

Socio-Economic Barriers to Agricultural Research Results Uptake among Africa's Rural Communities: A Case Study of Yatta Division, Machakos County, Kenya

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Abstract: *Agriculture is the mainstay of development in most of the Africa's rural communities. Agricultural research undertakings seek to increase existing knowledge and improve the livelihoods of the people. Sub Saharan region in Africa remains one of the poorest in the world with 40% of the population living below the poverty line and one in every three people been malnourished despite the potential of agriculture to significantly reduce this poverty margins (Africa development Bank, 2011). According to the World Bank, (2010) Kenya's poverty status is no better with the poverty index ranging between 44 per cent - 46 per cent. Improvements in agriculture and agricultural technologies can play a crucial role in the development of Africa's rural communities (FARA, 2006). This improvements will depend to a bigger extend on the production, dissemination and the utilization of agricultural research findings in a timely and appropriate manner (Huberman, 1990).The author concludes that timely and appropriate dissemination of agricultural research results is an integral component of any research undertaking. Therefore, the design of any research undertaking should understand the institutional as well as the socio-economic factors that may affect the dissemination of the research findings. The paper established that average farmer within the division was a female, who could not read and write, available agricultural research results were highly limited to only those services farmers can access with minimal income, Low level of awareness on agricultural research findings was a key barriers, since researchers and extension officers relied on a small spectrum of information dissemination tools/avenues.*

Keywords: Agricultural, Research uptake, Africa's rural communities, Yatta division, Kenya

1. Introduction

Research is fundamentally undertaken to expand the frontiers of knowledge and contribute considerably to the improvement in human welfare (Oduwaiye, et al 2009). Research is an essential tool that contributes considerably to the richness of existing societal debates by establishing general guidelines, concepts, philosophies, models for discussion besides identifying society problems based on sound assessments and arguments in order to inform the development processes (Court and Young, 2006).

According to Huberman, 1990, Improvement in the welfare of societies is closely linked to the improvements and transfer of knowledge. Research has the potential of significantly impacting on the development initiatives than it has today. The efficacy of conversion of research results to practice and policy has been cloaked in mystery, with researchers as knowledge creators unable to comprehend the botchin spite of rich and conclusive academic dissemination ways. On the other hand, development practitioners who are the knowledge consumers lament the failure of researchers to available research results to consumers in forms that are timely and appropriate. The World Bank, (2010) indicates that, most researchers base their researches on questions that are easily addressable with the current research methodologies rather than basing their researches on key knowledge gaps facing development practitioners within the societies.

Agricultural research no matter how informative and groundbreaking will not have significant impacts on the livelihoods of rural communities if it's not disseminated to the consumers in a timely and appropriate manner. Dissemination of research results which involves the communication of the research outcomes or knowledge to the targeted groups through various channels should be a key component of any research (Burns, 2005). According to Burns, (2005) research consumption denotes to the process of synthesizing and consuming research results in order to make an effect on or a transformation in the present practices in the society. Consumption of research outcomes to a substantial degree hinge on appropriate distribution channels to the target consumers.

70 per cent of the world's very underprivileged people live within the rural areas. Among the developing countries, 3.1 billion or 55% of the total population live in the rural communities than in the urban areas. Any poverty reduction measures should therefore focus on the rural communities with the biggest chunks of the population. According to IFAD, (2012) poverty status remains significantly high in Africa, Latin America and the East Asia regions despite considerable progress made in reducing human suffering by other regions of the world. Agriculture is the backbone of most developing countries' economies supporting over two thirds of the region's poor populations (ADB, 2011). The worth of agricultural research can only be assessed in

reference to its contribution to the betterment of live among the rural populations. It is not sufficient to undertake research, and attain results; but rather the results need to be disseminated in timely and appropriate manner to the farmers, fields, and extension officers for adoption. Owing to the fact that economic growth is one of the best solutions to poverty and only a handful of countries have ever attained economic growth without investing in agriculture, it follows that agriculture is an important component in the development of African countries. Developments in agricultural knowledge will significantly continue to play a crucial role in improving the livelihoods of rural communities and the overall economies of African countries. According to FARA, (2006) the efficacy of agricultural knowledge creation and use significantly depends on the relevance and receptiveness to farmer's needs. Currently most of the researches are not informed by the needs of farmers a fact that lessens the importance and impact of agricultural research undertakings.

