

CONSERVATION AGRICULTURE OVER THE AIRWAVES: MIKAYI FM COMMUNITY RADIO STATION IN SIAYA COUNTY, KENYA

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Abstract

Due to changing climate and advancements in technology, rural farmers require a wide range of information on new climate-smart farming practices, including conservation agriculture. Research indicates that even though scientists have created a number of farming methods and technologies, their uptake is still low because of a lack of knowledge or awareness, which is made worse by a communication gap between researchers and rural farmers. Therefore, there is need to link rural farmers in Kenya with the relevant agricultural information on conservation agriculture through community Radio. The paper analysed content of agricultural programs aired in Mikayi Fm community radio station on conservation agriculture in Siaya County, Kenya. The paper was anchored on participatory communication theory. The theory stresses on discussion and the active participation of all parties in decision-making. Communities are empowered to recognise their own needs and work together to generate answers as a result of the change from a one-way, top-down paradigm of information delivery to a collaborative, two-way process where varied opinions are shared and acknowledged. Therefore, Qualitative research approach was used to generate and analysed data. Mikayi FM community radio station was sampled for this paper, 6 farmers for focus group discussions and 4 key informants for key informant interviews that included radio presenter, ward agricultural officer and organization championing conservation agriculture were also sampled purposively. Content analysis was conducted on agricultural programs that was aired in the Mikayi Fm in the month of March, April and May and the month of October, November and December of the year 2023 to collect data on agricultural radio program content on conservation agriculture. Data that was generated was analysed through thematic analysis. The study found out that Mikayi radio station has two agricultural programs in a week. The study also found out that Mikayi Fm community radio station was airing content on conservation agriculture that is; content on minimum tillage, cover cropping and crop rotation. The study also established that there was no collaboration between the county agricultural extension officers and the radio station as the officers were not willing to be in the studio to discuss conservation agriculture with the farmers. Therefore, Mikayi Fm depends on the private extension officers as their experts to discuss conservation agriculture. The radio agricultural program was participatory as there was a two-way communication during the question-and-answer segment and the presenter also involved the community in creating of the program. The paper therefore recommends that there is need for partnership between community radio station with ward agricultural officers, experts on conservation agriculture and farmers to come up with a program design specifically for conservation agriculture.

Keywords: Community radio, conservation agriculture, Farmers, Adoption

Introduction

Due to its extensive use and growing ownership among farmers, radio is one of the most popular mediums for reaching rural audiences throughout Africa (Hudson et al., 2017). By overcoming obstacles like distance and inadequate road infrastructure, they thereby provide the chance to reach farmers who are frequently dispersed, rural, and underserved (Baumüller, 2018). Farmers can use radio as a source of information since it is informative, entertaining, companionable, enlightening, inexpensive, vernacular-based, and can influence changes in behaviour, attitude, and skill (Mtega, 2018). Because of these characteristics, radio is the most ancient information technology that is readily available to owners, friends, family, and neighbours. It now functions as a two-way platform for communication thanks to the inclusion of additional communication tools, enhancing current agricultural information systems that prioritise stakeholder participation (Tamako et al., 2022).

In rural places where traditional communication channels may be few, community radio has become an essential tool for information dissemination. Community radio is essential to rural development and the advancement of climate-smart agricultural technologies and practices like conservation agriculture, by delivering localised information and encouraging community involvement (Mtega, 2021; Ankuyiet al, 2023). Additionally, community radio has a vital role in promoting conservation agriculture, which supports sustainable agricultural practices, and filling the knowledge vacuum in rural regions (Yusriadi, 2023). In this instance, Community Radio provides a forum for listeners to voice their thoughts and participate in the show (Demuyakor, 2021). It is true that listeners' lives are greatly impacted by community radio. Important information, particularly on agricultural methods like conservation

agriculture, can be found by rural communities through community radio (Keefer & Khemani, 2014).

