
**FACTORS LIMITING GREEN PEPPER PRODUCTION IN BUDAKA TOWN
COUNCIL, BUDAKA DISTRICT, UGANDA.**

BY

TWANZA ASINANCY HANNAH

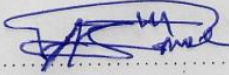
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**A RESEARCH REPORT TO BE SUBMITTED TO THE FACULTY OF SCIENCE AND
EDUCATION IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR
THE AWARD OF A DEGREE OF BACHELOR OF
SCIENCE EDUCATION (AGRICULTURE)
OF BUSITEMA UNIVERSITY.**

NOVEMBER 2023

APPROVAL

This research on the factors limiting green pepper production in Budaka town council, Budaka district has been submitted for examination with my approval as the candidate's university supervisor.

Signature..........date.....22/01/2024

MR.DRAMADRI GERALD AFAAYO

(SUPERVISOR)

DECLARATION

I TWANZA ASINANCY HANNAH, hereby declare that this my research report on the factors limiting green paper production in Budaka town council is my own work and has never been presented for any award in any institution of learning.

Signature..........date. 22 / 01 / 2024

TWANZA ASINANCY HANNAH

(STUDENT)

DEDICATION

I dedicate this report to my lovely parents, Mr. MUGOYA NATHAN and Mrs. NAMUWANE SYLVIA who have been a constant source of support, and encouragement throughout your life. They have been putting in their tireless effort of supporting emotionally and their strong financial support which has contributed to completion of research report with the stipulated time frame and God bless them and give them long live.

ACKNOWLEDGEMENT.

All praise to the almighty God, the creator of the heaven and earth who plans and arranges all things in the way they are supposed to be in that he gave the opportunity and the peace of mind to enable me to complete this course.

I also extend my honor and sincere appreciation the faculty of education for the facilitation and knowledge granted to me while in the university and field. Satisfactory thanks goes to my one and only supervisor Mr. DRAMADRI GRANLD AFAAYO for the tireless guidance provided to me through journey indeed God bless you.

Lastly, I extend your sincere to my friends who have always been with me and my side in the times of need and guidance during the course of being at Busitema University and in my research report formulation period which has made me better and enabled me to produce the document.

LIST OF ABBREVIATIONS

IPM-Integrated Pest Management

DV-Daily Value

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ABSTRACT

This study examines the factors limiting green pepper production in Budaka Town Council in Budaka district. Data was collected from 85 farmers through interviews with the help of structured questionnaire. The methods used were qualitative and quantitative Data analysis. The results of this study show that green pepper production is very economical to many farmers in terms of income in Budaka Town Council in Budaka district. The results show that the agronomic practices such as early planting, timely weeding, and fertilizer application when not applied properly hinder the production of green pepper. Furthermore, poor technologies and practices such as use of hand hoes, poor irrigation systems also limit green pepper production. The factors limiting green pepper production in Budaka Town Council include pests and diseases, infertile soils, unfavorable climate and weather, price fluctuation.

From the findings of the study, it was recommended that in order to reduce on the factors limiting green pepper production the Government should ensure subsidization of the agricultural sector and should also reduce on the taxes imposed on the agricultural sector. It was recommended that the District agricultural officers should provide enough pesticides to farmers at a fairly lower price and should also carry out sensitization of the farmers in order to reduce on the challenge of pests and diseases limiting green pepper production. For the purpose of compatibility, the research can be replicated in Budaka Town Council using a larger sample like 100 respondents. Further studies should be carried out carefully to monitor and assess how workers carryout their activities. Potential areas for research and development in the Town Council Include; Factors that boost the production of green pepper production in Budaka Town Council. How has technology influence green pepper production in Budaka Town Council.

CHAPTER ONE

INTRODUCTION

1.1 Background

Bell pepper

The bell pepper also known as paprika, sweet pepper, pepper, or capsicum is the fruit of plants in the Grossum Group of the species *Capsicum annuum*. It belongs to the solanaceae family by karapanos et al, 2008. Cultivars of the plant produce fruits in different colors, including red, yellow, orange, green, white, chocolate, candy cane striped, and purple. Bell peppers are sometimes grouped with less pungent chili varieties as "sweet peppers". While they are botanically fruits—classified as berries—they are commonly used as a vegetable ingredient or side dish. Other varieties of the genus *Capsicum* are categorized as chili peppers when they are cultivated for their pungency, including some varieties of *Capsicum annuum*. (Polo wick and sawhney, 1985.)

Bell pepper

Place of origin of capsicum is Western hemisphere, and it was known and used there as food since 7500BC. They appeared for the first time in South America, but they spread to Central America between 5200 and 3400BC. Even today, the wild ancestral chilies are harvested and held in same regard as the domesticated variants. As for spreading of capsicum around the world, one story says that Columbus himself is responsible for that and the introducing Chile to Europe from where it spread further to Africa and Asia. He was also responsible for the name “red pepper” because of the similar taste of the fruit to the black pepper. When the pepper arrived in Europe, it quickly found the place in the cuisines of different peoples. Other story says that capsicum was brought to Europe by conquistadors and later spread to Asia and Africa by Portugal sailors.

Peppers are native to Mexico, Central America, the Caribbean and northern South America. Pepper seeds were imported to Spain in 1493 and then spread through Europe and Asia. The mild bell pepper cultivar was developed in the 1920s, in Szeged, Hungary. Preferred growing conditions for bell peppers include warm, moist soil in a temperature range of 21 to 29 °C (70 to 84°F).

A green pepper, also called a bell pepper, is a slightly sweet fruit used in many cuisines from different regions. Unlike its spicy cousins, the green pepper has little to no perceptible heat and may be safely enjoyed by those who dislike spicy foods. Green peppers are delicious in a variety of recipes, but care must be taken when purchasing to ensure the best flavor.

Green peppers are a confusing vegetable, as it is difficult to tell if available specimens are ripe. Other types of bell pepper, such as red, yellow, and orange peppers, turn green before they ripen. Frequently, the green peppers available in the grocery store are actually unripe yellow or red peppers, and are far less sweet and more bitter. Additionally, there are green peppers that stay green when ripe, making the choice even more confusing. It may be advisable to grow peppers at home or purchase them directly from farmers if the taste difference is a problem.

Green peppers, also known as bell peppers, are available at most grocery stores.

Green pepper plants are easily found at nurseries and garden supply stores, and grow well throughout temperate climates. Peppers can be grown from seeds or small plants. If grown from seeds, peppers should be planted at the end of winter or in early spring. Many experts recommend letting seeds mature indoors and transferring to outdoor beds or containers after two or three months. Peppers will produce fruit throughout the year depending on the general climate.

