
**BUSITEMA UNIVERSITY ARAPAI CAMPUS
FACULTY OF AGRICULTURE AND ANIMAL SCIENCES
DEPARTMENT OF AGRIBUSINESS AND EXTENTION**

**ASSESSING FACTORS AFFECTING QUALITY POTATO SEED
PRODUCTION AND PROFITABILITY IN KWEEN DISTRICT**

BY

CHELANGAT LOUIS

BU/UP/2019/1102

Email: chelangatlouis1@gmail.com

SUPERVISOR: MR.OKIROR SIMON PETER

**A SPECIAL PROJECT REPORT SUBMITTED TO THE DEPARTMENT OF
AGRIBUSINESS AND EXTENTION IN PARTIAL FULFILMENT OF THE
REQUIREMENT FOR THE AWARD OF THE DEGREE OF BACHELOR OF
AGRIBUSINESS OF BUSITEMA UNIVERSITY**

MAY 2023

DECLARATION


This study is original and has not been published or submitted for any other degree award to any other University before.

Signature.....*Chelangat Louis*..... Date. *8th/06/2023*.....

CHELANGAT LOUIS
BU/UP/2019/1182

APPROVAL

This special project report has been submitted to the department of Agribusiness and Extension with approval of the University supervisor.

Signature..........Date.....9th/6/2023.....

Mr.OKIROR SIMON PETER

DEDICATION

In a special way I gratefully dedicate this work to my dad **Mr.Chebang David Moyoy** and mam **Mrs.Chebet Febia Moyoy** for their financial support towards my wellbeing and academics during my special project process.

I also dedicate this project to my academic supervisor **Mr. Okiror Simon Peter**. I also dedicate to my great friends from Busitema University, Arapai Campus in Uganda whom we shared knowledge and worked tirelessly together.

ACKNOWLEDGEMENT

All my sincere gratitude goes to the almighty God who provided all that was required to accomplish this work.

I express my appreciation to my University supervisor; Mr. Okiror Simon Peter. He was patient and inspirational during tough times. He taught me and guided during the preparation of this report.

Also my thanks go to the Department of Agribusiness and Extension staff that has imparted their knowledge and expertise to me for the development of my academic career.

In the special way I thank my dear parents, relatives and siblings whom they have been supporting my studies financially, encouraging and praying, may almighty God grant you more blessings.

I would like to thank all my classmates whom we have been on struggle together guiding me where necessary.

I thank people of these sub-counties Kaptum, Kwosir, Kitawoi and Benet for their hospitality and warm welcoming during data collection. They gave me true data which helped me to come up with this report.

I also appreciate those who helped me in one way or another helped me in the fulfillment of this work. May God bless you?

TABLE OF CONTENTS

DECLARATION	i
APPROVAL	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
LIST OF FIGURES	vii
LIST OF ACRONYMS	viii
ABSTRACT.....	ix
CHAPTER ONE	1
1.0 INTRODUCTION	1
1.1 Background.....	1
1.2 Problem statement.....	3
1.3.1 General Objective	4
1.4 Research questions.....	4
1.5 Significance of the study.....	4
1.6 Justification of the study	4
1.7 Scope of the study	4
CHAPTER TWO	6
2.0 LITRERATUER REVIEW.....	6
2.1 Introduction.....	6
2.2 Production activities of potato seed	6
2.2.1 Harvesting.....	6
2.2.2 Seed source	6
2.2.3 Marketing of potato seed.....	6
2.2.4 Storage of potato seed.....	7
2.2.5 Seed treatment.....	7
2.2.6 Reducing potato diseases and pests	7
2.2.7 Seed selection.....	8
CHAPTER THREE	9
3.0 METHODOLOGY	9
3.1 Research area and Study design.....	9
3.2 Study population and Sampling.....	9
3.3 Data sources and data collection.....	9
3.5.1 Questionnaire	10

3.5.2 Interviewing	10
3.5.3 Observation	10
3.6 Determining profit margin	10
CHAPTER FOUR.....	11
4.0 PRESENTATION AND DISCUSSION OF RESULTS	11
4.3 Total household land areas under production (acres) in Kween district.	12
4.4 Potato seed production arrangements in Kween district.	14
4.6 Factors affecting quality potato seed production in the study area in Kween district.	15
4.8 Analysis on profitability of quality potato seed production.....	19
4.8.2 Cost of inputs and labor for season B.	20
CHAPTER FIVE	22
5.0 CONCLUSIONS AND RECOMMENTATIONS	22
5.1 Conclusions.....	22
5.2 Recommendation	22
REFERENCES	24
Appendix.....	26

LIST OF FIGURES

Figure 1 Map of Kween district showing sub-counties	5
Figure 2 A graph showing total cost, total revenue, gross margin	21

LIST OF TABLES

Table 1 Characteristics of potato seed producers in Kween district	
Table 2 Occupation of potato seed farmers in Kween district.	
Table 3 Total household land area (acres) under production in Kween district.	
Table 4 Showing potato seed production arrangement in Kween district.	
Table 5 Showing reasons for selecting potato variety.	
Table 6 Factors affecting quality potato seed production in the study area in Kween district.	
Table 7 Potato seed total harvest and selling prices.	
Table 8 Cost of inputs and labor for season A.	
Table 9 Cost of inputs and labor for season B.	
Table 10 Showing total revenues, total variable cost and gross margin of potato seed.	

