RELATIONSHIP BETWEEN AGRICULTURE INPUT UTILIZATION AND MAIZE PRODUCTION IN MAJANJI SUB COUNTY BUSIA DISTRICT

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A RESEARCH REPORT SUBMITTED TO THE FACULTY OF SCIENCE AND EDUCATION, DEPARTMENT OF AGRICULTURE IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE A WARD OF THE DEGREE OF BACHELOR OF SCIENCE EDUCATION (AGRICULTURE DOUBLE MAIN)

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DECLARATI0N

I RADENI MUSANA declare that am the rightful author of this work and any assistance that I received is fully acknowledged and disclosed. This report is my original work to the best of my knowledge so it has not been published or written or submitted to any other institution of learning.

Signature.....

Date 04/09/2024.

DEDICATION

This Paper is lovingly dedicated to my parents; Mr. and Mrs. Musana Bumali, my brother Mr. Ashraf musana, who have been a constant source of inspiration, finance, and moral support. They have given me the drive and discipline to tackle any task with enthusiasm and determination. Without their love and support this project would not have been made possible.

APPROVAL

This research report titled Influence of Agriculture Input Utilization by Farmers on Household Maize Production in Majanji sub county Busia District is written by RADENI MUSANA under the guidance and supervision of Mr. OTEMA PATRICK BEN MOI and it meets the requirements of the University for the Award of a Bachelor of Science education.so it has been written and approved by

Academic supervisor Busitema University

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With profound admiration I would like to thank my supervisor Mr. OTEMA PATRICK BEN MOI for his invaluable guidance and support that enabled me complete this piece of work. Thanks go to Mr. Dramadri Gerald and the entire Agriculture Department and my colleagues for the guidance, all this has enable me to produce this dissertation, not forgetting my parents; Mr. Musana Bumali, Mrs. Minisa Muchala, my siblings; for their encouraging advice and cooperation during the entire course. To all of you, thanks so much, may God reward abundantly.

ABBREVIATIONS AND ACRONOMYS

FAQ	The Food and Agricultural Organization
RNF	Rural Non-Farm
GDP	Gross Domestic Product
SSA	Sub-Saharan Africa
UNHS	Uganda National Household Survey
USL	Uganda Seeds Limited
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
NAADS	National Agricultural Advisory Services
PMA	Plan for Modernization of Agriculture
CIS	Community information System
RDS	Rural Development Strategy
NARS	National Agricultural Research System

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ABSTRACT

The study sought to investigate the relationship between agricultural input and household crop production in Majanji Sub county Busia District. The objectives of the study were:

To identify the agriculture inputs used by the farmers in Majanji Sub County, to assess the influence of agricultural input utilization on household Maize production; and to examine the challenge 'farmers, face in the effective utilization of agricultural inputs. Data were collected during June and July from respondents using questionnaires. .It was found that agricultural inputs play a key role in household crop production; Women were found to be the major contributors in crop production. Education level, change in cropping system, and the level of technology. In conclusion therefore household crop production cannot stand without agricultural input such as the use of fertilizers, use of tractors, and irrigation among others.

More knowledge on use of organic manure to supplement chemical fertilizer should be given or imparted into farmers. Furthermore, extension efforts should be directed towards promoting the adoption of improved varieties, weeding, and management practices for controlling diseases and field and storage pests. This could be in form of government revisiting the old system where tractors and ploughs were availed to almost all sub-counties and would be used by farmers at very low cost because of subsidies from government.

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CHAPTER ONE

INTRODUCTION

1.2 Background of the Study

Globally, agriculture experienced a shift in a farming system that expresses the transition from zero-input agriculture to intensive input and other post-harvest technologies; from hand hoe to plow culture; from animal-drawn to tractor-drawn cultivation; and from traditional farming to mechanization. Therefore, a practice of intensive agricultural input use is considered a vital stimulus for raising productivity. However, the level of intensity of inputs and the shift in the farming system differs from country to country.

The main drivers of adoption are risk management, learning, information, credit availability, taste preferences, agro-ecology, local costs, and benefits. An individual sometimes decides to discontinue using new inputs for personal, institutional, or social reasons. Based on that fact, the classification of adoption is farm level and aggregate adoption. At the individual level, it is defined as the degree of use of new technology in the long-run equilibrium when the farmer has a full-package of the innovative technology and potential whereas, aggregate adoption is based on adopting the new inputs at the level of the geographical area. (Meja & Kebede, 2022)

The rates of fertilizer utilization have been much lower in Africa than in other developing countries, and the associated crop yields were also correspondingly lower. The low adoption rate of modern agricultural inputs is one of the main reasons for much of the stagnation in agricultural productivity across SSA countries. Moreover, in agriculture, innovation often takes the form of the utilization of modern inputs and farming practices:

seeds, fertilizer, crop protection chemicals, and integrated soil and water management practices to address a wide range of production limiting constraints (Abay et al, 2016).