1.2 NUTRITION (Benefits of Green Peppers)

Medically reviewed by Sade Meeks, MS, RD, Nutrition — By Jillian Kubala, MS, RD —
Updated on July 13, 2023

Green peppers contain a variety of nutrients and are rich in vitamins C and B6. They're a great way to increase your fiber and nutrient intake while protecting heart, eye, and gut health.

1.2.0 Rich source of nutrients:

Green bell peppers provide an array of vitamins and minerals. Plus, they're a good source of fiber and relatively low in carbohydrates.

Here's the nutrition breakdown for 1 cup (150 grams) of raw sweet green pepper (2Trusted Source):

Calories: 30

Protein: 1.3 grams

Carbohydrates: 7 grams

Fiber: 2.6 grams

Vitamin A, RAE: 3% of the daily value (DV)

Vitamin C: 134% of the DV

Vitamin K: 9% of the DV

Potassium: 6% of the DV

B6 (Pyridoxine): 20% of the DV

Green sweet peppers are low in calories and a particularly rich source of vitamins C and B6.

1.2.1 Good for gut health:

Peppers are a good source of fiber, which is essential for gut health.

Green sweet peppers are a good source of fiber. Adding fiber-rich foods to your diet can promote healthy gut function and protect against conditions that limit the digestive system.

1.2.2 Contains health-benefiting plant compounds:

Green sweet peppers are high in antioxidant and anti-inflammatory plant compounds, including vitamin C, carotenoids, and phenolic acids. Eating foods high in these compounds may promote your overall health and reduce your disease risk.

1.2.3 May promote heart and eye health:

Adding more fruits and vegetables like green sweet peppers to your diet is a smart way to promote your heart and eye health.

Studies show that diets high in vegetables and fruits like green sweet peppers protect against heart disease. Plus, lutein, a carotenoid compound found in sweet green peppers, may protect your eye health.

1.2.4 Could help you maintain a healthy body weight:

Eating more fruits and vegetables like green sweet peppers can help you maintain a healthy body weight or even lose weight.

A healthy, well-rounded diet rich in produce like green sweet peppers may help you

Maintain a healthy body weight and reduce belly fat.

1.2.5 Versatile and tasty:

In addition to being highly nutritious, green sweet peppers are versatile and taste great both raw and cooked.

You can use green sweet peppers in many dishes. Try incorporating all colors of sweet peppers into your diet to reap the most nutritional benefits.

There are many factors that have proven to be a challenge to the production of pepper in Budaka District.

1.3 PROBLEM STATEMENT

Green pepper production in Budaka district faces several limiting factors that hinder its potential. Many farmers prepare their land and grow the green pepper expecting a lot of harvest or yields but instead get less than expected. This forces many farmers to start growing other crops instead

of pepper. The problem statement revolves around identifying and addressing these factors to enhance green pepper production in Budaka district

There are many factors that limit the production of green pepper in Budaka district which may include pest and diseases, market, awareness, biodiversity, government policies and incentives conservativeness, land, harsh weather conditions and extension services.

This serves as a basis for this research to analyze the factors that limit green pepper production in Budaka District, formulate the possible solutions and recommendations to the factors limiting green pepper production.

1.4 Main objectives

The main objective of this study is to assess and analyze the factors that limit green pepper production in Budaka Town Council.

1.5 Specific objectives

1. To assess the practices and technologies used in green pepper production in Budaka town council.
2. To examine the challenges faced by green pepper farmers in Budaka town council.
3. To identify strategies of coping with limitations to green pepper production in Budaka Town Council.

1.6 Research questions

During the research, the following research questions will be answered:

1. What are the practices and technologies used during green pepper production in Budaka? Town Council?
2. Identify the challenges faced by green pepper farmers in Budaka town council.
3. Examine the mitigation measures that can be proposed in management of factors limiting green pepper production in Budaka Town Council?

1.7 Justification for the study

There are many factors which have posed a threat to the production of green pepper in Budaka District which may include type of soil, climate and weather limits the development of plants either alone or by interacting with other factors.

Rainfall fluctuation is a threat to green pepper production in Uganda.

Considerable research has been carried out on the factors that limit green pepper production, but few works have been specific on the factors that limit green pepper production .There is need to determine how these factors are limiting green pepper production and identify agricultural management practices and technologies appropriate for the factors.

1.8 CONCEPTUAL FRAME WORK.

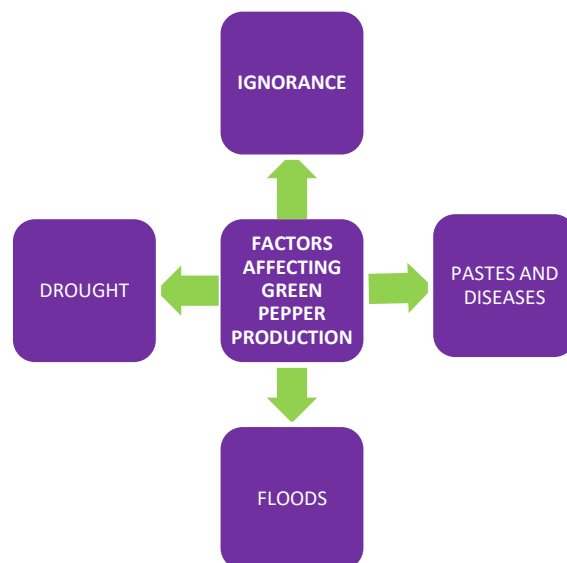


Figure 1 shows Conceptual frame work

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Green pepper production in Budaka district has been a significant agricultural activity contributing to the district's economy and livelihoods. Green pepper production in this district provides insights into the various aspects of cultivations, challenges faced and potential opportunities for improvement.

2.1.0 Climatic and weather conditions;

Budaka district's climatic condition plays a crucial role in green pepper production. The area experiences a bimodal rainfall pattern with average annual rainfall ranging from 1000mm-1500mm. The temperatures favorable for green pepper cultivation with average annual temperatures ranging from 20⁰C to 28⁰C (Nakayima et al., 2018). The soil in Budaka district is predominantly fertile and suitable for green pepper cultivation, with well drained loamy soils being preferred for optimal growth (Ocimati et al., 2017). However, climate and weather conditions have a direct impact on green paper production. The availability of water resources, temperature, and humidity levels are crucial for the growth of trees used in paper production. Changes in climate patterns, such as droughts or excessive rainfall, can limit the availability and quality of raw materials.

