Effect of Potato Production on People's Welfare in Mparo Village, Busoro Sub-County, Kabarole District

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Declaration

I, Arinitwe Loyce, declare that this research report is my original work and has not been submitted to any academic institution or university for any academic award.

Sign: .....

Date.....03/11/2025.....

Approval

This research report was derived from the research work that was carried out under my supervision and is ready for submission to examination committee.

Sign: .....

MR. OKIRIA AISU LATIF

Date..3/11/2025.....

Dedication

I dedicate this report to ARU students, my parents, brothers and sisters, relatives, and lecturers.

Acknowledgement

First and foremost, I thank God the Almighty for the gift of love, mercy, favor, and life. Secondly, I convey my sincere appreciations to my beloved mother Ms. Tumusiime Scovia who has always supported me financially, materially, and psychologically.

To my Faculty Mentor Mr. Okiria Aisu Latif, thanks for the educational guidance, and constructive criticism in the course of my research.

I also thank the management of African Rural University for the financial support rendered to me while in the field conducting this research

I acknowledge my classmates for the continuous moral support offered to me during the course of this research work, your words of encouragement always made me work hard to accomplish this research on time.

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List of Acronyms

NGO: Non-Governmental Organizations

NFA: National Food Authority

FAO: Food and Agriculture Organization

ARU: African Rural University

WFP: World Food Program

MT: Metric Ton

Abstract

Potato (*Solanum tuberosum* L.) is a starchy root vegetable native to the America that is consumed as a staple food in many parts of the world. In Uganda, its production has increased remarkedly in the past 15 years, with 327,300 MT produced from an estimated 111,100 hectares in 2018. However, challenges such as fluctuating market prices, poor road infrastructure, and limited access to modern farming technologies hinder its full potential. Therefore, this research evaluated how potato farming affects welfare of the farmers involved, focusing on income levels, varieties of potatoes, and overall standards of living. The objectives of the study were to evaluate the contribution of potato production to household income, identify the type of potato varieties that are mostly grown in Mparo village, and to examine the challenges faced by potato farmers in Mparo village. Data was collected through surveys, interviews, and focus group discussions with farmers, agricultural experts, and local community leaders and analyzed using Microsoft Excel (2013). Results showed the largest proportion (62%) of respondents earn above 1,000,000 UGX per season from potato farming, while the least (6%) of respondents earn less than 100,000 UGX, also, a larger proportion (47%) of respondents sell their potatoes in neighboring town, while the least number (9%) of respondents sell directly to consumers. Similarly, Majority (68%) of respondents reported potato farming as their primary occupation, while the least number (4%) of respondents identify as "brokers" without additional context. It was concluded that while most farmers report high production levels, income generation varies considerably across different groups. A substantial proportion of farmers face challenges such as limited financial resources, inadequate storage facilities, pests and diseases, and poor market access, all of which hinder their ability to maximize profits and productivity. Therefore, emphasis on promoting the use of improved and hybrid potato varieties, supporting efficient farming practices, increasing access to financial resources, and addressing the specific needs of farmers with low production is necessary

CHAPTER ONE

GENERAL INTRODUCTION

1.0 Introduction

This chapter presents the introduction, background, production statistics and importance of potato, agronomic practices, vision statement, objectives of the study, research questions, scope of the study, and significance of the study.

1.1 Background of the study

One of the most valuable food crops in the world is the potato. With an estimated production area of 18.9 million hectares, it ranks fourth globally in terms of production volume (347 million metric tons yearly), behind maize, rice, and wheat (FAOSTAT, 2004). They are the most produced and consumed root crop, followed by sweet potatoes, cassava, and yam. It is a great source of energy for humans because of its low fat and comparatively high carbohydrate content (Wauters, 2017). It is well known that potato provides a significant number of vital vitamins, minerals, and trace elements, as well as carbohydrates and high-quality protein (Lombard, 2017). Furthermore, compared to other food crops, the potato crop yields more nutrient-dense food per unit of land area, in less time, and frequently under more unfavourable circumstances. It is regarded as one of the most effective crops in transforming labor, capital, and natural resources into a high-quality food that is widely accepted by consumers (FAOSTAT, 2004). Therefore, given the above potential, this study aimed at evaluating how potato farming affects welfare of the farmers in Mparo village, focusing on income levels, varieties of potatoes, and overall standards of living

1.2 Production statistics and importance of potato in Uganda

Potato (*Solanum tuberosum* L.) is a starchy root vegetable native to the America that is consumed as a staple food in many parts of the world. (Kaguongo, 2009) Potatoes are grown throughout Uganda and its production has increased remarkedly in the past 15 years, with 327,300 MT produced from an estimated 111,100 hectares in 2018, up from 155,000 MT produced in 2005-2006. This increase can be attributed to the conducive agro-climatic conditions and farmer recognition of the crop's value in terms of both household consumption and sales potential. (Wauters, 2024)

Local potato varieties such as Victoria, Rwangume and Kinigi are the most commonly grown, although a number of new varieties are in the process of being introduced to the Ugandan market, including the Dutch-developed Taurus, Markies and Panamera, Victoria, master, NARO pot5, and NARO pot6 varieties. These new varieties are high yielding and better suited for processing into products such as crisps and French fries. The introduction of these new varieties coupled with a stronger seed potato industry and intensive cultivation practices could see the potato sector reach its market size potential estimated at USD 30,000,000 per annum (Ssebbanja, 2024). The best quality varieties are Victoria and Rutuku for chips or French fries and Kachpot1 and Rwangume for crisps. These are mostly grown in the Western region in Uganda and to a lesser extent in Eastern Uganda. Farmers have access to a wide range of local and improved varieties. Kachpot1 and Rwangume are the most recently released varieties from the research stations. Victoria is the most marketable variety. (Lombard, 2017)

Uganda's potato processing industry is only just beginning to emerge, but with domestic demand for potato products growing, combined with the fact that hotels and major food chains are importing potato products (around 3,640 MT annually), the economic opportunity for processing is strong and would open up new local markets for Ugandan potato farmers. (Amanya, 2024)

1.3 Potato agronomic practices

In Uganda, potato farmers have generally 2 growing seasons (season A from March to July and season B from September to January) in which roughly an equal volume of potatoes are produced (Lombard, 2017). Potato farming is an essential livelihood activity for the local population. Many households depend on potatoes not only for food but also as a primary source of income. The farmers in Uganda use a combination of traditional and modern farming techniques to cultivate potatoes and include site selection and land preparation, potatoes need well-drained, fertile soil and adequate sunlight. Land preparation involves tilling the soil, applying organic matter, and potentially using raised beds for improved drainage (Akinboye, 2015). Planting is also one of the practices, potatoes are typically planted in rows, with seed potatoes placed 10-12 inches apart in a shallow trench. Spacing and planting depth depend on the variety and size of the seed potatoes (Allen, 2007).

