

## How Public Library Information Resources Impact Maize Production in Laikipia East Sub-County, Kenya

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### Abstract

**Purpose:** Kenya's economy is still based mostly on agriculture, with maize (*Zea mays*) being essential to rural populations' livelihoods and food security, especially in Laikipia East Sub-County. The problem was that maize farmers had a history of significant crop failure, as seen by the 12.8% drop in the total amount of maize harvested in 2023 over 2022. The goal of the current study is to ascertain how public libraries in Kenya's Laikipia East Sub County might improve maize production. The purpose of this study is to investigate how the Laikipia East Sub-County's public library information resources affect the methods used in maize growing. The research was guided by the Information-seeking Behavior Theory.

**Methodology:** The survey method was utilized in this cross-sectional study. A population of 12,500 maize farmers from Laikipia East Sub-County was considered; where the simple random selection of 373 participants was taken as a sample for the study. A sample of 3 library staff was obtained from a population of 10 using a purposive sampling technique. Questionnaires and interview guides were used to collect the data. Mean and standard deviation were computed from data gathered through questionnaires, while, themes were identified from interview data.

**Results:** The findings reveal that while public libraries in Laikipia East Sub-County provide resources for maize farming, many farmers view these resources as outdated or insufficient, pointing out need for updated agricultural information, better digital resources, targeted training programs, and increased awareness of available library services. Public libraries in Laikipia East Sub-County provide valuable resources for maize farming, but there's a gap between available information and farmers' needs.

**Conclusion:** Libraries should update content, improve digital access, and tailor services to address farming challenges. The study recommends need for maize farmers to utilize digital resources from public libraries to enhance maize output and improve agricultural practices.

**Keywords:** *Maize Production, Maize Information Resources, Maize Farming, Public Libraries, Agricultural Resources*

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## 1.0 Introduction

Kenya's economy is still based mostly on agriculture, with maize (*Zea mays*) being a staple crop that is essential to livelihoods and food security. A major agricultural industry in Laikipia East Sub-County, maize growing provides income for a large number of rural communities. Nonetheless, there are several obstacles that affect the productivity of farmers in this area, such as restricted access to resources and current agricultural knowledge. One of the most extensively grown cereal crops worldwide, maize is produced on every continent but Antarctica (Erenstein et al., 2022). The world's top producers of maize are China, the United States, Argentina, Brazil, and India (Santpoort, 2020). Countries benefit from large land availability, cutting-edge agricultural technologies, and ideal climate conditions for maize cultivation, according to Grote et al., 2021. Furthermore, a number of factors, such as the need for food, animal feed, and industrial applications like biofuels, influence the world's maize production (Cairns & Prasanna, 2019).

As a staple food crop that provides millions of people in Sub-Saharan Africa (SSA) with their main source of calories and nutrition, maize is extremely important (Grote et al., 2021). Major producers in the region include South Africa, Tanzania, and Nigeria, which together produce a large amount of the world's maize (Santpoort, 2020). However, SSA's maize production suffers a number of difficulties, including restricted access to contemporary farming inputs like automation, fertilizers, and improved seeds; unpredictable weather patterns; and pressure from pests and diseases. Maize agriculture holds great cultural and economic significance in Kenya (Tarus, 2019). For most people, it is a staple crop that makes up a sizable portion of their diet. Throughout Kenya, maize is farmed throughout many of the country's agroecological zones; the country's principal producing regions are the Rift Valley, Western Kenya, and portions of the Eastern and Coastal regions (De Groote et al., 2020). The majority of maize is produced by smallholder farmers, who use both irrigated and rain-fed farming techniques.

The purpose of this study was to investigate how the Laikipia East Sub-County's public library information resources affect the methods used in maize growing. The issue was that Laikipia East Sub-county's maize farmers had a history of significant crop failure, as seen by the 12.8% drop in the total amount of maize harvested in 2023 over 2022 (GoK, 2022). This calls into question not just the processes used in production but also the accessibility and availability of data needed to support those processes. As a result, the study found that not much has been studied regarding how public libraries can increase maize output. The goal of the current study is to ascertain how public libraries in Kenya's Laikipia East Sub County might improve maize production. It aims to assess how farmers' knowledge and actions about maize production are influenced by the availability and utilization of these resources.

