

# CONSTRAINTSTO THE RURAL BEE KEEPING IN SELECTED SUB COUNTIES OF KITGUM DISTRICT

BY

# BU/UP/2011/608

kennedylutoduc@gmail.com



# A DISSERTATION SUBMITTED TO THE FACULTY OF AGRICULTURE AND ANIMAL SCIENCES IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF BACHELOR OF ANIMAL PRODUCTION AND MANGEMENT OF BUSITEMA UNIVERSITY MAY, 2014

DECLARATION
I,Lutoduc Kennedy declare that the information in this dissertation is my own work and it h
never been submitted to any institution of higher learning or university for any academic award Sign.  Date 014 08 2014
APPROVAL
The dissertation has been submitted for examination with the approval of my supervisor
Mr. Muyinda Robert (Bsc Biosciences and Dcs Biosciences)
Department of Animal Production and Management
Faculty of Agriculture and Animal Sciences
Busitema University, Arapai campus
P.O. Box 203
Soroti –Uganda.
Sign. Hearon. Date 08.08.2874
TOTAL UNIVERSITY LIBRARY

Copyright © 2014 Lutoduc Kennedy, Busitema University.

# DEDICATION

I dedicate these dissertation to my parents, sisters, brothers and my wife Atim Judith Ogwella not forgetting my uncles and unties and my friends thanks.

## ACKNOWLEDGMENT

My sincere appreciation goes to the management of Busitema University faculty of agriculture and animal sciences, department of animal production and management for allowing me carry my research in such a wonderful section of my program and special considerations to the university supervisor Mr. Muyinda Robert for his upper hand in ensuring that the research was successfully done and also to Dr Matovu Hendry and DrOkwany Patrick for the help rendered to me during my research study.

My sincerethanks alsogoes to the Veterinary Department of Kitgum district and special thanks to the DVO, Dr Otto Alfred Best for the technical support and encouragement given to me during the research time not forgetting the office of the CAO, Entomology department Kitgum district. I also do extend my sincere thanks to my dear parents Mr. Olweny Maurice Abitingsion Lugayi and Lamunu grace for their great effort and struggle to educate me up to this level, not forgetting my sisters Abone Sabina Lugayiand Ayoo Irene Lugayi and Ayaa Wat Stella and my brothers, Moro George wily Oluri, Komakech jimmy innocent, Okonyanono Peterson, Lugayi Abitingsion, Adegaynwa Felix, Kizza Besigye, Megiber Brian and Omara Genesis and not forgetting my beloved fiance Atim Judith thanks for all the supports and encouragement given to me during my studies.

I also extend my sincere thanks to my friends who have been with me during my studies and help me during my difficult time and special thanks goes to all my course matesthanks a lot may GOD bless you all.

# TABLE OF CONTENTS

DECLARATION i
DEDICATIONii
ACKNOWLEDGMENTiii
LIST OF TABLES AND FIGURESvii
LIST OF ABBREVIATIONSviii
CHAPTER ONE1
1.0 Introduction1
1.0.1 Background2
1.0.2 Problem Statement 2
1.0.3 Objectives
1.0.4 General objective
1.0.5 Specific objectives
1.0.6 Research questions
1.0.7 Significance/importance of the research
1.0.8 Justification 4
1.0.9 Scope of the study
2.0 Honey Bee keeping 6
2.0.1 General global bee keeping status6
2.0.2 Bee keeping and it's constraints in Africa
2.0.3 The apiary sub sector in Uganda
2.0.4 Challenges face by bee keepers in Uganda
2.0.5 Market and market outlook in bee keeping 8
2.0.6 World honey Market constraints analysis
2.0.7 The market overview in Uganda
2.0.8 Challenges face in marketing of the bee products
2.0.9 Diseases Pest and predators that affect bee keeping
2.1.0 Socio economic, cultural and management factors affecting bee keeping
2.1.1 Other challenges of hee keeping

