

ASSESSING FACTORS AFFECTING FARMERS' PREFERENCE FOR IRISH POTATO  
VARIETIES IN KWANYIY SUB COUNTY IN KWEEN DISTRICT, EASTERN UGANDA

BY

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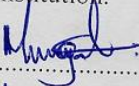
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**DECLARATION**

I KIPLANGAT MARK I thus declare that, to the greatest extent of my knowledge, the work provided here is the result of my own study and efforts, with the exception of the references, and that it has not yet been submitted for consideration for an academic award by any higher education institution.

Signature:  .....

Date: 04/09/2024 .....

**APPROVAL**

This certifies that the Project report was completed under the guidance of my supervisor and that it is ready to be submitted to the Busitema university assessments board.as partial requirement for the award of bachelor degree in science education.

The supervisor's name DR JOHN JAMES OKIROR

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DATE: .....  
*5/9/2024*

**DEDICATION**

I dedicate this report to my parents, Mr. MONGIN JOHN and Mrs. CHEBET SOPHY who laid the foundation for my education and their financial support during the research process. My lovely brothers; Chemutai Leonard, Kibet Godwin, Cheptoek Judah as well my sisters Chebet Phyllis and Kimuche Esther for their tireless guidance granted unto me during the course

## **ACKNOWLEDGEMENT**

I would like to extend my sincere appreciation and thanks to my parents who tirelessly provided financial support during the training as well as moral guidance which cannot be forgotten.

My gratitude goes to my supervisors for their guidance, support and advice throughout the proposal upon the completion of my research

I am greatly indebted to my friends and course mates with whom we have struggled, exchanged views and ideas.

I would like to thank the almighty GOD for the intensive care in terms of health that he granted me. This gave me intellectual advantage and in such a case, I was able to explore heights during the research process.

## **ABSTRACT**

The study was conducted on the assessment of the factors affecting potato varietal preference by farmers in Kwanyiy Sub County, Kween district. The study design was a cross sectional research design and a sample size of 45 respondents was adopted using purposive sampling technique. Data was collected using questionnaire that was designed for both farmers and stakeholders and presented in form of frequency tables and charts both pie charts and graphs the findings revealed that there are clear factors affecting potato varietal preferences by farmers. The factors included yield, skin color, disease resistance and maturity period. Therefore, it was recommended that farmers should chose potato varieties which are resistant to disease have a high yield and takes a short maturity period.

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### **List of abbreviations**

FAO; Food and Agricultural Organization

FAOSTAT; Food and Agricultural Organization Cooperate Statistical database

KAZARD; Kachwekaho Zonal Agricultural and Development Centre

UNBS; Uganda National Bureau of Statistic

UNSPA; Uganda National Seed production Association

NARO; National Agricultural Research Organization

## CHAPTER ONE

### 1.1 Introduction

The background, statement of the issue, importance of the study, aims, research hypothesis, rationale, and conceptual framework are the sections that make up this chapter. **1.2**

#### **Background of the study**

Globally, the production of Irish potatoes is significant as they are one of the most widely cultivated and consumed crop in the world. It is one of the most productive food crops in the world in terms of food edible energy and good quality protein, nutritionally, Irish potato is considered a well-balanced major food crop with a good ratio of protein calories, substantial amounts of vitamins especially vitamin C, producers of potatoes include China, India, Russia, Ukraine and United States. China is by far the largest producer, contributing to a significant portion of the global supply.

Global production volume of the recent statistics, global potato production estimated to be over 370 million metric tons annually. Potatoes are consumed in various forms such as fresh, processed like chips and ingredients; they are staple food in many cultures. Internally, the market of Irish potatoes has distinctive segments that include, seed Irish potato, ware Irish potato, frozen chips and other products such as starch, in countries like Kenya, Irish potato value chain employs over 2.5 million Kenyans as market agents, transporters, processors

Regional production of Irish potatoes varies significantly across the globe with different areas specializing in potato cultivation due to climate, soil conditions. In Europe it cultivates in central and southern regions of Russia.

The production of Irish potatoes in Africa has been growing steadily for example in Egypt their production is substantial output aimed at both local consumption and export in the key growing of Nile delta and the north coast. According to FAOSTAT, 2019, the yield of Irish potatoes in Africa is 20 tons per hectare with a continental average of 13 tons per hectare.

South Africa is another major producer focusing on both fresh market sales and processed products. The Western Cape, Free State is leading regions

In east Africa Kenya is also the leading producer of Irish potatoes for both local consumption and export. The major production areas include Nakuru, Meru, Uasin Gishu, the varieties include, Dutch robjin, Shangi and Asante

In Uganda Irish potato is cultivated for both food security and income. It employs an estimated population of 200,000 households in the production and trade activities offering them a sustainable source of subsistence and cash income supporting their livelihood MAAIF 2008, MAAIF 2010. Production is estimated at 689,000 tons on 1011000 hectare per year UBOS 2010, CIP 2010

According to FAO 2014, the annual Irish potato output in Uganda is approximately 800,000 metric tons, produced on approximately 112,000 hectares with an acreage yield of 7.14

metric tons per hectare. Seed tubers which are symptomatic are a potent source of infections leading to disease outbreak which may spread from place to place and from season to season

