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An Evaluation of Stakeholder Involvement in the Development of Communication Plans Used in the Diffusion of Improved Maize Varieties among Farmers in the Semi-Arid Lower Eastern Kenya

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Abstract

Purpose: While it is acknowledged that increased adoption of agricultural innovations is today hinged on increased and proper application of participatory communication approaches, the adoption of improved maize varieties in the semi-arid Lower Eastern Kenya has remained low at less than 30 percent despite the application of the approach. Proper application of the approach requires adequate involvement of stakeholders in communication activities that include the assessment of the communication needs and the formulation of the communication strategies at all stages of the development and diffusion of an innovation. The purpose of this study was therefore, to assess the level of stakeholder involvement in the development of communication plans used in the diffusion of improved maize varieties among farmers in the semi- arid region of Lower Eastern Kenya

Methodology: Qualitative data was collected from farmers, agricultural scientists, agricultural extension officers and documents. It was analysed using a thematic analysis method in accordance with *apriori* themes and sub-themes developed by the researcher from the literature, principles of participatory communication approaches and the concerns of the research questions.

Findings: The study revealed a critical gap in stakeholder involvement during the development of the communication plans which could hinder the formulation of an effective communication strategy.

Unique Contribution to Theory, Practice and Policy: In order to improve the adoption rates of improved maize varieties in the semi-arid Lower Eastern Kenya, stakeholders should adequately be involved in the development of communication plans to enable them to uncover their information deficits and identify their existing communication networks necessary for sustained adoption of the maize seeds. This involvement facilitates free and open dialogue which leads to conscientization in which individuals and communities develop a critical understanding of their social reality through reflection and action; ownership where participants accept the initiative and become active participants and; praxis (practice) in which the imitative is fully accepted and used.

Keywords: *Participatory Communication, Stakeholder Involvement, Development, Communication Plans, Improved Maize Varieties*

JEL Codes: *O13, O22, D78, Z13, L31*

INTRODUCTION

Many agricultural innovations that could benefit farmers fail to achieve sustainable adoption rates due to the inadequate involvement of stakeholders in developing the communication plans used to facilitate their diffusion. The Food and Agriculture Organization (FAO) emphasizes that the sustainable adoption of innovations relies more on the people involved in their implementation than on the innovations themselves Rizzo et al., (2024). This shift in perspective underscores the pivotal role of a participatory communication approach, which fosters equitable sharing and exchange of information, knowledge, experiences, and perceptions among all stakeholders.

This shift in approach to development communication has influenced the dissemination of agricultural innovations in Kenya, where the primary challenge has been the low adoption rates of these innovations (Mbithi, 1972; De Groote, 2005; Bett et al., 2017). The National Agricultural Research System Policy (NARSP) recognizes this paradigm shift, advocating for participatory methods that employ a bottom-up strategy. This strategy emphasizes clear communication with stakeholders and working in partnership (NARSP, 2012). In line with this policy, the Kenya Agricultural and Livestock Research Organization (KALRO) has adopted a participatory approach to improve the uptake of agricultural innovations, including drought tolerant improved maize varieties among farmers in the semi-arid areas of Lower Eastern Kenya, a region characterized by erratic rainfall patterns. According to Oakdel (2023), the the improved maize varieties are recognized for their high yield, early maturity, and resistance to pests and diseases. Yet, despite the application of participatory communication and acknowledged technical excellence of the improved maize, adoption rates for the improved maize varieties remain below 30 percent (Mbithi, 1972; De Groote, 2005; Bett et al., 2017). However, instances of success have been documented wherever participatory communication has been effectively implemented (Kadiyala et al., 2021; Miraftab, 2004). Van de Fliert (2010) argues that low adoption rates can often be attributed to the lack or the inappropriate use of participatory communication approaches.

