of watch time, and gained 3,6 to 6,1 thousand subscribers per month. The views, watch time, and subscribers vary based on the videos uploaded.

So far, the channel has addressed only cattle owners. Uploading content on different livestock will improve the channel and satisfy the needs of the audience in the future.

Analysis of the Channel

132 videos have been uploaded to date on a weekly basis, of which 107 were uploaded videos and 25 were live streamed videos. All the videos are sorted into 17 playlists. Only ten videos

have more than 100 000 views – ranging from 115 000 to 360 000. Out of this, seven videos have more than 150 000 views. There are 16 videos that have more than 25 thousand views and 14 videos that have more than 50 thousand views. 36 videos have more than 10 thousand views. Only 34,7% of channel viewers are subscribed, and the rest watched without subscribing to the channel.

i) Lessons Learned

It was not easy to address comments from the general public, especially for awareness videos posted on the channel, as they have a lot of questions. This platform helps the creators to raise awareness and share their knowledge with the audience, and also helps them to update their professional knowledge.

The number of views per video is very low compared to the number of subscribers to the channel, which clearly indicates that people were only interested in videos that answered their queries. They were not interested in looking at the channel for other videos unless they felt a need. Subscription does not mean that every video will be watched.

Extension and advisory services should take up this platform to transfer knowledge to a larger audience. Veterinarians, institutions, NGOs and extension agencies from all the states need to take up this initiative in their own language to provide wider coverage. It has to be carried out in as many languages as possible. If this initiative starts after conducting a need-based analysis, it will be effective. There are many channels providing information on livestock rearing that promote business-based content and not technical-based content, like promoting a breed that has no marketing potential.

To be an effective platform, it must be operated by specialized extension personnel who can communicate messages effectively on a daily basis by replying to audience comments and queries.

Integration is necessary, but it requires a lot of time, dedication and commitment from the producer's side to run the YouTube channel effectively. If a university needs a YouTube channel, they need

- A good quality video camera,
- A technician to record the videos,
- An expert who is good at communicating relevant information,
- Good video editing software,
- A respectable collection of livestock-related pictures, and
- A full time professional to handle this channel on a daily basis.

An extension expert can be appointed exclusively to undertake these activities.

Most of the time, the videos rich in content go unnoticed due to a top-down approach. The content should be based on the existing need of the audience. Understanding the audience and their needs play a major role in increasing channel viewership.

The Veterinary Universities/ Colleges can use their extension outreach centres to identify the needs of the audience and then corresponding videos can be prepared with the help of experts in the veterinary colleges.

Agricultural research and developmental organisations can have a greater impact by using YouTube for the extension and advisory services. They can document all their frontline demonstrations and on-farm trials as short videos.

Do's

- Upload videos based on the need of the audience
- Use supporting images and videos
- Make simple and effective content that is easy to understand
- Regularly answer their comments and queries
- Provide validated and practical information
- Provide innovative delivery of content
- Use hood description/title/thumbnail about the video

Don't

- Supply false information/hopes
- Include too much theoretical content
- Use fancy titles that do not match the content

COVID-19: Experiences

To tackle the situation faced by livestock farmers during COVID-19, a small group discussion was carried out on 03 April 2020 in the Telegram group to determine the constraints faced by participants. It was then planned that the constraints could be addressed by creating awareness and providing clarity on the existing situation. A question was posted on the group in the form of a video to ask the group members what constraints they were experiencing during the lockdown period, and whether they had any suggestions about how to mitigate them. The creators received different constraints to practice livestock from the members.

Offering advice Live-in Programme through YouTube (URL: https://www.youtube.com/c/kalnadainanbanjtk)

After collecting facts about the COVID-19 lockdown from the group members, the creators started providing advice through live streams through the YouTube channel. A total of 82, 137, and 93 participants joined the programmes on 5, 6 and 14 April 2020 respectively. The question-and-answer session on 4 April 2020 addressed the constraints faced during the lockdown. General queries from the livestock owners were also addressed. A half hour session was planned. On 14 April 2020, out of the 153+ questions, around 50+ questions were answered per session.