After the introduction of Irish potatoes by the colonial administrators in the late 1800s to the county, it was grown in different locations like the Kabala region, Kisoro, Mbale Mubenda, Mbarara and other upland areas with acceptable climate conditions for potato farming. The crop swiftly adapted to the country's highland areas with suitable conditions for its growth

Despite its significance, production of Irish potatoes remains low among other challenges observed to constraining its potentials as a food security and poverty eradicating crop enterprise. Its productivity stands at an average of 6.5 tons per hectare falling below an optimal standard of 20 tons per hectare FAOSTAT, 2011. This difference in yield has been attributed to low quality seed, limited use of improved agro inputs among others

In response the community connections project in partnership with the UNSPA and KAZARDI intervened with training support in quality seed production techniques of positive seed selection and small seed to smaller holder farmers in Kisoro and Kanungu districts of western Uganda. The training was provided by the community seed potato trainers alongside the public agricultural extension officers to boost their capacity to monitor the project activities. The research support aims to promote commercial production of Irish production through capacity building of farmers in Irish potatoes improved production.

Despite the significance progress in implementing the project the adoption of improved seed variety remains low 2.2percent, 9.6percent for manure application and 0.6 percent chemical fertilizer UBOS 2007 which is a threat to food security and poverty reduction.

Studies has shown that participatory breeding indicated that conventional breeding has not been as beneficial for poor farmers, especially those in marginal areas because plant breeders do not consider the specific preferences of farmers as a consequence, despite many available improved varieties. Few such improved varieties are adopted by farmers since they still grow non improved local varieties because officially recommended and released varieties lack the traits of their preference (Dennehy TJ, 2016) lowered the crop yield and increased cost of maintenance by farmers.

Seasonal variations in Kween district have a significant impact on potato production. In Kwanyiy Sub County, the first season provides higher yields and has a smaller market than the second. Even within the same agro-ecology, variations in precipitation, terrain, soil texture, and agricultural practices. Most farmers used farm yard manure and few can afford chemical fertilizers

## **1.2 Statement of the problem**

Irish potato production is one of the farmers main agricultural activities in Kwanyiy Sub County, the farmers produce potatoes for household consumption and for income generation in improving their standards of living. But despite of their production, it still remains low due to constrained of varietal preference, poor adoption of improved varieties by farmers which is a major threat to Irish production in Kwanyiy Sub County leading to reduction in the production. However, despite the availability of diverse potato varieties, there remains a low uptake among farmers, which hinders optimal yield and economic benefits. Factors influencing farmers preferences for specific potato varieties including agronomic traits, market dynamics, access to information and social influences have not been thoroughly investigated in Kwanyiy sub county Kween district. This gap limits the effectiveness of programs aimed at promoting diverse potato varieties but also impacts the overall productivity and sustainability of potato farming in kwanyiy Sub County, therefore there is pressing need to identify and analyze these factors to design targeted interventions and encourage the adoption of a broader range of varieties

## **1.3 Objectives**

### **1.3.1 General objective.**

The purpose of this study was to find out the factors Affecting Irish potato varietal preference by farmers in Kwanyiy sub-county in Kween district.

### **1.3.2 Specific objectives**

- i) To assess the level of production of improved varieties of Irish potatoes in kwanyiy sub county, Kween district.
- ii) To determine the extent to which a variety is chosen basing on the yield output by farmers in Kwanyiy Sub County, Kween district,
- iii) To assess the strategies of improving on the adoption of new potatoes varieties in Kwanyiy sub-county, Kween district

## **1.4 Research questions.**

- a) What is the level of production of improved resistant varieties of Irish potatoes in Kween district Kwanyiy Sub County?
- b) What are the different varieties of Irish potatoes planted by farmers in Kwanyiy sub county Kween district?

c) What are the strategies that should be used to improve adoption of new Irish potato resistant varieties by farmers in Kwanyiy sub county Kween district

## **1.5 Scope.**

### **1.5.1 Content scope.**

This study will focus on assessing the factors affecting potato varietal preference by farmers in kwanyiy sub county study, Kween district through interviewing potato growers

Basing on the season, the study may take a period of two to three month

### **1.6 Research hypothesis.**

The slow response of Irish potato farmers in adoption of improved varieties of Irish potato has negatively affected people.

#### **1.6.1 Hypothesis for research.**

The lack of acceptance of new Irish potato types by Irish potato growers has negatively impacted the livelihood of people living in Kween district, especially in Kwanyiy sub-county. due to poor harvested yield and low income in the Kwanyiy sub-county and Kween district, specifically, as a result of utilizing inferior seed. Because of low harvest yields and low income as a result of using subpar seed kinds.

### **1.7. Significance of the study.**

The research will help the farming households to understand the various new varieties of potatoes and hence adopting them which improves in the yield and standards of living.

The study intends to create a positive attitude on the existence of new varieties of Irish potatoes to the farmers.

The study will provide information about the factors for the adoption of new potato varieties.

### **1.8 Justification of the study**

.Due to the fact that Irish potato is solving famine crisis as caused by less cereal production in Uganda, especially Kween district kwanyiy sub county, its production has been limited by diseases, pests , harsh climatic conditions. This can be solved by use of resistant varieties of Irish potatoes such as Victoria. These varieties are resistant to harsh climatic conditions and disease occurrence. Most of the farmer's do not grow these varieties despite their preference,

the study intends to spread this information to farmers about the presence of these resistant varieties.

