Utilizing Gender Knowledge of Effective Adoption within Cooking Banana and Plantain Value Chain in Murang'a, Kirinyaga and Embu Counties, Kenya

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Abstract

Banana is an important source of income for rural, resource poor, smallholder male and female farmers and a staple for urban consumers in Sub-Saharan Africa. Their great potential to alleviate poverty among rural households has not been effectively exploited. Given the gender dynamics that occur in value chains due to commercialization, there is a need for gender responsive adoption of new agricultural technology. Participatory programming is an effective tool to empower all stakeholders. This study sought to establish the uptake and utilization of gender knowledge in the adoption of new tissue culture banana varieties among men and women stakeholders in Murang'a, Kirinyaga and Embu Counties in Kenya. The study further sought to establish effective strategies to enhance efficacy of gender knowledge implementation and sharing within the value chains under the "Climate Smart Banana Project". This project utilizes a gender responsive participatory approach in introduction of new varieties which are resilient to climate change. Plant breeders produce superior crop varieties that promise higher yields, income, resistance to pests and diseases as well as climate change tolerance. However, gender dynamics within value chains quite often lead to a backlash in optimizing benefits from new varieties. The study applied a mixed method design with qualitative and quantitative data being collected among men and women farmers. The preliminary results have revealed that while policy makers and implementers have higher levels of gender knowledge, male and female farmers' knowledge is limited and especially lower among male stakeholders. Observably, there is a breakdown in communication regarding gender knowledge from extension officers to farmers. The study thus recommends a structured, participatory, and multi- sectoral approach at county level to offer gender training to all stakeholders in the cooking banana and plantain value chains.

Key Words:Gender, knowledge, banana, plantain, value chain

Introduction

In Central Kenya, smallholder farmers mainly grow dessert banana varieties for sale. There is a need to increase production of cooking banana and plantain varieties to improve household nutrition and food security as well as increase household income. This can be done by introducing banana and plantain varieties that are climate smart and higher yielding. Adoption of these new varieties is however slow and impacted by various factors, including gender power dynamics quite often visible in agricultural value chains, banana and plantain being no exception. New breeders introduce high yielding varieties incognizant of gender power dynamics that often compromise their intentions of improving yields and nutrition. On the other hand, men and women farmers

plunge into new varieties' adoption, oblivious of negative gender outcomes, subsequently ending up in chaos within the household. Incorporating gender training at the onset of adoption, becomes crucial in driving uptake of new agricultural innovations. Gender training offered to men and women along the value chain is absorbed differently by both, due to gender dynamics emanating from roles, responsibilities, decision making and individual agency. This study assesses the uptake, utilization and sharing of knowledge acquired from gender training by men and women; and how this influences the gender outcomes within the new cooking banana and plantain value chains in the study area.

Background

Banana is among the highest produced, consumed, and traded fruit globally. They are categorized into two; dessert (ripening) and cooking varieties that include plantains (F.A.O, 2021). Dessert banana is consumed raw as it is sweet and is easily digested. The cooking variety on the other hand is mainly fried, boiled, and roasted. It provides starch. In Uganda and Tanzania, plantain is used to brew nutritious beer (Martha R. Kasyoka, 2010).

Banana is produced in 135 countries and territories (Randy C. Ploetz, 2015), all year round and is valued for its nutritional benefits of vitamins, minerals and energy (Kamal, 2014). Asia, Latin America and Africa are the pre-dominant banana producers with Asia being the largest, followed by Latin America and Africa respectively (F.A.O, 2022). In Africa, the Democratic Republic of Congo, Cameroon and Uganda are leading in banana production, while Kenya comes eleventh in the region (F.A.O, 2022); (Marimo, 2020). Whilst Asia is the largest producer, Latin America and the Caribbean are the largest exporters, accounting for 80% of global export, mainly of dessert bananas. 70-80% of bananas grown in Africa are local cultivars and mainly cooking varieties. These are produced by smallholders for local consumption. The largest importers are the EU, USA, Russia and Belgium (Vivek Voora, 2020). The East African region produces almost half of all bananas produced in Africa. However, production is mainly by smallholder farmers. In Kenya, the main banana growing counties are Meru, Tharaka Nithi, Embu, Kirinyaga, Murang'a, Kisii and Nyamira (Mulanda, 2019). While it is predominantly grown as a cash crop in the Counties within Central Kenya, the Kisii region grows it as a food crop (Mwangi, et al., 2010). The varieties grown are determined by taste preferences, environmental conditions, and market demand.