CHAPTER THREE	14
MATERIALS AND METHODS	14
3.0 Introduction	14
3.0.1 Study areas	14
3.0.2 Research approach	14
3.0.3 Sampling design	14
3.0.4 Operational design	15
3.0,5 Observational design.	15
3.0.6 Statistical design	15
3.0.7 Data presentation	16
3.0.8 Ethical consideration	16
3.0.9 Environmental consideration	
3.1.0 Limitation/anticipated problems	
4.0 Demographic characteristic of the respondents	17
Market Constraints	
Generally honey were produce at minimum quantity with most farmers (58%)	harvesting
between 5-8 liters of honey per hives per harvest, 25 % producing less than 4	litters, 15%
between 9-10 and only 2% getting above 10 liters of honey per hive	17
4.0.1 Constraints on market	18
4.0.2 Common diseases affecting bee hives	19
4.0.3 Common pest affecting the hives	20
4.0.4 Common predators affecting the apiary	20
4.0.5 Damages and losses from disease, pest and predators attack	21
4.0.6 Socio economic, cultural, management and other challenges to beekeeping	21
5.0 Demographic characteristic of the respondents	29
5.0.1 Market constraints.	30
5.0.2 Common diseases affecting the hives	31
5.0.3 Common pest affecting bee keeping.	31
5.0.4 Common predators affecting the colony	32
5.0.5 Socio economic, cultural, management and other constraints to beekeeping	32
6.0 Conclusion	35

6.0.1 Recommendation	35
APPENDICES	
Questionnaires	
Individual farmers interview design	
Work plan for the overall research	
Map of Kitgum showing kitgum district where the three sub counties were chosen for the stu-	
Summary of the data collected during the research	6

# LIST OF TABLES AND FIGURES

# LIST OF TABLESPAGE

Table 1. The summary of the socio economic characteristic of the respondents	17
Table 2.The common diseases affecting the bees	19
Table 3. The common damages from disease, pest and predators attacked	
Table 4.The source of income used in bee keeping	22
Table 5 Available technologies and the one used	25
Table 6. The different local measures taken by the respondents	28
LIST OF FIGURES	
LIST OF FIGURES	
Figure 1. Total litters of honey harvested per hives	.,18
Figure 2. The major market constraints in honey production	
Figure 3. The pest that disturbs the bee keepers	
Figure 4 .Knowledge and experience on bee keeping	21
Figure 5. Effect of culture, norms, myths and taboos on bee keeping	23
Figure 6 .The frequency of hive inspection	24
Figure 7. Support from government and other organization	
Figure 8. The numbers of respondents using the different types of bee hives	
Figure 9 .The Langstroth bee hives	
Figure 10. The local log bee hives	

## LIST OF ABBREVIATIONS

AAAE African association of agricultural economics

AFB American foul brood

CAO Chief administrative officer

DVO District veterinary officer

EFB European foul brood

GARSAH Global advance research journals of art and humanities

IFI Individual farmer's interview

KBA Kitgum bee keepers association

KITWOBEE Kitgum women bee keepers

KTB Kenya top bar hives

MAAIF Ministry of agriculture animal industries and fisheries

NAADS National agricultural advisory services

NECTAR Netherlands expertise center for sub-tropical apicultural resources

NGO None governmental organization

PEAP Poverty eradication action plan

SHB Small hive beetle

SPSS Statistical package of social science

TUNADO The Uganda national apiculture development organization

UEPB Uganda export promotions boards

UHA Uganda honey bee keepers association

UWESO Uganda women effort to support orphan

#### ABSTRACTS

This study was conducted inrandomly selected sub county of Labongo Amida, Kitgum Matidi and Omiya Anyima in Kitgum district to analyze the constraints to rural bee keeping. The focus of the study was to assess challenges market and marketing system, the measures to diseases, pest and predators affecting bee keeping, socio economic, cultural, management and other factors affecting bee keeping in the selected sub counties and 48 bee keepers were interviewed using the pretested individual farmers' interview where by 16 farmers were purposively sample from the selected sub counties in the district.