### **1.9 A conceptual structure**

A conceptual framework is multidisciplinary body of knowledge, systematic and synthesis of finding across qualitative studies, seeks to generate new interpretation which is related to a particular field of study. The choice of a given Irish potato varieties by farmers in kwanyiy sub county depends on many factors including reliable information to farmers, pest and disease resistance, market demand and maturity period, these human induced factors together with natural factors such weather change, soil conditions that influence crop productivity. This would affect the farmer's income and their standards of living. Most farmers choose Irish potato varieties that can adapt to variable climatic changes, adapt to varying soil types, tolerant to pests and diseases as well as low maintenance costs.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction.**

The review of literature was done according to the study objectives as follows.

#### **Overview of Irish potatoes in Uganda**

Irish potatoes are a staple crop in some parts of Uganda, contributing significantly to food security and livelihoods of many farmers. They grow best above 1500m and 3000m above sea level and are produced in the cool highlands mostly by small scale farmers under rain-fed conditions. The soils in these areas are generally moderate of fertility level. The major potato producing centers in Uganda include: - Kabale, Kisoro, Mbale, Mubende, Kabarole, Kapchorwa, Kween and others. Despite the availability of improved varieties, the adoption rate remains variable. This literature review explores the factors affecting farmer's preferences for Irish potato varieties in Uganda focusing on assessing the level of production of improved resistant varieties; determine the extent to which a yield influences the variety choice and identifying strategies to enhance the adoption of new Irish potato varieties

#### **2.2 Level of Irish potato production in Uganda**

According to Mugisha et al. (2021), introduction of improved varieties in Uganda has led to an increase in average yields from approximately 8 tons per hectare to over 15 tons per hectare in some regions. However, the level of production varies widely across different districts, influenced by factors such as access to quality seeds, farmer education, and extension services Okonya et al. (2021) emphasize that farmers often face challenges in accessing these improved seeds due to limited distribution network and high costs, also the importance of local adaptation in the improved varieties must suite specific agro ecological conditions to maximize their production potential

According to FAO (2014) figures, the production of Irish potatoes is the second most consistent food crop in Kween, after maize .200, 000 small scale farmers on 120,000 hectares and with an average yield of 7.7 tons per hectare is far below the national potential, largely due to limited use of certified seeds, low application of fertilizers and other organic amendments, and low use of fungicides and other production chemicals (Janssens S.G) . Transport of potatoes to the market is expensive due to poor road infrastructure in the Irish potato producing areas. Seasonality in production and lack of on-farm ware potato storage led to minimal returns to farmers

Potatoes are considered the main staple food in Kween. Potato production ranks second in terms of production volume and cultivated area in Kween district maize in the lead. Most of the potato output is consumed on the domestic market since the high degree of perishability and difficult transport conditions pose major challenges in the potato trade. Nonetheless, potatoes are regularly exchanged in the regional markets.

Potato is a key crop serving both as a food crop and cash crop in Mt Elgon highlands specifically in Kween district. (MAAIF, 2011). However, production has remained below 2.9 tons per hectare yet potential of 7.5-10 tons per hectare can be realized under a good cropping condition. Seed production constitutes about 40% of the total production costs. For farmers in Kween district, this situation is further connected by the long distances for transporting the seeds from Kachwekano ZARDI over 700km from the potato growing areas.

Irish potatoes are an everyday food especially for urban population. They are consumed as steamed food, as fried chips or as crisps. In most production areas during the first season, a sack of 100 kg goes for Ug sh. 50,000 depending on the surplus and in second season a sack costs Ug shilling's 100,000. However, in urban areas such as Kampala, Mable the same sack costs sh. 200,000.

### **2.2.1 Determining the extent to which variety is chosen according to the yield**

Yield is a critical factor influencing farmers choices of potato varieties .many farmers prioritize high yielding varieties due to their direct impact on income and food security, farmers are likely to choose varieties with proven high yields in local trials , often relying on peer recommendations and past experiences.

A study by ssebuliba et a (2021) reveals that the yield potential of a variety is often the primary consideration, overshadowing other factors such as taste or market demand. Farmers often conduct informal assessments of new varieties in their fields comparing yields before making decisions. Additionally, market access significantly influences variety choice. Varieties that are known to yield well and meet market preferences are favored by farmers

### **2.2.2 Strategies to improve adoption of new Irish potato varieties**

To enhance the adoption of new Irish potato varieties in kwanyiy sub county Kween district extension services are needed for educating farmers about the benefits and management practices associated with improved varieties. Okwu et al (2020) suggest that participatory extension approaches where farmers are involved in the selection and evaluation of new varieties can lead to greater acceptance and adoption,

Also establishing strong linkages between research institutions and farmers is essential for facilitating the dissemination of knowledge and resources, financial incentives such as subsidies for purchasing improved seeds can encourage adoption and can lower the barriers to entry for farmers considering new varieties.

Community bases seed production initiatives in Kwanyiy sub county, Kween district Uganda, noting that foster local ownership and trust in new varieties which can significantly improve adoption rates.

Additionally , promoting market linkages and value chain development can incentivize farmers adopt improved varieties by ensuring that farmers have access to markets where they can sell their produce at competitive prices, the perceived risk associated with adopting new varieties can be mitigated.