1.1.1. Theoretical Background

Theoretically, farmers have to choose a combination of input or technology that maximizes their expected production. A package of technologies could provide higher productivity than pieces of technologies used individually. However, pervasive uncertainty about new technology and binding credit constraint can confound this notion of complementarity. The adoption decision making also involves how many resources or inputs are expected to be in use. There are no exact paths to guide farm intensifications in developing countries. However, depending on resource endowments, a particular group of households can choose the Labor-led intensification path, committing a higher level of labor inputs per unit of land. While others can embark on capital-led intensification involving increased investments in non-labor inputs. More specifically, the fertilizer use effect is higher than other inputs that can lag crop productivity growth. Africa soils experienced inherent difficulties due to nutrient mining by crops, leaching, and inadequate erosion control practices coupled with land-use systems that don't match land suitability (Abay et al, 2016)

1.1.2. **Conceptual Background**

Agricultural inputs are necessities in a production process just as food is a necessity for human survival. Production comes with the use of inputs. The cultivation of maize in Uganda is predominantly dominated by smallholder farmers who use traditional methods and face drudgery. The current production level of maize in the country is declining and to

meet consumption requirements, huge quantities of the commodity are imported. Use of agriculture inputs influences the level of production i.e. Effective and efficient input utilization results into higher production yields as compared to low utilization of input (Simiyu, 2014)

1.1.3. **Context Background**

Therefore, in the context of aggregate adoption, in Majanji Sub County the level of effective input utilization by maize farmers is very low and less has been documented about this in the area. And those farmers who utilize this agriculture inputs still their production level is low i.e. there is less influence of inputs on household maize production due to ineffective utilization of the available inputs therefore this study tends to assess the influence of effective agriculture input utilization on household maize production in majanji sub county Busia district

1.2. Problem Statement

Uganda has one of the lowest crops and livestock yields in Sub-Saharan Africa despite a good agro climatic environment. (Simiyu, 2014). Yields on research stations are [2 to 5] times higher than farm yields (FAO, 2019). It is widely believed that the stagnation of agricultural productivity in Uganda can be traced due to little and ineffective use of modem inputs, yet about 70 percent of Ugandan soils are categorized as being of high productivity. (Simiyu, 2014). The reduction in growth resulted mostly from a prolonged drought, leading to reduced agricultural production and other factors (FAO, 2018). Despite the government programs such as NARO, NAADS, PAM farmers use the inputs but still household maize production continues to decline sharply for instance the hunger free says agricultural output

declined from 7.9 percent in 2015 to 2.1 percent in 2017 (UBOS 2017). The major factor underlying the low level of household maize production is ineffective input utilization thus a need for effective use of productive inputs like fertilizer, pesticides, and high-yielding crop varieties, ideally limited effort has been made to address this issue, it is not know why despite the use of the available inputs maize production levels in majanji are still low. Therefore, this study intends to assess the influence of effective agriculture input utilization on household maize production in Majanji sub county Busia District.

1.3. Objectives of the Study

1.3.1. Main objective

The main objective of the study is to assess the influence of agricultural input utilization on household maize production

1.3.2. Specific objectives

Specific objectives include

1. To identify the different agriculture inputs used by maize farmers in Majanji Sub County
2. To assess the influence of agricultural input utilization on household Maize production.
3. To examine the challenge's farmers, face in the effective utilization of agricultural inputs

1.4. SIGNFICANCE OF THE STUDY

The research study is significant to the following stakeholders;

The government /policy makers; the government can base on the findings to formulate and implement crop production policies and modern technique of farming. Such policies can be platform for sustained crop productivity and development.

The study is useful to the academician. Especially researchers who may be interested in carrying out empirical studies on agricultural inputs and crop productivity in Majanji sub county.

The study is useful to an individual. This will make farmer to understand whether the use of agricultural inputs such tractors, fertilizer, drought resistance crop among effectively others can lead to high or low crop productivity and equips them with better utilization knowledge and skills

1.5. JUSTIFICATION

Agriculture is the pillar that sustains all other economic sectors in the African continent. It is the driver of many countries' economies and remains, in many cases, the largest provider to Gross Domestic Product (GDP). One of the fundamental roles of the sector is to provide raw materials to the industries. Although its importance has been proven, the sector's productivity remains low. And back born of the Uganda's economy (Kim et al, 2022)

[This study sought to assess the influence of agriculture input utilization on household maize production which aims at developing appropriate, effective ways and measures for effective utilization of agriculture inputs to maximize high yield maize production hence ensuring food security within Majanji Sub County]

1.6. HYPOTHESIS

[HO: there is no significant relationship between agricultural inputs and household maize production Hi: there is significant relationship between agricultural inputs and maize production in Majanji Sub County]

1.7. RESEARCH QUESTION

1. What are the different agriculture inputs used in maize production and how appropriate and effective can they be used to maximize high yield maize production?
2. What are the factors that influence of agricultural input utilization by maize farmers?
3. What are the challenge's farmer's face in the effective utilization of agricultural inputs?