The data collected wasfed in the excel sheet and analyzed using statiscal package of social science (SPSS version 16) to find the frequencies, percentage which was presented using tables, graphs, pictures and pie cart. The study indicates that 75% of the respondents were male, 69% of the respondents market their products in the local market and they experience some common challenges like lack of fixed and recognized market for their products and price fluctuation, 69% of the respondents were not affected by disease incidence and insects (ants and termites) were contributing up to 74% of pest infestation in the sub counties and other pests were very rare.

Also 49% of predators were cattle and 31% was man, 54% of the respondents have some little knowledge and experience on bee keeping, 52% have got some simple bee keeping equipment and tools,90% of the respondents were not affected by culture, 73% rarely inspect their hives, 54% were affected by bush fire and theft and there were no cases of pesticides poisoning. The common measures were clearing of grasses around the apiary, fencing, regular inspection and treatment. In conclusion, there was poor market and marketing system, disease cases was minimal and many other challenges affecting bee keeping.

The research therefore recommends that farmers should join the bee keeping groups for easy marketing, adopt improve bee hives and good harvesting technique; attend training on bee keeping broaden their knowledge and experience in beekeeping.

#### CHAPTER ONE

## 1.0 Introduction

Bee keeping is an applied science of rearing honey bees for man's economics benefits which are commonly carried out in hives. High standard of bee keeping involves large number of colonies, high level of technology used in the production, deals in variety of bee product, park and export to other country (Curtis, 1982) mean while rural bee keeping in the other hand involves low level technology used, low level of product and other output, low or characteristic of the country side rather than the town (Tabindaet al., 2013), most tends to used local bee hives and most of their products are consumed locally at home and few marketed in local and urban market and honey is the major products and less concern in other products (Gidney and Mekoreu, 2008).

Most people keep bees to collect honey, bee wax, to pollinate crops though most farmers do not recognized this importance much especially in Africa, produce bees for sales, propolis and the level of manufactured products depends on the standard of production and mechanization of the farm. Apiculture today is seen as a very fast growing sector of enterprises in the world (Guoda*et al.*, 2003). Apiculture conveys many benefits to the famers like providing job opportunities, cash, income and food in the rural areas and the most growing importance is the increase in agricultural production of crops.

Bee keeping is much more suitable for poor people compare to other enterprises as it can be integrated with crop production and requires little capital to begin and is environmentally sound with ready markets. Uganda is among the countries in Africa where there is active bee keeping programs and lively honey production where at least halve of the honey produce are consume internally and the surplus exported to other country. Though the sector is facing some challenges like pest, predators and diseases, unrestricted use of pesticides which kills the bees, poor traditional hive and methods of harvesting which kills the bees, and low market development and price fluctuation of the products (Lepetuet al., 2001).

Honey which is the major product of apiculture is a nutritive food containing various kinds of sugar, proteins, free amino acids, minerals, trace elements, enzymes and vitamin with high caloric values and the main sugars, fructose, glucose and dextrose are absorbed directly in to the blood and provides rapid energy. Typical colony can produce up to 36,28kg -43kg of

#### REFERENCES

Akangaamkum A.D, Agbenonhevi M and Okudzeto C, (2010). Synthesis reports on an overview of honey industries in Ghana. Accra Ghana

Ambrose J.T, (2000). Bee, bee keeping and insect's pest management. Department of entomology. North Carolina

AndrzeiNowakowski, (2011). Honey bee health and challenges of the bee keeping. Journals of agriculture, European free alliance, Brussels, Europe.

Barker Charles Waiswa, (1997). Solving the low productivity problems in East African bee keeping, the Ugandan perspective. Njero wildlife research center, Kampala Uganda

Belie T, (2009). Honey bee production and marketing systems, constraints and opportunities in Burie district of Amhara region Ethiopia. International livestock research institutes, Bahir, Der University Ethiopia.