Additionally, fertilizer application is also carried out since potatoes require a balanced supply of nutrients, especially nitrogen, phosphorus, and potassium (NPK). Fertilizers are applied before

planting and may be supplemented later in the season. (Tolessa, 2021). As the plant grows, it's important to "earth up" or mound soil around the base of the plant to encourage tuber formation and protect them from sun exposure (Tapiwa, 2022). Integrated pest management (IPM) strategies, including cultural practices, biological controls, and selective use of pesticides, are essential for minimizing losses (Rokne, 2024).

1.4 Vision statement

To increase potato yields sustainably in Mparo Village by 50% by 30th December 2027 through the adoption of improved potato varieties, and climate smart agricultural practices.

1.5 Objectives of the study

i. To evaluate the contribution of potato production to household income.

ii. To identify the type of potato varieties that are mostly grown in Mparo village

iii. To examine the challenges faced by potato farmers in Mparo village.

1.6 Research Questions

i. How much income do you generate from potato production in a season?

ii. Which potato varieties are highly grown in Mparo village?

iii. What challenges are faced by the potato farmers?

1.7 Scope of the study

This Chapter presents the Content, Geographical, Demographic and Time Scope of the Research.

1.7.1 Content scope

This study evaluated how potato farming affects the livelihoods of local farmers, focusing on income levels, varieties of potatoes, and overall standards of living

1.7.2 Geographical Scope

The geographical focus of this study was Mparo village located in Busoro Sub County Kabarole district along Kijura road. It is characterized by fertile volcanic soils, cool highland climate, and hilly terrain. Kabarole District, with its altitudes ranging between 1,200 and 2,500 meters above sea level, provides optimal conditions for growing potatoes, particularly in the highland areas like Mparo Village.

1.7.3 Demographic Scope

The study covered a population of potato farmers in Mparo village which consisted of 53 people of which 17 were male and 36 were female

1.7.4 Time Scope

The study covered a period between August 2023- May 2025

1.8 Significance of the study

The research findings will be vital in the following ways:

i. Will serve as a reference to future researchers and scholars who may be having research interest on effect of potato farming to household welfare
ii. The research findings will enable farmers and Agricultural extension staff to get a deeper understanding on the effects of potato production on people's welfare.
iii. The study came up with practical solutions to address some of the challenges that potato farmers face in a bid to maximize productivity and household incomes.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter reviews existing literature and conceptual framework related to potato production and its effect on the welfare of rural communities, particularly in Uganda.

2.1 Role of potato farming in Uganda

Potato (*Solanum tuberosum* L.) is one of Uganda's most important crops, it is ranked as the 8th food crop by production volume, particularly in the highland regions of the country. Uganda is among the top producers of Irish potatoes in East Africa, with the crop being a key staple food and cash crop in many rural areas. Potato farming is predominantly practiced in the southwestern and western regions of Uganda, including areas like Kabale and Kabarole. Alternative staple crops for potato are cassava, sweet potato, maize and beans and rice. Potato is becoming ever more competitive compared to these other crops because of the relatively high gross profit. Studies confirmed a shift towards increased potato consumption over traditional staple food like maize and cassava (Wauters, 2017)

Potatoes are regarded a high value crop because they often yield a higher return on investment per unit of land area. Also, because of their strong market demand, potential for export, high nutritional, or medicinal worth, makes them an important source of income for smallholder farmers. In Western Uganda, potato farming offers a livelihood opportunity for many households who rely on it for both subsistence consumption and market sales. According to a study by Turyahabwe *et al*., (2015), potato production contributes significantly to food security and household income in Uganda, especially in rural areas. Potatoes are largely used as a source of food, and sold in local and regional markets to generate income

2.2 Socio-economic impact of potato production

Potato farming has multiple socio-economic impacts on rural households. As an income-generating activity, it allows farmers to meet essential needs, such as education, healthcare, and household improvements (Kagoda1, 2013). The sale of potatoes can also enable farmers to engage in other productive activities, such as investing in better farming equipment or expanding their farm sizes. Studies in districts, such as Kabale and Rukungiri districts, show that potato farming has helped farmers increase their overall household income and reduce poverty levels. A

study by Otim *et al*., (2014), found that farmers in southwestern Uganda who grew potatoes as a cash crop realized increased household income, which helped improve their access to food, education, and healthcare. Furthermore, the local potato economy promotes the growth of other businesses, such as transportation and potato processing, which provides further opportunities for economic development.

2.3 Role of potato farming to food security in Uganda

Food security is a critical concern in many rural areas of Uganda where many households rely on agriculture for both food and income. The World Food Programme (WFP) defines food security as access to sufficient, safe, and nutritious food that meets dietary needs for an active and healthy life. Potatoes provide essential nutrients, including carbohydrates, vitamins, and minerals, which contribute to a balanced diet. In addition, the crop is often grown alongside other staple crops, like beans and maize, to ensure continuous food availability throughout the year (Pokharel, 2024).

A study by Kasolo & Muwanga, (2016) found that households engaged in potato farming often enjoy better food security compared to those who rely solely on other crops like cassava or maize. The regular harvesting cycle of potatoes means families can access food even during dry seasons. Moreover, potatoes can be consumed in various forms, including fresh, processed into chips, or stored for later use, contributing to food availability during off-seasons. FAO, (2018) emphasized that over-reliance on potatoes as a primary source of food can be a potential risk to long-term food security and emphasizes the importance of diversifying agricultural production to reduce vulnerability to crop failures due to diseases, pests, and changing weather conditions.