1.8. Scope of study

1.8.1. Geographical scope

The study will be conducted in Majanji Sub County Busia district located in the Eastern region of Uganda. Its geographical coordinates are 1° 3' 52" North, 34° 10' 46" East

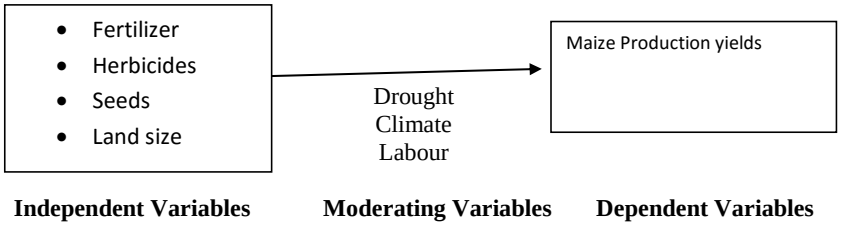
1.8.2. Time scope

The study is to take place within a time frame of 5 months starting January– July2024.

1.8.3. Content scope

The study is will be limited to agriculture inputs i.e. improved maize seeds varieties, fertilizer, herbicides use and other inputs to only farmers that have access to input utilization due to their household social economic status. The study is to utilize data from the Agricultural Module of the Uganda National Household Survey (UNHS) 2019/2020 collected in the First season 2019. (Ponzini et al., 2022)It covered one (1) out of the ten (10] major crops in Uganda

1.9. Conceptual Framework



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides present literature on the relationship between agriculture inputs utilization and maize production in Majanji Sub County. The review of the literature was carried out in accordance with the study objectives as follows: types of agriculture inputs: Effects of external inputs on maize yields: Farmers challenges in utilization of agriculture inputs

2.2 Agricultural inputs

These are items used by farm in the production of goods and services. For example, seed, fertilizers, chemicals, feed, machinery, fuel, labor, and land are farm input. (Pretty, 2018)

Crop productivity this is the measure of average output or real output per unit input. For example, the productivity of labor may be determined by dividing hours of work into real output. (Bowden et al, 2015)

2.3 The relationship between agricultural input and crop productivity

Female-Headed Households and access to Inputs IlLS (2014) showed that it is worth underlining the position of female-headed households with agricultural livelihoods, who are often poor because of limited ability to mobilize labour for farming, restrictions on access to credit and inputs, and exclusion from off-farm income. These are an important "excluded group" in sub-Saharan Africa, where a common pattern is for the men to migrate to work in the urban areas and the women to work land to which they have access through

continued use under indigenous tenure systems (Bush et al,2018,). The internal dynamics of these "doubly-divided' households are complex, and conflicts, and abandonment, may particularly reflect the impossible position both women and men find themselves given their allotted gender roles in conditions of economic stress. There is a strong correlation between the destitute, 'poor peasant' families and the women headed households who number roughly 30% of rural households in most of southern Africa. Many of these are without regular remittances of earnings from elsewhere and their own production is massively constrained as they have less chance of access to land, and to oxen for ploughing, and are also short of labour at crucial seasons, with the result that, in Botswana, 80% of all those working for rations' in drought relief projects were women. (Bush, et al 2019). According to Chipande (2017) in his study on "exclusion of women from credit and inputs in an agricultural development scheme in Malawi" documents said the inability of female-headed households to mobilize labour led to a poor credit rating for those households and, as a result, severe restrictions on access to inputs.

2.4 Access to Agricultural Inputs in Uganda

The current productivity observed in the Ugandan farming community is very low, in many cases much lower than the genetic potential expressed under optimal conditions in research stations (NARO, 2022). This low productivity is due to soil fertility depletion, heavy reliance on basic indigenous technology including the use of unimproved and low-yielding planting material, limited practice of crop protection, high postharvest losses arising from inadequate storage and processing capacity, etc. (MFPED,2014). Accordingly, the PMA seeks to improve agricultural input market access through various strategies

Seed is a crucial input determining yield (Muhhuku 2014). If bio fortified varieties are to attain rapid, widespread distribution through an efficient seed scheme must be in place. For grain crops this will be available with the setting up of Uganda Seeds Limited (USL) and the proposed close linkages with NARO and NAADS. A major factor-influencing yield is seed quality. The seed industry in Uganda is largely undeveloped, with farmers relying almost entirely on their own low-yielding seed supplies. The Government and private sectors have critical roles to play in the development of the seed industry. The major interventions include: Uganda Seeds Limited (USL), a limited liability company wholly owned by Government, was incorporated in 2015 to assume the functions of Uganda Seed Project formerly under the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF,2021), which is in line with the conditionality of the African Development Bank that funded the former Government project, Uganda Seeds Project, on condition that Private Sector Participation would be introduced in the operations of Uganda Seeds project to ensure sustainability and efficient delivery (UNIDO, 2014).