LIST OF ACRONYMS

BU:	Busitema University
CIP:	International Potato Center
DAP:	Di-Ammonium Phosphate
FAO:	Food and Agricultural Organization
FAOSTAT:	Food and Agricultural Organization Corporate Statistical Databases
GM:	Gross Margin
Kg:	Kilograms
MAAIF:	Ministry of Agriculture, Animal Industry and Fisheries
SPSS:	Statistical Package for the Social Sciences
TR:	Total Revenue
TVC:	Total Variable Cost
TY:	Total Yield

ABSTRACT

Potato seed production and profitability is known to be influenced by various agronomic practices, input supply and provision of extension services in Kween district. Therefore, optimum agronomic practices with good input supply would improve on the potato seed production and profitability in Kween district. The study was carried out to assess factors affecting quality potato seed production and profitability in Kween district. The objective of the study was to identify factors limiting production of quality potato seed and to determine profitability of quality potato seed. Quality seed was defined as pure variety with a high germination percentage, free from diseases, pests, high yielding and good maturity. Purposive random sample procedure was used to select 60 potato seed producers, structured questionnaires was used to collect primary data from the households. The results of the study indicated that high costs of seeds(46.6%), lack of oxen(60.0%), limited stores(66.6%), weeds(50.0%), high costs of fertilizers(53.4%), poor roads for transportation(66.6%) and low prices(53.4%) were the main constraints limiting quality potato seed production. 28.3 % of farmers were producing certified seeds and 71.7% of farmers were producing Non-certified seeds, during production 81.7% farmers were cultivating in two seasons and 18.3% farmers were cultivating only one season. The analysis of potato seed shows that potato seed production was profitable, where by profitability arises when the aggregate amount of revenue is greater than the aggregate amount of expenses, as revealed from gross margin analysis that potato seed production was profitable were farmers earned a net profit of Shs 2,097,495 in season A and Shs 1,748,252 in season B. Potato seed output fetched the highest. Therefore producing own seed for planting, improving on the storage facilities and renovation of poor roads will help farmers to improve on the quality of potato seed production and profitability.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

The potato (*Solanum tuberosum*) belongs to the family solanaceae. Potato is a crop of major importance worldwide, Food and Agricultural Organization (FAO, 2008). Potato is the fourth most important food crop in the world in terms of production with (388 million tons) produced in 2017, following rice with (770 million tons), wheat (771 million tons) and maize (1.1 billion tons), Food and Agricultural Organization Corporate Statistical Databases(FAOSTAT,2020). In 2019, the crop was cultivated worldwide on almost 17 million hectares with a total production of 370 million tones (Naziri, et al, 2022). Generally, Asia and Europe are the world's major potato producing regions ,accounting for more than 80%,while Africa was the least ,accounting for about 5%(FAOSTAT,2013).China is the biggest potato producer (25% of the world's production),followed by India (14%),the Russian Federation (6%),Ukraine(5%),and the USA(5%)(Naziri,et al,2022).In Africa, Egypt remains the leading producer of potato, followed by Algeria, South Africa and Kenya(FAOSTAT,2020). However, potato is a crop with a high potential to contribute to poverty reduction in Eastern Africa through income increase and improved food security (Gildemacher, 2012). Favorable conditions for potato production are found throughout sub-Sahara Africa, for example in East African highlands, but also in the sehelian zone during the Marmaton season and in southern Africa during the cold season (Gildemacher, 2012). It is well suited for cultivation in environmental conditions where other crops may fail and its short and flexible vegetative cycle makes it well suited for rotation with other major crops, such as wheat, rice, beans and maize (FAO, 2008).Thus, potato helps to increase the availability of food, contributing to a better land use ratio by raising the aggregate efficiency of agricultural production systems (Gastelo et al, 2014).

Also Uganda is the third largest producer of potato(*Solanum tuberosum*) in East Africa, after Rwanda and Kenya(Kajunju,et al,2021).Over 80percent of Uganda's households(and 85percent of the people)live in rural areas, and most of these depend on agriculture for their primary source of income(Gollin&Rogerson,2010).Potato is among the fastest expanding crops in Uganda, mainly driven by increasing demand from urban centers and changes lifestyle by a fast growing population (Akello, et al, 2022). There was a slight increase in potato production, from 173,092MT in 2015 to 173,610 MT in 2016 with the highest output achieved in 2012 (185,100 MT) (MAAIF, 2016/2017). Annually potato production is estimated at 162,151metric tones,