Live- in Programme links:

6. Programme 1: https://youtu.be/7Z4Kxx4MkOQ
7. Programme 2: https://youtu.be/XqoE1Y21Cos
8. Programme 3: https://youtu.be/Nf0ZG4lw7Mw

During the COVID-19 lockdown, the following problems were faced by the livestock farmers:

1. Transporting milk from farm to dairy cooperative societies (DCS), disposal or sale of milk. Many farmers lost some of their regular customers did not know what to do with the excess milk they had as a result.
2. The lack of regular veterinary services availability.
3. A scarcity of concentrate feed and an increase in the price of the available feed.

Innovative solutions through the digital media

To help the livestock farmers to use excess milk by value addition. A video on value addition to liquid milk was made with the help of relevant experts and was circulated among the group to help farmers gain knowledge on value addition.

YouTube links to the video: Value addition during crisis time

- Khoa preparation: https://youtu.be/4UcoS0dJ_xE
- Small Scale Milk Processing: https://youtu.be/knsqW8DMPBc
- Make Paneer in Small Scale: https://youtu.be/bBToqR5IGAQ

4. Considering COVID-19, online video sessions on special hygienic practices were streamed to livestock owners and others who handle milk selling, distribution and value addition.
5. Due to the lack of regular veterinary services at their doorstep, farmers were given video sessions on animal care and management to avoid conditions that cause diseases.
6. Feeding suggestions were given based on the questions. In general, we could clear the doubts on how to feed the livestock during the crisis period.

Apart from the livestock related issues, farmers were given general information on preventive measures to be carried out to reduce the spread of COVID-19, precautions during the travel and how to get the e-pass, and so on. In addition, they were made aware of the present crisis and their responsibility as a citizen during the crisis. Through live video sessions, farmers were advised to maintain social distance whenever they come out for grazing, care of animals, or sale of produce.

Impact

The advice provided through the YouTube and Telegram groups was effective enough to clear the doubts of livestock farmers. The first

aid advice was of great help to livestock owners, although it was a routine practice of the group. Advice during COVID-19 crisis situation was much more useful as they did not have many other means to seek professional advice. Through these social media groups identifying the appropriate stakeholders and sharing their contact details with the group, members could get access to better services. Through these social media groups, young veterinarian were identified who could help livestock farmers during this crisis by attending to emergency cases.

Lessons

Livestock owners are interested in YouTube Live programmes and sharing advice through social media. YouTube is playing a huge role during the COVID-19 lockdown.

The livestock owners are satisfied with the timely advisory services provided to them through social media. They learnt how to get an e-pass for transporting livestock produce and understand the importance of hygienic management practices.

Due to the YouTube sessions, the adoption of feeding practices recommended during the interactions and several farmers reported that they modified the feeding pattern based on the available feed and fodder.

Farmers realised the importance of saving the animal during this crisis more than sustaining milk production.

Many farmers received moral support while participating in the live programme. Over 1000 subscribers and 250+ group members joined this social network after the YouTube initiative. The social media tools can help livestock farmers to communicate beyond geographic borders and seek advice.

Source

Tamizhkumaran J and Saravanan Raj (2020). YouTube – An Effective Tool for Extension and Advisory Services, Good Practices 34: June 2020, Agricultural Extension South Asia (AESA), https://www.aesanetwork.org/youtube-an-effective-tool-for-extension-and-advisory-services/

Tamizhkumaran J and Saravanan Raj (2020). Using Social Media to Advise Livestock Farmers in India During the Covid-19 Lockdown, COVID-19 & EAS Insights from Practitioners, Field Notes 3 (April 2020), Agricultural Extension South Asia (AESA), https://www.aesanetwork.org/wp-content/uploads/2020/04/AESA-COVID-19-FIELD-NOTE-3.pdf