2.4 Challenges to potato farming

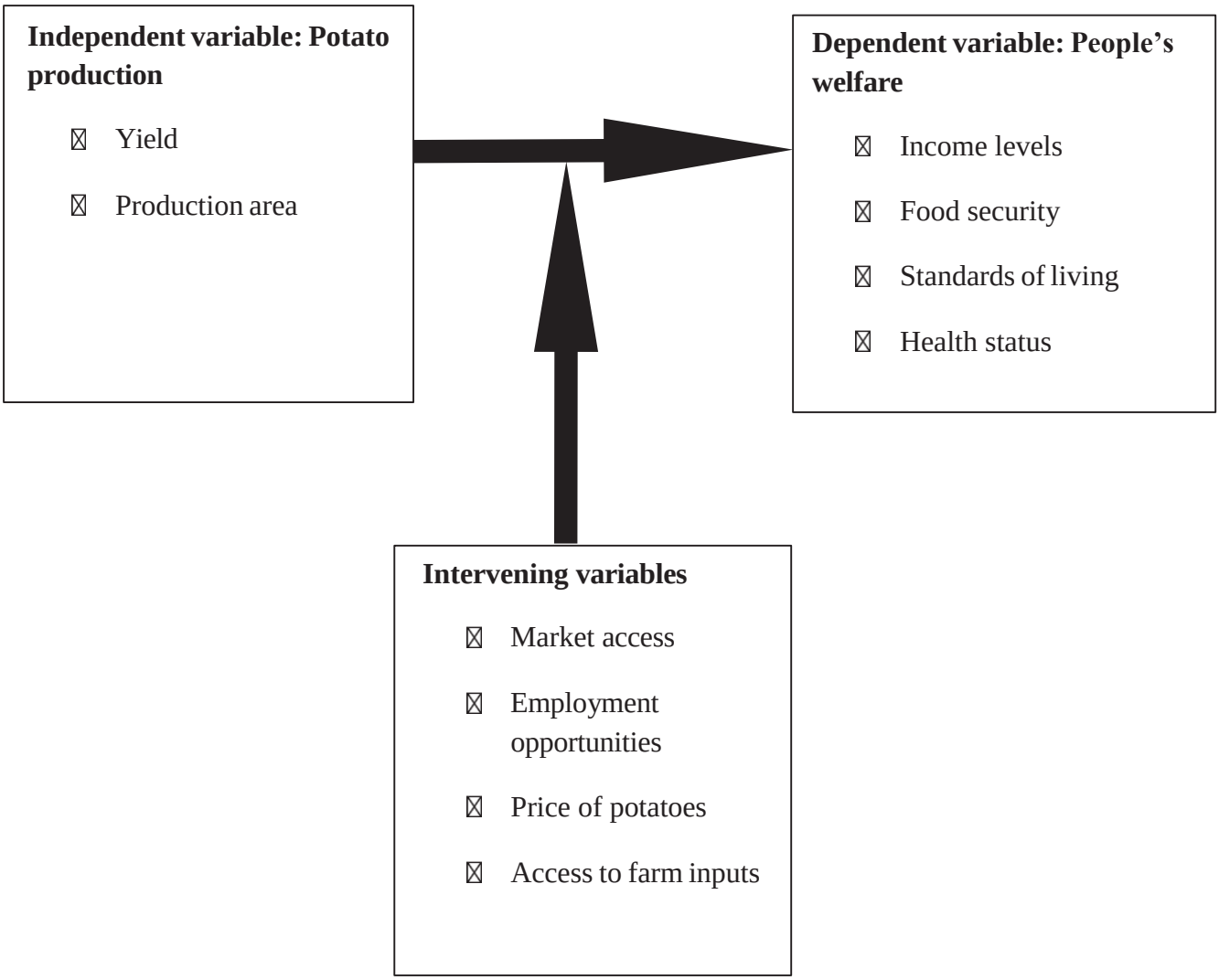
Despite benefits to potato farming, many challenges persist. According to Tiwari & Mpinganjira, (2017), the full potential of potato farming in Uganda has not been realized due to barriers such as poor infrastructure, access to markets, and inadequate farming inputs, including quality seeds and fertilizers. Potato farming in Uganda faces several challenges that hinder optimal production, including use of home-saved seed of low-yielding varieties. Many Ugandan farmers rely on replanting seed tubers from previous harvests, over time, this practice leads to seed degeneration, where the quality of the seed declines due to the accumulation of diseases and reduced genetic vigor. These seeds often belong to old or local varieties that are not bred for high yield, disease resistance, or market preference (Aheisibwe, 2016).

Similarly, Devi, (2025), reported that farmers pay little attention to product quality as they often focus more on quantity than quality. They may harvest too early or late, mishandle tubers during harvesting and storage, or fail to grade their produce. Poor quality potato reduces its market value, making them less attractive to buyers, especially in urban or export markets. He further pointed water restrictions in potato as another major challenge, many farming areas in Uganda depend on rain-fed agriculture, making production vulnerable to droughts or irregular rainfall. Lack of irrigation infrastructure limits the ability of farmers to manage water needs during dry spells, affecting crop health and yield (Koffi Djaman, 2021). Additionally, Wauters, (2017), revealed that Uganda has the lowest potato productivity and production in the EAC region. Farmers' efforts have been hampered by minimal seed quality, old varieties, old agricultural methods and minimum fertilizer and crop protection use, in addition to susceptibility to late blight and other diseases.

Conversely, Ainebyona, (2025) reported that continuous cropping of potatoes without proper soil fertility management depletes essential nutrients. No use of fertilizers leads to declining soil fertility, which directly lowers productivity. Relatedly, Bizimungu, (2025) reported prevalence of diseases like late blight and bacterial wilt as a major challenge to potato farmers. Late blight, caused by *Phytophthora infestans*, is one of the most destructive fungal diseases of potato and spreads rapidly under cool, wet conditions, similarly, bacterial wilt caused by *Ralstonia solanacearum*, a soil-borne disease causes severe wilting and death of potato plants. Other viruses can also affect plant vigor and tuber quality, often spread by aphids or through infected seed tubers.

2.5 Conceptual framework

This conceptual framework presents interrelationships among independent variables, dependent variables, and intervening variables of the study.



CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter includes the study area, research design, target population, sample size, data collection methods, sampling techniques, and data analysis

3.1 Study area

The study was conducted in Mparo Village, Busoro Sub County, and Kabarole district. Kabarole district is bordered by Ntoroko district to the North, Kasese district to the South, kyenjojo district to the East and Bundibugyo district to the West. Coordinates: 0.6833° N, 30.2974° E and elevation of 1,490 meters above sea level. Agriculture is the main economic activity and the main crops grown include potatoes, maize, beans, groundnuts, millet, and bananas.

3.2 Research Design

A cross sectional survey design involving both qualitative and quantitative approaches was used in order to cover a number of respondents to provide a comprehensive understanding on the effect of potato production on people's welfare.

3.3 Target population

The target population comprised of potato farmers, household heads, and potato consumers in Mparo Village, as well as local stakeholders such as Agricultural Extension Officers and Government representatives.

3.4 Sample size and Sampling technique

A sample was obtained from the target population. The research team used a sample size of 53 respondents from a total population of 76 respondents using solvin's formula.

The formula is:

$$n = \frac{N}{1 + Ne^2}$$

Where n = sample size

N = total population size

e = margin of error

The error value of the sample size was 7% and it's within an acceptable range for this exploratory research study

The study used purposive sampling to come up with the study population and thereafter simple random sampling to select the 53 participants. Gender considerations were also observed throughout the entire sampling process. Simple random sampling was applied since all the study population were engaged in potato farming. The sample included smallholder farmers who cultivate potatoes on smaller plots of 0.5 acre for household consumption and local markets, and large-scale commercial producers. This was done to ensure the inclusion of a variety of experiences and agricultural practices.

3.5 Data types and Sources

3.5.1 Primary Data

The primary data was collected directly from the field using tools like questionnaires, interview guides, observation checklists, and focus group discussion guides.