The need for agricultural information has increased as a result of both technology advancement and shifting climate conditions. Conservation agriculture (CA), which is founded on the interconnected principles of minimal mechanical soil disturbance, permanent soil cover with living or dead plant material, and crop diversification through rotation or intercropping, is one example of the new farming techniques that farmers require a wide range of information on and other climate smart agricultural technologies (FAO, 2023). When used effectively, CA helps achieve SDG number one, which is to ensure that poverty in all of its manifestations is eradicated worldwide. This is because CA innovations are specifically made to help smallholders become more productive with fewer inputs and to lessen the negative effects of climate change by increasing resilience and adaptation. This supports rural businesses. Additionally, because crop rotation and diversification will result in better nutrition (e.g., fruits and vegetables), CA supports smallholder farmers in increasing productivity without requiring significant technological inputs, which helps to achieve SDG number two: to end hunger, achieve food security, improve nutrition, and promote sustainable agriculture. This lessens their reliance on loans, is environmentally beneficial, and increases risk aversion, ecosystem functionality, and resilience (ACT & ANAFE 2018).

In Kenya, agricultural extension has been a means of sharing agricultural knowledge for many years. The Agriculture Sector Development Strategy (ASDS) has further emphasised the significance of agricultural extension as a vital tool required to convert subsistence farming into a contemporary, commercial agriculture in order to increase household food security, boost income, and

lessen poverty (GoK, 2010). Low coverage, however, is the result of years of underfunding extension services. This is mostly because to a decrease in manpower and assistance as a result of public hiring freezes and lower operating and maintenance budgets. For example, it is difficult to reach many farmers because the public frontline extension worker to farmer ratio is approximately 1:1000 instead of the desired level of 1:400 (Kenya Agricultural Sector Extension Policy (KASEP), 2023). As a result, extension officers need to use other media, like community radio, to reach farmers.

Community Radio programs integrate scientific information into the social and cultural context, knowledge, and interests of the intended audience by covering a wide range of topics. Antwi-Boateng et al. (2023) noted that radio in the frequency modulation mode was rated as the most reliable, trusted, easy, convenient, and low-cost source of information in that fosters agency in rural communities on development issues related to agriculture, education, and health. Community Radio works collaboratively with affiliated stations as partners in extension services through the design and broadcast of related programs that offer cost-effective mechanisms of reaching large numbers of audiences in different places simultaneously without information distortion. Its distinctive characteristics set it apart from commercial radio, including local language broadcasts, interactive programming, and an emphasis on community issues (Mutaqi et al., 2023).

Although several studies have been carried on the use of radio in communicating agricultural information, most of the studies focus on general agricultural activities and how farmers use the radio to increase their productivity, very few studies focus on communication of climate smart technologies like conservation agriculture. According to a study by Maritim (2023), one of the long-term agricultural-based technologies

created and developed to lead sustainable agricultural development by tackling food supply and climatic problems is climate smart agriculture. In spite of this, the target farmers have not embraced the technologies sufficiently. Poor communication methods, such as language barriers and the technical jargon scientists used to speak to farmers, were the main factors limiting their acceptance.

With Community Radio as a special and useful tool, the dissemination of knowledge and skills has grown in popularity in the effort to empower communities. According to Chapman et al. (2003), the rise of community radio stations is a result of both the advancement of information technologies and the paradigm shift in development towards a more participatory approach to knowledge and information sharing. According to Kumar (2004), radio is a tool that is important for social and economic development as well as a channel for participatory communication.

In this regard, radio offers a collection of participatory communication strategies that aid in agricultural extension initiatives by speaking to listeners and farmers directly in their native tongues. Additionally, it encourages community voices to be heard and two-way communication. Walters et al. (2011) evaluated the influence of community radio in Indonesia using the Most Significant Change (MSC) process and came to the conclusion that successful radio initiatives can significantly affect a community's way of life.

Thus, it is necessary to use community radio to connect Kenyan rural farmers with pertinent agricultural information about conservation agriculture. The paper therefore, analysed content of the programs aired by community radio on conservation agriculture to the audience in Siaya County, Kenya. The paper findings will be significant for better value of the program's content, designing good diversity and format on

agricultural program that meets requirements of the listeners on conservation agriculture. The results will also direct the creation of interventions, such as laws and rules encouraging the implementation of improved programs aimed at educating County residents about agriculture at the local level via community radio. The results of this study will contribute to a better understanding and appreciation of the role that community radio plays in Siaya County's conservation agricultural communication. The study Objective; To analyse content of the agricultural radio program aired by Mikayi Fm community radio on conservation agriculture to the audience.