This study sheds light on how public libraries might improve agricultural productivity by analyzing the kinds of information resources that are available, how easily accessible they are, and how well they complement agricultural practices. Comprehending this effect is essential to formulating plans that make public libraries indispensable instruments for the advancement of agriculture. The results of this study will add to the growing body of knowledge regarding the incorporation of library resources into agricultural extension programs and provide suggestions for enhancing library offerings to better assist Laikipia East Sub-County's maize farmers.

## 2.0 Literature Review

The theory provides a paradigm for analyzing how people satisfy their information demands by searching for, obtaining, and using information. This paradigm has theoretical roots in information science, psychology, communication studies, and sociology. It talks about how human behavior is complex and dynamic in the context of information-seeking (Oza, 2021). The Information-seeking Behavior Theory, which has its roots in the late 20th century, mainly in the work of Carol Kuhlthau in 2008 (Soroya et al., 2021), has significantly changed our understanding of how people search for information to fulfill their needs (Mirzaei et al., 2021). The present study used information-seeking Seeking Behavior Theory to investigate how individuals, including the maize farmers in Laikipia East, actively seek out information to meet their unique needs. This idea can aid in the understanding of the information-gathering channels used by farmers, whether they are more contemporary and use the internet and mobile devices, or more conventional ones like books and extension services. Public libraries may play a significant role in facilitating access to pertinent agricultural information and helping farmers make educated decisions about their operations by matching their resources and services with these information-seeking habits.

Farmers use data as information resources. A database of customer purchasing information is an example of an information resource. Public libraries acquire, store, organize, distribute, and administer information resources for research, instruction, learning, and university public services (Wangechi & Njoroge, 2021). Mauti et al. (2018) state that the library caters to users who are also advertisers, with their primary concern being the availability of required information material in the suitable format at the appropriate time. As a result, a well-run public library facilitates access to and use of information resources, acting as a doorway to knowledge. The provision of a wide range of information resources by public libraries is essential to improve maize output. Books and journals, research papers, online databases, government publications, and community resources are all included in this list of resources. Public libraries are dynamic information repositories that provide maize farmers with a wide range of resources, from modern internet databases to conventional books and journals (Rehman et al., 2022). Libraries give farmers access to a multitude of information, enabling them to choose wisely, implement best practices, and enhance their maize production efforts over time. Libraries are vital global access points to a vast body of information that is essential for improving agricultural techniques, one of which is maize production. Libraries can address the particular difficulties and opportunities that agricultural communities in particular geographic locations experience when using a regional approach (Boateng et al., 2018).

The term "Information Needs of Maize Farmers" describes the particular knowledge and information that farmers need to improve yields, improve production practices, deal with obstacles, and keep up with developments in market trends, technology, and farming methods (Donatti et al., 2019). Finding library resources is aided by the information required for farmers to produce maize (Phiri & Chawinga, 2019). Farmers' information demands, which emphasize cutting-edge technologies like precision irrigation, hydroponics, and vertical farming to maximize yield potential and sustainability, are a reflection of Israel's experience in agrotechnology and innovation (Degani et al., 2022). In addition, the management of pests and diseases is a critical factor that drives farmers to research integrated pest management techniques in order to reduce crop losses and preserve stable output (Orimoloye, 2022).

### 3.0 Methodology

The survey method was utilized in this cross-sectional study. This research design was used for the study since surveys have been shown to have higher external reliability and more generalizability in research (Maxwell, 2021). Surveys also enable the highly economical collection of vast amounts of data from a sizable population (Story & Tait, 2019). A population of 12,500 maize farmers from Laikipia East Sub-County was considered; where, the simple random selection of 373 participants was acquired as a sample for the study. A sample of 3 library staff was obtained from population of 10 using purposive sampling technique. Questionnaires and interview guides were used to collect the data. Pre-testing of instruments was done which helped to ensure reliability and validity. The quantitative technique used descriptive statistics such as frequencies and mean values while themes were used to analyze interview data. Information was presented using tables and themes.