2.5 Constraints of input use

This is of particular importance when allocation of inputs is skewed to a minority of producers or crops such that reallocation could greatly improve total agricultural output. Perhaps a greater problem exists with public expenditures and how to allocate them to agriculture. In indigenous land, tenure systems in which a household is allowed to put under cultivation as much land as it can use, the ability to mobilize labor resources, through control of the household, is a central determinant of wealth and poverty when land is abundant (Binswanger, 2014). As available land becomes scarce, the application of inputs

which enhance land productivity become more important than expansion of the area of production in determining total production, and access to those inputs become more important in determining agricultural livelihoods. 'Modern" inputs can offer a way of cultivating land intensively without degradation (though this is not always so). With the commercialization of production, livelihoods also depend upon the ability to cultivate high value crops and access to output markets. These considerations mean that agricultural livelihoods depend on the interaction between access to productive inputs, high-value crops, and output markets. These interactions are complex. They are taking place within an international frame, in the sense that the prices of many of the agricultural commodities produced and agricultural inputs used in Africa are determined in international markets. Agricultural policies are also the subject of negotiations surrounding the implementation of structural adjustment programs. A recognized problem is simply in measuring output. Kelly et al. (2017) estimate that data collection methods underestimate African agricultural production by up to 50 percent. This is because mixed cropping is common, crop by-products are not enumerated, crops are consumed at home or as inputs to other household production activities, or farmers have diversified into new products that are poorly enumerated in national surveys.

Agricultural extension in Uganda has undergone a number of transformations from regulatory 1920- 1956, advisory 1956-1963, advisory education 1964-1971, dormancy 1972-1981, recovery 1982- 1999, educational 1992-1996, participatory education 1997-1998, decentralized education 1997- 2001 and now agricultural services under contract extension systems. Each of those up to 1997- 2001 had strengths to build on and

weaknesses to change or improve, but had challenges of the socio-economic and political environment. In addition, there have been marked changes in the concept of agriculture, which is increasingly seen in terms of commercial or farming for market with emphasis on modernization of agriculture and use of participatory approaches in the process. All evolutions over time through transformation into unsustainable service were for several reasons; There was no policy on agricultural extension until the establishment of National Agricultural Advisory Services (NAADS), the transformation of extension did not build on the strengths of the past, the relied upon expert advice has mainly been foreign more than local and the dependence on donor funding; The policy and mechanisms to empower the farmer to demand, pay and control extension services are in place (Semana, 2018). The dilemma is that the majority of the Ugandan farming community is predominately peasantry subsistence with a small fraction that can be regarded emergent farmers. Such population may not respond sustainably to the now farmer owned contract extension system including changing patterns of donors.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter focuses on the research methodology that will be used in this study. Methodology refers to the range of approaches used in research to gather data to be used as a basis for inference, interpretation, explanation, and prediction

3.2 Research design

The study is to employ a cross sectional survey design since it will examine data for a short time; it will also involve the use descriptive-correlation since it is interested in examining the relation between agricultural inputs and crop productivity. Analysis of variance (ANOVA) will be performed to assess the effect of any of the categorical variables on the household maize production.

3.3 Study location

The study will be conducted in Majanji Sub County Busia district located in the Eastern region of Uganda. Its geographical coordinates are 1° 3' 52" North, 34° 10' 46" East N

3.4Target Population

Target population is defined as a set of components that contain observable features which are employed for generalization of findings of the study (Russell, 2015). Bryman and Cramer (2014) viewed population as collection of individuals, items, cases, substances, articles with

common features. Here the targeted population will be maize farmers of the selected parishes in Majanji Sub County, with a sample of 80 farmers

3.5 Research Approach

The research is to involve both qualitative and quantitative approaches

3.6 Sample size and sample selection

[Sample is fraction of entire population that is involved in data in data collection process (Sahu, 2017). Sample size depicts the number of the total samples that are observed, measured or surveyed. A sample size of 80 farmers from the different parish will be used.]

3.7 Data collection Methods and tools (instrument)

Data Sources

The method of data collection are questionnaires, observation and interview guides.

Primary Data

The study used primary data sources. Primary data was obtained by use of questionnaires and interview guides.

Secondary Data

The researcher used Secondary data sources with an aim of comparing secondary data with responses to primary data that is going to be gathered in order to get a meaning full and objective interpretation of findings. Secondary involved review of the existing literature such as internal report, research dissertation, text books and internet.

3.8 Questionnaire

Questionnaires and surveys have long played a role in research as a means of gathering (typically quantitative) background information in order to examine the connection of

particular variables to outcomes Babbie and Mouton (2014, p. 74). The questionnaire will be designed by the researcher and it will be distributed to the farmers. The Questionnaires will enable the researcher to quantify the information from the respondents

3.9 Interviews

Face to face interviews was carried out with the farmers designed in a way that more specific and truthful answers are to be got. This helped to capture information, not provided by the questionnaires. This method is preferred because of its flexibility and ability to provide new ideas on the subject (Kothri, 2018).