Carrol Thomas (2006). A beginner guide to bee keeping. Baraka agricultural collage and self help development international. Nakura, Kenya

Clarence HC, Maryann F, Ann H, Danish V, (2004). Bee keeping basics.Mid-Atlantic apicultural research and extension consortium. Collage of agricultural sciences cooperative extension, USA.

Collision C.H, Maryann F, Dewey C, Harmon A, Vanegledorp D, (2004).Mid Atlantic apiculture research and extension consortium, collage of agricultural science cooperative extension. Penn state's collage of agricultural science, www.psu.edu

Curtis Gentry, (1982). Small scale bee keeping. Stacey Leslie peace corporation. United state of America

Dathine report, (2006). The apiary sub sector in Uganda. Dathine agricultural consultant limited. Kampala Uganda.

Denis Critkovic, ZoranGirgic, ZeljkaMatasin, Marina Davilak, JanjaFilipi and IvanaGajger, 2009. Economic aspect of bee keeping production in Croatia, department of veterinary economics and analytical epidiomiology, faculty of veterinary nedicine university of Zagreb Croatia

Donnelly R.R, (2010). The honey bee health strategy. Bee farmers association of the United Kingdom, Scottish agricultural collage, Scottish government. St Andrews house, Edinburg

Ebojei G, Alamu J.F and Adeniji O.B, (2008). Assessment of contribution of bee keeping extension society to the income of bee farmers in Kadunda state, department of agricultural economics and rural sociology. Ahmadubello university zaire. www.patnsukjournal.com/current issue

EisiaMaymoone Ahmed and Roth M, (2008). Overview of bee keeping in Sudan, competition for resources in a changing world and new drives for rural development. Institute of forest botany and zoology, pienstr. 7, 0173, Tharand Germany

FAO report, (2006). Honey production status of the world. University of Arkansas national apicultural law. Denmark. beekeepers.com

Florence kata, (2005).Uganda apicultural export strategy. Internal trade center for apiculture, Uganda exports promotions board (UEPB). Uganda, Kampala.

Gidney A, Mulugeta s and Fromsa A, (2012). Prevalence of bee lice braulacoeca and other perceived constraints to honey bee production. Collage of agriculture and veterinary medicine Jimma University. Wukroworeda, Tigray region in Ethiopia

Gidneyyirga and KibromFtiui, (2010). Bee keeping for rural development, its potentiality and constraints in Eastern Tigray, Northern Ethiopia Journal of agriculture. Scientific research publishing company, Ethiopia.

Gidney Yirga and Mekoren Teferi, 2008. Participatory technology and constraints assessments to improves the livelihood of bee keepers in Tigray region, Northern Ethiopia

Husselman M, Moeliono M, Paumgarter F,(2010). Contribution of bee keeping to the sustainability of the millennium development goals in Miombo wood lands of southern Africa. Center for agricultural forestry research, South Africa. www.cifor.cgiar.org

Karealem E, Tilahun G and TR Pretonn, (2009). Constraints and prospect for agriculture research and development in Amahara region Ethiopia. Andassa livestock research center. Bahir, Der, Ethiopia.

Kinati C, Tolemariam T, Debele K, Tolosa T, (2012). opportunities and challenges of honey production in Goma district of simma zone. Journal of agricultural extension and rural development. South west Ethiopia.

Kitgum district local government report (2012). Five year development plan; policy issues FY 2010/2011-2014/2015 volume one.www.kitgum.go.ug

Lance Gegner, (2003). Bee keeping. Appropriate technology transfer for rural areas. Department of agriculture California.

Leputu J.P, Thelo O, Sebina N.V, (2001). The potential of bee keeping industries in enhancing rural housed holds incomes in Botswana. Department of crops science and production, Botswana collage of agriculture, department of agricultural economics. Botswana

Marieke M, Henk V.B, Leen V.L, Jaap K, Jan V.W, (2005). Bee products, properties, processing and marketing. Netherlands expertise center for sub tropical apicultural resources (NECTAR), Agrodok 42 first edition, ISBN:agromisa 90-8573-028-7, ISBN CTA, 92-9081-305-9. Tropical bee keeping experts in Netherlands

Matavele Rosario, (2004). Situational analysis of bee keeping in Mozambique. Mputo agricultural research center. Mozambique.

