



**BUSITEMA  
UNIVERSITY**  
*Pursuing Excellence*

P.O. Box 236, Tororo, Uganda  
Gen: +256 - 45 444 8838  
Fax: +256 - 45 4436517  
Email: info@adm.busitema.ac.ug

[www.busitema.ac.ug](http://www.busitema.ac.ug)

**FACULTY OF AGRICULTURE AND ANIMAL SCIENCES  
OF AGRIBUSINESS AND EXTENSION**

**VARIATION IN TECHNOLOGY ADOPTION AMONG SMALLHOLDER FARMERS  
INVOLVED IN SOYA BEAN PRODUCTION: THE CASE OF ALITO SUB-COUNTY IN  
KOLE DISTRICT**

BY

OTIM PIUS

DATE:.....

REG. NO BU/UP/2017/298.

CODE: AGB 3209.


EMAIL: [piusotim@gmail.com](mailto:piusotim@gmail.com).

<sup>DESSERTATION</sup>  
A RESEARCH PROPOSAL SUBMITTED TO THE DEPARTMENT OF AGRIBUSINESS AND  
EXTENSION IN PARTIAL FULFILLMENT OF THEREQUIREMENTS FOR THE AWARD  
OF THE BACHELOR DEGREE IN AGRIBUSINESS MANAGEMENTBUSITEMA  
UNIVERSITY

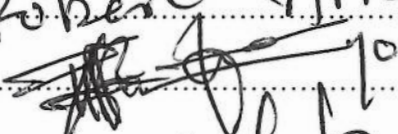
FEBRUARY 2021

**DECLARATION**

This research contains my own work and has not been submitted for the award of any degree in any other university or institution of higher learning.

NAME OTIM PIUS  
SIGNATURE   
DATE 17/02/2021.


This thesis has been submitted with our approval as supervisors:

NAME Robert Amayo  
SIGNATURE   
DATE 17/2/2021,

BUSITEMA UNIVERSITY LIBRARY  
CLASS No.:  
ACCESS NO.: FAA 1352

<u>Title</u>	<u>2.0</u>
<u>Abstract</u>	<u>1.5</u>
<u>Int./Lit review</u>	<u>15</u>
<u>Materials &amp; Methods</u>	<u>13</u>
<u>Results</u>	<u>11</u>
<u>Discussion &amp; Conclusion</u>	<u>14</u>
<u>Org. unity</u>	<u>3</u>
<u>Presentation &amp; Referencing</u>	<u>7</u>
<u>Written English</u>	<u>3</u>

70%

  
Eskau Sirian Peter

## **DEDICATION**

I Dedicate This Thesis to My parent DORISH ADONG & VINCENT OGWAL and not forgetting my steps mum MISS KETTY OGWAL, and my supervisor MR. AMAYO ROBERT for their tiredness support to me during the research development

## **Table of Contents**

DECLARATION.....	i
DEDICATION.....	ii
LIST OF TABLES AND FIGURES .....	v
ABSTRACT.....	vi
CHAPTER ONE:.....	1
1.0INTRODUCTION .....	1
1.1 Background of the study .....	1
1.2 Statement of the Problem.....	2
1.3 Justifications of the study.....	3
1.4Objectives of the Study.....	3
1.5 Significance of the study.....	4
1.6 Scope of the study .....	4
CHAPTER TWO.....	5
2.1. LITERATURE REVIEW.....	5
2.2. Soya bean production and utilization in Uganda.....	5
2.3. Major soya bean producing areas.....	7
2.4. Major uses of soya bean in Uganda.....	8
2.5. Constraints to soya bean production.....	8
2.6. Agricultural technologies used in Soya bean production .....	9
2.7. Agricultural technology adoption among smallholder farmers .....	10
2.8. Factors influencing technology adoption among smallholder farmers .....	11
CHAPTER THREE.....	14
3.0. METHODOLOGY.....	14
3.1. The study area .....	14
3.2. Study design.....	14

3.3. The target population.....	14
3.4. The sample sizes.....	14
3.5. The sampling technique.....	15
3.6. Data collection.....	15
3.7. Data analysis and interpretation.....	17
CHAPTER FOUR.....	18
4.0. PRESENTATION AND DISCUSSION OF RESULTS:.....	18
4.1. Demographic characteristics of the respondents.....	18
4.2. Estimates of variation in the level of technological adoption among smallholder soya bean farmers.....	21
CHAPTER FIVE.....	26
5.0. CONCLUSIONS AND RECOMMENDATIONS.....	26
5.1. Conclusion.....	26
5.2. Recommendation.....	26
REFERENCES:.....	27