2.1.1 Land Availability: The availability of suitable land for tree plantations is essential for green paper production. Deforestation, urbanization, and land degradation can reduce the amount of land available for tree cultivation, thereby limiting the supply of raw materials.

2.1.2 Biodiversity Conservation: Uganda is known for its rich biodiversity, including various tree species used in paper production. Conservation efforts to protect endangered species and ecosystems can limit the availability of certain tree species for paper production.

2.1.3 Market Demand: The demand for green paper products influences the production levels in Uganda. If there is a high demand for eco-friendly paper products, it can incentivize producers to

increase their output. Conversely, low market demand may discourage investment in green paper production.

2.1.4 Cost of Production: The cost of producing green paper is influenced by factors such as labor costs, energy costs, raw material green peppers, and transportation expenses. Fluctuations in these costs can impact the profitability and viability of green paper production.

2.1.5 Government Policies and Incentives: Government policies and incentives play a crucial role in promoting or hindering green paper production. Supportive policies such as tax incentives, subsidies, and regulations that promote sustainable forestry practices can encourage investment in the sector.

2.1.6 Awareness and Consumer Preferences: Consumer awareness and preferences for eco-friendly products can drive the demand for green paper. Increased awareness about the environmental impact of traditional paper production methods can lead to a shift in consumer behavior towards more sustainable alternatives.

2.1.7 Education and Training: The availability of skilled labor and technical expertise in green paper production is essential for the industry's growth. Adequate education and training programs can enhance the capacity of workers and improve overall productivity.

2.1.8 Community Engagement: Engaging local communities in sustainable forestry practices and promoting their participation in green paper production can have positive social impacts. This can include providing employment opportunities, supporting livelihoods, and fostering community development.

2.1.9 Good agricultural practices;

According to Ocimati et al., 2017, the importance of adopting good agricultural practices is to enhance green pepper production in Budaka district. This includes proper land preparation, timely planting, integrated pest management practices, efficient irrigation methods and the use of organic fertilizers to improve on soil fertility.

Green pepper production in Budaka district faces several challenges that limit the potential for productivity and profitability. Here are some of the possible solutions to these challenges;

2.1.10 Soil acidity; green pepper requires a slightly acidic to neutral soil PH range or use acidic tolerant crop varieties that are bred to perform well in acidic conditions. According a study by Kawuki et al., (2016), the use lime can significantly improve the yield and quality of green pepper in acidic soil. The study found that application of 2-4 tons of lime per hectare increased the yield of green pepper by 20-30% and the fruit quality.

2.1.11 Water availability: green pepper require consistent and adequate water supply for optimal growth. However, Budaka district experiences a rainy season that is often un predictable and irregular, leading to drought and water scarcity. To address this challenge farmers can use irrigation system to supply consistent water to their plants.

According to a study by Ocaido et al., (2017), the use drip irrigation system can improve the yield and water use efficiency of green peppers in rain fed conditions. The study found that drip irrigation used the yield of green pepper by 30-40% and reduced to water consumption by 25-30%.

Pest and diseases; Green peppers are prone to several pests and diseases such as aphids, white flies and bacterial wilt which can reduce yields and affect fruit quality. To address this challenge, farmers can use integrated pest management (IPM) techniques that combine physical, cultural, biological controls to manage pests and diseases.

According to a study by Nabatanzi et al., (2018), the use of IPM techniques can reduce the use of chemical pesticides and improve the yield and quality of green peppers. The study found that the IPM approach increased the yield of green peppers by 25-30% and reduced the use of chemical pesticides by 50-60%.

2.1.12 Limited access to market; Green pepper farmers in Budaka district often face challenges in accessing market to sell their produce which can limit their income and profitability. To address this challenge, farmers can work with aggregators, processors, and exporters to access larger markets and improve their bargaining power.

According to a study by Kagabo et al.,(2019), the use of market- oriented agricultural extension services can improve the income and profitability of green pepper farmers in Budaka. The study

found the use of market oriented extension services increased the income of farmers by 20-30% and improved their access to the markets

2.1.13 Conclusion

In conclusion, the challenges limiting green pepper production in Budaka district can be addressed through a combination of improved soil management, irrigation, pest management, and market access. By adopting to these solutions farmers can increase on their yields, improve on the quality their produce and enhance their income and profitability.

CHAPTER THREE

RESEARCH METHODS AND MATERIALS

3.1 Introduction

The tools and methods of research that will be used will include interview schedules, questionnaires, observation and review of documented information from research work already done, maps, journals and books. It will cover the nature and sources of data, target population and unit of analysis, sampling frame and sample size, population distribution and sampling procedures, and data collection and data analysis.

3.2 Research Design.

This study will examine the challenges farmers growing green pepper face in Budaka Town Council. During this study information will be obtained that will best describe the factors that limit green pepper production and also determine the current state of green pepper production. This study will adopt the explorative, quantitative, descriptive, and evaluative research design. The strength of explorative design lies in its flexibility of design, which easily allows different aspects of the problem to be considered. It will involve the survey of concerned literature, the experience survey and analysis of insights stimulating examples.

3.3 Population.

Population refers to the entire group of individuals having a common observable characteristic Mugenda, (1999). This study will target all the households growing green pepper in Budaka Town Council Budaka district.

3.4 Sample size;

Sample size refers to the number of respondents that represent the entire population of the study from which the information is obtained (hunt: 2020). The sample size will be got using Krejcie and Morgan (1970) Sample size determination tables. This will serve as an adequate representation of the population for the researcher wishes to make generalizations and small enough to be selected economically in terms of expense and complexity of data analysis.

Table 1: below summaries the population, sample size, sampling techniques and instruments.

Category	Population		Sampling	Instrument
	size(N)	Sample size(S)	Technique	
Extension worker	3	3	Selective sampling	Questionnaire
Farmers	85	56	Simple random sampling	Questionnaire
Total	88	59		

Source: Primary Data, 2023.

Table 1 shows summaries of population, sample size, sampling techniques, and instruments

3.5 Sampling techniques;

The researcher shall use selective sampling, random sampling techniques to generate the desired sample size.

Simple random sampling provides equal chances for every of the population to be included in the study (Amin, 2005). This will help the researcher narrow down the targeted population to ease the process of gathering data and also get the needed information from anyone among the target population. Simple random sampling shall be used to select 100 farmers for the study because of their big numbers and the need to make generalizations for the entire population.

Selective sampling defines a specialized selection of particular individuals in the data selection process (Robinson, 2014). This particular sampling will enable the researcher to select 27 farmers. Selective sampling will be used to select farmers because they have prior knowledge regarding the study.