Further resources

Global Good Practices: Social Media for Agricultural Extension and advisory Services

https://www.g-fras.org/en/good-practice-notes/social-media-new-generation-tools-for-agricultural-extension.html

Session 3.9: Network for Information on Climate Exchange (NICE), India

a) e-Extension tool:

SMS and web-based Knowledge management platform

Under the project Climate Change Adaptation in Rural Areas of India (CCA RAI), the Network for Information on Climate Exchange (NICE) is a joint pilot initiative of:

- Deutsche Gesellschaftfür Internationale Zusammenarbeit GmbH (GIZ),
- National Institute of Agricultural Extension Management,
- Hyderabad (MANAGE) and
- DHAN Foundation
- NICE is being implemented under the bilateral cooperation of
- Ministry of Environment, Forest and Climate Change (MoEFCC),
- The Government of India, and
- GIZ.

b) Purpose:

To integrate climate adaptation and mitigation measures into the national and state development planning. This pilot aims to ensure effective and timely delivery of agro-advisories to farmers and support the implementation of the NICE platform in identified villages of the two states of Telangana and Tamil Nadu, India.

c) Stakeholders:

- The GIZ - Providing financial support and guidance,
- National Institute of Agricultural Extension Management (MANAGE), providing agro-advice facilitation and support,
- DHAN Foundation - Implementing the project among 10 000 farmers in the six project districts in the states of Tamil Nadu and Telangana.

d) Innovations/ Initiatives

Awareness: The community resource persons (CRPs) are creating awareness among farmers about new technologies through information dissemination through tablet PCs, focus group discussions, display boards, voice messages and other ICT tools in the following areas:

- Agriculture,
- Climate change adaptation techniques,
- Crop issues,
- Drought resistant activities,
- Amongst others

Accessibility: The CRPs are also involved in increasing the access of the farmers to resources. The CRPs connect farmers to

- Department officials,
- MANAGE experts,
- KVK officials,
- Block development officers,
- Agriculture experts, and
- Resource farmers

Farmers are connected through

- Video conference,
- WhatsApp,
- Camps,
- Facilitating exposure visits
- Amongst others.

This increases the accessibility of farmers. Farmers receive

- Department subsidy benefits,
- Scheme benefits,
- Input supply,
- Marketing access,
- And so on.

Advancement: The CRPs aim to bring advancement to the livelihood of the farmers by increasing productivity. DHAN CRPs

monitor and follow-up of the awareness created, and accessibility facilitated.

In addition to disseminating information through the NICE platform, DHAN Foundation used different ICT and other conventional tools to disseminate agro-advisory to the farmers. The following are the different tools being used by DHAN to take the agro-advisory to the farmers:

Queries & answers: Each community resource person (CRP) or extension professional has a separate login and access to the NICE Platform. CRPs visit the farmers field directly and take three photographs of the crop issues and upload them to the NICE platform. When the query is answered, the CRP take the answer directly to the farmer or send them the answers through WhatsApp or by phone.

Display boards: Display boards are placed in selected villages. CRPs paste printouts of common crop issues and answers on the boards. CRPs encourage farmers to refer to the display board for information.

Voice messages: With the information from NICE platform, the DHAN central team sends the farmers 30-second-long voice messages about the crops twice a week.

WhatsApp groups: WhatsApp groups were formed among the farmers and most of the questions and answers are sent through WhatsApp. WhatsApp is used as a knowledge sharing tool. Experts are included in the group to answer the farmer's queries.

Video / audio conference: The video conferences are facilitated among the farmers, resource persons, officials from the Department of Agriculture, Horticulture and Animal Husbandry. The community knowledge domains are being used effectively.

Agriculture and veterinary camps: In addition to technology driven services, conventional methods of organising agriculture

and veterinary camps are also being carried out in the selected villages.