Purpose of the Present Study

The purpose of this study was to assess the level of stakeholder involvement in the development of communication plans used to promote the diffusion of drought tolerant improved maize varieties among farmers in the semi-arid region of Lower Eastern Kenya. The research aimed to answer the question: To what extent were stakeholders engaged in the formulation of communication strategies for disseminating improved maize varieties in the semi-arid lower eastern Kenya region? Unlike earlier studies, this research employed qualitative data, enabling the researcher to gain deeper insights into farmers' perceptions and attitudes regarding the implementation of the participatory communication approach. It is anticipated that the findings will lead to the development of more effective communication mechanisms, ultimately fostering increased adoption rates and enhancing the livelihoods of farmers in Lower Eastern Kenya.

Theoretical Review

This study is premised on Paulo Freire's Theory of dialogical action (1974) which is seen by many researchers and practitioners as the foundation of participatory communication approaches to diffusion and adoption of innovations (Mefalopulos, 2008, Cornish and Dunn, 2009). According to Tufte and Mefalopulos (2009), participatory communication strategy offers a specific perspective on how to articulate social processes, decision-making processes,

and any change processes. Proponents of the participatory communication approach use the concepts of the dialogical action theory as a communicative tool of involvement of all stakeholders in the diffusion of innovations**.**

Freire's Theory of Dialogical Action in the Context of Enhancing Maize Innovations at KALRO (Kenya Agricultural & Livestock Research Organization)

Freire's (1968) Theory of the Dialogical Action is essential for understanding the critical role of giving the voice to those who have traditionally been excluded from contexts of dialogue and participation (del Mar Ramis, 2018). According to Freire (1970) dialogical communication, can be considered as a tool to develop an individual's capacity for reflection about their own living conditions in terms of which they willingly and actively participate and become enthusiastic supporters of the change process. Following Freire's (1970) concepts, diffusion of agricultural innovations is seen as involving a process of information sharing and dialogue between innovators and farmers for whom the innovations are developed. Through dialogue, and the reflection that it entails, farmers increase the scope of their perception, becoming aware of situations and conditions in their lives of which they were previously not aware.

The key concepts of Freire's theory of dialogic action are:

Dialogue: Free and open dialogue is the main concept of participatory communication. Dialogue allows the sharing of information, perceptions and opinions among the various stakeholders, thereby facilitates their empowerment. It is not just the exchange of information and experiences: it is also the exploration and generation of new knowledge aimed at addressing situations that need to be improved.

Conscientization: Another key concept in Freire's approach is conscientization, ways in which individuals and communities develop a critical understanding of their social reality through reflection and action. This involves examining and acting on the root causes of oppression as experienced in the here and now. Conscientization should be learned through teaching based on dialogue and communication; a dialogue that should be between participants engaged in critical thinking. The process of developing a critical awareness of one's social reality through reflection and action is fundamental because it is the process of changing the reality.

Ownership: Freire noted that, without dialogue, people accept content in a passive way and they rarely reflect on them as validity of the knowledge. Dialogue enables partners in an initiative to become deliberate, goal-seeking participants and therefore owners of an initiative.

Praxis: Finally, there is praxis which is the act of engaging, applying and exercising, the new ideas. It is the culmination of dialogue, conscientization and ownership of an initiative by a community.

In summary, integrating Freire's Theory of Dialogical Action into the agriculture innovation process at KALRO can significantly enhance stakeholder engagement, empower farmers, and foster sustainable adoption of improved maize varieties.

METHODOLOGY

Participant Selection and Data Collection

This study utilized an explanatory research design, targeting farmers who belong to farmer groups within the maize-growing zones of the Kenya Cereal Enhancement Programme - Climate Resilient Agriculture Livelihoods (KCEP-CRAL) in Lower Eastern Kenya,

specifically in Machakos, Makueni, and Kitui counties. The target population also included agricultural extension officers working in these counties. Purposive sampling was employed to select participants who could provide valuable insights into stakeholder involvement in the development of communication plans.

Farmer focus group discussion (FGD) participants were drawn from individual members of the farmer groups. In total, 12 FGDs were conducted, and 11 extension officers from the selected areas were purposively chosen for interviews. The overall participant pool comprised 125 individuals, including farmer FGD participants, scientists, and Agricultural Extension Officers (AEOs). Table 1 below provides a detailed summary of the total number of farmers involved in FGDs and AEO interviewees, along with the specific areas covered. Purposive sampling was particularly appropriate for this study as it enabled the inclusion of individuals who were knowledgeable and directly engaged in the communication and diffusion processes of improved maize varieties. By selecting participants based on specific characteristics and their relevance to the research focus, the study ensured that the data collected would be rich and contextually relevant.