3.5.2 Secondary Data

Secondary Data was extracted from existing literature like internet and journals with this data, document review was done to answer the research questions.

3.6 Data collection methods

3.6.1 Interview methods

Semi-structured questions were used to get information from farmers, traders, consumers, and local authorities, (appendix 1). The procedure followed in administration of interviews was physically meeting the target persons and having a face-to-face interaction with them on the study interview questions.

3.6.2 Questionnaire administration

The method involved administering a series of questions to the respondents, the order of questions was specified in the questionnaire (appendix 2). This method was used because large

amounts of information were collected from respondents in a short period of time, and it was relatively cost effective. Questionnaires were administered under my guidance (guided questionnaires) due to the low literacy rates amongst the majority of the respondents

3.6.3 Document review method

This involved review of documents in order to obtain the secondary data. Here documents such as reports, textbooks and journals were reviewed in order to obtain relevant literature and data.

3.6.4 Focus Group Discussion

A focus group discussion was organized with target group to deeply discuss and share experience, insights on potato varieties grown, the income generated from potato production and challenges faced by potato farmers.

3.6.5 Field observation

An observation checklist was developed and used during data collection (appendix 3). It involved a purposeful, systematic, and selective way of physically observing and evaluating the various parameters of research interest, like potato varieties grown, the income earned from potato production and challenges faced by potato farmers. This method was used because it enabled direct experiences to be observed and appreciated, for example potato varieties. The method also helped in drawing conclusions based on what was observed.

3.7 Data collection Tools

The following are the instruments that we used to collect data for all the objectives

3.7.1 Questionnaire

This tool of data collection was used to generate and collect vast information from respondents. The tool included closed end sets of questions that were distributed to all respondents, and this gave respondents convenient time to answer the questions by making choice of their own.

3.7.2 Interview Guide

According to (Howlet, 2024) Interview guides are the roadmap to ensure every interview conducted for a particular position is consistent and focused. We used unstructured interview as the tool for data collection, because it provided participants with the opportunity to fully describe their experiences. The interview guides were provided to farmers who answered according to their choices, and later collected for analysis.

3.7.3 Observation checklist

In order to have a focused field observation, a checklist was developed to guide on the key areas and objects that needed real-time appreciation through observation and documentation

3.8 Research procedure

During field attachment one at Rwebitaba ZARDI, I met community members in Mparo village whom we developed a research topic together. I wrote a research proposal and submitted to the Faculty Mentor, afterwards, clearance was given. We developed research tools with the community members and thereafter, the study proceeded by observation, interviewing, and administering questionnaires to the selected respondents with regard to their categories.

3.9 Data analysis

The data was entered manually into excel (version 2016) and analyzed, each row represented one observation, each column represented a variable. Data cleaning was done by removing duplicate entry using remove duplicate tool. Analyzed data was then presented in tables, percentages, histograms, bar charts and pie charts

3.10 Ethical consideration

The respondents were sensitised about the purpose of carrying out research in the area. Consent was adhered to, and the respondents participated in the study voluntarily after achieving an understanding of the relevance of the study and the risks involved and therefore permission was granted for a go ahead. There was assurance to the respondents that the information obtained from them was to be kept with utmost confidentiality and protected throughout their life time and assured them that it was only to be accessible to those authorised to access it in order to build trust and confidence that their privacy was protected.

The respondents were also assured about the confidentiality of their identity by not including any of their name(s) in any of the final research findings and report.

3.11 Limitations of the study

During the study, the researchers encountered some challenges which included:

i. Poor weather conditions especially rainfall that could limit movements to the field

ii. Language barrier due to variety of languages and relatively low literacy rate in Mparo village which hindered to the acquisition of accurate information.

iii. Inadequate funds to facilitate the research activities especially transport, purchase of research tools.

3.12 Delimitations of the study

The researchers addressed these challenges in the following ways:

i. Researchers bought umbrellas and gumboots to address the challenge of poor weather conditions, also field activities had to be rescheduled

ii. Some co-researchers who knew the language were interpreting to ease communication thus addressing the challenge of language barrier.

iii. Priorities on research expenditure were set to address the challenge of meager financial resources

3.13 Dissemination of findings

Research findings were disseminated through presentations during university validation workshop, and during stakeholder meetings. A final report will be shared with relevant stakeholders, including local government officials and university community. The research findings will also be published in form of research articles and conference papers.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSSION

4.0 Introduction

This chapter presents key research findings, interpretation, and discussion.

4.1 Demographic information of respondents

4.1.1 Gender information

A majority (68%) of the respondents were female, while male comprised of 32%**.** This shows the role of women in agriculture in Mparo village, it indicated that women were actively involved in potato farming than their male counterparts.

Table 1: Distribution of respondents by gender

Gender	**Frequency**	**Percentage (%)**
Male	17	32
Female	36	68
Total	**53**	**100**

Source: ***Primary data, 2024***

4.1.2 Age of respondents

Most (38%) of the respondents were aged 36-45, while the least (15%) of respondents were below the age of 25 years. This was because 36-45 years age range is the most productive age range, potentially possessing both the experience and energy necessary for effective potato farming.

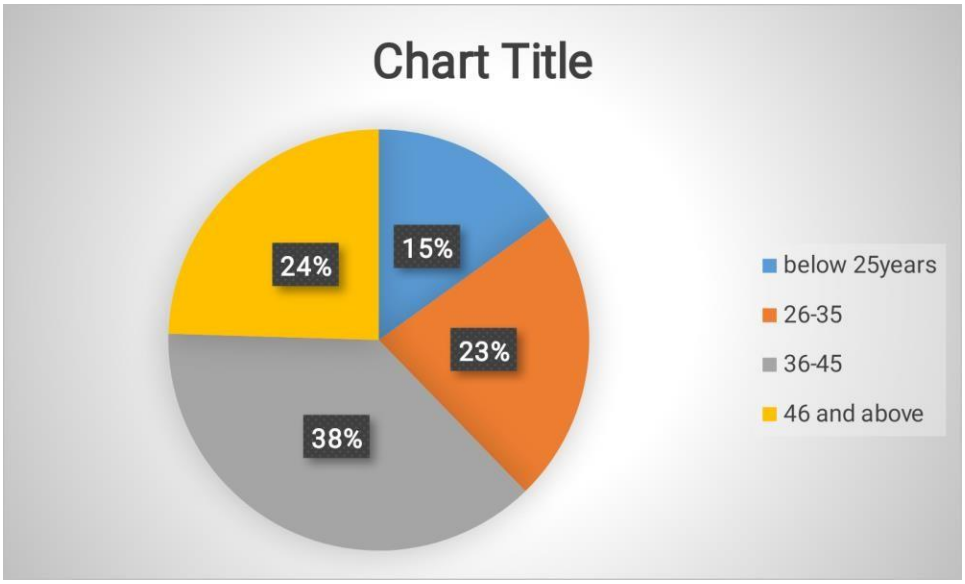


Figure 1: Distribution of respondents by age

Source: ***Primary data, 2024***

4.1.3 Highest level of education

The highest (45%) of the respondents had attained primary education, while the least (9%) reported having completed tertiary education.