3.10 Observation

The researcher used observation method to find out for himself what's exactly on the ground.

3.10.1 Validity of research instrument

Validity is described as the state in which particular research instrument measure what it purports to measure (Collis& Hussey, 2014). The present research will utilize content as well as face validity. Face validity is defined as the process of applying subjective or superficial assessment of whether test measures what it is intended to measure. Conducting a pre-test will improve on research instrument's face validity. The researcher will improve on face validity of the data gathering tool through conducting pilot test so as to eliminate ambiguous or misunderstood questions. Logical or content validity is defined as the degree in which a particular measure actually depicts all facets in social construct. The researcher

will improve on logical validity through consulting experts (university supervisor) where she will eliminate all errors.

3.11 Data analysis

Information obtained from questionnaires, interviews and document analysis will shall be regularly coded and updated on a coding framework. Qualitative data will be descriptively analyzed while quantitative data will be analyzed using a statistical package for social sciences (SPSS). The researcher will a quantitative research design using descriptive statistics such as frequency counts, percentage charts and averages for structured items; meanings shall be contextualized, interpreted and organized according to their sources. The Pearson correlation coefficient (r) is to be used to determine the strength of relationship between Agricultural input and crop productivity

3.12 Procedure of Data Collection

After the approval of the proposal, the researcher is to get a letter of introduction from Busitema University, Faculty of Science and Education to enable him to proceed to the field. After ascertaining the reliability of the instruments, the researcher is to proceed to administer the area of study. Interviews are to be conducted and recorded by the researcher. The data to be collected will be computed with the use computer, edited and coded to minimize obvious errors. Then data will be grouped into tables and frequency graphs. The collected data will be analyzed using scientific package for social sciences; interpreted and then discussed

3.13 Ethical Considerations

Informed consent: Participants are given the choice to participate or not to participate, and furthermore be informed in advance about the nature of the study.

Right to privacy: The nature and quality of participants' performance are to be kept strictly confidential. Honesty with professional colleagues: Findings are to be reported in a complete and honest fashion, without misrepresenting what will be done or intentionally misleading others as to the nature of it. Data is not fabricated to support a particular conclusion Confidentiality or Anonymity: Confidentiality or anonymity is to be practiced since it will lead to participants giving more open and honest responses.

CHAPTER FOUR

DATA PRESENTATION ANALYSIS, AND DISCUSSION

4.1 Introduction

This chapter includes data presentation, analysis and discussion of research findings using tables and tables and diagrams.it also presents findings through systematic comparison and contrast of findings from the literature, and identifies any new in references and insight on the problem. The findings were based on the objectives and research questions of study

4.2 DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

The demographic characteristics of respondents were presented using various statistical tables and diagrams.

Table 4.1.1 residence of respondents by parish

Parish Name	**Number of respondents**
Namundiri A	22
Namundiri B	21
Namundiri C	14
Namundiri D	18
Other stakeholders	04
Total	80

Source: primary data

Table 4.1.2: Education level of respondents

Education level	Frequency [n=80]	percentage %
Primary	21	26
Secondary	43	35
Certificate	12	15
Graduate	4	4.4

Source: primary data

Table 4.1.1 above summarizes the residential details of respondents in which 80 respondents were sampled and interviewed per parish. Namundiri A parish being the largest provided the greatest number of respondents (22) followed Namundiri B parish with 21. Namundiri C Parish contributed 18 respondents, while in Namundiri C parish 14 respondents turned up. On the other hand, a total of 04 stake-holders including the CDO, parish chief, sub county chief and the secretary production at the sub county were also among the respondents. The above findings reveal that most farmers are based in rural areas and deep in villages.

The finding presented in table 4.1.2 above also provide information about the educational details expressed in percentages. The details further indicate that majority of the respondents 35% ended in secondary, 26.2% went to school briefly and ended in primary while, only 15% studied up to certificate level and 4.4% only were graduates.

The above findings strongly agree with (Muhanguzi, 2022) and (Hawary, 2019) in which their finding reflected that most farmers are located in rural areas, lack education and technical skills, and that they are majority in the population. This is in total agreement with FAO report, (FAO, Crop sector development strategy for Eastern Africa 2021-2026 addisababa, 2021), 2021 (Sennuga

Samson Olunyemi, 2021) whose findings reported that agriculture is basically carried out by the rural people who are usuallyill-educated and that their ratio to that of extension staff is higher with over 1:1000 while the recommended is 1:750.