The research employed qualitative data collection methods, including FGDs, in-depth interviews, and document analysis, to gather comprehensive insights. The data were analyzed thematically, leading to the development of three key themes that explored stakeholder involvement in the communication plan development:

i) Identification of communication needs,

ii) Formulation of communication plans, and

iii) Extent of dialogue.

Table 1: Aeos and Agricultural Scientists Interviewees and Farmer Focus Group Discussion Participants by Location and Gender

Sub county	No of FCDs	No. of participants		Total no. of participants
		Men	Women	
Makueni	6	15	40	55
Yatta	4	13	24	37
Mbooni	2	8	11	19
Subtotal	**12**	**36**	**75**	**111**
AEOs	--	--	--	11
AS	--	--	--	3
Total	**12**	**36**	**75**	**125**

Participant Coding

Participants were sequentially assigned numbers with abbreviations depending on their occupations for professionals, thus. AS01-03 for Agricultural scientists and AEO 01 – 11 for Agricultural Extension Officers. Farmer participants were identified with letters FGD (for focus group discussion participants) followed by numbering denoting the specific focus group. Sequel numbering followed the gender identification (M for men or W for women), for instance FGD 6, M01.

RESULTS

The following are findings of the analysis of the qualitative data on level of stakeholder involvement in the development of communication plans used in the diffusion of improved maize varieties among farmers in the semi- arid region of Lower Eastern Kenya.

Communication Needs Identification

The study sought to understand the extent to which stakeholders were involved in the identification of the communication needs in relation to maize farming in the semi-arid Lower Eastern Kenya during the introduction of improved maize varieties. In participatory communication model, there are no senders and receivers of information; instead, the communication process is transactional and the players are all regarded as communicators. In the approach, identification of information needs - ideally through participatory rural communication appraisal (PRCA) - is the first step in the formulation of a communication strategy. PRCA is a communication methodology that utilizes visualization techniques and participatory exercises to open dialogue and generate information for the design of effective communication programs for development purposes. It involves stakeholders in joint investigations not only of the Problems and the Needs, but also of the Opportunities and possible Solutions (NOPS), facilitating the required common understanding needed to address both structural as well as communication issues. Identification of needs establishes what the community already knows, what the information deficits are as well as existing communication methods that could be utilized for effective communication. According to Hawkins and Van den Ban (1999) ownership of a project is greatly influenced by the stakeholders' involvement in the identification of communication needs. Hawkins and Van den Ban (1999) state that by actively participating in the communication needs identification process, farmers are able to convey their objectives.

Findings from this study indicate that although a majority of the farmer participants in focus group discussions (FGD) were given information about improved maize seed varieties, the agricultural scientists did not undertake any communication activities to uncover the existing communication networks in the community and to understand farmer information needs in relation to maize seeds. The methods through which the farmers came to learn about the maize seeds confirm this as illustrated by these statements from farmers representative of the typical answers from farmers throughout the research area.

> *"My son came from school with a message that there was a planned chief's baraza. It was at the baraza that I learned of the introduction of the new maize variety and where the demonstration of the new seeds would be held"* – (FGD 01, W02)
>
> *"We were invited to demos at the station where we learnt about the seeds. And later, during field days we were explained about the advantages of the new seed varieties and given samples to plant" – (*FGD 06, W 05)

This lack of involvement extended even to the agricultural extension officers who are a key link between the farmers and the researchers. An agricultural extension officer stated:

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> *"I come into contact with agricultural scientists only when they have something they want to introduce to farmers. They will tell me: We have these seeds which we want you to distribute to farmers. They will send the seeds I distribute. Other times they will ask me if I have a farmer's group which they can use to try a new seed. Sometimes they will call me when there is a planned demo to organise farmers to attend. Most times they will go direct to farmers if they have worked with them before"* – (AEO, O1 Interviews)

Another agricultural extension officer described how the communication process has changed with the dawn of devolved system of government in Kenya in 2013. The participant described how regular meetings used to be held involving farmer representatives, ministry of agriculture officials and researchers during which stakeholders would express their needs and share knowledge. However, according to the participant, the outcomes of these meetings were not shared.