3.6 Nature and Sources of Data

The nature of the data to be obtained will include the socio-economic characteristics of different groups of people and house hold resource, land use and production, factors limiting green pepper production, mitigation and adaptation practices and policy recommendations.

Data on green pepper production in bags per acre and general agronomic practices will be obtained from the household interviews.

Other sources of data and information such as policy development on factors limiting green pepper production will be obtained from the NARO website.

Two types of data will be obtained; primary and secondary data.

i) Sources of Primary Data

This will be obtained from household head respondents and the observations that will be made and recorded in the field.

ii) Sources of Secondary Data

Secondary data will be obtained from published and unpublished information sources.

NGO's, relevant references, publications, maps, development plans, annual reports from government departments, other academic studies in other areas, books periodicals and journals. Various institutions will be visited to gather information.

3.7 Data Collection Instruments/methods

Instruments that will be used in data collection will include:

3.8 Households Questionnaires

A Closed ended questionnaire will be administered to the farmers. The questionnaire will have an introductory part with information about the researcher's intention to carry out this research. Section A comprises the bio data of the respondents, and section B will have questions on the objectives of the study. The Household questionnaire will be administered to farmers or household heads.

3.9 Interview Schedule.

This technique will involve face to face interactions between the respondents and researcher leading to self-report. The interview method will be used because it is quite flexible and can be used to gather detailed and well explained information from various respondents. The researcher intends to use the interviews with the local council leaders and agricultural officers as they are more knowledgeable about the variables under the study

3.10 Photographs

The photographs will be captured by the researcher during the field activities when conducting the research with the farmers. These photographs will show the current performance and situation of the farmers' crops in terms of growth and yields. It will be used to capture long lasting impressions of the field situation with regards to activities that will be carried out.

3.11 Maps and observation sheets.

The maps will assist in evaluating the trends of factors that influence green pepper production in Budaka town council, Budaka district. They will contain each factor and how it has limited the production of green pepper in Budaka town council, Budaka district. These may be obtained from agricultural officers at the district and extension workers

3.12 Data analysis

According to (polit, 2017) Data analysis means to organize, provide structure and elicit meaning from the data collected. The qualitative data that will be generated from interviews shall be recorded, organized and then summarized in themes .Thematic analysis will then be used to analyze this data and aim at ensuring credibility and validity of the research finding from the data that will be collected. The data from the questionnaire shall be organized and presented in frequency tables using descriptive data analysis and shall be analyzed using inferential statistic methods in order to make general conclusion about the influence of different factors on green pepper production. According to Creswell (2012) inferential statistic is most suitable when relating two or more variables.

3.13 Validity of instruments

Validity is the efficiency or the degree to which a method, a test, or a research tool measures what is supposed to be measured. For this case, the validity of the questionnaires shall be tested using the Content Validity Index Test (CVI). Kimberlin et al., (2008). This shall involve analysis

to be carried out by the supervisor or other experts who have considerable knowledge about the study in order to establish whether the instrument shall actually assess what it is intended for.

3.14 Reliability of instruments

Reliability means the degree of consistency of the items, the instruments or the extent to which a test, a method, or a tool gives consistent results across a range of settings or when it was administered to the same group on different occasions. The reliability of research questionnaire shall be tested through a Pilot testing to ensure internal consistency to measure research variables.

3.15 Ethical considerations

During the process of research, the researcher shall make sure that respondents understand that participation is voluntary and that participants are free to answer according to their perception.

Accuracy and honesty during this study shall also be of great concern. The researcher shall treat the research project with the utmost care, in that there will be no temptation to cheat and generate research results since it threatens the conception of the research

CHAPTER FOUR

Data Presentation, Interpretation

4.0 INTRODUCTION

This chapter presents the research presentation, interpretation, analysis, and discussions of the study findings. The results are presented based on the specific objectives of the study. This is done after elaborating on the demographic data.

Table 2: showing the practices and technologies used during green pepper production in Budaka Town Council.

Technologies and practices	Farmers	Percentage
Tractor	1	1.2
Oxen	20	23.5
Irrigation system	5	5.9
Hand hoes	59	69.4
Total	85	100.0

Table 2 shows Technologies and practices used

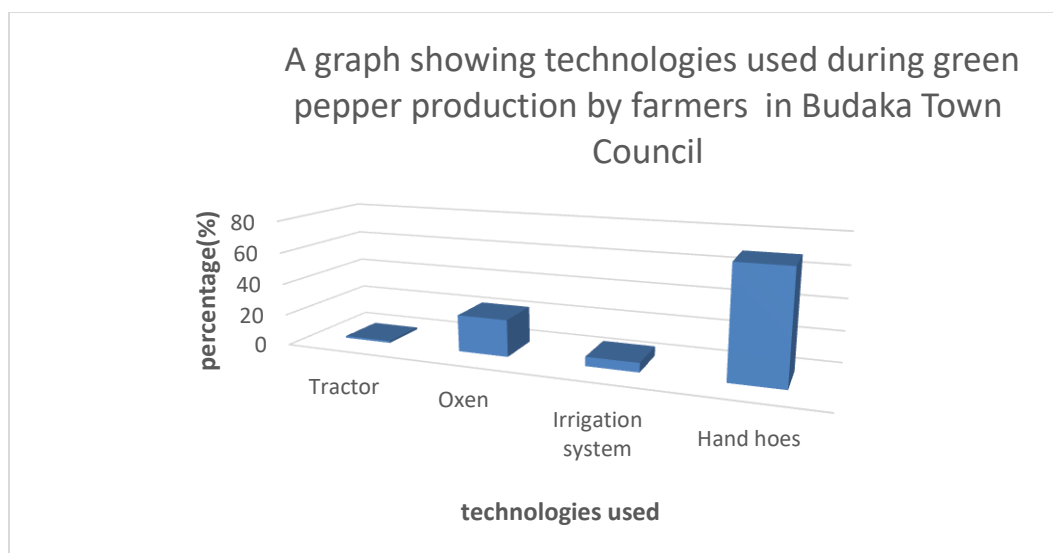


Figure 2 shows a graph of Technologies used

The graph above show that 1(1.2%) of the respondents used tractor for green pepper production from the previous year, 20(23.5%) of the respondents' green pepper production carried ox cultivation from the previous year, 5(5.9%) used irrigation systems in the green pepper production from the previous year. And 59(69.4%) of the farmers used hand hoes for the cultivation of green pepper. Therefore, it implies that there was use of inadequate technology and practices during green pepper production from the previous year.

Table 3: showing agronomic practices carried out in green pepper production in Budaka town council.