Despite the improvements in information and communication technologies which have made the distribution of information much easier, there is still a significant gap between the producers of agricultural research knowledge and the consumers of the same. Anderson, (1992) indicates that this gap is credited to knowledge producers bestowing much of their time, attention and energy to the creation of new information at the expense of distribution of new and existing research outcomes. Kirst, (2000) in agreement denotes that, resistance by knowledge consumers to uptake research findings elucidates to the barrier to the integration of research outcomes into development activities. In some cases, researchers may wish to share their results with their target communities, but the structuring of their research institutions make it untenable. Further, most of the research funding institutions do not make the research dissemination a mandatory component in their call or proposals a factor which may aggravate the problem further. The careers of most researchers including agricultural researchers is often academically oriented thereby the most appropriate dissemination venues are the academically based avenues such as peer reviewed publications or journals with little attention on community forums.

2. Methodology

This paper is an outcome of a research that was conducted in Yatta division, Machakos County, Kenya. Yatta division has four administrative locations which include Matuu, Mavoloni, Ndalani and Kithimani. The division has an approximate population of 91,115 people, with an approximate surface area of 1,059 km². The poverty index within the division stands at 56% with 60% of the population been able to read and write. Main economic activities in the division include small scale farming and isolated pockets of commercial farming for export mainly done within Yatta canal, and Athi River. The author's focus on Yatta division was based on the fact more researches had been undertaken within the division compared to other divisions within the county according to Machakos county agriculture field data. Most of the previous researches focused on institutional factors

hindering the utilization of agricultural research uptake. Therefore the author sought to establish the socio-economic barriers to agricultural research results uptake within the division.

The study adopted an ex post facto research design to assess the factors influencing the utilization of agricultural research in Yatta division, Machakos County. Kerlinger, (1964) points out that an ex post facto research is one in which the independent variable (s) have already occurred and in which the researcher studies the independent variables in retrospect to their possible relations to and effects on the dependent variable (s). The basic purpose of ex post facto research design is to discover or establish causal relationships among variables. The study of the factors affecting utilization of research findings in rural communities involves practices, processes and conditions that already exist, a fact that makes this research design most appropriate. This paper critically emphasizes socio-economic barriers to agricultural research results uptake. The paper concludes by giving recommendations to the government and other relevant stakeholders for policy decisions on how enhance research results utilization.

3. Findings and Discussions

3.1 Socio-economic barriers to agricultural research utilization

The main theme of this study was to establish the socio-economic barriers to research uptake. According to the figure below, 57.6 (%) of the respondents earned less than Kshs 5,000 from their agricultural based economic activities. 23.7 (%) of the respondents earned between Kshs 5,000 and Kshs 10,000 while 15.1 (%) earned between Kshs 10,000 and Kshs 20, 000 and, 3.6 (%) earning above Kshs 20,000.

Table 1: Distribution of respondents on basis of monthly income

<i>Income per person per month</i>	<i>Percent</i>
Less than 5000	57.6
5,000-9,999	23.7
10,000-19,999	15.1
Above 20,000	3.6
Total	100.0

The data shows that low income level as a major barrier to research uptake. Research utilization is not simply getting the word out to the consumers but rather getting the word used by the consumers. Most of the farmers especially within rural communities are poor and may not be in a position to make use of new agricultural innovations often associated with high cost. The strenuous financial status of the poor respondents forces them to be extremely cautious in adopting anything new. Most agricultural innovation and inputs such as seedlings and fertilizers retailed at high prices hence unaffordable to most of the farmer. Further the study revealed that 47.5 (%) of the respondents practiced subsistence farming, 24.5 (%) of the respondents practiced horticulture mainly concentrated along the Yatta canal strip and Athi river, 20.8 (%) cattle keeping, 3.6 (%) agro-forestry and 3.6 (%) cash crop farming as illustrated below. The economic activities were mainly done in substance basis to

support the family within minimal incomes realized from the endeavors.