> *"I remember we used to hold monthly meetings .... I remember every meeting was attended by at least three farmer representatives, researchers, extension workers and representative from the ministry of agriculture. Discussions were very free. And the researchers took notes. What I can't tell you is what the researchers did with the notes they took." – (*AEO, O5 Interviews)

Similar views were expressed by yet another agricultural extension officer who described a scenario when before devolution, they used to hold monthly meetings with farmers, researchers and extension workers in which they shared information.

> *"There was even a research extension liaison officer at KALRO-Katumani.... Every season, breeders invited extension workers and farmers so that everyone was kept informed. For example, before they introduction of QPM (quality Protein Maize) in Makueni in 2013, the extension workers and farmers met with the breeders and had discussions. In my view, the maize variety they introduced was liked by farmers though it later went out of the market – (*AEO, 07 Interviews)

These findings show that farmers and extension officers, key stakeholders in agriculture, were not involved at this crucial stage of communication needs assessment as required in participatory communication. Using Pretty (2006), the degree of involvement of stakeholders in communication needs assessment could best be described as passive participation where the application of participatory communication is least applied and in which primary stakeholders of a project participate by being informed about what is going to happen or has already happened. The failure to involve key stakeholders in agricultural sector is an indication that there were no prior efforts to establish farmer communication needs and existing communication channels before undertaking the improved maize diffusion process. The findings are similar to those obtained by other researchers such as Kaliba, Verkuiji and Mwangi, (2009); Musembi, (1998) who also found that farmers were not involved in the identification of their communication needs. In a similar research Kamau, (2007) looked at practices of agricultural scientists while carrying out research and found that the research cycle is usually dictated by production factors and available funds. Kamau (2007) concluded that participation in research often thinly disguises the deeply institutionalized value system inherent in the research process for quantitative results. This exclusion of stakeholders in communication activities would seem to defeat the purpose of participatory communication which was introduced to facilitate the inclusion of farmers' voice in the research process, and

hence improve on the appropriateness of the farming innovations. According to FAO and GTZ (2008), achieving sustainable agricultural development is less based on material inputs such as seeds and fertilizer than on the people involved in their use. This focus on human resources calls for increased knowledge and information sharing about agricultural production, as well as on appropriate communication methodologies, channels and tools.

On paper however, National Agricultural Research System Policy 2012 states that the current procedure for all research in Kenya starts with a participatory diagnosis phase, followed by participatory prioritization, planning, implementation, evaluation and scaling-out. All these phases require participation of all stakeholders from the beginning to the end. Similarly, KALRO in its 2017 – 2021 Strategic Plan aims for continous engagement in technology dissemination activities and to develop and promote use of participatory research methods in the organization.

Designing Communication Strategy

Communication for farming innovations is based on the premise that successful farming practices calls for the conscious and active participation of all the stakeholders at every stage of the development process. Communication for agricultural development can thus be described as the planned and systematic use of communication, through defined communication channels, to collect and exchange information among all those concerned to formulate a communication plan (Bessette, 2006). This study therefore, also sought to know whether all the key stakeholders were involved in designing the communication strategy used in the diffusion of improved maize seed varieties. Discussions with farmers and extension workers in the semi-arid Lower Eastern Kenya however, showed that neither the farmers nor the agricultural extension officers were involved in the communication strategy formulation. Participants in a focus group discussion explained to the point at which they got involved in one project:

> *"The first time we met the researcher was when she came to request us to give her plots for planting her seeds for demonstration. Our role was to do mother and baby demos and then we evaluate. We have been attending demos at the Kambi Mawe (research station). I believe that's how the breeder got our contacts."* – (FGD 04, M03)

The same pattern of operation was described by members of other focus groups discussions (FGDs). According to one of the participants:

> *"The researcher informed us that he needed to demonstrate a seed variety. He asked us to identify a farm from among our members where he could do the demo and we did."* – (FGD 07, M02)

An agricultural extension officer confirmed the process of involvement thus:

> *"I don't know whether the scientists have a communication strategy in place. Many times, I see the promoters of a project come to our offices to get contacts of farmer groups who can attend their events."* – (AEO 2 Interviews)

Lack of involvement of farmers in the planning of communication activities leads to low adoption of agricultural innovations. FAO and GTZ (2008) state that in many countries low agricultural production has been attributed, among other factors, to poor linkages between Research-Advisory Service-Farmers and to ineffective technology delivery systems, including poor information packaging, inadequate communication systems and poor methodologies. It is

notable that KALRO policy does not emphasise the need for proper formulation of communication plans to be used in diffusion of innovations and additionally, there are no departments for communication at the research institute level. Additionally, the lack of involvement of agricultural extension officers who are key stakeholders in agricultural development and diffusion processes leads to distrust and antagonism between the agricultural extension officers and the researchers which further affects perceptions and adoption of innovations. Asked about what their role in designing the communication strategy was, an agricultural extension officer said:

> *"Once scientists have worked with a farmer group, they go straight to them when they have an innovation to introduce or test with farmers. Since they have their contacts, they apparently don't see the need to involve government officers in planning their activities."* - *(*AEO 6 Interviews)

The attitude of agricultural scientists on the need to involve the other stakeholders in communication strategy formulation was expressed by one scientist who told this researcher:

> *Research focuses on solving a certain known or expected problem which a farmer may overlook. What research is doing is to bring solutions based on data accumulation and analysis. Discussing issues with farmers at the initial stages would therefore, be of no benefit* – (AS03)

From the quotations above, it is clear that farmers are incorporated into the research activities long after the conception of the project. These comments from both farmers, agricultural extension officers and agricultural scientists show the lack of involvement of key stakeholders in the semi-arid Lower Eastern Kenya in communication plans formulation. Using Pretty (2006), the degree of involvement of stakeholders in communication plans formulation could best be described as passive participation. The stakeholders were not involved in decision making but were only informed about the planned activities. The findings are also supported by other studies such as those of De Groote, et al (2002) and Wekesa, et al (2003) which examined factors affecting adoption of improved maize in Eastern Africa and particularly in Kilifi in Kenya. Without regard to other stakeholders, agricultural scientists decide the communication activities they want to undertake as well as the roles the farmers and extension officers should play in the activities. In the participatory communication approach, communication plans should spring from the community's perceptions of their communication needs and problems and should therefore be developed with their active participation (Anyaegbunam Mefalopulos and Moetsabi, 2004).

Extent of Dialogue in Communication Activities

Participatory communication emphasizes the role of dialogue in the implementation of development projects. According to Freire (1970), consensus in the implementation of a project is arrived at as a result of dialogic action – conversation or shared dialogue to explore the meaning of something. Dialogical actions promote understanding, consensus, praxis (practice) while non-dialogic actions or monologues, distort communication, lead to lack of consensus and lack of adoption. According to Freire (1974), through dialogue and the reflection, people increase the scope of their perception, becoming aware of situations and conditions in their lives which they were not previously aware of. And it is through "knowing" the world through this dialogue, action and reflection that the conditions for transformation and empowerment are enabled ending in praxis" or practice of the new information.

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www.iprjb.org

The narrations in the previous sections of this report show that maize farmers in Lower Eastern Kenya and agricultural extension officers were not involved during communication needs identification and neither were they involved in the formulation of the communication strategy. It therefore means that there was no dialogue between the farmers and the agricultural scientists in the formulation of the communication strategy. For a majority of the farmer participants in the focus group discussions, the first time they came face to face with agricultural scientists was during demos at the station, activities that were decided on by the agricultural scientists:

> "*The first time we had contact with agricultural scientists was during demos at the station. That is the first time we spoke with them."- (*FGD 09, M01)

Similarly, during the implementation stage activities, up bottom, non-dialogic communication activities still persisted as indicated in one of the statements quoted earlier:

> *"During the demos and field days, members of the group are explained about the advantages of the new crop and given samples to plant" - (*FGD 06, W05)

However, findings from this study in the semi-arid Lower Eastern Kenya established that there was an element of dialogue at evaluation stage in the development of the maize seeds during on station and field days where seed varieties had been planted:

> *"We had discussions with the scientists when we were evaluating the maize varieties. Farmers were open about their opinions. Sometimes we had different opinions and the agricultural scientists had their own."- (*FGD 06, M04)

However, farmers and agricultural officers stated that decisions such as where or at whose farm the demos would be held were often made by the scientists. This is often a unitary decision with no effort at consensus. According to an extension officer:

> *"Agricultural scientists often identify leaders of farmer groups and approach them with the need for demos. The researcher is the one with the criteria for the selection of the location. It has to be convenient" - (*AEO, 08 Interviews)

The result of lack of dialogue is failure to arrive at consensus which is necessary for creating conditions for transformation that enables the practice of the new information or idea (Freire, 1974). A good illustration of communication activities that do not promote dialogue and consensus in the case of the improved maize is a story narrated to this researcher by an agricultural extension officer:

> *"In one of the on-station demonstration workshops, the researcher planted five varieties of improved maize seeds including the traditional maize seeds (Machakos White maize variety) commonly known as Kikamba or kinyanya. But the improved seeds did very poorly while the local seeds did very well. The farmers pointed this to the breeder. Instead of trying to figure out the explanation with farmers, the researcher decided to shift focus and make soil management the agenda of the demo"– (*AEO, 07 Interviews)

The consequence of this lack of dialogue is that many farmers and agricultural extension officers in Lower Eastern Kenya are confused and cannot tell what maize seeds come from KALRO or other sources. An example is a conversation this researcher held with two agricultural extension officers, one of whom had participated in the introduction of improved maize varieties developed by KALRO in collaboration with CIMMYT.

> *"I participated with Kalro scientists in the evaluation of …varieties at Kiboko Research Station (a substation of KALRO-Katumani Research Centre). It was very good and farmers loved it. I don't know what happened to it. I don't see it anymore."* (AEO, 03 Interviews)
>
> "*It's still in the market. One of the varieties was given the name ……"* (AEO,5 Interviews)
>
> *That is strange. I know … seed. But how am I expected to link what we evaluated at Kiboko to the … in the market?* (AEO, 03 Interviews)

Where there is no consensus, there is a plurality of solutions (Freire 1974). This is the situation in Lower Eastern Kenya where currently many seed varieties have been developed by private companies that are involved in aggressive marketing efforts. This researcher counted not less than 20 improved varieties, with all kinds of names, all in competition for farmers' attention. As one farmer sardonically put it during one of the focus group discussions:

> *"Siku hizi mbegu zinachanganyika. Tumechanganyikiwa" (These days seeds are mixed up and we are mixed up, we don't know which seeds to trust). It is survival of the loudest in promoting, not necessarily the best suited* – (FGD 06, M02)

Another consequence of lack of dialogue and consensus is that eenthusiasm also wanes. Another extension officer described the enthusiasm he witnessed when he was involved in an evaluation of a maize variety he described as promising to be good for the area he was working in but the farmers did not get a chance to give or get feedback.

> *"We planted demos with five seed varieties. Since then, I have not seen the breeders and the maize varieties we evaluated. I see like currently maize is not being promoted …. It's like it has been relegated." – (*AEO, 04 Interviews)

The findings above, show that the level of dialogue among stakeholders in the diffusion of improved maize in Lower Eastern Kenya was not optimal. The findings are similar to those of other studies such as Schroeder, et al (2013) and Ouma, De Groote and Owuor , (2011) which show lack of involvement of farmers in the introduction of hybrid maize innovations. Tufte and Mefalopulos (2009) advocate actively engaging stakeholders in open dialogue to generate information for the design of effective communication programs and activities from the early stages of the research and design of interventions of a development project through to its evaluation. It is at the early stage that the development problem is accurately defined. All relevant stakeholders should be involved in dialogue in this process to share their perceptions of the problem, existing community knowledge and relevant contextual information.