Focus group discussions: Organising focus group discussions on topics every month is a regular role of the CRPs. The CRPs organise focus group discussions on climate change adaptation practices and share the same information on a large scale.

e) Impact:

Among the farmers surveyed in Tamil Nadu, India 40% reported that they were able to increase the yield of their crop marginally due to advisories provided through the NICE platform. Yield increase was mostly reported by farmers who adopted silt application. Since the intervention has completed one crop cycle at the time of assessment, it has resulted in a marginal impact on the yield of crops. For a small number of respondents (4%), the intervention resulted in a significant increase in yield. 48% of the farmers remarked that they were able to marginally increase their income due to interventions under the NICE project, while a remarkable percentage of respondents (46%) reported no change in income. One of the major activities promoted in the region was application of silt in the farms. The activity is expected to improve the soil health in the long-term, where 22% of the farmers surveyed from Tamil Nadu reported an improvement in soil health based on their judgement and experience.

Reference:

Impact Evaluation of NICE (Network for Information on Climate Exchange) Project (November, 2019), MANAGE-GIZ.

Session 3.10: Online Surveys: ICT4RAS interest group of GFRAS-Global Survey on Social Media

In 2015, an online survey using Google Forms titled "Social media for agricultural extension and advisory services: A global survey" was conducted for the ICT4RAS interest group of GFRAS globally among the extension practitioners and professionals. There were 229 respondents from 69 countries. To increase visibility and participation, it was promoted

- Through social media platforms like Facebook and Twitter,
- On web portals of Young Professionals for Agricultural Development (YPARD), eAgriculture, GFRAS and AESA; and
- Email links were sent to some respondents to take the survey.

Google Forms is a free online survey tool used to create web surveys, tests, or web input forms. It allows the researcher to create a simple and user-friendly web survey form, linked to a spreadsheet for storing the data. The researcher can track the progress of the survey and close it when data collection is complete.

Some **advantages** of the online survey conducted using Google Forms are:

- A global audience was reached in very little time and at no cost
- Data visualization was easier
- Accessible through smartphones
- Page breaks make the sections sequential and breaks monotony

Drawbacks:

- Limited audience – as it is accessible only to those with internet access;
- Non-responses;
- Dropping out because of compulsory questions of a sensitive nature;
- Limitations in designing the questionnaire.

A few Do's and Don'ts when using Google Forms as a web survey tool

- Visualization of output before preparation of a schedule
- Precise, clear and concise questions
- Choice of online data collection tools should be based on the type of questions to be posed
- Page breaks should be incorporated instead of long scrolling surveys (branching logic)
- Sequence of questions should be logical
- Mention tentative time required to take the survey
- Leading questions should be avoided
- If options are non-exhaustive, an "other" option should be incorporated
- Long questions need to be avoided
- Privacy protection measures need special attention
- Communication of survey results to respondents is necessary

Session 3.11: 2020 Global Survey on Social Media for AEAS amid COVID 19 (to be updated by Saravanan)

Online Survey report:

Suchiradipta Bhattacharjee and Saravanan Raj (2016). Social Media: Shaping the Future of Agricultural Extension and Advisory Services, GFRAS interest group on ICT4RAS discussion paper, GFRAS: Lindau, Switzerland.

https://www.g-fras.org/en/knowledge/gfras-publications.html?download=414:social-media-shaping-the-future-of-agricultural-extension-and-advisory-services

Reference:

Saravanan Raj and Suchiradipta Bhattacharjee, (2020). Online Data Collection, In: P Sethuraman Sivakumar, B S Sontakki, Rasheed Sulaiman V, Saravanan R and Nimisha Mittal (Eds.) Manual on Good Practices in Extension Research and Evaluation, Agricultural Extension south Asia. https://www.aesanetwork.org/wp-content/uploads/2018/07/6.pdf

Session 3.12: Other e-Extension Initiatives for further understanding

Farmer Query System mPower Social Enterprises Ltd. Private Sector, Bangladesh

a) e-Extension tools used:

Website, SMS, voice message, phone calls

b) Stakeholders:

Agricultural experts are providing demand-driven solution to farmers.