Agronomic practices	Farmers	
		Percentage
Early planting	12	14.1
Timely weeding	10	11.8
Fertilizer application	15	17.6
Irrigation	05	5.9
Pruning	05	5.9
Thinning	05	5.9
Spraying	20	23.5
Staking	03	3.5
Timely harvesting	10	11.8
TOTAL	85	100

Table 3 shows Agronomic practices used

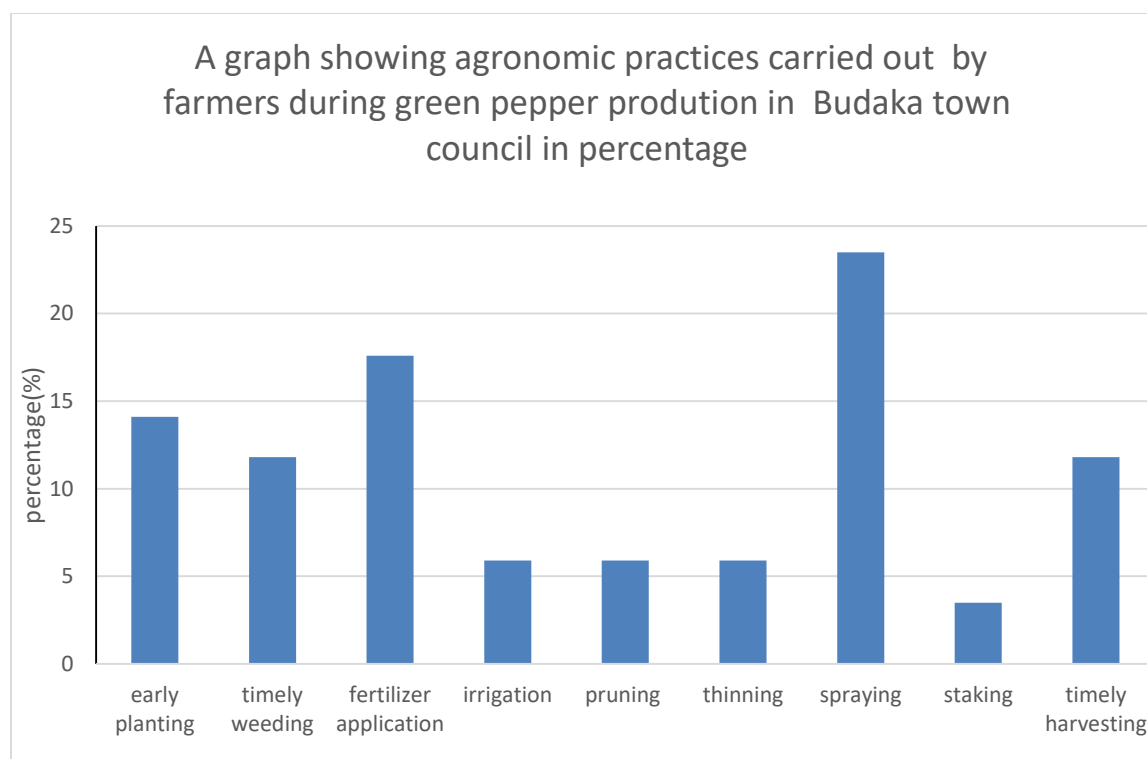


Figure 3 shows a graph of Agronomic practices

The graph above shows that 12(14.1%) of the respondents practiced early planting of green pepper production from the previous year, 10(11.8%) of the respondents practiced timely weeding of green pepper from the previous year, 15(17.6%) carried out fertilizer application in the green pepper production from the previous year. 05(5.9%) of the farmers used irrigation method for green pepper, 05(5.9%) of the farmers carried out pruning during green pepper production, 05(5.9%) of the respondents carried out thinning during green pepper production, 20(23.5%) of the farmers carried out spraying during green pepper production, 03(3.5) of the respondents carried out staking during green pepper production and 10(11.8%) of the farmers carried out timely harvesting from the previous years. Therefore, it implies that there were less agronomic practices carried out during green pepper production from the previous year.

Table 4: showing the factors limiting green pepper production in Budaka Town Council?

Problems	Farmers	Percentage
price fluctuation	10	11.8

Unfavorable climate and weather	20	23.5
Poor land tenure system	5	5.9
Infertile soils	10	11.8
Low level of education and training:	5	5.9
Poor transport and communication network	3	3.5
Unfavorable government policies and incentives:	7	8.2
Pests and diseases:	14	16.5
Poor technology	6	7.1
Inadequate extension facilities	5	5.9
Total	85	100.0