## **2.3 Factors affecting farmer's preference for Irish potatoes varieties**

### **2.3.1 Resistance to drought.**

Water management is crucial to potato cultivation since it stresses the crop as it grows and has an impact on Irish potato production globally (Demirel 2023). Irish potatoes' thin root structure has been identified as the primary cause of their drought susceptibility. It is commonly recognized that different types of many field crops, such as potatoes, react differentially to water stresses in terms of yield and other growth factors. A variety of factors, including leaf durability, harvest index, root factors, the anatomy of the leaf, pores behavior, leaf water possibilities, osmotic capacity, relative water content, photosynthesis rate, retention of water by leaves, wilting and recovery following a long period of water stress, and transpiration rate, can cause variations in how different plants respond to water stress (Iqbal, Fahad et al. 2020). This has a significant impact on the Irish potato variety that farmers decide to grow.

### **2.3.2 Late blight resistance.**

Farmers should plant potatoes that can withstand the devastating effects of botanical intestines, the pathogens that cause late blight disease. Potato varieties that are resistant to late blight show a lower susceptibility to this disease, which lowers the risk of infestation and increases crop yields (Tsedaley 2014). Victoria is a late blight-resistant cultivar found in Uganda. Therefore, in order to cut expenses, growers must cultivate this kind as their top choice.

### **2.3.3 Crop yield.**

It is better to have high-quality enhanced seed varieties. It is presumed that farmers who depend on cultivating Irish potatoes for a living opt to cultivate the kinds with the potential for greater yields. When growing under identical conditions or with other variables held equal, some kinds yield more than others. Some kinds have the capacity to yield far more than others, like Victoria and Kabale. This is the reasons why growers favor these kinds over others, such as Rutuku, which yield less under the same circumstances.

### **2.3.4 Social and cultural perspectives.**

Social and cultural aspects include the locals' impression of the enhanced potato varieties, which some of them feel are meant to limit productivity, contain bitter compounds that damage health, and are difficult to market.

## **2.3. Information availability.**

According to Culbertson et al. (2014), farmers and extension agents need to stay informed about the most recent recommendations for every crop activity. Information regarding the existence of better cultivars is still not widely available to Irish potatoes growers in the region. In actuality, a large number of farmers in Africa south of the Sahara are unable to

make an informed decision on the adoption of new technology due to a lack of trustworthy information.

### **2.3.6 Maturity period.**

The amount of time a crop is in the field until it is ready to be harvested and consumed is known as the maturity phase. Different crop kinds reach maturity at different times, which is unfortunate for Irish potato growers (Rees et al. 2012). As an illustration, KACHPOT 1 develops two months after developing, Victoria matures 60-70 days following growing, and NAKPOT 5 matures 60 afterwards sprout. Various potato cultivars mature at different dates. Farmers are prompted to select early growing potato types, such as KAPCHPOT 1, which matures in just two months after sprouting, due to the disparity in maturation periods for the various varieties. Farmers act in this way to maximize their earnings from the early spike in potato prices.

### **2.3.7 Skin color and market demand.**

In order to reveal system potentials and challenges, more market system research supporting targeted regulatory changes may be beneficial (Arnould and Press 2019)

Depending on the variety, different potatoes have varied hues. For instance, the colors of Nakpot 5, Victoria, Kachpot 2, and Kachpot S 1 are respectively cream, red, and pink-eyed spherical tubers. According to the color that the market will accept, farmers cultivate different types. In Uganda, the majority of potato markets favor purchasing red potatoes; hence, farmers plant Victoria variety in response to market needs. Although farmers may want to grow high-yielding or early-maturing types, they often choose the desired red variety, which is in high demand, out of worry that their produce won't find a market because of skin color.

### **2.3.8 Farmers' income.**

Breeding programs are seeing an increase in preference ranking and variety trait elicitations due to the significant challenges still facing smallholder farmers in low-income countries Rattunde et al. (2019).

The choice of potato variety to plant is significantly influenced by the income of the farmers. The cost of different potato seed varieties varies. For instance, large costs are charged for enhanced variants because of their exceptional qualities, whereas native potato varieties are always inexpensive. Second, compared to seeds that have been sown for several seasons before, the first seeds obtained from a seed center following breeding or variety creation are more expensive. Depending on the seeds' dependability and output, farmers always purchase them. While the poor farmers employ the local varieties, the wealthy farmers use the enhanced seed kinds. This establishes the variety that farmers should plant.

### **2.3.9 Bacterial wilt resistance.**

Bacterial wilt is a major obstacle to a good production of Irish potatoes, particularly in poor nations, according to a survey conducted by the Interaction Potato Center. It is brought on by bacteria known as bacterium *Ralstonia*, which severely damages crops.

One of the most common hazards to potato growth is bacterial wilt, which has resulted in the usage of numerous herbicides that are expensive and harmful to the environment, meaning that profit margins are often low. Certain types of Irish potatoes, including NAKPOT 3, can withstand bacterial wilt. Because of this variety's resistance to bacterial wilt, some farmers decided to grow it. Thus, playing a decisive role in potato variety preferences by farmers

## **2.4 Strategies to improve on the adoption of new varieties of potatoes.**

### **2.4.1 Training centers.**

Farmer training centers should be well equipped with training facility to help to deliver qualified knowledge and skill-based training which is important to increase the production and improve the adoption decisions.