c) Strength, weakness, challenges and opportunities:

Agricultural information service has traditionally been provided to farmers for free. As a result, farmers do not expect to have to pay for agricultural advice. In an effort to commercialize FQS and to make the service sustainable, they are looking to create a business model where they can cross-subsidize services to farmers from revenue earned elsewhere.

d) Solutions (initiatives/ innovations):

The agriculture expert reviews all the information on a web dashboard and sends the recommendations and solutions to the infomediaries through a variety of digital channels including SMS, voice message, or phone calls, which is passed on to the farmers within 3 - 6 hours. Because of the solution, professional experts providing the service are no longer limited by geography and can reach many more farmers on a given day than in traditional circumstances.

e) Constraints and lessons:

Rural farmers face a lot of challenges in their crop production and they usually seek advice from extension practitioners (including government and private companies), and input retailers. Restricted movement due to COVID 19 means these farmers cannot access their usual knowledge sources. However, getting timely and specific information for their crop problems is crucial, otherwise, farmers are likely to make choices that will result in higher costs and even produce less than the expected amount of yield.

f) Results (outcome/ impact):

The FQS service is accessible from anywhere in Bangladesh. We are planning to replicate the service for Nepal. mPower is already working with the International Potato Center to make the service accessible from the farmers under their DDBIO project and can receive solutions through an app.

Source:

https://www.mpower-social.com / https://www.mpower-social.com/agriculture.php

Session 3.13: RegoPantes, 8villages Private Sector, Indonesia

a) e-Extension tools used:

Smartphones to provide a marketplace platform for farmers and buyers, encouraging farmers to learn more, upgrade their services beyond planting and be more involved in the value chain.

b) Stakeholders:

Indonesian farmers are the beneficiaries. RegoPantes (meaning fair price) was developed in 2018. It is a marketplace platform proven to provide reasonable prices for both rural and urban communities and can be used by various business lines to market business products without worrying about the involvement of intermediaries.

c) Strength, weakness, challenges and opportunities:

The project is very sustainable as it has already been running for three years. Farmers receive better income and buyers receive fresh products directly from farmers.

d) Solutions (initiatives/ innovations):

Shopping for vegetables and fruit online is no longer a lifestyle choice, but has become a necessity. RegoPantes.com, created by 8villages, continues to be a marketplace for farmers and consumers and keep farmers involved in the value chain to reduce dependence on intermediaries.

e) Constraints and lessons:

The low demand from culinary businesses has decreased farmers' incomes significantly, so the alternative is to sell to end consumers. A digital market connects farmers directly to end consumers so that in this difficult time, farmers can still make an

income. They started the project by connecting farmers in Central Java to customers in Jakarta, and now they have supply coming from farmers in Java and Bali and connect them to consumers in Jakarta, Bogor, Depok, Tangerang, and Bekasi. They also successfully connect farmers to businesses.

f) Results (outcome/ impact):

Before COVID-19, farmers depended buses to send their products from outside West Java. Since the buses stopped operating, the connection is cut. Together with Coordinating Ministry for Economic Affairs, 8villages is leveraging the state-owned train company to deliver products, and this is not just solving the logistical problem, it is also reducing logistic cost by up to 60%.

Source:

http://8villages.com & http://regopantes.com

Session 3.14: AgroRuqsat "Information and Account Centre" JSC Government, Kazakhstan

a) e-Extension tools used:

Web technology and integration with government databases are the main foundations of the work of the AgroRuqsat electronic pass issuing service. The system is based on the Qoldau.kz digital platform, where about 200 thousand users (over 90%) of agricultural enterprises and farms of Kazakhstan are located. The innovation speeds up the process of issuing passes and the process of transport and farmers crossing the boundaries of quarantine zones. To apply for a pass, the user must register on the website (www.qoldau.kz) and login into their personal account, where they identify themself with a digital identification key. The electronic pass of the citizen and the vehicle are both equipped with an individual QR codes. The pass can be printed or photographed on a phone so that it is easier to show identification outside the checkpoints.