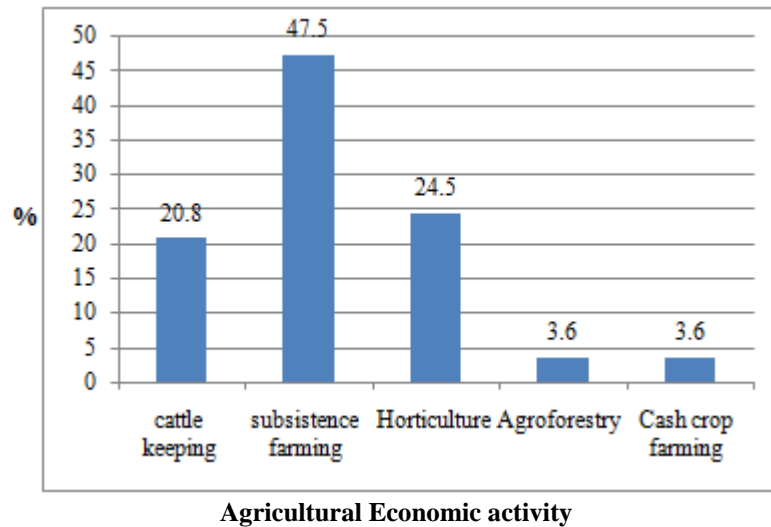


Figure 1: Main agricultural related economic activities within the division

As an indication of the sources of information, knowledge and intervention to improve their economic activities the study posed a question to the respondents to understand their extent of the uptake of research results as indicated below.

Table 2: Measures to improve productivity of agricultural activities

Measures to increase incomes	Percent
Attending trainings/seminars	43.2
Agricultural extension services	19.4
Merry go rounds/CBOS	29.5
Micro credits	7.9
Extensive farming	0
Total	100.0

The study revealed that 43.2 (%) of the respondents relied on trainings/seminars as the way of improving the performance of their agricultural economic activities. The influx of Non-governmental organizations played the role of improving the livelihoods of the locals mainly through organizing trainings or seminars to train farmers on various practices. However, the study revealed that farmers didn't learn to apply research results at the first instance (of sharing the agricultural research findings) but over repeated trainings and through seasons. However, most of the training avenues by various institutions lacked the repetitive aspects thus reducing their effectiveness. This conclusion was drawn from a comparison between a KARI program and business alliance against chronic hunger (BAACH) a NGO program, where repeated presence of BAACH and frequent documentation of the progress of the farmers yielded improved results as compared to KARI.

It was observed that, 19.4 (%) of the farmers relied on agricultural extension services in improving the productivity. The main services assessed by the locals from agricultural extension services mainly included provision of seeds and fertilizers to the farmers, although the study indicated that such supplies were always in small quantities not enough for the farm needs. The extension offices had a wide range of information but available through 'access on request' bases mainly done by large scale farmers who

frequently visited the extension offices. The inability of the extension officers to reach out frequently to the farmers reduced the effectiveness of this method.

It was noted that, 29.5 (%) relied on organizing themselves into merry go rounds or CBOs with high dominance of youth and women groups. Most of the respondents were organized into groups with 'Tukilanie', 'Uumwewaaamwaitu' and Kenworks initiative been examples of groups identified in Kithimani location and Maiuni youth group and Mutauni women group been examples of groups identified within Matuu location. A few of the groups and individuals, 7.9 (%) also relied on micro credit institutions such as KWFT to access financial services to expand their activities. The groups were vital in enhancing the capacity of single farmers when working together in; raising capital and produce, sharing knowledge and, accessing markets especially in the case of horticultural producers through visitations by groups. According to the study findings, groups were mainly influenced by strong leadership with the leaders been the prime beneficiaries. This created a sense of dependency where majority of the members relied heavily on their leaders for the functioning of the group - the withdrawal of such leaders lead to the collapse of such groups (a case of Kakatania self-help groups whose two influencing leaders joined Kenworks initiatives)-. None of the respondents interviewed engaged in large scale or extensive farming.