Table 2: Respondents' highest level of education

Highest level of education	Frequency	Percentage (%)
No formal education	9	17
Primary education	24	45
Secondary education	15	28
Tertiary education	5	9
TOTAL	**53**	**100**

Source: ***Primary data, 2024***

4.2 Seasonal income from potato production

The largest proportion (62%) of respondents earn above 1,000,000 UGX per season from potato farming, while the least (6%) of respondents earn less than 100,000 UGX. This confirmed a major role potato plays in the household income of many farmers in Mparo village. This relates to finding by Ssebanja, (2024) who noted that introduction new potato varieties coupled with a stronger seed potato industry and intensive cultivation practices could see the potato sector reach its market size potential estimated at USD 30,000,000 per annum.

Table 3: Seasonal income from potato production.

Income earned per season	Frequency	Percentage (%)
Less than 100,000	3	6
100,001-500,000	6	11
500,001-1,000,000	11	21
Above 1,000,000	33	62
Total	**53**	**100**

Source: ***Primary data, 2024***

4.3 Potato varieties grown

The majority (47%) of respondents grow improved varieties while the least (15%) of the respondents grow local potato varieties. This finding is evidence to farmer's demand for varieties that offer higher yields, possibly greater resistance to environmental challenges and may be more suitable for market demands. This agrees with findings by Lombard, (2017 who reported that farmers in Western Uganda have access to a wide range of local and improved varieties. Kachpot1 and Rwangume being the most recently released varieties from the research stations. Victoria is the most marketable variety (figure 2).

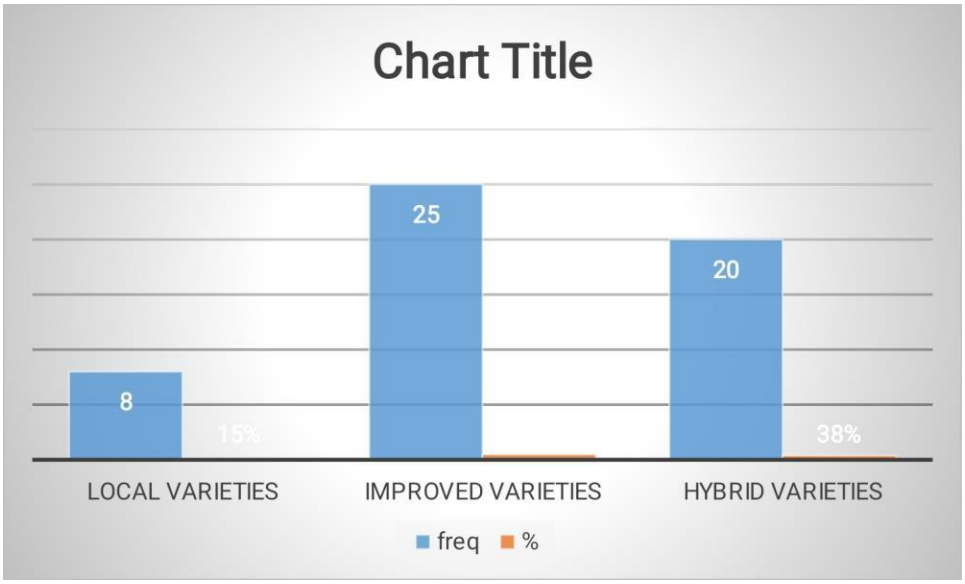


Figure 2: Distribution of potato varieties in Mparo village

Source: ***Primary data, 2024***

4.4 Farmer access to different markets

A larger proportion (47%) of respondents sell their potatoes in neighboring town, while the least number (9%) of respondents sell directly to consumers. This was because producers were able to access more profitable markets, where demand is higher, and prices are more competitive. These towns also had better infrastructure (roads, transport services) and larger populations that create a greater demand for food. However, Hoffer & Maingi, (2005) observed that most potato farmers in Western Uganda could not know much about trustworthy and lucrative marketplaces, even if they produce what the market demands. Since practically all farmers sell to middlemen at the farm gate, the market value of the potatoes is subject to very little bargaining, which raises the possibility of farmers being taken advantage of by the middlemen and wholesalers in the chain. The lack of consistent packing and weighing scales makes the exploitation even worse

Table 4: Access to different market types

Market type	Frequency	Percentage (%)
Local market in Mparo village	16	30
Neighboring towns	25	47
Wholesalers	7	13
Direct sales to consumers	5	9
Total	**53**	**100**

Source: ***Primary data, 2024***

4.5 Occupation of respondents

Majority (68%) of respondents reported potato farming as their primary occupation, while the least number (4%) of respondents identify as "blockers" without additional context. Similarly, Wauters, (2017) noted that Potato farming is predominantly practiced in the southwestern and western regions of Uganda, including areas like Kabale and Kabarole. Potato is becoming ever more competitive compared to these other crops because of the relatively high gross profit. Studies confirmed a shift towards increased potato consumption over traditional staple food like maize and cassava.

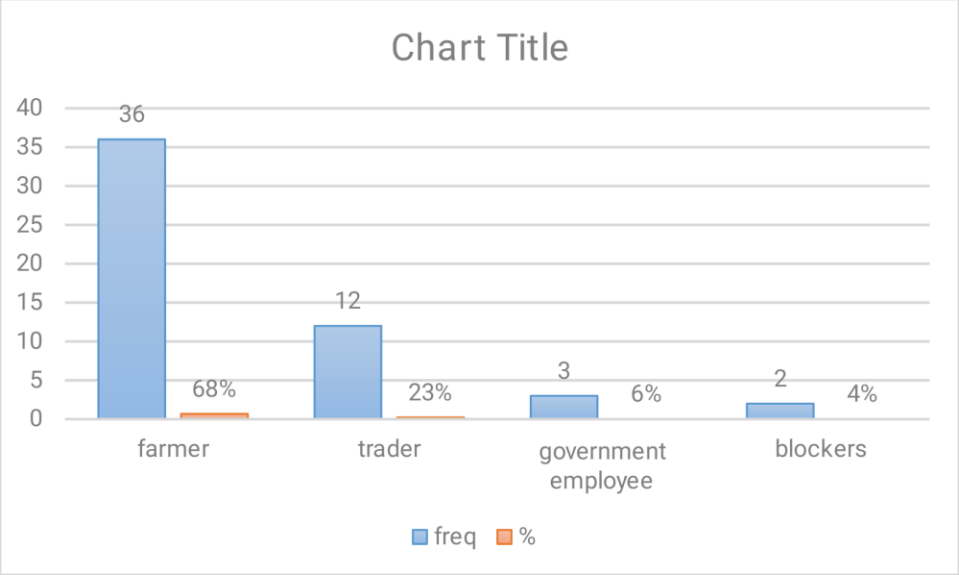


Figure 3: Occupation of respondents

Source: ***Primary data, 2024***

4.6 Challenges faced by potato farmers

Most (49%) of respondents reported lack of financial resources as a major challenge, while the least number (2%) of respondents observed poor soil fertility being the major challenge. Financial constraints were noted to limit the farmers' ability to invest in key agricultural inputs like fertilizers, pesticides, or irrigation systems. Farmers also reported that limited capital affected their ability to expand and improve farm operations. However, Namugga, (2017) reported the major production challenge to potato as pests and diseases.