Research methodology

Qualitative research approach was used to collect qualitative data. The paper used a case study design to explore the content of Mikayi Fm community radio in communicating conservation agriculture in Siaya County. The study was conducted in Siaya County. Siaya County is among the Lake Basin counties that has the advantageous environmental features of arable land, good soil, and consistent water supply from rain as well as several rivers and lakes. Siaya County has large amounts of land but still record low productivity. The lack of irrigated acreage, the collapse of agricultural extension services system, and the continued use of poor agricultural practices all lead to low yields. In addition, although there have been efforts to integrate value addition into the sector particularly for cash crops, the region continues to be a net importer of finished products.

The study employed purposive sampling to sample community radio station, farmers and key informants. According to Communication Authority of Kenya (2025), in Siaya County, there are 6 licensed community radio stations; Kababa radio, Dada radio, Lwasi radio, Tembea community broadcast services, Radio Pacho and

Mikayi radio. Mikayi Radio station was sampled based on its audience and also the number of agricultural programs as compared to other stations as it was having two programs in a week.

According to Agricultural Census, (2019) there are 197,783 farming households in Siaya County. Through Mikayi Fm listeners club, 6 farmers from Mikayi Fm listening club were sampled for a focus group discussion randomly from the list that was provided by the listener club chairperson. In Mikayi radio, 2 agricultural radio presenters were also sampled purposively. The study also sampled one ward agricultural officer where the radio station is located and one expert from an organization that promotes conservation agriculture in Siaya County. For content analysis, through purposive sampling, the study sampled agricultural programs aired between the month of March, April and May (MAM) and October, November and December (OND) in 2023.

Data was collected through content analysis of agricultural programs aired at Mikayi Fm in the month of March, April and May (MAM) and October, November and December (OND) in the year 2023. Interview guide was also to collect data from two agricultural radio presenter at Mikayi Fm, an expert who works with organization that champions conservation agriculture and agricultural officer within the ward where community radio is located.

The interviews were conducted to; two agricultural program presenters from Mikayi radio station, ward agricultural officer and one organization that champions conservation agriculture in Siaya County. The focus group discussion consisted six farmers from Mikayi radio listeners club.

For the statements made by journalist, farmers and experts in this section; SJ to refer to Siaya County Journalist and they were two at Mikayi radio, represented with SJ1 and SJ2, SFG -1-6 to represent farmers as per the way they were

assigned during the focus group discussion, SE to represent Siaya County conservation agriculture Expert then finally SWO to represent Siaya County Ward Agricultural Officer.

Triangulation was used for the validity and reliable for the study. Triangulation is when another assessment and cross-check are conducted to improve credibility. Triangulation is a method in which various sources, diverse perspectives, theories, many investigators, and various techniques are used to assess and cross-check the research plan, process, and interpretation (Denzin et al., 2011). The researcher compared data received from different sources which will include an in-depth interview, focus group discussion and content analysis to ensure the validity of the research is achieved.

Making sense of qualitative data from interviews and open-ended questions is part of the analysis process (Creswell, 2009). Thematic analysis was used to analyse qualitative data from in-depth interviews with key informants and from the focus group discussion guides. According to Jwan and Ong'ondo (2011), theme analysis is one of the most often used data analysis approaches in qualitative data. It is a technique for detecting, analysing, and reporting patterns (themes) that emerge from data (Braun & Clarke, 2006). Thematic analysis grouped and detailed data based on the research goal and research questions. Data from content analysis was also analysed quantitatively.

Cooper and Schindler (2008) define ethics as the 'norms or standards of behavior that guide moral choices about our behavior and our relationships with others'. During the research, the researcher ensured he gained acceptance and consent from the farmers, journalists, agricultural officers, and non-government officers and also Mikayi fm Radio station. The researcher ensured a regular review of what the participants have given consent to is carried out; this is referred to as a

procedure of consent, which enables the researcher to renegotiate features of the consent form derived from the changing description of the inquiry (Munhall, 2001). Once access was granted, the researcher kept to the aims of the research project by sharing and agreeing with the participant(s).