Table 4 shows Factors limiting pepper production

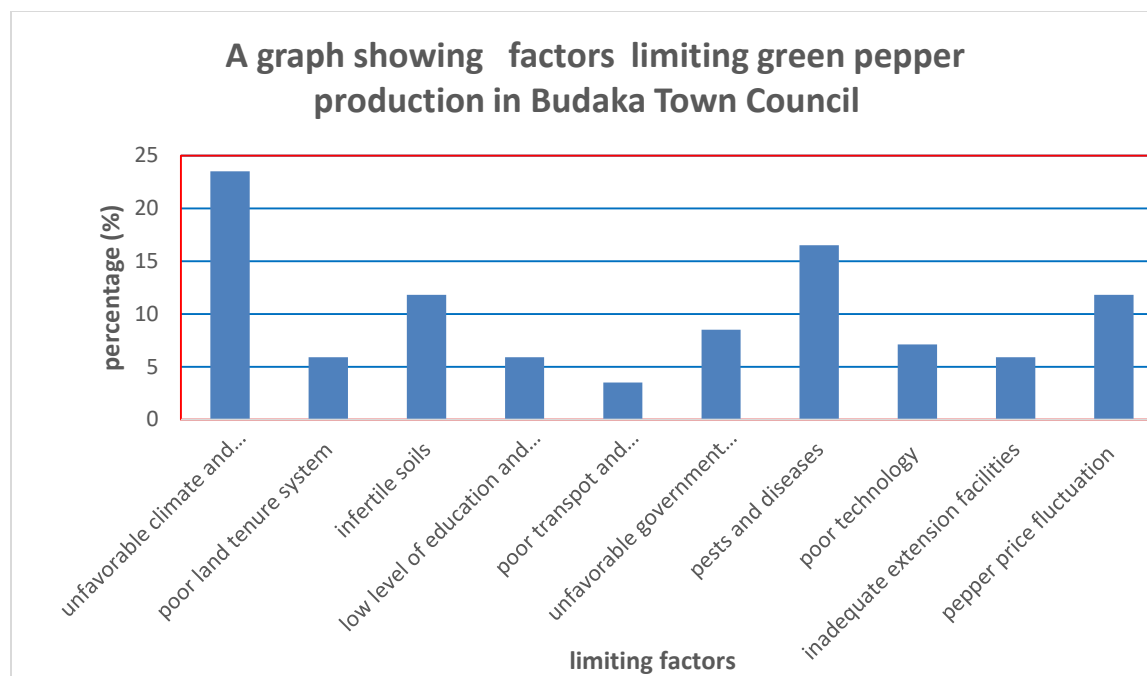


Figure 4 shows a graph of Factors Limiting Pepper Production

From the graph above, the farmers listed in the questionnaires the problems that they faced in the course of green pepper production. The researcher interpreted each problem stated as follows below: There is the problem of green pepper price fluctuation where by the prices of green pepper is not constant which was denoted by all the farmers' representing 11.8%. unfavorable climate and weather conditions such as drought, floods, which was revealed by 20 farmers representing 23.5%. There is also the problem of poor technology which has reduced the quality and quantity of green pepper which was revealed by 6 farmers representing 7.1%, there is need for improving on the land tenure system by the authorities which has limited the use of land by some farmers in the production of pepper represented by 5 farmers (5.9%). Infertile soils which has hindered from some farmers producing green pepper which was noted by 10 (11.8%) farmers there is also inadequate level of education and training which has led to low production of green pepper revealed by 5 (5.9%) farmers. There is poor transport and communication network which has hindered green pepper production in their community leading to low production stated by 3 (3.5%) farmers, unfavorable Government policies which has increased costs of production evidenced by 7 (8.2%) farmers and there is also a challenge of pests and diseases such as aphids, which lead to losses and lower the quality of green pepper stated by 14 (16.5%) farmers. Shortage

of extension facilities is also another challenge which has limited production of green pepper as suggested by 5(5.9%) farmers.

Table 4: showing solutions to the factors limiting green pepper production in Budaka town council.

Solutions	farmers	percentage
Integrated Pest and Disease Management	12	14.1
Climate-Smart Agriculture Practices	20	23.5
Capacity Building and Extension Services	12	14.1
Market Linkages and Value Addition	10	11.8
Policy Support	07	8.2
Improving transport and communication network	07	8.2
Application of fertilizers	10	11.8
Mechanization of agriculture	04	4.7
Communal ownership of land	03	3.5
TOTAL	85	100

Table 5 shows solutions to the limiting factors

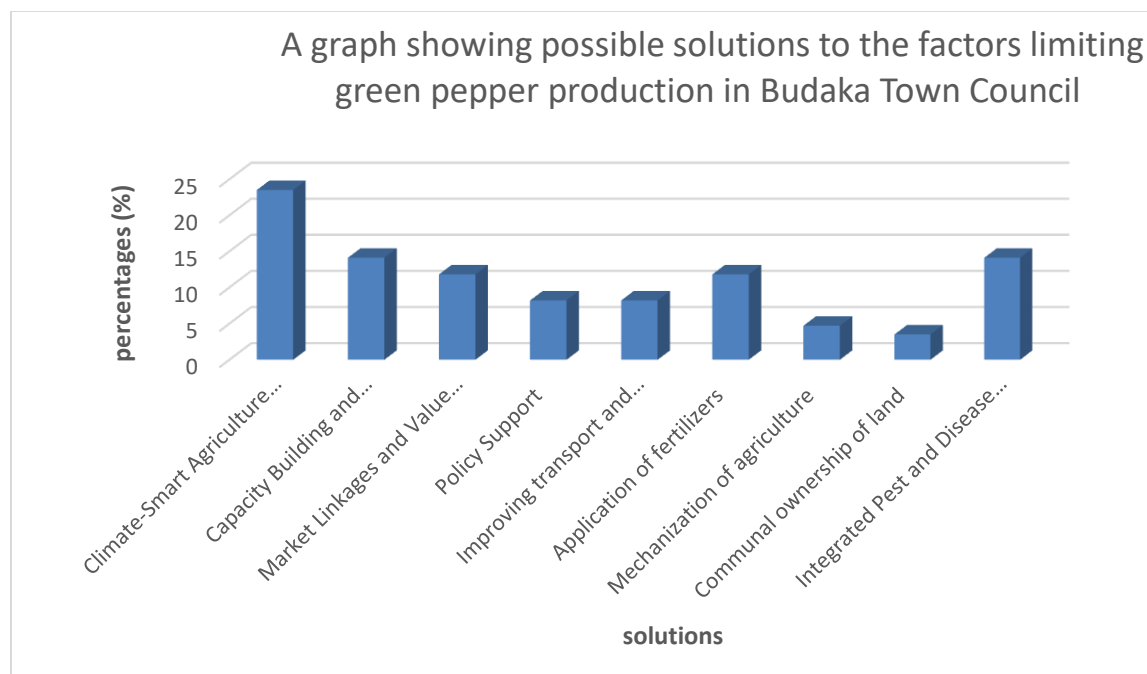


Figure 5 shows a graph of possible solutions

The graph above shows the solutions to the factors limiting green pepper production in Budaka town council.

The researcher interpreted that 12(14.1%) of the respondents suggested that there should be integrated pest and disease management in order to overcome the challenge of pest and diseases , 20(23.5%) of the respondents suggested that there should be climate smart agriculture practices to overcome the challenge of unfavorable climate, 12(14.1%) of the respondents suggested should that there be capacity building and extension services to overcome the challenge of shortage of extension workers and low level of education and training ,10(11.8%) of the respondents suggested should that there be market linkages and value addition to overcome the challenge of price fluctuation ,07(8.2%) of the respondents suggested should that there be policy support to overcome the challenge of unfavorable government policy and incentives, 07(8.2%) of the respondents suggested should that there be improvement in transport and communication network to overcome the challenge of poor transport and communication network,10(11.8%) of the respondents suggested should that there be fertilizer application to overcome the challenge of soil infertility,04(4.7%) of the respondents suggested should that there be mechanization of agriculture to overcome the challenge of poor technology , and

03(3.5%) of the respondents suggested should that there be communal land ownership to overcome the challenge of poor land tenure system.