The above findings are also indicated in the figure 1 and figure 2 below

Table 4.1.3: Age characteristics of respondents

Age group	Frequency [n=80]	Percentage
18-29	25	31.2
30-45	40	50
45-60	15	18.7

Source: primary data

The results in table 4.1.3 above shows that majority of the respondents were ranging between 30-45years, accounting for 50% while 31.2% of the respondents were ranging between the age of 18-29 years, and 18.7% of the total number of respondents were ranging between the age of 45-60 years. The above results further prove that majority of the rural farmers were youths, while the smallest number of farmers are aged and less energetic and ignorant of technological changes.

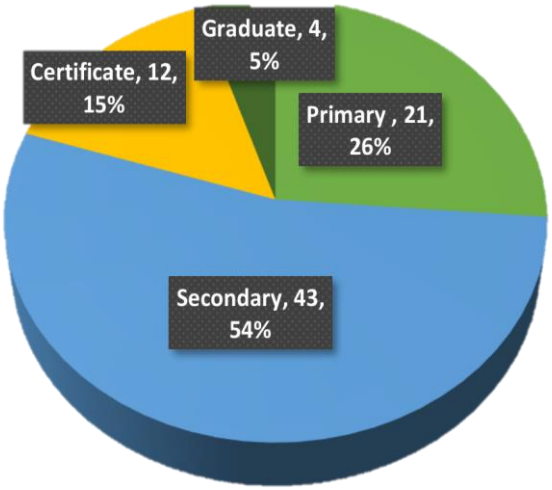


Figure 1: comparing education level and gender of respondents

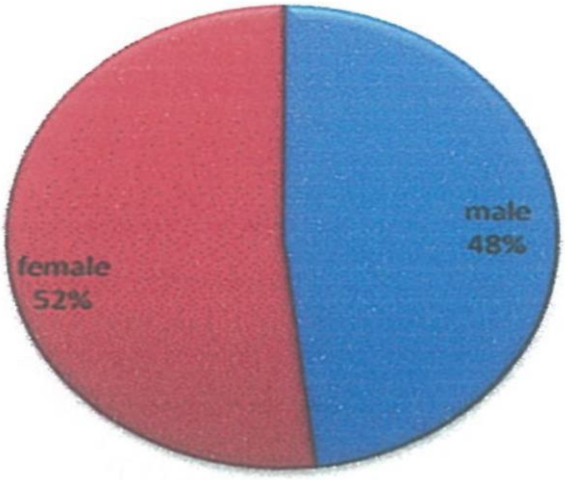


Figure 2: A pie chart showing the gender of maize growing respondent.

Source: Primary Data

Most of the women were the participant in maize production (41) 52 percent and men were the last (39) 48 percent this might be as result of men leaving their wives to

Participate in farming activities as for them they do other business.

4.1 .4 Table the Cropping system

Table X; Types of maize cropping systems used by respondents

Types of cropping system	Frequency [n=80]	Mean	Percent
Pure stand	44	0.58	58
Intercropping	36	0.42	42
Total	80		

Source: Primary Data

Most of the respondents growing maize on pure stand were (29) 58 percent and those who were intercropping maize with other crop were (21) 42 percent. This could be as result of high yield of maize since maize grown on pure stand yield highly than with those grown with other crop**.**

Table 4. 1.5 The member's participation in NAADS

Those who were participating in NAADs were (48) 66 percent wean while who were growing maize but not members of NAADs were (32) 34 percent**.**

Table 4. 1.5 The member's participation in NAADS

Weather participated in NAADS programmes	Frequency[n=80]	Mean	Percentage
No	32	0.34	34
Yes	48	0.66	66
Total	80		

Table 4.1.5: The Change of farming technology

Weather changed farming technology	Frequency [n=80]	Mean	Percentage
No	31	0.32	32
Yes	49	0.68	68
Total	80		

Source: Primary Data

Those who were using modern technique of production were (49) 68 percent mean while those with old technique of production were (31) 32 percent. This has indicated that production has

Table 4.1.6: The Visitation by extension workers (1 2 months)

Weather visited by extension workers	Frequency [n=80]	Mean	Percentage
No	32	0.34	34
Yes	48	0.68	66
Total	80		

Source: Primary Data

Most of the respondents were visited by extension workers (48) 66 percent and those were not

visited by extension workers were few (32) 34 percent, the highest visit by the extension workers indicate that their impartment in knowledge to farmers to improve on their level of production hence promoting productivity

TabIe 4.1.7: The number of workers hired

Number of workers hired	Frequency [n=80]	Mean	Percentage
Below 10	12	0.12	12
10-19	17	0.22	22
20-29	13	0.14	14
30-39	18	0.24	24
40 and above	20	0.28	28
Total	80		

Source: Primary Data

Respondent who hired 40 workers and above were (20) 28 percent, 30-39 workers were (18) 24 percent 10-19 (17) 22 percent, 20-29 workers were (13) 14 percent and lastly below 10 workers hired in maize production were (12) 12 percent.