Bananas are a source of income, employment, food security and nutrition in countries of production. In low income countries, it is a staple food for urban consumers, while among rural resource poor and smallholder farmers, they offer nutrition, food security and income (FAO, IFPRI, 2014) (Quisumbing et al., 2014). Due to their perennial nature and ease in production, they have potential to alleviate poverty among smallholder farmers (Miriti, Wamue-Ngare, Masiga, Miruka, & Maina, 2013).

Production has however been on the decline due to factors such as climate change, pests and diseases, limited access to clean planting materials and limited access to extension services (Wahome, 2020). To remedy the situation, Tissue Culture cultivars have been introduced to

alleviate declining yields, improve household food security, and livelihoods. Tissue culture is an agricultural technology that propagates pests and disease-free plantlets in controlled conditions and later transferred to nurseries for hardening. Tissue Culture banana and plantain lead to increased yields and income. They are therefore preferred in commercial banana farming (Niere, 2006).

Banana is traditionally considered a woman's crop when it is grown non- commercially. It provides continuous income under a low input regime (Miriti et.al, 2013). However, introduction of TC bananas results in commercial production which increases yields and subsequent income. This, in many cases, leads to a shift in gender power relations within the value chain. Commercialization and adoption of new agricultural technologies often alter existing gender dynamics in gender role allocation, division of labour, resource and benefits' allocation and distribution as well as access and control over resources (Fischer, 2012). In Africa, quite often, women traditionally control income from subsistence crops, bananas being one of them amidst others like sorghum, millet, sweet potatoes, beans, peas etc. Observably, commercialization of these crops leads to women's loss of control as the crops move to the male domain (Fischer & Qaim, 2012; Njuki et al., 2011), obviously with observable consequences.

For instance, commercializing banana and plantain shifts the control of income to men, impacting the dietary quality and benefit allocation within the household. There is also the possibility of negative gender outcomes as women's role in the value chain is reduced or diminished. This shift increasingly disadvantages women due to already existing gender disparities in access and control over productive resources (Fischer & Qaim, 2012). Despite the potential to transform the smallholders' lives through adoption of new cultivars; not only does this remain low, but also women are further marginalized. This may be attributed to numerous reasons among them gender differences in varietal preference, responsive crop utilization, levels of gender-related risks and agency by men and women within the value chain. Local culture, behavioral factors, and gender norms also influence the uptake of these new varieties (Marimo, 2020). Left unaddressed, gender blind adoption of new varieties militates against the intended benefits of bridging the food security and nutritional gaps in Africa.

Gender training is thus crucial. The aim is to sensitize male and female farmers on the power dynamics especially in preferences of men, women and youth in the banana and plantain value chain and how they intersect with various socio-economic and cultural factors at the individual, household and community levels (Iradukunda, 2012). It is also crucial for plant breeders to engage men and women farmers, social scientists, and other stakeholders to understand their needs, roles, levels of agency and preference. This would enhance adoption of new agricultural technologies and ensure equitable sharing of benefits (Marimo, 2020). After adoption, sustainability of agricultural innovations depends largely on participants' levels of knowledge and decision-making capacity (Boz & Ozcatalbas, 2010). As such, there must be deep considerations of local contexts on gender and social differences to understand gaps between awareness and utilization of new knowledge. This study will seek to determine pathways to gender knowledge

uptake and sharing in driving adoption of new cooking banana and plantain varieties in three selected Counties in the Central region of Kenya.

Specific objectives

1. To explore the factors that determine uptake and utilization of gender knowledge among men and women stakeholders in the cooking banana and plantain value chain in the study area.
2. To evaluate the effects of gender training in enhancing adoption of improved cooking bananas and plantains in the study area.
3. To explore the challenges faced by men and women stakeholders of cooking bananas and plantains in utilizing gender knowledge.
4. To suggest gender responsive strategies for effective uptake, utilization and sharing of gender knowledge by all stakeholders within the cooking banana and plantain value chains.