## LIST OF TABLES AND FIGURES

Table 1 Frequency and percentage distribution of household headship by gender of respondents.	19
Table 2 : Estimated land/farm size of households .....	20
Table 3 Percentage distribution of respondents according to reason for engaging in soy bean production.....	21
Table 4 Proportion of households and the soy bean varieties grown and their sources .....	22
Table 5 : Percentage proportion of households and technologies for cultivation .....	23
Table 6 Pest and disease control options and percentage of respondents.....	24
Table 7 Factors influencing technology adoption and proportion of respondents .....	25
Figure 1 showing some of the variety of soybean .....	2
Figure 2 : Scheme of data collection procedure .....	16
Figure 3:Bar chart showing percentage distribution of respondents by gender .....	18
Figure 4 The percentage distribution of respondents by their age group.....	19
Figure 5 Percentage distribution of respondents by their level of education.....	20
Figure 6 Proportion of land allocated to soy bean growing by households .....	21

## ABSTRACT

Soybean is a legume crop grown in the tropical, subtropical, and temperate climates which is used for food and animal feed. However, the production and productivity of soybean is low and improvement in production and productivity depends on the extent to which a household has applied the recommended production technologies. The objectives of this study were: to estimate the level of technological adoption among smallholder soya bean farmers and to identify the major factors contributing to variation in technological adoption among smallholder's soybean farmers in the study area. A cross-sectional survey study was conducted among short bean farmers in Alito Sub County in Kileleshwa district. Simple random sampling method was employed to select the required sample of 60 households of soy bean farmers for the study. In this study, descriptive statistical methods were used to describe household characteristics and adoption of the technologies among households. The t-test and chi square test was conducted for continuous variables to see the presence of statistically significant differences on the level of technological adoption and factors contributing to adaptation of the recommended technology. The findings of the study revealed that Maksoy 5N was the most commonly grown variety by most of the people in the sample household followed by Maksoy 4N as an improved variety, Namsoy 2N and Maksoy 2N the local variety grown still by the farmers. The cultivation method mostly used by the farmers are hand hoes and oxen interchangeably. The use tractor was extremely low among the households estimated at 2.9% while in pest and disease control it was found that 78.3% stated using chemicals as their control option, only 5% are using cultural methods and interestingly 16.7% do nothing (~~Table 6~~). It is however not known whether the farmers are using correct chemicals. The factors such as Income level, skills acquired in using soybean technology, the level of education and accessibility to the recommended soy bean technology by the sample household are factors contributing to farmers ability to take up those technology and other demographic characteristic such as Land holding which was found also an important variable positively and significantly influencing adoption of soybean production technologies. This would imply that, farmers with increasing land holding are more likely to adopt recommended soybean production technologies. Thus, research and extension organizations should give attention in solving farmers' problem especially by improving the contribution of recommended soybean production technologies to enhance productivity per unit of area.

It was found that extension contact positively affects soybean production technology, which implies the need for more regular contact and extension services. Thus, the extension system needs to be strengthened further to increase the flow of agricultural information.

Finally it is necessary to establish strong network between farmers, research, and extension and policy makers and also establishment of farmers group to support in providing services like skills and knowledge on the use of available technique, loans for easy accessibility of expensive to acquire technique like tractor in land cultivation in the area, the farmers to be sensitized on the benefits of adopting improved soybean technology in soy bean production in relation to the changing environment like weather, soil fertility and outbreak of pest and diseases.