### **2.4.2 Increasing access to credit loans.**

Access to credit loans investing in smallholder agriculture for food security, a report by high level panel experts on food security and nutrition, (FAO 2013) found that investment in infrastructure development, availability of agricultural banks, extension services, fell considerably since Mid-1980s.

### **2.4.3 Market network improvement.**

Improvement of market network in East African countries still face challenges in the marketing of Irish potatoes. Many farmers live very far from the market centers must walk and transport their produce for many hours to reach the markets. This is particularly hard for women, children and the elderly to market Irish potatoes.

### **2.4.4 Improvement of extension services.**

Extension and other organizations target them during on-farm research and improved technology promotion. This enables farmers to be aware of the different varieties of potatoes and their different characteristics. Decision making by farmers in this case will be from the informed view not bandwagon

## CHAPTER THREE

### METHODOLOGY

#### 3.1 Introduction.

This chapter contains the methodology for conducting the study research, it includes the study area, research design, study population, sampling design, sample size determination, and data management and collecting.

#### 3.2 Study area.

**3.2.1 Location.** Kween district is located in the slopes of Mt Elgon, middle of Bukwo and Kapchorwa in eastern Uganda. Its headquarters is situated in Binyiny which is approximately 69 kilometers by the road of Mbale, the nearest large city. The coordinates of Kween are 01 25N, 34 31E

Bulambuli in the Northeast, Amudat to the northeast, Bukwo to East, Kapchorwa to the West and northwest to Nakapiripirit.

#### 3.3 Methodology

**3.3.1. Research design** Research design is a plan of data collection which includes what data to collect, from whom, how and when to collect data, how to analyze the data obtained. This study will adopt a descriptive study design because it sought to investigate ideas of farmers on factors affecting potato varieties for preferences by farmers which will generate primary data.

The study will also use both qualitative and quantitative approaches to get perception of respondents

#### 3.3.2 Study population.

Is defined as the specific group of individuals from which data will be collected for the study. On factors affecting potato varieties preferences in kwanyiy sub county Kween district. The study population consists of 45 individuals. This includes Irish potato farmers, agricultural extension officers. These participants are selected due to their direct involvement in the production, handling, and marketing of Irish potatoes, making them crucial for understanding the factors affecting potato varieties preferences.

#### 3.3.3 Sampling procedure.

Sampling is the process of choosing a subset of people (a sample) from a population so that the chosen people are representative of the larger group from whom the sample was drawn (Dunne 2012). To create the study sample, the researcher will use basic and purposive random sampling techniques.

### **3.3.4 Purposive sampling technique.**

Is the procedure for choosing a sample that is thought to be purposefully representative of a particular community (Levy and Reeves 2011) Using this approach, Kwanyiy Sub County village the leaders of Irish producers and extension workers will be chosen based upon their administrative roles..

### **3.3.5 Simple random sampling technique.**

The technique of choosing a sample using simple random sampling ensures that every member of the defined population has a fair and independent opportunity of being chosen; for example, this will be used to choose the various respondents, parishes, as well as villages.

## **3.4 Data sources.**

### **3.4.1 Primary sources.**

Through the use of questionnaires that require respondents to answer a series of questions, data will be directly gathered from the potato growers, extension agents, and vendors. Additionally, firsthand observations must be made regarding things like crop growth at the moment, crop appearance, and crop damage that occurs in the gardens.

### **3.4.2 Secondary sources.**

Reviewing recent publications, government documents, textbooks, and important online sources such as newspapers, journals, atlases, magazines, and newspapers will provide data. Additionally, information would be gathered from the World Food Program, the Uganda National Bureau of Statistic, reports from the Uganda Potato Technologists who are Association, and Food and the agricultural sector Organizations.

## **3.5 Data collection**

Researchers used in the study will gave questionnaires to guarantee the gathering of authentic, dependable, and high-quality primary data. Since the majority of farmers lacked literacy, accurate data will be gathered through in-person administration of questionnaires. To guarantee that the in-depth information needed to address the study's research topics was obtained, both closed-ended and open-ended questions were employed. Before being distributed to a small group of farmers, the questionnaires underwent a pre-test to make sure they were acceptable, clear, relevant, and reliable. The pre-test gave the researcher the opportunity to appropriately modify the questionnaire in light of the pertinent objectives.

Questionnaire guides will be used in this investigation.

### **3.5. Data collection tools**

#### **Surveys and questionnaires**

Surveys and structured questionnaires were used as primary data collection tool to gather quantitative information from the respondents. These tools were designed to capture

responses on aspects of factors affecting potato varieties preferences. The questionnaires include closed ended questions for specific data and some open-ended questions to capture necessary information. This approach allowed systematic data collection from large number of respondents, enabling statistical analysis and comparison across different groups.

### **3.6 Data processing and analysis.**

Questionnaires, primary information from the field will then be gathered. After then, each questionnaire will be closely scrutinized to ensure that it is consistent and full. For every respondent, a unique serial number will be assigned. The responses received from the respondents served as the basis for the evaluation, description, and interpretation of each objective. Coding, editing, and tabulation are the first steps in the data analysis process, which served as a foundation for more investigation. The descriptive statistics feature in Excel for Microsoft Office 2007 will be used to analyze the data. After that, reports were generated and tabulated using it.

Descriptive statistical techniques will be used in this study to examine the information gathered. To make sure that all of the questions were responded to correctly the questionnaires are cross-checked

### **3.7 Ethical considerations Informed consent**

Is a fundamental ethical requirement for this study? All participants including Irish potato production were provided with comprehensive information about the study purposes procedures, potential risks and benefits before participating.