CHAPTER FIVE

DISCUSSION AND CONCLUSION

5.0 INTRODUCTION

This chapter presents the discussion of the research findings and conclusions in the research study which was conducted in Budaka Town Council, Budaka district showing the agronomic practices, limitations and solutions to the factors limiting green pepper production in Budaka Town Council

5.1 DISCUSSION

This section presents the discussion from the field findings basing on the objectives of the study

5.2 Technologies used by the farmers in green pepper production in Budaka Town Council

Tractors, 1.2% of the respondents reported that he used the tractor during the production of green pepper which helped him to cultivate a large area of land hence increasing on quantity of yields produced and the quality through replenishing the leached nutrients from the down layers.

Oxen, 23.5% of the respondents reported that they used oxen for cultivating their land which helped them to a small extent, cultivate a large piece of land which helped in increased on their yields and tried to improve on the quality through improving on the soil structure and fertility.

Irrigation system, 5.9% of the respondents reported that they used irrigation system such as sprinkle head, splash irrigation among others which has helped in supplying water during the dry season which has led to constant supply of green pepper in Budaka Town Council.

Hand hoes, 69.4% of the respondents reported that they used hand hoes in the production of green pepper since it is cheap and can be afforded by many farmers.

5.2 Agronomic practices carried out by farmers in Budaka Town Council during green pepper production.

Early planting, 14.1% of the respondents reported that they carried out early planting which increased on the quality and quantity of their yields since there was less infestation of pests and diseases, there was proper utilization of water and nutrients hence increasing production.

Timely weeding, 11.8% of the respondents reported that they carried out timely weeding which helped on reducing on competition of growth requirements and reduced on the infestation of pests and diseases hence improving on quality and quantity of yields.

Fertilizer application, 17.6% of the respondents reported that they applied fertilizers onto their green pepper which helped in boosting growth and led to increased yields hence leading to increased production of green pepper.

Irrigation, 5.9% of the respondents reported that they applied irrigation method during green pepper production which increased on the yields and led to constant supply of green pepper throughout the year since there is constant supply of water which supported the growth of green pepper.

Pruning, 5.9% of the respondents reported that they carried out pruning of green pepper which has helped in reducing competition for growth requirements leading to increased yields since the nutrients which could be wasted in the growth of excess branches can be utilized in the development of green pepper fruits.

Thinning, 5.9% of the respondents reported that they carried out thinning of green pepper which helped in increasing the yields since it reduces overcrowding and competition for the growth requirements hence leading to increased quality and quantity of yield.

Spraying, 23.5% of the respondents reported that they carried out spraying of green pepper which helped in improving on the quality and increasing the quantity of yields through the management of pests like aphids, spider mites, thrips, mealy bugs, scales and white flies and diseases like pseudomonas syringae, phytophthora blight, colletotrichum lindmuthianum and botrytis cinerea which could reduce on the quality and quantity of the yields hence leading to high production of green pepper.

Staking, 3.5% of the respondents reported that they carried out staking which helped in improving the quality of green pepper produced through providing extra support to the plant hence avoiding of the green pepper produced.

Timely harvesting, 11.8% of the respondents reported that they carried out timely harvesting which helped them on improving the quality of yields through avoiding rotting and germination

of the yields in the garden during rainy season, it has also reduced on losses caused due to rotting of green pepper during rainy season.

5.3 Factors limiting green pepper production in Budaka Town Council.

Price fluctuation, 11.8% of the respondents reported that they faced a challenge of price fluctuation which led to flooding of green pepper in the market due price speculation by farmers leading to losses due to rotting and selling of green pepper at lower prices .

Unfavorable climate and weather, 23.5% of the respondents reported that during the rainy season excessive rainfall led to water logging which led to rotting of green pepper in the field, also prolonged drought reduced availability of water leading to stunted growth ,storms and strong winds caused physical damage to the green pepper hence leading to low yields.

Poor land tenure system, 5.9% of the respondents reported that they faced a challenge of poor land tenure system such as land fragmentation which hindered the use of tractors leading to low production hence low quantity and quality of yields.

Infertile soils, 11.8% of the respondents reported that they faced a challenge of soil infertility which was caused due to mono -cropping, soil erosion hence limiting production due to loss of nutrients which could support plant growth hence leading to low quality and quantity of yields.

Low level of education and training, 5.9% of the respondents reported that they faced a challenge of failure to use modern methods of farming which could help in increasing on the quantity and quality of yields due to low level of education and training leading low production.

Poor transport and communication network, 3.5% of the respondents reported that they faced a challenge of poor transport and communication network which hindered them from reaching areas of scarcity or need reducing access to market leading to low quality and quantity of green pepper produced by the farmers hence leading to low production

Unfavorable government policies and incentives, 8.2% of the respondents reported that they faced a challenge of unfavorable government policies and incentives such as heavy taxes imposed on the green pepper farmers and the high prices of agricultural inputs increased the cost of production leading to low profits, losses hence low production.

Pests and diseases, 16.5% of the respondents reported that they faced a challenge of pests

Like aphids, spider mites, thrips, mealy bugs, scales and white flies and diseases like pseudomonas syringae, phytophthora blight, colletotrichum lindmuthianum and botrytis cinerea which reduced on the quality and quantity of the yields hence led to low production of green pepper by the farmers.

Poor technology, 7.1% of the respondents reported that they faced a challenge of poor technology such as use of hand hoes which was time consuming and could cover a smaller area in a long period of time, labour consuming which increased costs of production leading to low quality and quantity of yields produced by farmers hence low production.

Inadequate extension facilities, 5.9% of the respondents reported that they faced a challenge of inadequate extension facilities such as extension workers, agricultural inputs like fertilizers, seeds, pesticides which has affected the quality and quantity of yields produced due to shortage of skills, infestation of pests and diseases, soil infertility leading to low production.

Council.

5.4 Solution to the factors limiting green pepper production in Budaka Town Council.

Integrated Pest and Disease Management, 14.1% of the respondents suggested that there should be integrated pest and disease management to overcome the challenge of pests Like aphids, spider mites, thrips, mealy bugs, scales and white flies and diseases like pseudomonas syringae, phytophthora blight, colletotrichum lindmuthianum and botrytis cinerea in order to improve on the quality and quantity of the green pepper produced by farmers.

Climate-Smart Agriculture Practices, 23.5% of the respondents suggested that there should be climate-Smart Agriculture practices such as conservation tillage, mulching, integrated pest and disease management in order to overcome the challenge of unfavorable climate conditions hence improving on quality and quantity of green pepper produced by farmers.

Capacity Building and Extension Services, 14.1 % of the respondents suggested that there should be capacity building and extension services such as provision of training, seeds, fertilizers, pesticides which helps to overcome the challenge of low level of education and training and

shortage of extension services which helps in improving the quality and quantity of the green pepper produced by farmers.