Theoretical orientation

Diffusion Innovations Theory

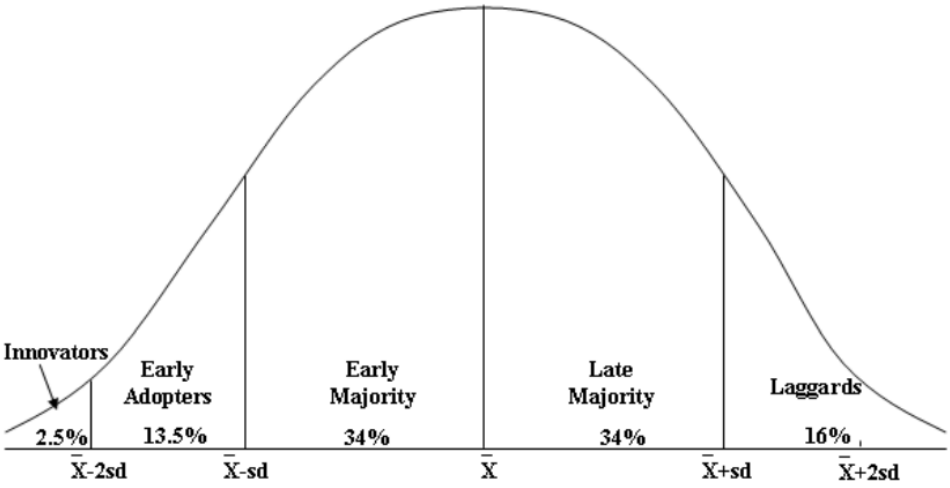
This theory seeks to describe the pathway taken by new ideas or technology and the speed at which the technology and ideas spread. The theory originated from communication and was developed by E.M. Rodgers in 1962. Rogers, 2003 defines diffusion as "the process in which an innovation is communicated through certain channels over time among the members of a social system" (Rogers E.M, 2003). Diffusion is a special form of communication related to new ideas. It is a specific form of social change by which alteration occurs in the structure and function of a social system (Tomaš-Simin, 2014). This theory seeks to understand the process of knowledge transfer and adoption of innovations. It examines how an idea spreads through a social system and attempts to predict the behavior of individuals and social groups in the process of adoption of new ideas and innovation. In the attempt to predict behaviour, the theory factors in adopters' personal characteristics, social relations, time factor and the characteristics of the innovation. Diffusion results in people adopting the new idea, innovation or technology as part of their social system. Rogers (2003) defined adoption as a decision of "full use of an innovation as the best course of action available" and rejection is a decision "not to adopt an innovation" (Rogers E.M, 2003). Adoption implies that people do things differently from what they are used to. This can mean acquiring new behavior or altering the structure of a social system.

Rogers categorized adopters into five main categories and gave characteristics that make an innovation spread. The categories are based on society members' innovativeness and form a normal distribution.

Figure 1: Normal distribution of adopters

Rogers' proposed categorization of adopters based on the average time to adopt (x) and the standard deviation (sd)

Figure 2.2 shows, the distribution of adopters is a normal distribution.



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Adopter categories

Innovators

Innovators are people who want to be first to try an innovation. These comprise approximately 2.5% of a population. They are looking for new ways of doing things and actively develop them. Innovators must cope with uncertainty of their innovations, unsuccessful and unprofitable innovations. Innovators are gatekeepers, who bring the innovation from outside the social system. They are poor communicators and require technical expertise (Sahin, 2006; Rogers, 2003).

Early adopters

Early adopters are limited within the boundaries of a social system. They are approximately 13.5% of the population. This category comprises of opinion leaders who are aware of the need for change and therefore embrace new ideas and innovations. They hold leadership roles and are role models in the social system. Their attitude towards an innovation is crucial as their opinion on an innovation trickles down to the society through their interpersonal networks. Their adoption of an idea decreases uncertainty of the innovation in the diffusion process. Their adoption is considered approval of the innovation (Rogers, 2003) (Sahin, 2006). This category bridges the gap between innovators and the early majority.

Early majority

The early majority comprises 34% of the population. These are not usually leaders but adopt new innovations before average persons. This category is more careful in adoption, open to change and pragmatic. Evidence of the success stories of innovation is a key driver of their adoption. Their decision making is slower than the innovators and early adopters (Wayne W. LaMorte, 2019).

Late majority

This category is skeptical of new innovations and comprises 34% of the population. These are members in the social system with lower resources. They only adopt after it has been tested by others as they need to be sure that the investment is worthwhile. They mainly adopt due to economic necessity. The strategy to appeal to them is to share information on others who have tried and successfully adopted the innovation as well as having their interpersonal networks persuade them to adopt the innovation (Rogers, 2003).