### 4.0 Results and Discussion

In the Laikipia East Sub-County, the researcher gave 373 questionnaires to farmers who grow maize. Following the process of collecting data, 270 (72.4%) were completed and deemed legitimate. The study was able to interview every single one of the three (100%) library staff members it had planned to interview. As a result, the study had a good overall response rate of 86.2%. The Laikipia East Sub-county's maize growers and library employees worked together to achieve a high response rate. These results support the suggestion made by Mugenda & Mugenda (2003) that a response rate of 70% or more provides a good representation of the study participants. Similar to this, Babbie and Mouton (2001) proposed that response rates of 60% and 70% are categorized as good and very good, respectively, although a study that finds a 50% response rate is still sufficient for data analysis. The findings are represented in Table 1.

**Table 1: Demographic characteristics of maize farmers**

Characteristics	Description	Frequency	Percentage
Level of Education	Primary Education	73	27.0%
	Secondary Education	41	15.2%
	Vocational training/certificate	58	21.5%
	Bachelors	67	24.8%
	Other	31	11.5%
	Total	270	100.0%
Maize farming type	Large-Scale Maize Farming	110	41.0%
	Small Scale Maize Farming	160	59.0%
	Total	270	100.0%
Length of practicing maize farming	Between one and three years	38	14.0%
	Between three and five years	42	16.0%
	More than five years	168	62.0%
	Less than one year	22	8.0%
	Total	270	100.0%

The essential demographic features of maize producers are displayed in Table 1. The first feature was the educational background of the participating Laikipia East sub-county, Laikipia

County corn producers. It is evident that of those surveyed, 73 (27%), 41 (15.2%), 58 (21.5%), 67 (24.8%), and 31 (11.5%) had completed their primary, secondary, or vocational education. Seven people had dropped out of school, four held master's degrees, and nineteen had no formal education at all in the "other" group. Understanding the balance between large- and small-scale farming can help with the adaptation of resources and assistance to meet different farming needs. In their study article, Small-scale versus large-scale agriculture: Tanzanian experiences, Coulson, A. (2015) compares and contrasts large-scale farming with smallholder farming in East Africa, highlighting differences in resource usage, output, and accessibility to support services. The report emphasizes that because smallholder farmers typically face different challenges than large-scale farmers, they require specific help to boost their output. This study provides more evidence of the marketing infrastructure's importance. When paid for their labor, they will be extremely reluctant to grow that crop. This was according to Table 2.

**Table 2: Demographic characteristics of Library staff**

Characteristics	Description	Frequency	Percentage
Level of Education	Primary education	0	0.0%
	Secondary education	0	0.0%
	Vocational training/certificate	0	0.0%
	Bachelor's degree	3	100.0%
	Total	3	
Length of service	Less than one year	0	0.0%
	Between one and three years	1	33.3%
	Between three and five years	1	33.3%
	More than five years	1	33.3%
	Total	3	
Library section	Librarian	1	33.3%
	Circulation	1	33.3%
	Digital library	1	33.3%
	Total	3	

According to Table 2 above all the library staff were Bachelor's Degree holders. They had worked in the library for more than one year. In their study on the use of ICTs in conservation agricultural knowledge pathways among smaller farmers in Machako and Laikipia counties, Kenya, Achora et al. (2019) discovered that the average age of the respondents was 53 years old. This may indicate an aging farming population. Based on the respondents' average of nine years of education, nearly all of the farmers had finished primary school. Eighty-eight percent of the participants were farmers who raised a range of crops and cattle. Thus, the majority of the food and financial security for the study's participating households came from agriculture.

***Findings on Information Resources Available at Public Library for Supporting Maize Farming in Laikipia East Sub-County***

These resources, which include educational workshops and training materials, digital resources, and online access, agricultural books and manuals, and materials from local agricultural extension services that offer current information on best practices and useful advice



on maize, can help farmers in Laikipia East Sub-County improve their farming practices. It's a good idea to go to your local library and talk to the librarians about what you need; they might be able to recommend even more specialized services and resources. The information resources available at the public library to support maize farming in the Laikipia East Sub-County are listed in Table 3.