b) Stakeholders:

Farmers affected by the COVID-19 outbreak.

c) Strength, weakness, challenges and opportunities:

During the quarantine outbreak in Kazakhstan, a state of emergency was declared, and the government decided to prohibit movement across the borders of all villages, districts and regions. Farmers, whose farm fields can be located in several districts and regions, encountered difficulties in sowing and field work due to difficulties in obtaining paper passes, which put Kazakhstan's food security at risk. Therefore it was necessary to implement a solution as quickly as possible so that the sowing would take place at the right time.

d) Solutions (initiatives/ innovations):

AgroRuqsat is a free online service that addresses the issue of providing transportation permits for farmers and their suppliers in quarantine zones by remotely receiving applications for electronic passes, processing these applications, and maintaining a register of electronic passes. To obtain an electronic pass, the user does not need to complete a lengthy process. The pass is free and valid for the entire period of emergency and quarantine. Within a few minutes to one business day, the applicant receives an electronic document granting the right to cross the roadblocks to proceed to their land plots. The transparency of the service helped solve the problem of fake passes and minimize the risks of the spreading the virus. Data is automatically uploaded to the Sergek system installed at checkpoints and was made available to all police officers. In addition, upon receipt of a pass, an automatic check is carried out on state databases, which excludes the receipt of passes by those who are not involved in spring field work and ensures compliance with quarantine measures. During the first week, all regions joined the service.

e) Constraints and lessons:

One of the main difficulties in the implementation of the project was a tight timing. The sudden outbreak of the virus required an accelerated decision-making and implementation of the service. For three days, the specialists of the Information and Accounting Center did a lot of work, including negotiations and methodological, legal, technical support and integration with several databases. In case of any errors or system failures, defects must be handled as quickly as possible so as not to interrupt the service, and allow farmers to complete their field work on time. In addition, the digitization level of the agricultural sector in some regions of the country is much lower.

f) Results (outcome/ impact):

The service automatically accepts and processes applications, checks against databases, but is not fully automated. The speed of issuing passes depends on how quickly employees of local executive bodies work through applications.

Source:

http://iuc.kz & https://ruqsat.qoldau.kz/ru/information

Session 3.15: Zimba Women Zimba Mart, Uganda

a) e-Extension tools used:

E-commerce digital tools.

b) Stakeholders (roles, capacities required, and cost involved):

Zimba Mart focuses specifically on women. There was no marketplace, physical or online, that is specifically targeted at women merchants, even though women form the largest percentage of small-scale suppliers of home, agricultural produce and apparel.

c) Strength, weakness, challenges and opportunities:

They have moved most of women's training online to enable the on-boarded SMEs learn how e-commerce can enable their business growth. They have encouraged them to update their social and business pages to take advantage of the increased traffic to their sites due from the Zimba Mart. Zimba Mart provides more visibility as they have customers from not only Kampala (where the main office is located), Eastern and Western Uganda but also from as far as the US, customers are placing orders.

d) Solutions (initiatives/ innovations):

In general, and during lock down, SMEs on-boarded on the Zimba Mart platform have benefited from adopting an e-commerce approach in a number of ways, including

- Lower transaction costs;
- Reduced advertising and promotion costs;
- Rapid communication between buyers and sellers;
- The ability to reach new customers;

- Shorter supply chains; and
- Eliminating physical limitations.

e) Constraints and lessons:

Zimba Women have introduced the SME eCommerce and Digitization Resilience Programme through the Zimba Mart ecommerce platform to respond to this challenge by:

- Identifying women-owned or women-led SMEs that have fundamentally sound value propositions but have been severely impacted by COVID-19;
- Providing dedicated COVID-19 impact analysis and contingency planning to these SMEs through offering business training and digital literacy training through online platforms;
- On-boarding SMEs onto the women-owned, women-tailored e-commerce platform to both adjust to the market dynamics created by COVID-19 lock down actions and begin to take advantage of the market opportunities offered by e-commerce in Sub-Saharan Africa; and
- Provide bespoke follow-on support to the women owners/ leaders to enable them to protect their enterprises and take full advantage of e-commerce opportunities. Support is also provided remotely when necessary.

f) Results (outcome/ impact):

Zimba Women is currently working with over 10 000 women-owned businesses and women in STEM in Uganda, Kenya, Nigeria, South Africa and other African countries. These women have received business training and digital literacy training through our technology platforms.