REFERENCES

- Kajunju, N.H.B., Atukwase, A., Tumuhimbise, G.A., Mugisha, J. (2021). Potato processing in Uganda. *Makerere University Journal of Agricultural and Environmental Sciences*. 10 (1). pp. 60 - 81, 2021.
- Aheisibwe, A.R., Barekye, A., Namugga, P., Byarugaba, A.A. (2015). Challenges and opportunities for Quality seed potato availability and production in Uganda. *Uganda Journal of Agricultural Sciences*, 16 (2): 149 – 159.
- Kyomugisha, H., Mugisha, J., Sebbata, C. (2017). Potential determinants of profits and market efficiency of potato market chains in Uganda. *Journal of Agribusiness in developing and emerging economies*, 7 (1), pp.52-68. <http://dx.doi.org/10.1108/JADEE-06-2015-0032>
- Addisu, G.T. (2019). Analysis of the Profitability of Potato Production in Ejere District, West Ethiopia. *Holetta Agricultural Research Center*. 2, pp. (1-9), March - April 2019.
- FAOSTAT, Food and Agriculture Organization of the United Nations, (2020). Statistical corporate database.
- Muthoni, J., Kabira, J.K. (2015). Potato Production in the Hot Tropical Areas of Africa. Progress Made in Breeding for Heat Tolerance. Kenya Agricultural and Livestock Research Organization. *Journal of Agricultural Science*. 7(9) 2015
- Wasilewska, B.N., Boguszewska, D., Krystna, Z. (2020). Challenges in the Production of High-Quality Seed Potatoes (*Solanum tuberosum* L.) in the Tropics and Subtropics. *Plant Breeding and Acclimatization Institute, Jadwisin Research Center*, pp. 05-140. 2020, 10, 260. <https://doi.org/10.3390/agronomy10020260>
- MAAIF, Ministry of Agriculture, Animal Industry and Fisheries, (2016/2017). Performance Review Report.
- Gildemacher, P. R. (2012). Innovation in Seed Potato Systems in Eastern Africa. Thesis, *Wageningen University*, Wageningen. 10-8, 184 pp.
- Akello, R., Turinawe, A., Wauters, P., Naziri, D. (2022). Factors Influencing the Choice of Storage Technologies by Smallholder Potato Farmers in Eastern and Southwestern Uganda. *Agriculture* 2022, 12-240 <https://doi.org/10.3390/agriculture12020240>
- Gastelo, M., Ulrich, M. B. (2014). Global Potato Research for a Changing World. *International Potato Center (CIP)*, Lima, Peru. 3(4), pp41-143 <https://doi.org/10.4160/9789290604426>
- Pandey, N.K., Singh, D.K., Pandey, K.K., Sanjeev, S., Singh, B.P. (2012). Agro -Techniques for Production of Quality Potato Seed. *CPRI Extension Bulletin. Journal of Central Potato Research Institute*, Shimla, Himachal Pradesh, India, 6(2) pp. 14.
- Campos, H., Ortiz, O. (2020). Degeneration of Potato Seed Systems in Magaland States in North-Eastern hills of India. https://doi.org/10.1007/978-3-030-28683-5_12
- Bahati-Kajunju, N.H., Atukwase, A., Tumuhimbise, G.A., Mugisha, J. (2018). Processing qualities of potato varieties grown in Uganda. 17 (2), pp.170-174.
- Gollin, D., Richard, R. (2010). Agriculture, Roads, and Economic Development in Uganda. *National Bureau of Economic Research* 2(44)
- Bajracharya, M., Sapkota, M. (2017). Portability and productivity of potato in Baglung district, Nepa. *Agric & Food Secur* (2017) pp. 6-47 <https://doi.org/10.1186/s40066-017-0125-5>
- Abu Zafar, A.M., Shah Jahir, R., Masudul, H. (2006). Farmer's Profitability of Potato Cultivation at Rangpur District. The Socio-Economic Context of Bangladesh. *Russian Journal of Agricultural and Socio-Economic Sciences*, 7(19), pp.24

Diro, S. (2016). Assessing the Effect of Plant Density on Yield of Irrigated Potato and Analysis of Input Supply Chains at AdeaBerga District. *College of Agriculture and Veterinary Sciences, Ambo University School of Graduates, Ethiopia* 5(1), pp.42-88

Food and Agricultural Organizations of United Nations, (FAO). Statistical database (2008).

Okello, J.J., Zhou, Y., Kwikiriza, N., Oguto, S.O. (2016). Determinants of the Use of Certified Seed Potato among Smallholder Farmers. *The Case of Potato Growers in Central and Eastern Kenya. Agriculture* 2016, 6- 55
<https://doi.org/10.3390/agriculture6040055>

Bornventure, I. M., Muthoni, W.J., Narla, R.D., Nyongesa, W.M., Olubayo, F.M. (2018). Seed Potato Production Practices and Quality of Farm Saved Seed Potato in Kiambu and Nyandarua Counties in Kenya. *Journal of Agricultural Research*, 6(1) (2018), pp. 20-30. <https://doi.org/10.12691/wjar-6-1-5>

Woldegiorgis, G., Hailemariam, G., Lemaga, B., Schulz, S. (2015). Quality seed potato production Experienced from the highlands of Ethiopia pp18-19 <https://doi.org/10.1079/9781780644202.0186>