Table 4.1.9: The land size

Land size [ha]	Frequency [n=80]	Mean	Percentage
Below 10	28	0.36	36
10-20	26	0.32	32
20 and above	26	0.32	32
Total	80		

Source: Primary Data

Respondent who cultivate 10 hectare of land below were (28) 36 percent and 10-19 hectares, 26 and above were 32, 32 respectively. This is an indication that production of maize is high basing on the size of land.

The relationship between Agricultural input and maize crop production (sig=O.05)

Here the researcher used analysis of variance as can be seen below

Table 4.1.10: showing the relationship between Agricultural input and maize crop production

S/N		Sum of square	Df	Mean square	F	Sig.
Gender	Between groups	3.013	17	1.507	7.480	.002
	Within groups	9.467	63	.201		
	Total	12.480	80			
Age	Between groups	28.880	17	14.440	18.392	.000
	Within groups	36.6900	63	.785		
	Total	65.780	80			
Education	between groups	9.813	17	4.907	5.843	.005
	Within groups	39.467	63	.840		
	Total	49.280	80			
Cropping system	Between groups	3.213	17	1.607	8.422	.001
	Within groups	8.967	63	.191		
	Total	12.180	80			
Participation NAADs	between groups	.853	17	.427	1.934	.156
	Within groups	10.367	63	.221		
	Total	11.220	80			
Change technology	between groups	6.080	17	3.040	29.767	.000
	within groups	4.800	63	.102		
	Total	10.880	80			
Visit extension work	between groups	1.520	17	.760	3.682	0.33
	Within groups	9.700	63	.206		
	Total	11.220	80			
Worker hired	between groups	37.453	17	18.727	14.726	.000
	Within groups	59.767	63	1.272		
	Total	97.220	80			
Size of land	between groups	13.653	17	6.827	15.832	.000
	Within	20.267	63	.431		
	Total	33.920	80			

Source: Primary Data

Using the analysis of variance, it was fond that size of land (p=O.OO), worker hired (p=O. OO), visit by extension workers (pO.O33), change in technology (p=O.000), age (p=O.000) education (p=O.0005), cropping system (p=O.OOl) their probabilities were less than (p=O.O5) we reject the null hypothesis and conclude that they have relationship with maize production.

The regression analysis of agricultural input and maize crop production in Busia District Here the researcher use regression analysis to establish the relationship between agricultural input

And house crop production as can be seen below.

Table 4.1.11: The Regression analysis agricultural input and maize crop production

	Unstandard coefficients B	Unstandard Coefficients Std.Error	t	Sig	95%confidence interval for B Lower bound	95%Confidence interval for B Upper bound
Constant	4.147	.861	4.818	.000	2.408	5.887
Gender	-.035	.183	-.190	.850	-·404	.335
Age	-.136	.105	1.297	.000	-·347	.076
Education level	-.087	.124	.697	.005	-·338	.165
cropping system	-.056	.200	.478	.001	-.459	.348
participation in NAADs	-.241	.173	-1.393	.171	-·590	.109
Change in technology	.633	.215	-2.948	.005	-1.067	-·199
Visit by extension workers	.493	.166	-2.970	.005	-·828	-·157
Worker hired	-.023	.103	-·227	.000	-·231	.185
Size of land	.423	.131	3.232	.002	-·159	.688

Using the regression analysis the rejection criteria is if (sig=O.05)> (sig computed) reject the null hypothesis which states that agricultural input is not part of the model: age(sig=O.OOO), education

(sig=O.005), cropping system (sig=O.O0 Ol) change in technology (sig=O.005), visit by extension workers (sig=O.033), workers hired (sig=O.000) and size of land (0.002) all their probability were less than the stated probability (0.05) we reject the null hypothesis and conclude there is relation between education level ,cropping system, change in technology, visit by extension workers, workers hired and size of land in production of maize in Busia District

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 SUMMARY OF FINDINGS

The main objective of this study was to establish the relationship of agricultural inputs and household crop productivity in Busia District for the relationship of each of the input on production of maize, the probability of the t-distribution was used based on a multiple linear regression 5 percent level of significance. The dependent variable and the all the continuous independent variables were found to have relationship. (Age, education, cropping system, change in technology, worker hired and size of land).

5.2 CONCLUSIONS

This study examined the relationship of agricultural inputs and household crop production in Busia. The findings of the study include: Household crop production highly gains from farmers' application of agricultural inputs. Maize (food-type) production boost is achieved from plots where farmers have used agricultural inputs in relation to the plot. However, there could also be some unobserved factors that play a vital combination role in achieving the increment. Hired labor (in terms of labor days) on the plots reduces household crop production. It is however, worthwhile to note that this reduction is not significant. The reduction could be due to limited commitment and skills by the hired laborers who in most cases quickly and unsatisfactorily ~seed, prune, and mulch or apply inputs to get quick money. Household agricultural investment in terms of purchases of inputs such as seeds, fertilizers, manure and pesticides on plots increase household crop production. This is so because most times when farmers opt to purchase inputs, they purchase high yielding

inputs like seed and also high quality fertilizers, pesticides and fungicides, which highly contribute to high crop yields.