#### **Respect for participants**

Was a core ethical consideration throughout the research process? Researchers approached all interactions with values of participants time and input, cultural sensitivities and local customs were respected and participants were given ample time for their responses.

#### **Integrity and transparency**

Maintaining integrity and transparency in conducting and reporting the study was crucial. Researchers adhered to ethical standards in collecting, analyzing and presenting data, ensure that findings were reported honestly and accurately

### **3.8 Financial resources.**

The estimated budget for this research is as follow

Printing questionnaires will cost shs 1500, pens 5 at a cost of 2500, Transport 85000, gumboots 25000, Food and drinks 10000, data of 30000 , report printing 60000. Others requirements 20000,The estimated total cost is shs 250000 for all whole process of this research.

### **3.9 Limitations**

One of the most likely obstacles in the research area would be the farmers' poor literacy rates, which prevent them from reading and filling out questionnaires inadequate network, transportation, and language barrier. This could make gathering data more difficult.

## CHAPTER FOUR

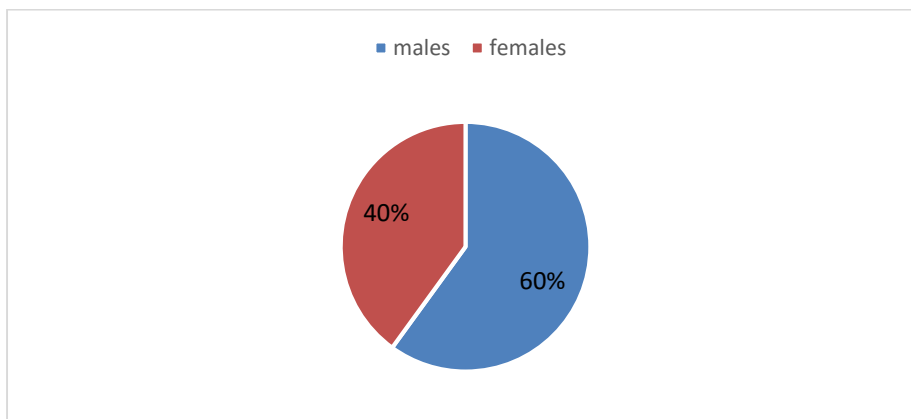
### PRESENTATION OF RESULTS

#### 4.1 Introduction

This chapter presents, discussed and analysed the findings about the respondent's personal data and findings are presented in statistical tables

#### 4.2. Demographic characteristics of respondents

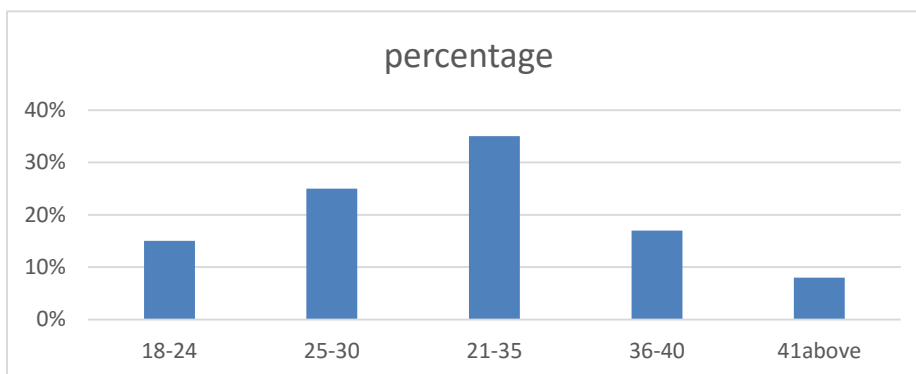
##### 4.2.1. Gender



Finding from the figure 1 indicates the distribution of respondents by gender in the study of farmer's preference on potato varieties in kwanyiy sub county Kween district Uganda. The data shows that majority were male with, percentage of 60% and females with a percentage of 40%. The difference in such percentages is 20% is that females can participate in other activities or enterprises like vegetable growing, sweet potato production

The bigger percentage of males is due to access to marketing information and purchasing of seeds and also transportation of the produce is mainly done by men

##### 4.1.2 Age of the respondents



**Fig 2. Age structure of the respondents**

Findings from the figure 2 indicate the distribution of the respondents by age group in the study on factors affecting potato varieties preferences by farmers in kwanyiy sub county Kween district. The data shows that Majority of the respondents 35% of the respondents are between the ages of 31-35 years, 25% aged 25-30 years, and 15% between 18-24 years, 36-40 years aged 17% and 7% for above 41 years. The results indicate that most of the respondents are young people that are considered to be energetic and productive to carry out the Irish production

#### 4.1.3 Educational level of the respondents

**Table 1 Showing levels of education**

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
None	7	15%
Primary	18	40%
Secondary	15	35%
Tertiary and above	5	10%
Total	45	100

The Findings from the table 1, detail the educational levels of the respondents in the study on factors affecting potato preferences by the farmers in kwanyiy Sub County, Kween district that

40% have attained primary education, none 15%, secondary 35% and tertiary 10%, indicating that primary took the biggest percentage, followed by secondary then non and tertiary are at last, meaning that many respondents did not attain high levels of education as they drop out from the primary and join marriage and involve in subsistence farming

Such labor is used to work in Irish production such as weeding, spraying and others. The few which attend to high levels of education mostly have access to obtain credit and adopt new technology.