Source:

https://www.zimbamart.com & https://www.zimbawomen.org

Session 3.16: E-KOKARI Interactive Voice Response (IVR) platform, Niger

a) e-Extension tools used:

Interactive voice response (IVR) platform for agriculture, livestock, market information to farmers, breeders and buyers,

b) Stakeholders (roles, capacities required, and cost involved):

Several actors have been involved in the process of developing E-KOKARI and its testing. NOVATECH is a small start-up in Niger that developed the E-KOKARI platform with the financial support of the World Bank, the Ministry of Agriculture and the Niger ICT High Commissary. The Ministry provided the official content used for the platform. CIPMEN Incubator provided support for NOVATECHs business development and its search for investors and partners.

c) Strength, weakness, challenges and opportunities:

E-KOKARI is the first platform of this kind developed in Niger. The E-KOKARI platform uses of any type of cell phone (smartphone or feature phone) and a voice system that makes information available in local languages to farmers who may not be able to read or speak French. The local languages Hausa and Zarma are generally spoken languages and few documents exist in those languages. Users can now easily use their phones to access voice recorded information in their own language, which will facilitate the use of improved agricultural techniques. Farmers trust the information provided by the platform, as it was certified and validated by the Ministry of Agriculture in Niger.

d) Solutions (initiatives/ innovations):

E-KOKARI is an IVR platform developed in Niger that enables farmers, breeders and buyers to access information, advice, warnings and market prices in the field of agriculture and livestock. When a user dials a number from their phone, they can access a voice menu in the main local languages (French, Hausa and Zarma) of the country, which guides them according to their needs. A prototype was developed and tested over a period of ten years.

e) Constraints and lessons:

The challenges faced are mostly related to training farmers to use the platform. Since this is a new way of accessing information for most users, enough time must be allowed for capacity development. Most cell phone users only use phones to make calls. To make sure that the capacity development aspect of the implementation of E-KOKARI runs smoothly, collaboration with the Ministry is foreseen. Technically, the use of cell phones does not seem to be a constraint anymore for the farmers and the breeders, as the use of cell phones in Niger has increased tremendously, even in rural areas. The rural population is able to overcome challenges related to the absence of electricity to charge the phones by using solar panels. NOVATECH faces challenges due to not having sufficient equipment to scale up the prototype in collaboration with the mobile operators in Niger.

Developing a prototype of an information platform for farmers and breeders, is about listening to the target group in order to understand their problems and their needs. Farmers were interviewed in the field and discussion groups were organized. There was also a close collaboration with the specialists in the department of Agricultural Vulgarization of the Ministry of Agriculture. Interviews and discussions were repeated until sufficient information was available to develop an appropriate service for the farmers.

f) Results (outcome/ impact):

E-KOKARI aims to become socially, economically and environmentally sustainable. The platform meets a real need for access information to improve production and agro-business. The business model is based on the cost of phone calls, meaning that phone calls will be billed at a very affordable price for farmers, breeders and buyers to make the platform more sustainable. The cost of a call is around 0,09 USD. The farmers pay per call. To roll out the project in the field, discussions are ongoing with the Ministry of Agriculture, the West Agriculture Production Project Niger (WAPP-Niger), the World Bank Climate Smart Agriculture Project in Niger, the CIPMEN Incubator and the National Agency of Information Society

Source:

http://www.fao.org/3/BU743EN/bu743en.pdf https://www.do4africa.org/en/projects/smart-economy/8354/e-kokari-4/

Concluding remarks

In this study unit, you have learnt how e-extension has been used in different situations in different countries around the world. Numerous examples were provided to give an insight into how e-extension is helping communities in different countries in the world. Given that e-extension in Rwanda is still at the beginning stage, less is documented about it. We have profiled different e-extension tools and programs from other countries to inspire and help Rwanda extension enterprises and extension workers learn from those and mainstream the use of digital tools in agriculture extension. You have also learnt how e-extension helped in reaching remote places and sharing information during the pandemic period like COVID-19.