Results and discussions

In Siaya County, Radio Mikayi is a community radio based in Siaya Town, Alego Usonga Sub-County. According to findings, Mikayi Radio station has two radio presenters airing agricultural programs and they have two agricultural programs in a week. One is an expert practising conservation agriculture and is not trained journalist while the other presenter is a trained journalist but not practising hands on agriculture though writes stories on conservation agriculture. The researcher was also able to conduct a focus group discussion with farmers who were from Mikayi Community radio listening club from. An Expert from WHH (*Welthungerhilfe*), an international organization that implements projects on conservation agriculture in Siaya County was also interviewed for the study and ward agricultural officers.

Content analysis was also conducted on the program scripts that were aired at Mikayi Fm in Siaya County on the month of MAM (March, April and May) and for the month OND (October, November and December) in 2024. A total of 48 scripts were analysed during the study from the Mikayi Fm that is from the two programs aired every week.

From the interviews, conservation agriculture expert confirmed that he has never visited Mikayi Fm community radio station in Siaya County but has visited Commercial radio stations that is Radio Ramogi and Radio Nam Lolwe.

I have been in two radio stations that is Radio Ramogi and Radio Nam Lolwe to discuss conservation agriculture. (SE)

For the ward agricultural officer, she also confirmed that she has never been to community radio nor vernacular radio station to discuss agriculture but has been to Citizen radio to discuss about young farmers club therefore the discussion was based on in case she was invited to the radio station what could he discuss in terms of conservation agriculture as she has never been into radio station to discuss conservation agriculture.

Yes, I relate with them, because once in a while I have been invited to radio station to talk on certain topics and at that time. I have been invited once to radio citizen since I started working as extension officer. To talk about young farmers club. I have never taken part in vernacular radio station; I have never been invited. (SWO)

Based on content analysis of programs aired at Mikayi Fm, focus group discussion with farmers, interview with radio presenters, ward agricultural officers and an expert in conservation agricultural, the following are themes that emerged; familiarity with agricultural programs, Minimum tillage content, crop rotation and cover cropping.

Familiarity with agricultural programs

The degree of information and comprehension people have about various agricultural projects, policies, and practices is referred to as their familiarity with agricultural programs. This can cover a broad range of topics, such as government regulations, agricultural education, extension services, and even the application of technology in farming.

From an interview with the journalist from Mikayi Radio station who host agricultural shows, it was clear from their responses that the two of them

did not study agriculture at college level but only did it at Kenya Certificate of Secondary Education level as agriculture subject up to form four. While for the second presenter who airs the agricultural program at Mikayi Fm though not qualified as journalist said that for him, he practices conservation agriculture and he is an expert from the trainings from workshops and seminars that were offered by organizations championing conservation agriculture in Siaya County.

As a presenter, I did agriculture in high school and I have been having a lot of interest in agriculture. But I did not study it as a course though I have been attending agricultural trainings, workshop. Though am not an expert. (SJ1)

I practice agriculture, I do hands on because it feeds me as I do a lot of field work and am passionate about it. If I talk about sweet potato I do and if I talk about conservation agriculture, I practice it. But if it's something I don't practice, then I invite an expert but prior to that, I must also research and have some knowledge about the topic before the program with the expert. (SJ2).

On familiarity with conservation agriculture, the presenters' responses indicated that they are familiar with conservation agriculture as one of them said that he always reports stories on conservation agriculture. While the second journalist confirms that he does hands on conservation agriculture practices.