#### 4.2 level of production of resistant varieties of potatoes

##### 4.2.1 Number of hectares under resistant varieties of potatoes

The research findings from the respondents' interviewed in kwanyiy sub county Kween district cited the following data in the table basing on the objective of the study

**Table 2 showing the number of hectares under resistant varieties of potatoes**

<b>Number of hectares</b>	<b>Percentage</b>	<b>Frequency</b>
---------------------------	-------------------	------------------

1-3	20	9
3-5	40	18
5-7	18	8.1
7-9	12	5.4
9 above	10	4.5

Findings from table 2 illustrate the hectares of land of respondents involved in the study on factors affecting farmer’s preference for potato varieties in kwanyiy subcounty Kween district. The majority of the respondents, 40% have 3-5 hectares of land, 20% have 1-3 hectares of land, 18% have 5-7 hectares of land, 12% have 7-9 hectares of land and 9 above have 10% hectares of land. These hectares of land may support the production of resistant varieties of Irish potato production in kwanyiy Sub County since most people can access land for farming.

#### 4.2.2 Varieties of potatoes grown

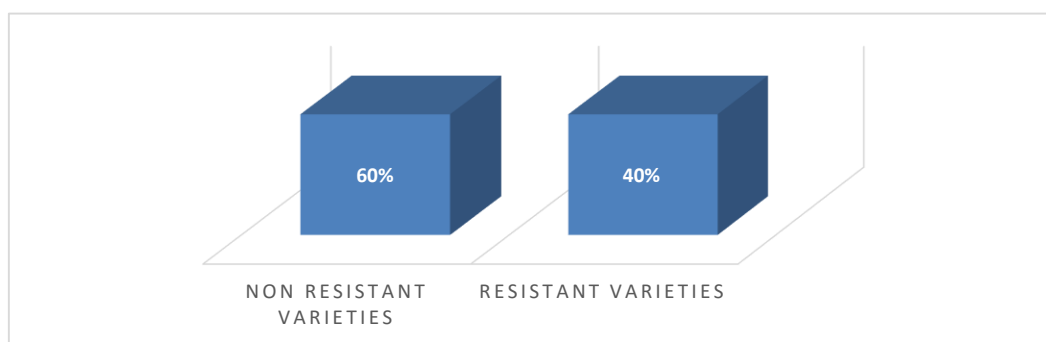


Figure 3 shows types of potatoes grown by farmers in kwanyiy sub county, Kween district

The figure above shows the varieties of potatoes grouped into resistant (NAKPOT 1, 2, 3) and non-resistant (kabale, Victoria) are the accessible varieties to farmers in kwanyiy Sub County. It was observed that 40% of the respondents grow the resistant varieties; resistance was based in pests and diseases, harshed climatic conditions in terms of drought and water content

60% were observed to growing the non-resistant varieties, such varieties a times do well in terms of good

#### Table 3 Extent to which varieties of potatoes are chosen according to yield

Variety	Yield	Frequency	Percentage
Victoria	10-14	4	9
Kabale	30	19	42
Kisoro	22-28	5	11
Nakpot	26-32	18	38
Total		45	100

### 4.2.3 Factors affecting farmers preference for Irish potato varieties

**Table 4 factors affecting farmer’s preference for Irish potato varieties**

Factor	Frequency	Percentage
Maturity period	10	22.2
Drought resistance	08	17.7
Skin colour	20	44.4
Disease resistance	07	15.5
Total	45	100

#### 4.2.3.1 Maturity period

From the findings, it was observed that most farmers do not take in maturity period while choosing varieties of potatoes to be grown as a key factor that’s why a less per hectare of 22.2% was observed from the findings collected implying that many farmers lack information about the maturity period of different varieties of potatoes. These make some farmers to choose other varieties of Irish potatoes basing on other factors

#### 4.2.3.2 disease resistance

This is the least considered factor in choosing a variety of potatoes to grow by farmers in Kween district especially Kwanyiy subcounty, it has a percentage of 18% farmers do not give prioritize disease resistance in choosing a variety of potatoes to grow. Farmers in kwanyiy sub county uses chemicals to develop resistance against diseases.

#### 4.2.3.3 skin color

From the findings of the field indicates that most farmers grow varieties of potatoes depending on the factor of the skin color of a variety with a percentage of 44.4%, for this reason ,most farmers grow kabale because it is preferred by most people, it has a high demand in the market hence a high level of growth of pink varieties compared to white varieties like Victoria.

#### 4.2.3.4 Drought resistance

According to the research findings from the field shows that less is considered in drought resistance. When farmers are choosing the quality of seeds to be planted. This is evidenced by the percentage of 17.7% which indicates that they are the least considered by farmers.