Further, the predominant female gender involved in agricultural activities was another barrier to the utilization of agricultural results. The total number of female respondents was 66.9 (%) while the number of male respondents was 33.1 (%). Agriculture is a labor and land intensive undertaking which can be influenced by decisions relating to these two factors of production. Due to the nature of land holdings within the division, decisions relating to what to be produced and allocation of labor may highly be influenced by the gender of the decision makers. Thus, the high dominant female gender composition may be correlated to low agricultural productivity within the division. One female respondent said that she had to wait for the husband who

works in the city to give orders relating to when and what will be cultivated despite the fact that remains are normally sporadic and any delays may mean reduction in the total yields. Family decision making structures have a profound effect on the functioning of the members. Gender biasness in decision making was observed with men dominating in making major decisions in the family and community. Though majority of the farmers were women, owing to the dominant male effect in decision making, most of the decisions relating to farm production may have being influenced by the absent males most of whom have moved to the urban areas.

In relation to agricultural productivity and the use of agricultural research results, literacy means more than just be able to read drug labels or pamphlets. Literacy refers to both the cognitive and social skills which determine the enthusiasm and the capacity of farmers to gain access to, comprehend and make use of agricultural research results in ways that promote and enhance their livelihoods. Literacy is broader than just farmer-behavior oriented communication and is paramount in empowering farmers to address environmental, social-cultural, economic and political factors that determine agricultural productivity.

The study revealed significant number of people who had poor reading and writing skills accounting for 46.8 (%) of the responses as indicated in the figure below. The study noted a positive strong correlation value of 0.87 between low education levels and the low agricultural productivity within the division. Literacy levels influence the types of crops grown or animals reared and their management or husbandry. For example, appropriate application of Chemical and fertilizers, understanding of the farm calendar, identification of pest and diseases.

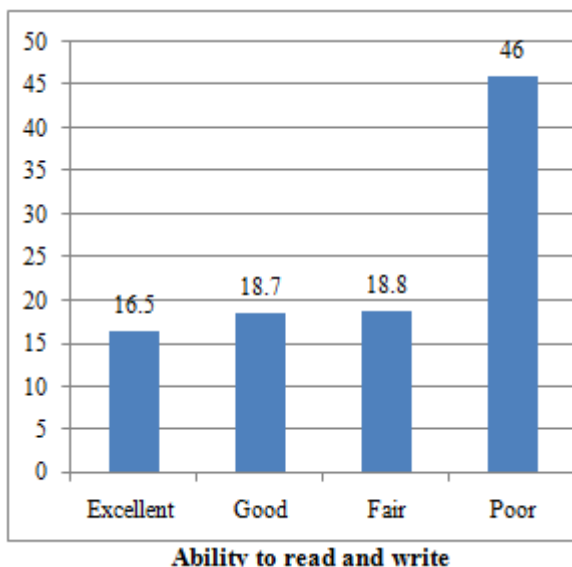


Figure 2: Distribution of respondents according to literacy levels

During key informant interviews one respondent said that: *'I am a horticulture farmer and since I know that certain chemicals such as Dimethoate have been banned I do not use them on my horticultural crops but i apply them on my locally consumed crops such as Sukuma wiki since no ban prohibits such chemicals.'*

This was an indication of the extent to which illiteracy was impacting not only the production capacity of the farmers but also on the health of the farmers who lack the ability to understand and synthesize the information for convenience of expanding their production and also guaranteeing the health.

According to the study findings poverty and ignorance accounted for a big share of research utilization problem. Most of the respondents reported they didn't have a specific reason why they had not translated the information into tangible output rather they would see to it with time. The study noted habit and routine formed a big hindrance to research uptake. The divisional agricultural officer observed that local NGOs are more successful in getting the farmers to utilize new technologies in comparison to the government Kenya agricultural research institute due to the repetitive nature of the NGO undertakings as compared to KARI. In addition, the NGOs are associated with monetary incentives which motivate the farmers in adopting the technologies. It is therefore important for the researches to adopt cheaper, repetitive dissemination avenues to the farmers to enhance their uptake.

According to the study findings, Cultural practice formed a major hindrance to research uptake. Rogers, (1983), identifies laggards as localite and often near isolates in social grouping. Their main reference point is the past and their major decisions are often made in reference to previous generations. Culture encourages people to continue with particular practices and to stay clear of some other or new practices. Cultural practices form a uniformed way of doing things within the society. It unifies the practices of different community members and inhibits the introduction of any new ideas. This may explain the continued production of specific crops or reliance on specific agricultural activities despite their low production within the division.