Laggards

This category comprises 16% of the population. They are normally the last to adopt new ideas as they strongly resist change. They are very conservative and are bound by tradition. Their interpersonal network is localized and consists of traditional people like them, thus isolating them from the rest of the social system. Their behaviour is due to their limited resources and they need to be sure that the innovation will not fail (Sahin, 2006) (Rogers, 2003) (Wayne W. LaMorte, 2019).

This study is seeking to understand how gender knowledge is communicated through the social system in the cooking banana and plantain value chain. It also seeks to understand the adoption of this new knowledge among the stakeholders. Diffusion and adoption of gender knowledge in the cooking banana and plantain value chain is expected to lead to a shift in gender responsiveness in the value chain, with the shift expected to create a conducive environment for men, women, youth and other categories to fully participate in the value chain.

Characteristics of an innovation that helps it spread.

Rogers identified five attributes of an innovation that influence whether and how it spreads.

1. Relative advantage

This is the degree to which an idea is considered better than the one it replaces.

2. Compatibility

The degree to which innovation or idea fits in or is consistent with the values, practices and needs of the adopter.

3. Complexity

The degree to which the adopter perceives the idea is difficult to understand and use. Excessive complexity is an obstacle to adoption.

4. Trialability

The degree to which an innovation may be tested before full scale. The more an innovation is tested, the faster it is adopted.

5. Observability

The degree to which the results of an innovation are visible to others.

Methodology

This is a mixed methods study, applying both qualitative and quantitative research methods to allow for triangulation of evidence. Quantitative data was collected through survey, while the

qualitative data was collected through Focus Groups Discussions, an observation sheet was provided and Key Informant Interviews. Respondents were selected from existing banana and plantain farmer cooperatives in the study area. Structured questionnaires were administered to stakeholders before the gender training and again after the gender training to compare the levels of knowledge and adoption. Mini focus groups with men and women were also conducted before gender training and was conducted again after the training. Key Informant Interviews were conducted with County government officers for gender, agriculture, social services, and key NGOs. Observations were also conducted during farm visits. An observation checklist was used during farm visits.

Results

Gender knowledge levels were found relatively low among men and women banana farmers in the study. Only 26% (12% male; 14% female) of all participants have any gender knowledge. 66% of these have fair levels with 22% being male and 44% female. Observably, County Government officials were found to have higher levels of gender knowledge obtained from training from donor-funded projects. It was also noted that there is no gender –specific training within the agricultural value chains targeting County officials or any other. As noted, 55% of the farmers, mostly men, who had any minimal gender knowledge had obtained it from extension officers, hence its scarcity.

It was also noted that men and women implement and share knowledge acquired from agricultural training only if it is aimed at increasing production and cutting costs. Such knowledge is freely shared within the family, friends and other farmers irrespective of gender. Observably, while such knowledge is perceived to purposely improve yields, knowledge that seemingly contravenes social norms, in particular gender knowledge is reluctantly shared or not shared at all. While women claimed futility of sharing or even implementing any knowledge that challenges gender norms, men were more hesitant to share similar information especially if it demands full disclosure on specific issues like family budget.

Discussion

Gender relations determine roles, responsibilities, rights and power dynamics within a household and community in agricultural value chains. There is therefore a need to increase gender knowledge among men and women in the banana and plantain value chain. More gender training among the stakeholders is key to enhancing uptake. Further, the connection between gender dynamics and returns from banana and plantain farming must be clear to all stakeholders from the onset to enhance uptake of the gender knowledge. Extension officers, and social networks are considered the major sources of agricultural knowledge (Fidelugwuowo, U. B. (2020) (Lwoga, E. T., Stilwell, C., & Ngulube, P. (2010). With the results of this study revealing that these have not been efficient in gender knowledge sharing, more capacity building needs to be conducted to equip them to mainstream gender in the banana and plantain value chain and train other stakeholders.

Conclusion and recommendation

In conclusion, communicating gender knowledge is central to adoption of new cultivars of bananas. There is therefore a need to incorporate it throughout the entire value chain. Greater emphasis should be put in equipping extension officers with gender knowledge as well as training them on building gender responsive value chains that bridge the gap between scientific innovations and social factors that may deter adoption.

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