Complete the summative assessment in your workbook.

Study unit 4: Concluding thoughts

Study unit outcomes

After completing this concluding unit of study, you should be able to:

- Describe the kind of mindset required for success;
- Explain the importance of frequent practice;
- Outline ways of successfully using a community of practice; and
- Understand the importance of being brave

Study unit overview

This study unit will help you understand how e-extension is best applied in real life and the best-fit functions and conditions required.

Study unit introduction

While it is good to know the theory of using e-extension, as an extension professional, you need to be able to apply it in real life. It takes practice to improve, and the right mindset to effectively use these new tools.

Session 4.1: Best-fit functions and conditions

It is easy to be distracted or overwhelmed by the wide range of e-extension tools available, so it is important to focus on the farmers in your target audience, and determine what is best going to meet their needs. Because of their diversity in age, gender, education, experience and so on, a single approach will not be effective for everyone.

Figure 2: Farmers planting beans (photo credit: CNFA Hinga Weze)

A well thought out, through extension strategy should guide all your activities. It is important to focus on the objectives you want to achieve with each of your extension activities, and the best approach is to use multiple approaches. Even if you use the latest e-extension tool, you need to think of your target audience and what other approaches you can use. It can be useful to combine a high-tech tool with some low-tech tools to best meet the diverse needs of your audience. Similarly, strive for a mix of synchronous and asynchronous tools to deliver a range of effective extension activities. It is important to use tools that farmers are familiar with or if you introduce a new tool, take time to train them how it works.

Complete Activity 4.1 in your workbook.

Session 4.2: Steps for e-extension success

Mindset

An effective extension agent needs to have the right mindset, be concerned about what is happening at the moment, and also look to the future to see what might be coming. As new tools and technologies appear in the marketplace, assess their effectiveness and fit within your extension programs. Keep experimenting with different tools and approaches and see what works in your situation.

Practice

Learning most things takes time and practice. If you want to master a new e-extension tool, practice using it in a safe environment. For example, if you want to master webinars, use the program for a short time each day and practice sharing a presentation, opening a poll, and responding to chat messages. You might initially do this on your own, and then seek some friends or colleagues who can join your practice meetings.

Within a short period of time, you might have the competence and confidence to run a small webinar with some farmers. Do this every few days with different groups of farmers so you continue to improve your competence and confidence. Soon you will be able to run larger and larger meetings with confidence.

Community of practice

Find or create a community of practice (either physical or online) with like-minded professionals to exchange ideas and continue improving your knowledge and skills. The e-extension tool you have been focusing on will release updates with new features, so there will always be new things to be learning. Having a support group like this is highly beneficial as you are not only learning from your experience, but that of the others in the group.

Figure 4: Farmers during a study visit (photo credit: ICT Hinga Weze)

Be brave

Above all, you need to be brave and try new approaches and techniques. Sometimes they may not work, but other times they will be highly successful. If you do not try, you will never know.

Figure 5: Extension worker training farmers using e-extension tools (CNFA Hinga Weze)

Complete Activity 4.2 in your workbook.

Concluding remarks

In this study unit you have learnt how e-extension has been used in different situation in different countries around the world. It is important to work on your confidence in using a given tool you want to introduce in your activities. You also learnt different steps needed to make your e-extension program a success. Try e-extension tools in your activities and change the way you can engage with your target audience.


Complete the summative assessment in your workbook.


Complete the post-assessment in your workbook.

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