One farmer said that; *'I continue producing maize and beans despite the fact that I do not get good yields because I found our fathers and ancestors producing the same crops and this are our crops and we cannot abandon them to producing other communities crops'*

In support of that the division agricultural officer said that;

Farmers continue producing crops that do not do well because of the history and cultures and do not give new crops and innovation a chance since they feel they will take away their culture'

In addition, productivity within most of the rural communities is not just attributed to the efforts of the farmers but also to the 'will of gods'. Farmers often leave their fate to the gods and easily attribute their low production to gods and this is taken as a normally occurrence. The individual effort of the farmers in improving production is not in any way comparable to the influence by the gods. This may provide a way to accept all outcomes by farmers without a deliberate effort to improve.

Persons of different cultural backgrounds have varied ways of obtaining information and trust varied sources of

information. Some communities prefer networks of family and friends while others are open to agencies and institutions in accessing their information.

It was observed that the community members on the division where more comfortable with government agricultural officers speaking the local languages, NGO that have thrived in the areas for a longer time, and word from either friends, or family members. Although government agricultural officer stocked huge piles of information materials there was hardly any use by local farmers except by a handful of young farmers mainly doing horticultural farming. Failure to recognize such diversities in the dissemination of research findings may have varying results from different communities. The over reliance on journals and books by researchers to disseminate their findings would therefore form a big barriers.

Table 3: Information related challenges to research utilization

<i>Information related barriers to research findings usage</i>		<i>Percent</i>
Language barrier		17.9
Unavailability of information		48.9
Poor communication channels		33.2
Total		100.0

According to Blasiotti, (1992) agricultural research results are numerous and available to those who seek them. However they are not widely accessible to a majority of the small scale farmers especially within rural communities. There is critical distinction between the availability (which basically refers to availability of scholarly journals or availing of the final research report upon request) and accessibility, which refers to the ease and the simplicity with which farmers can comprehend and use the research findings.

The study revealed that 48.9 (%) of the respondents rated unavailability of information as the main information based barrier to research utilization. Language barrier between farmers and the source of the information mainly government extension officer or suppliers of farm inputs formed 17.9 (%) and, poor channels of communication forming 33.2 (%).

Rich, (1979) posits that, the breakdown in 'research to practice path' can be explained through a number of factors. There is limited time and money allocated to dissemination of research, limited dissemination channels and often, researchers lack the language or skills to present their findings to the communities. Besides, research consumers must wait until the research findings get published in journals or seminars, which they may or may not access. Based on the study findings, the dominant research results familiar to the respondents within the division were on the drought resistant seedlings, fertilizers assessed through the local extension services, drought resistant crops such as banana and millet, and sorghum introduced by KARI, chemicals, seeds, mechanizing equipment and fertilizers introduced by the private sector and the NGOs.

4. Conclusions

Each society in the world is striving to achieve development. Developing countries are currently struggling to accelerate their economies through new and innovative programs to improve the lives of people in the rural settings. From the study findings it can be concluded that the key factors influencing the utilization of research results include female headed households, illiteracy, poverty, availability of research finding and their accessibility in a consumable language. The average farmer within the division was a female, who could not read and write and the income levels are less than Kshs 5,000. Further the available agricultural research results were highly limited to only those services farmers can access with minimal income such as free distribution of seeds and fertilizers. Low level of awareness on agricultural research findings was noted among the farmers. Researchers and extension officers relied on a small spectrum of information dissemination tools/avenues only reaching small proportion of the farmers. Effective dissemination of agricultural research results can play a significant role in improving the lives of rural people. The current dissemination ways should seek to reach farmers through groups to enhance mobilization of resources. Further integration of community leadership and local government officials in dissemination of agricultural research results is critical to overcome cultural and social barriers facing the dissemination process. Further good relationships between the farmers, extension officers and the researchers to complement each other are important in winning the trust of the farmers. Sensitization of farmers on available financial services since poverty and lack of capital is important since it formed the biggest barrier to research results utilization.

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