**4.2.4 strategies to the factors affecting potato varietal reference by farmers**

**Table 4 shows the strategies to the factors affecting potato varietal preference by farmers in kwanyiy sub-county**

Strategies to improve on potato varietal preference	Frequency	Percentage
Value addition	10	22.2
Market improvement	10	22.2
Training centres	08	17.7
Increasing access to credit	17	37,7
Total	45	100

**4.2.4.1 training centers**

Findings highlight the training centers as other strategies that should be addressed. 17.7% of the respondents sampled refer establishment of training and research stations at the sub-county. These increases information accessibility among the farmers as well as the improved seed variety would improve on the adaption of the resistant seed varieties

**4.2.4.2 increasing access to credit facilities**

Findings on the study of factors affecting Irish potatoes varieties preferences for the farmers in kwanyiy subcounty Kween district detailed 37.7% farmers suggested that they may not be capable to buy those improved seeds and certified seeds because they are expensive and farmers do not afford them therefore resorting to buying seeds that has been planted already because they are cheap.

Therefore, improving access to loans and credit would enhance their abilities to buy such seeds hence utilization of the resistant varieties.

**4.2.4.3 value addition**

Value addition was found out that 22.2% of the respondent’s proposal as one of the strategies of improving potato varietal preference by farmers. Processing of potatoes such as dried potatoes, potato flour and chips extends the shelf life, processed products are less bulky and quality is improved

**4.2.4.4 market improvement**

According to research findings, this is also another strategy put forward by farmers. Most consumers of potato prefer the pink varieties. Therefore, through having the wide market will help farmers to grow all the varieties that suit the market access

**CHAPTER FIVE**  
**SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

## **5.1 Introduction**

This chapter covers the summary of findings of the study, conclusions based on the findings and based on conclusions. On the study, recommendations and suggestions to put forward

### **5.1 Summary of the findings**

#### **5.1.1 Level of the Irish potato production**

The research indicates out the level of production of resistant varieties of potatoes. From the results 60% of the respondents grew non resistant varieties. This is because they have limited access to resistant varieties of potatoes evidenced with 40%.

#### **5.1.2 Determination of the extent to which varieties are chosen according to yield.**

From the research findings, the following are potato varieties that are accessed by farmers in kwanyiy sub county Kween district. Most respondents grew kabale with 42%, followed by Nakpot 38% and the least is Victoria

#### **5.1.3 Strategies to improve adoption of resistant varieties of potatoes**

The study found out that increasing access to credit facilities was the most cited strategy among the farmers in kwanyiy sub county in Kween district as evidenced by the highest percentage of 37.7. Farmers suggested that however much they know about the improved and resistant varieties of potatoes they may not be capable to buy those improved seeds.

According to the research findings. Found out that training centers is also another strategy among to be addressed as cited by 17.7% of the respondents

## **5.2 Conclusions**

This research focused on the level of production of resistant varieties of potatoes, extent to which a variety is chosen according to yield and strategies to improve adoption of resistant varieties of potatoes

## **5.3 Recommendations**

The following are recommendations that was put forward basing on this research

More farmers were encouraged to grow potatoes because they are staple food crops and diet as well as economic potential.

Farmers to form small saving groups at sub county level to raise capital in order to purchase improved seeds

Extension services should advise the farmers to adopt modern methods of farming and to improve productivity.

Value addition of potatoes by the farmers as this would Increase the farmers role in marketing by increasing production and consumption of processed Irish products like flour

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## **APPENDIX I QUESTIONNAIRE**

### **Questionnaire for farmers**

Dear respondent, I am KIPLANGAT MARK, a student of Busitema University pursuing a Bachelor’s Degree in Science Education agriculture double main. I am carrying out research on the “factors affecting Irish potato varietal preferences by farmers in Kwanyiy Sub County, Kween district. Therefore, you have been selected to take part in this study. Your response will be used for study purposes only and will be treated with the confidentiality it deserves.

**PART A: Social Demography**

1. How old are you ?(Tick appropriately)

- Below 18  40-49
- 18-29  Above 50
- 30-39

2. Gender (Tick appropriately)

- Male
- Female

3. Level of Education (Tick appropriately)

- Primary  A-level
- O-level  University

**PART B: Farming practice**

1. Do you plant Irish potatoes? (Tick appropriately)

- Yes  No

2. If yes, how long have you been growing Irish Potatoes? (Tick appropriately)

- 1 year  Between 2-5 years  More than 5 years

3. Farming scale (Tick appropriately)

- Commercial  Subsistence
- Others (specify).....

**PART C: Income Status**

Source of income (Tick appropriately)

-

Salary

Farming

Business

Other  (specify).....

Occupation; Note down your occupation e.g. teacher, peasant, doctor, LC1, etc.

.....

**PART D: Crop varieties, factors that affect farmers' preference and what should be done)**

1. Which Irish potato variety do you grow? (Tick appropriately)

Victoria

Kachpot

Nakport

Kabaale

Other (specify).....

2. Why do you choose to grow the Irish potato variety above (Tick appropriately)?

Resistance to pesticides	<input type="checkbox"/>
Resistant to pests and diseases	<input type="checkbox"/>
High market Demand	<input type="checkbox"/>
High crop yield	<input type="checkbox"/>
Cost of maintenance	<input type="checkbox"/>

3. How often do you spray your crops in one season?

3 times  5-10 times

3-5 times  More than  10 times

4. What challenges do you face as Irish potato farmers? (Tick appropriately)

Pest and diseases	
Cost of buying seeds	
Bad roads to the market	
Bad whether	
Price fluctuation of the produce	

Other (Specify).....

5. Describe in your own view what should be done to help Irish potato stake holders adopt to adopt quality varieties?

.....  
.....  
.....  
.....

**THANKS FOR YOUR RESPONSES**