Although NAADS training is focused on farmer groups rather than individuals, households which have members that are part of the groups and participate in the training, increase their crop production significantly. This is because NAADS training provide directly effective technology transfer mechanism that expose farmers to improved technologies and practices through demonstration centers of farmers. Generally, female-headed agricultural households realize boosts in crop production than those of their male counterparts. This could be partly due to the fact that there are more female than male headed households. It could also be due to the issue that females easily assess loan than male and can use them as agricultural loan, which boost crop production in their households

5.3 RECOMMENDATIONS

Technical improvement characteristics and external persuasion seriously affect the adoption of improved crop practices. Field pests limit crop production, and flexible integrated management packages that combine drought tolerant varieties with improved cultural practices could be adopted as they increase crop yields. Low-cost technologies for controlling crop pests and diseases using cultural practices or environmentally friendly industrial chemicals should also be developed. The majority of improved varieties are responsive to fertilizer, and farmers usually obtain economic yields with fertilizer or manure. But the use of fertilizer/manure is most times constrained by its high price and farmers' lack of knowledge of fertilizer. An efficient agricultural inputs (fertilizer/manure) awareness system would benefit farmers by teaching them the nitty-gritty of the inputs and reducing the cost of fertilizer/manure. Such a system cannot be established without

policy support from the government. More knowledge on use of organic manure to supplement chemical fertilizer should be given or imparted into farmers. Furthermore, extension efforts should be directed towards promoting the adoption of improved varieties, weeding, and management practices for controlling diseases and field and storage pests. Farmers who intend to store their harvested crops should be advised to the National Agricultural Advisory Services (NAADS) should be guided and supported by the government to; open-up to all districts and sub-counties in Uganda since they currently operate in about 44 out of over 80 districts; make sure that the NAADS demonstration gardens are in easily accessible places for all beneficiaries; open-up to all farmers instead of groups of farmers as this leads to wide spread of knowledge. Since hired labor does seem to increase household crop production, there is need to think of other types for labor to supplement household member labor on the plot. This could be in form of government revisiting the old system where tractors and ploughs were availed to almost all sub-counties and would be used by farmers at very low cost because of subsidies from government. Government though Ministry of Gender, Labor and Social Developments (MGLSD) should continue to strengthen women emancipation strategies especially for women farmers to support them in areas like acquisition of low interest agricultural loans to enhance their household crop production. This will help increase production for female headed agricultural households in the country

5.4 Suggestions for Further Research

The results presented in this dissertation are very not conclusive and should be treated as being preliminary. Further analysis of the survey data (plot and household) needs to be done to validate these, findings and provide greater confidence in explaining the changes in livelihood activities in the household crop production. A study should be carried to establish how the introduction and

promotion of Micro Finance Office within MFPED has affected credit accessibility by farmers and the overall effect to use of agricultural inputs/extension services not forgetting household crop. Study of the economics of fertilizer use should be undertaken, especially now that input and output markets have been liberalized. Extension should be reinforced to increase the flow of information to farmers. Supplementary effort should be directed towards fertilizer technologies, as the bulk of farmers use inefficient practices

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APPENDICES

APPENDICES APPENDIX I: RESEARCH INSTRUMENT

Dear Sir! Madam,

Greetings dear respondent

I am an under graduate candidate at Busitema University pursuing a bachelor's Degree in science education, currently undertaking a research study entitled AGRICULTURAL INPUTS UTILIZATION AND HOUSEHOLD MAIZE PRODUCTION) in Majanji sub county. In view of this empirical investigation, may I request you to be part of this study by answering my questionnaires, Rest assured that the information you provide shall be kept with utmost confidentiality and will be used for academic purposes only, please respond to all of the items in the questionnaire and do not leave any item unanswered. Further, I request to retrieve the questionnaires within two days from the date of distribution.

Yours faithfully,

RADENI MUSANA

……

Section A: Background information of the respondent

1. Gender

- Male ☐

☐

- Female

2. Age

- 20-30 years ☐
- 31-40 years ☐
- . 41-50 years ☐
- above 50 years ☐

4. Education Level

- Certificate
- Diploma
- Degree
- Master

Section B

The categorical variable of the maize growing

1. Cropping system

Pure stand…… Intercropping ……

2. Change of practice with respect to technology in the last 12 months

No……. Yes …….

3. Size of land used in hectare

- 10 below _____
- 10-19…….
- 20 above ……

4. The yield of crop per hectares in cluster**.**

- 299 below……..
- 300-499……
- 500 and above _____

Section C: Agriculture input utilization

Please provide the different agriculture inputs that you use in maize production

……

……

……

……

Outline any 4 challenge that u face as a farmer towards effective utilization of the agriculture inputs

……

……

……

……

Comment on how the use of agricultural inputs influences household Maize production

……

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……

……

Thank you