I do practice conservation agriculture and what I do tell farmers is that if they don't practice conservation agriculture, then we don't have a future in agriculture. Is a kind of friendly farming practice that ensure we produce food without destroying our environment. (SJ2)

I have done stories on conservation agriculture even if you visit my Facebook page, you will get stories that I did concerning conservation agriculture. I have been able to discuss with farmers though agriculture by inviting farmers who does conservation agriculture. (SJ1)

According to other scholars, for journalists who want to work in the field, agricultural journalism offers promising opportunities. To succeed in this sector, though, one must put in a lot of effort and go above and beyond. To be successful, a generalist reporter who wants to focus on this field must also undergo rigorous training. According to Whitaker and Dyer (2002), journalists who focus on agricultural reporting should undergo specialised training because of the intricate nature of agriculture. To flourish in this specialised sector, you must take this first step. Because man must first survive before he can efficiently mobilise resources to build or rent a house and clothe himself, food holds a prominent place in the hierarchy of what communication academics have referred to as "the basic needs of man." Agriculture reporting must therefore receive the attention it deserves. Therefore, Mikayi radio presenters are familiar with conservation agricultural content as they have undergone training and also practising hands on conservation agriculture.

Content of the programs aired by community radio on conservation agriculture to the audience

One alternative farming system that has been emphasised is conservation agriculture (CA), which reduces greenhouse gas emissions, enhances soil and water conservation, promotes productive and profitable agriculture, and helps soils sequester carbon (FAO 2023). Three agronomic pillars (or principles) form the basis of CA: (i) crop diversification; (ii) permanent soil organic cover; and (iii) minimal mechanical soil

disturbance (FAO 2023). Therefore, the paper wanted to find out the content of agricultural programs in Mikayi Fm in regards to conservation agriculture. Some of the themes that emerged included; minimum tillage, crop rotation and cover cropping.

Minimum tillage content

From content analysis, the study found out that out of the 48 scripts that were analysed, 13 of the agricultural scripts that contained information on conservation agriculture has information on minimum tillage where farmers were encouraged to reduce the number of times they till their land by using rippers. Rippers are used in minimum tillage by loosening soil only along the planting line or strip, rather than plowing the entire field. In an interview with radio presenters in Mikayi Fm, it was also confirmed that part of the conversation on conservation agriculture include minimum tillage. The same was also confirmed by the ward agricultural officer, expert on conservation agriculture and farmer during focus group discussion. According to the Siaya County expert on conservation agriculture, minimum tillage was discussed in the radio studio to educate farmers on how they can reduce the cost of land preparation to cut the cost of production. The same was also echoed by one of the journalists at Mikayi Fm. While for the ward agricultural officer who was interviewed, minimum tillage discussion on radio might not be helpful to farmers in Siaya County as their farms are not conducive for practicing minimum tillage so he doesn't support discussing this in radio station. Though she acknowledges it as a good practice that can help famers.

Under this we discover that farmers incur a lot of losses during land preparation, so we discussed how the farmer could cut cost through minimum tillage, they weed using less cost. We also looked at integrated soil fertility management.

Around 80% of farmers records low yield according to study that was conducted by us WHH. This prompted us to prepare different topics on how we can improve soil fertility through conservation soil. (SE)

Minimum tillage is good aspect that can help our farmers but the challenges is most of our farms might not be conducive for minim tillage because the farm has trees or not well prepared. So, it becomes a challenge to talk about it for farmers to adopt. (SWO)

Crop rotation

The researcher was also interested to find out if the content of the program contains on crop rotation as one of the principles of conservation agriculture. The results from content analysis shows that crop rotation formed part of agricultural scripts at Mikayi Fm. The same results were also found out during interviews with Mikayi radio journalists, expert on conservation agriculture, ward agricultural officer and focus group discussion with farmers. According to the agricultural expert, during his talk show at the radio, he discusses on the importance of crop rotation to the soil and also to the farmer. The radio journalist at Mikayi Fm also confirmed that they do bring programs that encourage farmers to grow different crops at different seasons such as rotating deep-rooted crops with shallow rooted crops to ensure maximum utilization of nutrients in the soil.

From the expert, he also explained that in his discussion in the radio, he also discussed on crop rotation as being beneficial in pest and diseases control. According to the Ward agricultural officer who was interviewed, she confirmed that the people of Siaya are adopting conservation agriculture.

While from the farmers focus group discussion, one of them confirmed that he learned crop

diversification from the radio and he has been practicing it as horticultural farmer. While another one also confirms that he learned from the radio that striga weed can be controlled through crop rotation and since then he has been rotating maize with sweet potatoes that has helped him a lot to control striga weed.