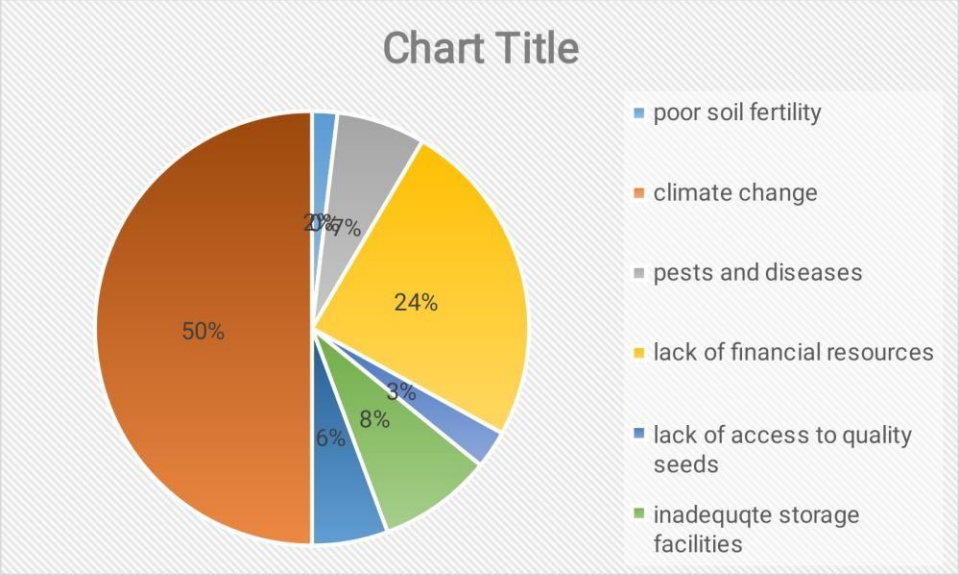


Figure 4: Challenges faced by potato farmers

Source: ***Primary data, 2024***

CHAPTER FIVE
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.0 Introduction

This chapter presents a summary of key research findings, conclusion, and recommendations

5.1 Summary

i. Results showed that the largest proportion (62%) of respondents earn above 1,000,000 UGX per season from potato farming, while the least (6%) of respondents earn less than 100,000 UGX

ii. According to results, the majority (47%) of respondents grow improved potato varieties, while the least number (15%) of respondents grow local potato varieties. This finding is evidence to farmer's demand for varieties that offer higher yields

iii. Additionally, A larger proportion (47%) of respondents sell their potatoes in neighboring town, while the least number (9%) of respondents sell directly to consumers

iv. Similarly, Majority (68%) of respondents reported potato farming as their primary occupation, while the least number (4%) of respondents identify as "blockers" without additional context

v. Conversely, most (49%) of respondents reported lack of financial resources as a major challenge, while the least number (2%) of respondents observed poor soil fertility being the major challenge

5.2 Conclusion

In Mparo village, potato farming plays a significant role in the local economy, contributing to the livelihoods of the majority of farmers. While most farmers report high production levels, income generation varies considerably across different groups. A substantial proportion of farmers face challenges such as limited financial resources, inadequate storage facilities, pests and diseases, and poor market access, all of which hinder their ability to maximize profits and productivity.

The increasing popularity of improved and hybrid potato varieties reflects a trend toward more modern and higher-yielding farming practices

5.3 Recommendations

Basing on results from this research on effect of potato production on people's welfare in Mparo village, Busoro Sub-County, Kabarole District, the following recommendations were made:

i. Supporting efficient farming practices. This can be done through on farm training of farmers, demonstration farms and radio talk shows.

ii. Emphasis on promoting the use of improved and hybrid potato varieties and increasing access to financial resources

iii. Government to ensure access to healthy, disease free and certified seed tubers for planting. This can be done through seed distribution programs or collaborations with agricultural organizations.

REFERENCES

Aheisibwe, A.R. (2016). Challenges and opportunities for quality seed potato availability and production in Uganda. *Uganda Journal of Agricultural Sciences, 16* (2). doi:10.4314/ujas.v16i2.1

Ainebyona, R. N. (2025). The attitude of smallholder farmers towards uptake of potato crop intensification innovations in Southwestern Uganda. *Open Access Library Journal, 12* . doi:10.4236/oalib.1112726

Akinboye, O. E. (2015). Effects of Land Preparation Methods on the Growth and Yield of. *International Journal of Research in Agriculture and Forestry, 2*(1), 33-39. Retrieved from www.ijraf.org/pdf/v2-i1/5.pdf

Allen, D. F. (2007). Agronomic Practices. *Potato Biology and Biotechnology*, 719-738.

Amanya, S. (2024). The varieties that have been named NARO Pot 5 and NARO Pot 6 are disease resistant, according to Jorom Kubiriba, the Director of Research for Kachwekano Zonal Agriculture Research Institute. Retrieved from ugandaradionetwork.net/story/agricultural-researchers-unveil-two-new-irish-potato-varieties

Baloyi, L. M. (2023). *article*, 2071-1050. doi:10.3390/su151914457

Bizimungu, J. E. (2025). Management of potato pests and diseases in Africa. *article*, 1545-4487. doi:10.1146/annurev-ento-120523-023156

Dechassa1, B. M. (2018). Growth and Productivity of Different Potato Cultivars. *Journal of Agricultural Science, 11*. doi:10.5539/jas.v11n3p528

Devi, R. A. (2025). Basics of Economics and Marketing Practices in Potato Production. 407-424. doi:10.1007/978-3-031-82710-5_18

Devi, R. A. (2025, May). Basics of Economics and Marketing Practices in Potato Production. 407-424. doi:10.1007/978-3-031-82710-5_18

Djaman, K. (2021). Irrigation Management in Potato (Solanum tuberosum L.) Production: A Review. *13* (3). doi:doi.org/10.3390/su13031504

FAOSTAT (2004). Statistics division. www.faostat3.fao.org/home/index.html#DOWNLOAD_STANDARD.