Stakeholder Involvement in the Development of Communication Plans in the Diffusion of the Improved Maize Varieties

This study aimed to assess the extent of stakeholder involvement in the development of communication plans used in the diffusion of improved maize varieties in the semi-arid Lower Eastern Kenya. In this study, a qualitative method was employed to collect data from farmers, agricultural extension officers, and scientists involved in implementing participatory communication during the improved maize diffusion process. Overall, the involvement of stakeholders in communication activities for the development of the communication plan was minimal or lacking in most instances and could therefore, not lead to conscientization and ownership which in Freire's (1974) Dialogic Action are critical stages in social change as

receiver communities became aware of their social reality and thus become partners in search for solutions.

Stakeholders were excluded at all the stages of the development of communication plans where the communication needs and social networks would have been identified empowering them to become partners in the diffusion process of the improved maize in Lower Eastern Kenya. The results revealed a lack of meaningful engagement from key stakeholders—both farmers and agricultural extension officers. Insufficient stakeholder involvement in the formulation of communication planning hinders effective dialogue, preventing the identification of farmer information needs and consensus-building. Comments from farmers, agricultural extension officers, and scientists highlighted this deficiency. Previous research has demonstrated that properly implemented participatory communication fosters dialogue, facilitates the sharing of perceptions and knowledge, and builds consensus among stakeholders, ultimately increasing ownership and the eventual increase in the adoption of agricultural innovations.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The study identified a significant gap in stakeholder involvement during the development of the communication plans used during the development and diffusion of improved maize seed varieties in the semi-arid Lower Eastern Kenya. At the critical stage of the identification of information needs for the development of the communication plans which is essential to help identify farmers' needs, understand their prior knowledge, and prioritize key aspects, there was insufficient engagement which could hinder the formulation of an effective communication strategy.

Discussions with farmers and extension workers in the study area also revealed that neither group was involved in the communication strategy formulation. Studies indicate that low agricultural production and ineffective technology delivery systems, including poor information packaging, inadequate communication systems, and suboptimal methodologies, greatly affect the adoption and diffusion of agricultural innovations.

Effective innovation diffusion also relies on dialogue among all stakeholders, which promotes understanding, consensus, adoption, and diffusion. A lack of dialogic communication leads to a lack of consensus and adoption. This study found that there was a lack of dialogue among stakeholders during the diffusion process of the improved maize varieties in the semi-arid Lower Eastern Kenya.

Conclusion

In conclusion, this study aimed to assess stakeholder involvement in the development of communication plans used in the diffusion of improved maize varieties in the semi-arid Lower Eastern Kenya. The findings align with prior research by De Groote, Doss, Lyimo, Mwangi, and Alemu (2002) and Wekesa, Mwangi, Verkuijl, and De Groote (2003), which also highlighted a lack of stakeholder engagement in the adoption process of improved maize in Eastern Africa, particularly in Kilifi, Kenya. While agricultural scientists may have their own reasons for not involving stakeholders in communication plan development, participatory communication researchers consistently emphasize that communication plans should be rooted in the community's perceptions of their communication needs, opportunities and challenges. Ignoring these community perspectives may lead to the failure of development initiatives (Anyaegbunam, Mefalopulos, and Moetsabi, 2004).

Recommendations

Based on the conclusions of this study, here are the researcher's recommendations:

1. Agricultural research scientists should actively involve stakeholders in the development of communication plans. The goal is to engage stakeholders in identifying their communication needs and opportunities. By doing so, researchers can uncover farmer information deficits, understand farmers' prior knowledge, and discover their preferred communication methods. This approach will facilitate the design of effective communication plans.
2. The study recommends fostering continuous dialogue between farmers, agricultural extension workers, and scientists throughout the communication activities related to the diffusion of innovations. This ongoing interaction will ensure that communication materials resonate with farmers' needs, preferences, and local context.
3. There should be an enhancement of collaborative workshops that include all stakeholders (farmers, extension officers, and researchers) to jointly identify communication needs and co-create communication plans. This strategy promotes a sense of ownership and strengthens relationships among stakeholders.

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