I practice cover crop as horticulture farmer, I was once taught from radio station that if you plant tomatoes then you should not plant capsicum next because they are in the same family instead you can plant another crop maybe beans which is from a different family. (SFG1)

Rotate maize with potatoes because of the striga weed. (SFG2).

In terms of crop rotation, we were advising farmers not to repeat cereals in farms where they planted cereals in last season. Deep rooted crops should be followed with shallow rooted crops. Rotating crops affected with same pest. This will help to increase yield, like shallow rooted crops will utilize nutrients at the shallow part and if you rotate with deep rooted, then the deep rooted will be able to utilize nutrients at the deep and this will help to increase yield. (SE)

Crop rotation is picking up and we are teaching them on beans and maize that majority are adopting. (SWO).

Cover cropping

In Siaya Couty, the researcher also wanted to know if cover cropping forms part of radio discussion at the radio station. From the content analysis, most of the programs that were analysed that contain conservation agricultural has got content on cover cropping where farmers were taught on different cover crops. From the journalist at Mikayi radio station they do discuss issues on content analysis during their discussion

on conservation agriculture. The same was mentioned during an interview with expert from Siaya County who mentioned that during his discussion in the radio, they promoted cover crops such as Mucuna to farmers, how to plant different cover crops in terms of spacing and also value addition of most the cover crops. He also discussed the importance of cover crops in controlling soil erosion and soil conservation and its benefits.

The same was mentioned by the ward agricultural officer who mentioned that when he was in radio station to talk about cover cropping, she advised the farmers on how to plant cover crops and also directed them where to get cover crops such as Mucuna.

While from Mikayi radio presenter, during his program on conservation agriculture, he taught farmers on mulching as one of the key factors in cover cropping.

Mulching can also assist in suppressing the weeds for example maize stalks spread in the farm after harvesting. (SJ2)

I can say cover cropping; farmers are adopting and we need to teach them how to grow them and what type of cover crops they are supposed to grow. Also to tell them where to get the cover crops like Mucuna. We are also telling them to try cover crops such as beans though for beans, planting on acre of land might be expensive for a farmer. (SWO)

The cover crops that we are currently promoting and we discussed included Canavalia and Mucuna and actually they are under the category of permanent cover crops. Some seasonal cover crops that we also discussed included the beans family like the beans, soybeans or the leguminous family. We prefer if a farmer decided to do a short-term cover crop, then he should do

a relay of cover cropping in that after planting beans, when beans are flowering then the farmer can introduce Mucuna so that when the farmer harvest beans, then Mucuna will remain in the field. We also discussed planting of the cover cropping; the spacing of the plants and the importance of the cover crops. Also, the value addition that can generate income to the farmer as well as through the sale of cover crops seeds. Maximum soil cover will help in reducing soil erosion because this happens when the land is bare. The covered soil will help in maintaining the soil moisture content that will help soil micro-organisms to increase the soil fertility. (SE)

Discussion

A journalist covering agricultural programs must be well-versed in a number of agricultural-related topics. This entails being familiar with farming methods, pertinent agricultural laws and initiatives, and having the capacity to explain complicated concepts to a wide range of people. In Mikayi Community radio station, the two journalists hosting agricultural programs are familiar with conservation agriculture and therefore they are able to communicate conservation agricultural principles to farmers. The Food and Agriculture Organisation (FAO) (2023) states that agricultural communication is now regarded as a highly respected area of reporting in both developed and developing countries. For instance, in Asia, according to statistics, there are reportedly more than 250 journalists in India that focus on agricultural communication. This indicates that presenting farm news to a rural agricultural audience is no longer the only aspect of agricultural reporting in the twenty-first century. Donors from all across the world are now interested in this global issue. Therefore, there is need to capacity build more

journalist on agricultural content to ensure we have more journalists in the field of agriculture.

Promoting the adoption of conservation agriculture (CA) methods requires effective communication. To promote broad adoption, this entails focussing on the advantages of CA, using a variety of communication platforms, and customising messages for particular stakeholder groups. Through knowledge dissemination and community interaction, Mikayi community radio was essential in the advancement of conservation agriculture in Siaya County. It was effective tool for teaching farmers about conservation agriculture practices like crop rotation, cover crops, and no-till farming. Mikayi Community radio effectively reached farmers and promote the adoption of sustainable agriculture techniques by speaking local languages and catering to particular local requirements.