**Table 3: Information Resources available on public library to support maize farmers**

Statements on Maize production (N=270)	0(NV)	1(SD)	2(D)	3(N)	4(A)	5(SA)	Mean	Std. Deviation
The public library provides a comprehensive collection of resources relevant to maize farming.	87(32.22%)	15(5.56%)	13(4.81%)	60(22.22%)	39(14.44%)	56(20.74%)	2.433	1.959
Agricultural information available at the public library is up-to-date and relevant to current farming practices	85(31.48%)	19(7.04%)	13(4.81%)	55(20.37%)	42(15.56%)	56(20.74%)	2.437	1.961
The public library offers easy access to digital resources and the internet for researching maize production techniques	79(29.26%)	18(6.67%)	18(6.67%)	62(22.96%)	40(14.81%)	53(19.63%)	2.463	1.904
The information resources provided by public libraries in Laikipia East Sub-County enhance your knowledge and skills in maize production	79(29.26%)	12(4.44%)	17(6.30%)	45(16.67%)	63(23.33%)	54(20.00%)	2.604	1.940
I have access to relevant information resources on maize production outside of public libraries in Laikipia East Sub-County	56(20.74%)	18(6.67%)	17(6.30%)	34(12.59%)	80(29.63%)	65(24.07%)	2.959	1.862
Public libraries continually update and expand their collection of information resources related to maize production	70(25.93%)	14(5.19%)	17(6.30%)	52(19.26%)	67(24.81%)	50(18.52%)	2.674	1.871

Similar to the previous statement, the mean of 2.437 denotes a neutral to somewhat unfavorable opinion of the relevance and timeliness of agricultural information. A variety of viewpoints are reflected in the high standard deviation. The average score of 2.463 indicates that opinions about the internet's and digital resources' usability for studying maize production are viewed as neutral to slightly negative. Table 3 shows that the average rating of 2.433 indicates a neutral to slightly unfavorable opinion on the extent of resources offered by public libraries for growing maize. The wide range of responses is indicated by the high standard deviation. According to Kamau et al. (2018), libraries play a crucial role in achieving the Sustainable Development Goals (SDGs) by providing access to knowledge, instruction, and community resources. Sustainable Development Goals (SDGs) supported by Kenyan libraries include high-quality education (SDG 4), sustainable cities and communities (SDG 11), and responsible consumption and production (SDG 12).

Libraries offer materials and instructional initiatives that promote the acquisition of skills and knowledge for a lifetime. This includes topics like computer literacy, career training, and access to scholarly research all crucial for empowering people. Individually and as a community. Public libraries may assist in promoting sustainable agricultural practices like maize production, which is necessary for ensuring food security in places like Laikipia East Sub-County. The standard deviation of 1.871 indicates a reasonable level of agreement. Libraries provide access to case studies, agricultural research articles, and publications on agricultural production based on sustainable development goals (Sadare et al., 2022). These publications may contain information about disease-resistant strains, high-yielding varieties of maize, and how crop yields are affected by climate change. According to Abata et al. (2018), libraries are essential social tools that are necessary for achieving sustainable development goals. It is necessary to put in place a program for climate information awareness and access. This should include resources on climate change adaptation, mitigation, early warning, and effect reduction.

#### ***Findings on Maize Production in Laikipia East Sub-County***

The study focused on maize production in terms of volumes of outputs and how the public libraries helped to solve the challenges associated with maize production. Table 4 provides the findings of the maize production in Laikipia East Sub-County.

**Table 4: Maize Production in Laikipia East Sub-County**

Statements on Maize production (N=270)	0(NV)	1(SD)	2(D)	3(N)	4(A)	5(SA)	Mean	Std. Deviation
I have been getting more volumes of maize yield each year since I started using the library	85(31.48%)	18(6.67%)	14(5.19%)	42(15.56%)	58(21.48%)	53(19.63%)	2.478	1.973
Maize production has been consistently through the use of Nanyuki Public Library improved services	87(32.22%)	15(5.56%)	25(9.26%)	35(12.96%)	54(20.00%)	54(20.00%)	2.43	1.976
Nanyuki public library services have enabled me to increase maize sales	87(32.22%)	15(5.56%)	20(7.41%)	33(12.22%)	66(24.44%)	49(18.15%)	2.456	1.97
Enabled me to reduce maize farming input expenses	87(32.22%)	15(5.56%)	19(7.04%)	28(10.37%)	71(26.3%)	50(18.52%)	2.485	1.986
Public libraries currently address challenges faced in maize production	81(30.00%)	18(6.67%)	20(7.41%)	37(13.70%)	71(26.30%)	43(15.93%)	2.474	1.918
Access to information through public libraries can significantly improve maize production practices	84(31.11%)	18(6.67%)	14(5.19%)	34(12.59%)	62(22.96%)	58(21.48%)	2.54	2.003