Market Linkages and Value Addition, 11.8% of the respondents suggested that there should be market linkage and value addition to overcome the challenge of flooding of green pepper in the market and selling it at low prices due to price fluctuation which encourage high production leading to large quantity of green pepper produced by farmers.

Policy support, 8.2% of the respondents suggested that there should be policy support by the government through subsidization of agriculture, provision of credit loans, agricultural inputs in order to overcome the challenge of unfavorable government policy which will reduce on the costs of production hence leading to high production of green pepper by the farmers.

Improving transport and communication network, 8.2% of the respondents suggested that there should be Improvement on transport and communication network through construction of Roads which help in connecting to areas of scarcity which will help improving transport and communication network in improving on the market hence leading to high production of green pepper by the farmers.

Application of fertilizers, 11.8% of the respondents suggested that there should be application of fertilizers such as DAP in order to overcome the challenge of soil infertility which boost plant growth and production leading to improvement of quality and quantity of green pepper produced by the farmers.

Mechanization of agriculture, 4.7% of the respondents suggested that there should be mechanization of agriculture such as use of tractors, irrigation machines, processing machines to overcome the challenge of low level of technology which leads to improved quality and quantity of green pepper produced by farmers' hence high production.

Communal ownership of land, 3.5% of the respondents suggested that there should be communal ownership of land to overcome the challenge of poor land tenure system such as land fragmentation which leads to increased production hence leading to large quantity of green pepper produced by the farmers.

It was recommended that the farmers should form farmer cooperatives that will enable them to sell their products at relatively high and stable prices

CHAPTER 6

CONCLUSION AND RECOMMENDATION

6.0 CONCLUSION

The study was conducted on the technologies used in green pepper production in Budaka Town Council and revealed the technologies that were used which included use of tractors, irrigation system, oxen and hand hoes. It revealed that most farmers used poor technologies evidenced by the large number of farmers who used hand hoes with 69.4%.

Agronomic practices carried out included; early planting, timely weeding, Fertilizer application, Irrigation, Pruning, Thinning, Spraying, Staking and Timely harvesting and spraying was the most agronomic practice carried out by the largest number of farmers with 23.5% and staking was the least agronomic practice carried out by the farmers with 3.5%.

The factors limiting the green pepper production in Budaka Town Council included; price fluctuation, Unfavorable climate and weather, Poor land tenure system, Infertile soils, Low level of education and training, Poor transport and communication network, Unfavorable government policies and incentives, Poor technology, Pests and diseases. Unfavorable climate and pests and diseases are the major factors limiting green pepper production as cited by the most farmers with a percentage of (23.5% and 16.5%) respectively.

The solutions to the factors limiting the production of green pepper in Budaka Town Council which included; Capacity Building and Extension Services, Integrated Pest and Disease Management, Climate-Smart Agriculture Practices, Market Linkages and Value Addition, Policy Support, Improving transport and communication network, Application of fertilizers, Mechanization of agriculture and Communal ownership of land. Climate-Smart Agriculture Practices was the most suggested solution by the farmers with 23.5% and Communal ownership of land was the least suggested solution by the farmers with 3.5%.

6.1 RECOMMENDATION.

From the findings of the study, it was recommended that in order to reduce on the factors limiting green pepper production the Government should ensure subsidization of the agricultural sector and should also reduce on the taxes imposed on the agricultural sector.

It was recommended that the District agricultural officers should provide enough pesticides to farmers at a fairly lower price and should also carry out sensitization of the farmers in order to reduce on the challenge of pests and diseases limiting green pepper production.

It was recommended that the farmers should form farmer cooperatives that will enable them to sell their products at relatively high and stable prices, also enable them to acquire large pieces of land and enables access to modern technology.

6.2. AREAS OF FURTHER RESEARCH.

For the purpose of compatibility, the research can be replicated in Budaka Town Council using a larger sample like 100 respondents. Further studies should be carried out carefully to monitor and assess how workers carry out their activities. Potential areas for research and development in the Town Council include;

- I. Factors that boost the production of green pepper production in Budaka Town Council.
- II. How has technology influence green pepper production in Budaka Town Council.

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challenges facing green paper production in Uganda, including pests and diseases, and identifies potential opportunities for improving the sector.

“Integrated Pest Management for Green Papaya Production in Uganda” by J.K. Muhumuza, K.M. Kawuki, and J.K. Ssegawa. This reference provides a comprehensive guide to IPM techniques for green paper production in Uganda, including crop rotation, biological control, cultural control, and chemical control.

APPENDICES

Appendix 1

QUESTIONNAIRE TO FARMERS

Dear Farmers,

I am TWANZA ASINANCY HANNAH from Busitema University faculty of Science and education Nagongera campus pursuing a bachelor’s degree of education in Agriculture.

The purpose of this questionnaire is to assess your opinion and attitude towards the growing of green pepper in your locality. Kindly read and answer all the statements as precisely and frankly as you can.

Tick against the alternative you think is suitable.

1. Name of your Parish.....

2. Select your age bracket by ticking

(a) 18 to 25 years, ☐ (b) 26 to 40 years ☐ (c) 41 to 60 years ☐

3. Select your gender by ticking,

(a) Female ☐

(b) Male ☐

4. At which level of education do you attain?

(a) primary ☐

(b) secondary ☐

(c) Tertiary ☐

5 what is your marital status

(a) married ☐

(b) single ☐

6. In which months of the year do you begin early planting of green pepper?

a. Between March and April

b. Between April and May

c. Between June and July

d. Others (specify).....

7. How many times do you weed your green pepper?

(a) Once ☐ b) Twice ☐ c) Three times ☐ d) More than three times ☐

8. How many times do you apply fertilizers?

a) Zero ☐ b) One ☐ c) Two ☐ d) More than two ☐

9. How do you receive the herbicides?

a) On credit ☐ b) On cash payment c) given free ☐

10. Do you have green pepper growers' cooperative society in your Parish to buy the green pepper?

(a) Yes ☐ (b) No ☐

If yes, who buys?

(a) Traders Union ☐

(b) Farmer Cooperative Union ☐

(c) Green pepper Development Organization ☐

11. In your own view, is green pepper growing beneficial to you in terms of total net profit?

Yes ☐ No ☐

1. Has any seminar or workshop been organized by Agricultural Department in your locality on farming issues?

YES ☐ NO ☐

If YES, on which areas?

11. Which major problems do you face in green pepper growing I production in Budaka town council?

i.

ii.

iii.

iv. Any others.

12. What do you think are the measures that could be put in place to address the challenges you face in green pepper production?

i.

ii.

iii.

iv. Any others