According to the interviews conducted and content analysis of the programs, one of the alternative farming systems that was emphasised on was conservation agriculture (CA), which reduces greenhouse gas emissions, enhances soil and water conservation, promotes productive and profitable agriculture, and helps soils sequester carbon (FAO 2023). As a climate-smart strategy for boosting crop yields and bolstering farmers' climate change resilience, conservation agriculture (CA) has gained popularity in Siaya County as a result of programs aired by Mikayi Community radio station.

According to ACT & ANAFE (2018), if Conservation agriculture is properly communicated, it contributes to SDG's goal number one to ensure we end poverty in all its forms everywhere as CA addresses the needs of smallholders to achieve more productivity with less inputs and CA innovations are particularly designed to reduce the negative effects of climate change by building up resilience and adaptation. This builds up rural enterprises. It also

contributes to SDG's goal number two that is to end hunger, achieve food security and improved nutrition and promote sustainable agriculture as Crop diversification and rotation will lead to Improved nutrition (e.g. fruits and vegetables), CA is primarily geared to support smallholder farmers to raise productivity without the need for heavy technological inputs. This lessens their reliance on loans, is environmentally beneficial, and increases risk aversion, ecosystem functionality, and resilience. In Mikayi community radio station, it was found out that they air programs containing topics on minimum tillage, crop rotation and cover cropping.

Minimum tillage was discussed in the radio studio to educate farmers on how they can reduce the cost of land preparation to cut the cost of production. Conservation agricultural practices such as tilling are expensive especially within the context of rising fuel and labor costs. Experiences in Ghana and Kenya have shown a decrease of labor costs by 40 percent input by using no tillage methods (FAO, 2023). Though ward agricultural officer who was interviewed believe that minimum tillage discussion on radio might not be helpful to farmers in Siaya County as their farms are not conducive for practicing minimum tillage so she doesn't support discussing this in radio station. Though she acknowledges it as a good practice that can help famers.

Crop rotation also formed part of discussion at Mikayi Fm. From scripts that were analysed, 6 out of 48 had information on crop rotation. In one of the program script, farmers were taught on how to control striga weeds through crop rotation. Farmers were being advised to plant tubers instead of maize in areas affected by striga weeds. The radio journalist at Mikayi Fm also confirmed that they do bring programs that encourage farmers to grow different crops at different seasons such as rotating deep-rooted crops with shallow rooted crops to ensure maximum utilization of nutrients in the soil. By fixing

nitrogen and increasing biodiversity, crop rotation encourages farmers to switch up their cereal crops with legumes, improving soil fertility (Andersson & D'Souza, 2014). Avoiding issues with pests and diseases that are present in the residue is one of the primary goals of crop rotation in CA systems (Thierfelder, 2010). Ward agriculture officer confirms this concept that most farmers in Siaya are practising. It was confirmed by one of the farmers who said he learned this in radio and has been helping him in horticulture to control pest and disease.

Discussion on cover cropping dominated discussions compared to other principals of conservation agriculture. This is according to the scripts that were analysed as 18 of the scripts analysed all contain information on cover cropping. This was because one of the presenters is involved in selling cover cropping seeds to farmers (Mucuna). Therefore, he promotes it a lot while in studio. Conservation agriculture expert also mentioned that it's important to use radio to educate farmers on some of the cover crops that they can use such as Mucuna and how they are supposed to plant them. According to him farmers should be taught on the importance of cover cropping such as control of soil erosion and weeds. A steady and conducive microclimate for plant growth is produced by cover cropping, which also shields the soil surface from erosion. The application of available crop residues as surface mulch preserves soil moisture by lowering evaporation, stops soil losses due to wind and rain, and improves soil nutrients by boosting the number of soil microorganisms that aid in the breakdown of organic matter (Andersson & D'Souza, 2014).

From other studies, Chavinda (2023) found that community radios provide space for the production of media narratives, sharing knowledge, experience, and empowerment for communities and marginalized groups. Mikayi Fm community radio station in Siaya County

provided space for sharing knowledge and empowerment of small-scale farmers to adopt conservation agriculture through their agricultural programs.