Kagoda1, A. W. (2013). Seasonal effects on potato production under conventionaland small seed plot technologies in the Mt. Elgon zone. *Uganda Journal of Agricultural Sciences*. Retrieved from www.google.com/search?client=firefox-b-d&q=the+impact+of+potato+production+in+uganda

Kayunze, D. H. (2014). Contribution of Round Potato Production to Household Income in Mbeya and Makete Districts, Tanzania. *Journal of Biology, Agriculture and Healthcare , 4.*

Lombard, C. A (2017) regional market assessment for specialized processing potatoes in East African Countries.

Namugga, P. (2017,). Participatory assessment of potato farming systems, production constraints and cultivar preferences in Uganda. *Australian Journal of Crop Science, 11* , 932-940, [i]-[iii].

Rokne, A. S. (2024). Enhanced Potato Pest Identification: A Deep Learning Approach for Identifying Potato Pests. doi: 10.1109/ACCESS.2024.3488730ISBN

Rokne, A. S. (2024). Enhanced Potato Pest Identification: A Deep Learning Approach for Identifying Potato Pests. doi: 10.1109/ACCESS.2024.3488730ISBN

Tapiwa A.K. (2022). Assessing the potential of earthing up and integrated nutrient management on Irish potato (Solanum tuberosum L.) productivity in smallholder farming systems. doi:10.31015/jaefs.2022.2.14

Tolessa, E. S. (2021). A Review on Responses of Potato to Macro and Micro Fertilizers. *Advances in Life Science and Technology* , *87*(2224-7181), 22-23. doi:10.7176/ALST/87-05

Wauters, D. N. (2024). Supply and Demand of Processed Potato Products in Kenya, Rwanda, and Uganda: Variety Requirements of Processing Companies and Implications for Trait Prioritization for. doi:10.1007/s11540-024-09817-x

Wauters, P. (2017) Value chain mapping and stakeholder analysis of the potato sector in Uganda – a literature review. 1–78.

APPENDICES

Appendix1: Interview guide

Introduction

I am **ARINITWE LOYCE**, a student at African Rural University conducting research on '*effect of potato production on people's welfare in Mparo village*". The study seeks to understand how potato production affects income generation, food security, employment, and the overall well-being of households. The findings in this study will be presented to the Faculty of Technology for rural transformation of African Rural University in partial fulfillment of the requirements for award of Bachelor of science in sustainable agriculture of African Rural University. You have been identified as one of the respondents in this study and as such I request for your participation in this study. Your views will be treated with maximum confidentiality. Thank you in advance for your cooperation.

Section A: Demographic information

1. What is your name?

   ……

2. How old are you?

   ……

3. What is your gender?

   ……

4. How many people live in your household?

   ……

5. What is your highest level of education?

   ……

6. What is your primary source of income or occupation?

……....

Section B: potato farming practices

7. For how long have you been growing potatoes?

……

8. How much land do you use for growing potatoes?

……

9. What types of potatoes do you grow?

……

10. What major challenges do you face in growing potatoes?

……

……

12. How do you address these challenges?

Section C: Market access and income generation

13. Where do you usually sell your potatoes?

……....

……

14. What determines the price you sell your potatoes at?

……

……

15. On average, how much income do you earn from potato farming each season?

……

16. In your opinion, has potato farming improved your household's welfare?

……

Section D: Overall impact on welfare

17. How has potato farming affected your daily life or the lives of your family members?

……

18. What suggestions do you have for improving potato farming in your area?

……

Thank you so much for your time

END

Appendix 2: Questionnaire for potato farmers

Introduction

I am **ARINITWE LOYCE**, a student at African Rural University conducting research on '*effect of potato production on people's welfare in Mparo village*". The study seeks to understand how potato production affects income generation, food security, employment, and the overall well-being of households. The findings in this study will be presented to the Faculty of Technology for rural transformation of African Rural University in partial fulfillment of the requirements for award of Bachelor of science in sustainable agriculture of African Rural University. You have been identified as one of the respondents in this study and as such I request for your participation in this study. Your views will be treated with maximum confidentiality. Thank you in advance for your cooperation.

Section A: Demographic Information

1. Name

   …….....

2. Age

   a. 8–25 years
   b. 26–35 years
   c. 36–45 years
   d. 46 years and above

3. Gender:

a. Male
b. Female
c. Other

4. How many people are you in your household.....?
5. Level of Education:
   a. No formal education
   b. Primary education

c. Secondary education

d. Tertiary education

6. What is your primary occupation?

a. Farmer

b. Trader

c. Government employee

d. Other (specify)…….

Section B: Potato Farming Practices

7. How many years have you been engaged in potato farming?

a. Less than 1 year

b. 1–5 year's

c. 6–10 years

d. More than 10 years

8. What is the total area of land you use for potato farming (in acres)?

a. Less than 1 acre

b. 1–2 acres

c. 3–5 acres

d. More than 5 acres

9. What potato varieties do you primarily grow? (Select all that apply)?

a. Local varieties

b. Improved varieties

c. Hybrid varieties

10. What challenges do you face in potato production? (Select all that apply)

a. Poor soil fertility

b. Climate change

c. Pests and diseases

d. Lack of financial resources

e. Lack of access to quality seeds

f. Inadequate storage facilities

g. Poor market access

Section C: Market access and income generation

11. Where do you sell your potatoes? (Select all that apply)
    a. Local market in Mparo Village
    b. Neighboring towns especially Fort Portal City
    c. Wholesalers
    d. Direct sales to consumers
    e. Other (specify): …….....
12. How much income do you generate from potato farming on average per season?
    a. Less than UGX 100,000
    b. UGX 100,000 – UGX 500,000
    c. UGX 500,000 – UGX 1,000,000
    d. Above UGX 1,000,000

Thank you for your participation.