## CHAPTER ONE:

### 1.0 INTRODUCTION

#### 1.1 Background of the study

Soybean (*Glycine max* (L.) Merr.) is a non-native and non-staple crop in sub-Saharan Africa (SSA) with potential to be a commercial crop owing to its wide range of uses as food, feed, and industrial raw material (Mohamedkheir et al., 2018). Soybean is ranked the number one most important oil crop in the world, providing the cheapest source of protein for both human and livestock diets. The protein content (40%) is unrivalled among crops, in addition to high content (20%) of quality edible oil. It contains all the essential amino acids; and significant amounts of minerals (Fe, Zn, Ca, Mg); the oil is 85% unsaturated comprised of linoleic and oleic acid shown to reduce the risk of heart disease. And this is of benefit in boosting the nutritional status of individuals and communities involved in its production and utilization (Tukamuhabwa et al., n.d.). Soybean was first introduced to SSA by Chinese traders in the 19th century and was cultivated as an economic crop as early as 1903 in South Africa. In the past four decades, soybean cultivation area and production in SSA has increased exponentially, from about 20,000 ha and 13,000 t in the early 1970s to 1,500,000 ha and 2,300,000 t in 2016. However, soybean yield has been stagnant in SSA at about 1.1 t ha<sup>-1</sup>, which is much lower than the world average (Ronner et al., 2016). The low soybean yield in SSA can be attributed to the use of poor-performing varieties and to the limited application of fertilizers and rhizobia inoculants in soils with no history of soybean production (Mohamedkheir et al., 2018). Uganda are among the leading soybean producers in SSA, attributed to strong soybean research that began in the late 1930s resulting in the release of three varieties (Kabanyolo 1, Kabanyolo 2 and Congo 72) that pioneered large scale production of soybean in the 1940s. Since then, several high yielding and stress tolerant varieties through the research work based at Makerere University and at NARO were released. This has contributed to the growing production and increasing yield among the growers. New breeds such as Maksoy 1N is the most known soybean variety by 70% of the farmers, followed by Maksoy 3N 43% known of the farmers. Maksoy 1N dominates in all regions except in the Central where only Maksoy 3N is popular. Namsöy 4M was most popular in Eastern region while Maksoy 2N was most popular in West Nile region. The varieties Maksoy 4N and Maksoy 5N released in 2013 was yet to be known

## REFERENCES:

1. Agriculture and Natural Resources Team of the UK Department for International Development (DFID) in collaboration with Rob Tripp of ODI, London
2. Edward, T. (2015). *ECONOMIC EVALUATION OF SOYBEAN GENOTYPES UNDER SOIL FERTILITY*. 2010.
3. Guide, P. (n.d.). *Production Guide In Uganda*.
4. Mbanya, W. (n.d.). *Assessment of the Constraints in Soybean Production: A Case of Northern Region , Ghana*.
5. Miruts, F. (2016). *Analysis of the Factors Affecting Adoption of Soybean Production Technology in Pawe District , Metekele Zone of Benshangul Gumuz Regional*. 53(3), 122–137.
6. Mohamedkheir, D., Elrayah, S., Sapey, E., & Han, T. (2018). ScienceDirect History , current status , and prospects of soybean production and research in sub-Saharan Africa. *The Crop Journal*, 6(3), 226–235. <https://doi.org/10.1016/j.cj.2018.03.006>
7. Moses, A. (2014). *EVALUATION OF NEW SOYBEAN VARIETIES FOR MARKET TRAITS AND*. December 2012.
8. Odame, H., Kimenye, L., Kabutha, C., Alemu, D., & Oduori, L. H. (n.d.). *No Title*.
9. Pan, Y., & Smith, S. C. (2018). *Agricultural Extension and Technology Adoption for Food Security: Evidence Agricultural Extension and Technology Adoption for Food Security: Evidence from Uganda \**. January. <https://doi.org/10.1093/ajae/aay012>
10. *Review Article Quality of soybean and its food products*. (2009). 19, 11–19.
11. Review, S. A. A., Muzari, W., Gatsi, W., & Muvhunzi, S. (2012). *The Impacts of Technology Adoption on Smallholder Agricultural Productivity The Impacts of Technology Adoption on Smallholder Agricultural Productivity in Sub-Saharan Africa : A Review*. July. <https://doi.org/10.5539/jsd.v5n8p69>
12. Ronner, E., Franke, A. C., Vanlauwe, B., Dianda, M., Edeh, E., Ukem, B., Bala, A., Heerwaarden, J. Van, & Giller, K. E. (2016). *Field Crops Research Understanding variability in soybean yield and response to P-fertilizer and rhizobium inoculants on farmers' fields in northern Nigeria*. 186, 133–145.

13. *SoyAbean Research & Development in Uganda / 1.* (n.d.).
14. Tukamuhabwa, P., Obaa, B., Obua, T., Namara, M., Okii, D., Kabayi, P., & Sciencee, E. (n.d.). *STATUS OF SOYBEAN PRODUCTION AND IMPACT INDICATORS OF NEW SOYBEAN VARIETIES IN UGANDA.* 1-30.
15. Wadsworth, J. (n.d.). *TECHNOLOGY AND ITS CONTRIBUTION TO PRO-POOR.* 1-23.