Even though Backhaus et al. (2023) stated that community radio stations offer leaders and policymakers to access sentiments and experiences of climate change to address communicative justice and climate justice, in Siaya County, it was established that extension officers and NGO's experts that champions for conservation agriculture have never visited Mikayi Fm to discuss conservation agriculture with farmers and therefore they rely on private extension officers and farmers as guest who were being invited to the studio. GCA (2020) found that radio is the most trusted source of weather and climate information, as it broadcasts location-specific information in local languages and dialects therefore best suited to communicate to rural farmers.

The participatory communication philosophy, which stresses discussion, community interaction, and elevating local perspectives, is put into practice by community radio stations. According to this philosophy, which is supported by people like Paulo Freire, communication should be a two-way process in which the audience actively participates in the creation and consumption of content in order to solve their own issues and promote growth. This is made possible by community radio stations, which provide a forum for under-represented voices, allow for local expression in local language, and promote audience engagement through social media, call-ins, and content production.

Community radio stations can serve as a communication resource for the community, claim Gaynor and O'Brien (2017). Give underprivileged and rural communities the chance to listen to their own voices while also expressing themselves in their own language in a

way that is comfortable for them (Megwa, 2007). By giving regular people, a chance to have their opinions heard on the air, community radio promotes listener participation. Contextually speaking, voice refers to having access to a communication device, such a phone, that can be utilised as a tool for community communication.

Conclusion and Recommendation

The food situation in Siaya County has gotten worse due to ongoing climate change and population growth, which means that farming systems need to be improved by implementing climate-smart agricultural technologies. Siaya County Government (2025) states that one of the primary goals of these advisory actions is to promote CA techniques because it has been shown that they have a significant potential to increase yields, particularly when adverse climate effects are present. because it emphasises soil health, moisture, and the least amount of chemical use. By maintaining the soil's organic matter and structure, the method not only boosts land productivity but is also financially feasible and environmentally benign (Siaya County website, 2025).

In Kenya, agricultural extension has been employed as a means of sharing agricultural knowledge. Low coverage, however, is the result of years of underfunding extension services. This is mostly because to a decrease in manpower and assistance as a result of public hiring freezes and lower operating and maintenance budgets. There is now a need for other channels, like community radio, that extension agents can use to connect with farmers. Therefore, need for other medium such as community radio that can be used by extension officers to reach farmers. Though the study found out that extension officers are not using the community radio to communicate conservation agriculture.

Conservation agriculture expert also confirmed that they have never been hosted in a community

radio but only in commercial radio station. Therefore, to enhance adoption and practice of conservation agriculture in Siaya County, there is need for the county government to collaborate with the community radio stations in Siaya County and other stakeholders spearheading conservation agriculture to use community radio stations to communicate conservation agriculture. This will allow wide reach, awareness and adoption of conservation agriculture to assist the county to end poverty and zero hunger. Community Radio programs are capable of integrating scientific information into the social and cultural context, knowledge, and interests of the intended audience by covering a wide range of topics as compared to ward agricultural officers visiting only specified farmer groups. Its unique features such as participatory programming that allows for two way communication, local language broadcasts, and a focus on community issues if fully utilized, then can bring journalists, experts, ward agricultural officers and farmers together to participate together for the adopt conservation agriculture in Siaya County that will assist farmers to reduce cost of production and increase food availability therefore, assist in attaining Sustainable Development Goals (SDGs) number one and two that is; SDG 1: No poverty; End poverty in all its forms and everywhere and SDG 2: No hunger; End hunger, achieve food security and better nutrition and promote sustainable agriculture.

Declaration of generative AI and AI-assisted technologies in the writing process

The author(s), while preparing this work, did not use generative AI and AI- assisted technologies.

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CRedit authorship contribution statement

Kashara: Writing of the original draft, Methodology and Data curation. **Ogenga:** Review, editing and Conceptualization. **Nyaole:** Review & editing, Methodology. **Millicent:** Writing, review & editing, Conceptualization.

Declaration of conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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