Table 4 above demonstrates that the respondents have been able to acquire higher yearly volumes of maize production once they started utilizing the library mean score of 2.478. This implied that opinions on the claim that library services have increased corn yields were mostly divided or indifferent. A high level of response variability was suggested by the high standard deviation. The improved services provided by the Nanyuki Public Library have consistently raised maize yield. This statement showed a similar pattern of mixed responses with a slight tendency toward disagreement or neutrality, with a mean score of 2.43. There was a wide range of opinions, as the standard deviation demonstrated. Libraries can promote sustainable agricultural practices in the production of maize by providing information on disease-resistant



strains, high-yielding cultivars, and the effects of climate change on crop yields (Sadare et al., 2022). Farmers need this kind of knowledge to adapt and prosper in a changing environment.

The report emphasizes how critical it is to put in place initiatives that promote access to and knowledge of climate information. According to Abata et al. (2018), libraries are essential social tools for accomplishing goals related to sustainable development. As a result, libraries ought to include materials on effect reduction, early warning systems, mitigation, and adaptation to climate change. By assisting farmers in comprehending and addressing climate-related issues, these programs can improve the sustainability of maize production. The report emphasizes how critical it is to put in place initiatives that promote access to and knowledge of climate information. According to Abata et al. (2018), libraries are essential social tools for accomplishing goals related to sustainable development. As a result, libraries ought to include materials on effect reduction, early warning systems, mitigation, and adaptation to climate change.

By assisting farmers in comprehending and addressing climate-related issues, these programs can improve the sustainability of maize production. Farmers generally have neutral to somewhat negative opinions on the relevance and timeliness of agricultural information, as indicated by their mean score of 2.437. This neutrality, along with a significant standard deviation, suggests a wide range of perspectives regarding the efficiency with which agricultural information is provided by public libraries. Although some farmers might find the material helpful, others could think it is out of date or unrelated to their needs. The need for libraries to continuously update and modify their agricultural resources to better correspond with contemporary farming methods and issues is highlighted by this variation in perspective.

A neutral to somewhat unfavorable impression is reflected in the average rating of 2.433 for the amount of resources available in public libraries for maize cultivation. There is a notable variation in farmers' opinions regarding the suitability of library resources, as seen by the high standard deviation of replies. While some might think there are gaps or restrictions in the contents offered, others could think the resources are adequate.

## **5.0 Conclusion**

The findings indicate that while public libraries in Laikipia East Sub-County offer valuable resources for maize farming, there is a notable gap between the available information and the farmers' information needs. The generally neutral to somewhat unfavorable perceptions among farmers highlight the need for libraries to continuously update and expand their agricultural content, improve digital access, and tailor services to address specific farming challenges. Enhancing awareness of these resources and integrating climate information programs are essential steps to better support maize farmers, promote sustainable agricultural practices, and ultimately increase productivity in the region.

## **6.0 Recommendations**

The study recommends that public libraries should regularly update their agricultural resources to reflect modern maize farming practices. It recommends public libraries collaborate with agricultural extension services to ensure accurate information. Investing in internet connectivity and digital resources can help farmers explore advanced techniques. Public libraries should organize targeted workshops and training sessions covering climate-resilient farming practices, disease-resistant varieties, and sustainable techniques. They should also carry out awareness campaigns to educate maize farmers about available information resources. Climate information programs should be introduced, and partnerships between

libraries, NGOs and agricultural research institutions to facilitate knowledge sharing. They should further engage in regular assessments of library services' effectiveness to enhance library services to farmers. They need to promote sustainable agricultural practices by providing resources on organic farming, soil conservation, water management, and crop diversification.

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