Appendix 3: Observation checklist

1. Agricultural Practices

Indicator	Yes/No
Evidence of potato farming (e.g., fields, tools, storage)	☐
Use of modern farming tools or technology	☐
Presence of irrigation systems or water sources for farming	☐
Signs of pest control or fertilizers used	☐
Crop rotation or land left fallow observed	☐

2. Economic Indicators

Indicator	Yes/No
Homes with visible signs of development (e.g., new buildings, metal roofing)	☐
Local markets selling potatoes or potato-related products	☐
Presence of businesses related to potato production (e.g., transport, storage, processing)	☐
Evidence of employment in potato-related activities	☐
Ownership of vehicles or machinery used for transport of produce	☐

3. Social Welfare

Indicator	Yes/No
Children attending school during school hours	☐
Community health facilities (functional and accessible)	☐
Signs of improved housing conditions	☐
Electricity and water supply availability	☐
Community involvement in cooperatives or groups	☐

4. Food Security & Nutrition

Indicator	Yes/No
Households with visible food gardens (diversity of crops)	☐
Signs of potato consumption (e.g., peeling, cooking)	☐
Livestock present in households (as a food source)	☐
No visible signs of malnutrition in children/adults	☐

5. Environmental Impact

Indicator	Yes/No
Soil erosion or degradation signs on farms	☐
Deforestation or land clearing for potato farming	☐
Use of chemical pesticides or herbicides observed	☐
Waste disposal related to farming activities	☐

Appendix 4: STC and budget for my research study

Vision: Conduct research in Mparo village by 09/05/2025		
Accountable	**Action steps**	**Due date**
Arinitwe Loyce	Finalizing the report and printing	09/16/2024
Arinitwe Loyce	Data analysis	15/12/2024
Arinitwe Loyce	Data collection	04/09/2024
Arinitwe Loyce	Reporting and introduction to chairperson Lc1	08/08/2024
Kuiima Jackson	Departure	06/08/2024

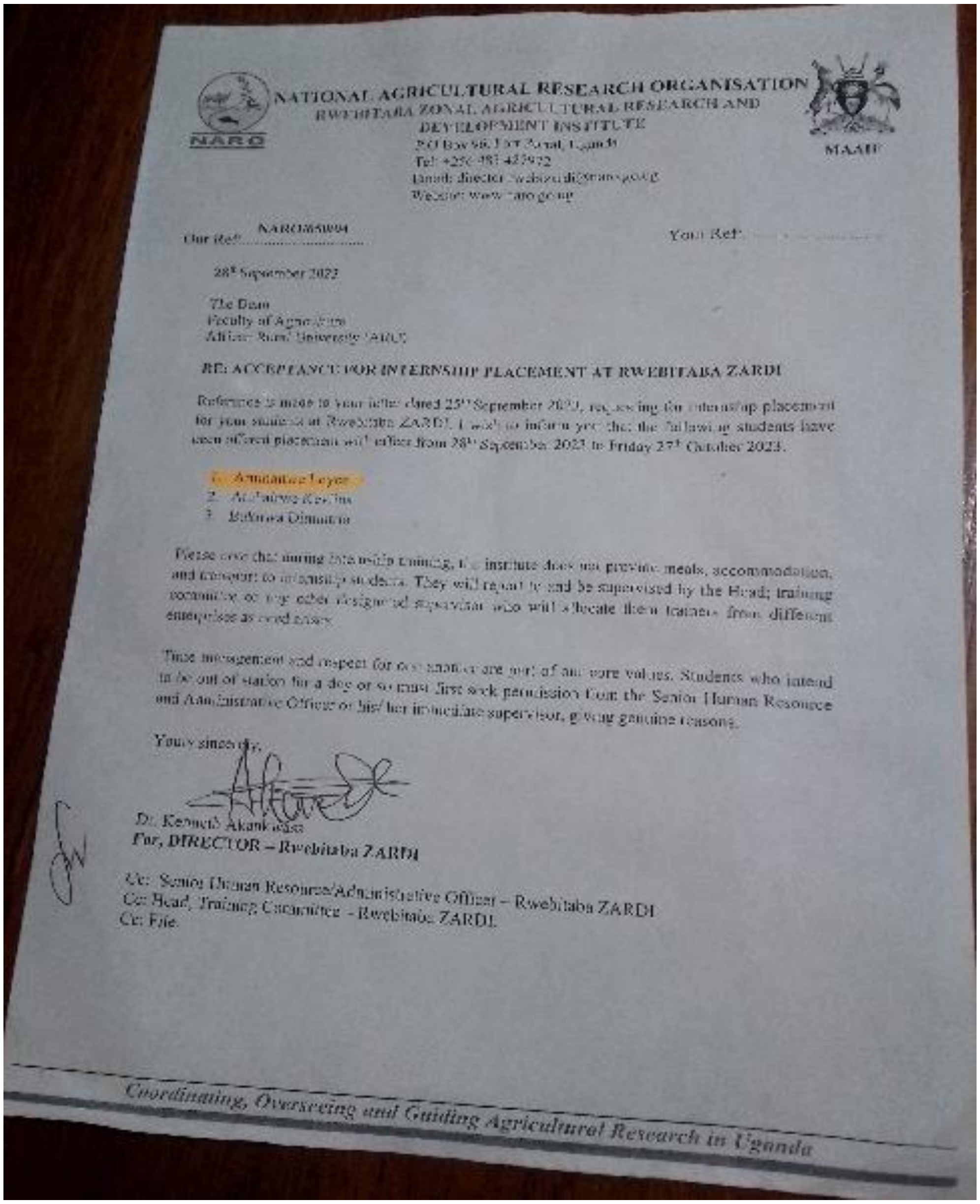
Current reality

- Research not yet conducted
- Data collection tools not available
- Have knowledge on data collection

Research budget

Item	**Quantity**	**Unit cost**	**Amount**
Rent	1	30000	30,000
Food	-		110,000
Printing of research tools	159	300	47,700
photocopying			8,800
Pens	5	700	3,500
Transport			50,000
Airtime/Data		30000	30,000
Total			**280000**

Appendix 5: Acceptance letter



NATIONAL AGRICULTURAL RESEARCH ORGANISATION
RWEBITABA ZONAL AGRICULTURAL RESEARCH AND DEVELOPMENT INSTITUTE
[illegible]
NARO
MAAIF

Our Ref: NARO[illegible] Your Ref:

28[th] September 2023

The Dean
Faculty of Agriculture
African Rural University (ARU)

RE: ACCEPTANCE FOR INTERNSHIP PLACEMENT AT RWEBITABA ZARDI

Reference is made to your letter dated 25[th] September 2023, requesting for internship placement for your students at Rwebitaba ZARDI. I wish to inform you that the following students have been offered placement with effect from 28[th] September 2023 to Friday 27[th] October 2023.

1. [illegible]
2. [illegible]
3. [illegible]

Please note that during internship training, the institute does not provide meals, accommodation, and transport to internship students. They will report to and be supervised by the Head; training committee or any other designated supervisor who will allocate them trainers from different enterprises as need arises.

Time management and respect for one another are part of our core values. Students who intend to be out of station for a day or so must first seek permission from the Senior Human Resource and Administrative Officer or his/ her immediate supervisor, giving genuine reasons.

Yours sincerely,

Dr. Kenneth Akankwasa
For, DIRECTOR – Rwebitaba ZARDI

Cc: Senior Human Resource/Administrative Officer – Rwebitaba ZARDI
Cc: Head, Training Committee - Rwebitaba ZARDI
Cc: File.

Coordinating, Overseeing and Guiding Agricultural Research in Uganda

Appendix 6: Field photos