Moustafa H Hussian, (2001). Bee keeping in Africa. University of Assiut, faculty of agriculture. Assiut Egypt.

Mujuni A, Natukunda K, Kugonza D.R, (2012) Factors affecting the adoption of bee keeping and associated technologies in Bushenyi district, western Uganda. Center for livestock research for rural development, department of agricultural production, school of agricultural science, collage of agricultural and environmental science Makerere University Kampala Uganda. Natukunda 2007 @gmail.com

Musumba N. Dickson M, Nyariki M, Elijah M and Mutungi ,(2001). The socio-economics, culture and ecology of bee keeping among the Akamba community of southern Kenya. Department of range management, ministry of agriculture and rural development, Nairobi University, kintui Kenya

Mutsaers M, Vanblitterswijk H, Vant L, Kerkuliet J, Dewarerdt J.V,(2005). Bee product, properties, processing and marketing. Netherlands experience center for sub tropical apicultural resources (NECTAR). Awede Netherlands.

Mwakatobe A and Mingwa C, (2005). The status of Tanzanian honey trade, domestic and international markets. Tanzanian wildlife research institutes. Arusha, Tanzania.

Nyau V, Mwanza E.P, Monga H.B, (2013). Physico chemical qualities of honey harvested from different bee hives types in Zambia. African journals of food, agriculture, nutrition and development. African scholarly science communication trust. Nairobi Kenya

Ochan Ben, (2012). Bee keeping in Uganda. The wren media center Kampala Uganda.

Ogaba Margaret Rose and Akongo Thelma, (2001). Gender issues in bee keeping, the Uganda case. International apicultural congress and Kitgum women bee keeping association (KTWOBA). Kitgum Uganda. Oxfarm. kitgum@wfp.org

Ogaba Rose Margaret, (2002). House hold poverty reduction through bee keeping amongst Uganda rural women. Honey show and exhibitions, kensington town hall London United Kingdom. Kitgum women bee keepers' associations (KITWOBEE). Kitgum Uganda

Owot Ramsey, (2001). Apiculture training model for bee farmers in Uganda. Uganda honey bee keepers association (UHA). Kampala, Uganda, uha@infocom.co.ug

Owot Ramsey, (2001). Bee keeping for rural development, a Uganda case. International apicultural congress and Uganda bee keepers association. Kitgum district. uha@infocom.co.ug

Phipps Ron, (2012). International honey market report for American honey producers associations, CPNA international limited.

Qaiser T, Murad A, Sajidaa T, Akmal N, (2013). Impact assessment of bee keeping in sustainable rural livelihood. Journals of social sciences, COES and RS-JSS. Center of excellences for scientific and journalism, Sargodha and Chakwal in Pakistan

Rosenkraz peter, (2010). Bee keeping in the tropic. Apicultural state institutes, university of Hohenheim. Hohenheim state

Saha J.CH, 2002. Bee keeping for rural development, its potentiality and bee keeping against poverty. Bangladesh perspectives, Dhaka Bangladesh

Segeren P, (2004). Bee keeping in the tropics, Agrodok 32 fifth editions.ISBN:90-77073-57-4, NUGI:835, Wangeningem Netherlands

Sihimbiro Francois, (2009). Enabling poor rural people to overcome poverty. Institute of community and organization development (CODIT). Kenya Nairobi

SlaoamaMurinkovic and Nebojsa, 2010. Analysis of production and competitiveness on small bee keeping farms in selected districts of Serbia bee keeping situational analysis Ethgiopia.

TabindaQaiser, Murad Ali, SajindaTajand NadeemAkmal, 2013. Impact assessment of bee keeping in sustainerble rural livelihood. Journals of social sciances center of excellence for scientific and research journalism, Ethiopia.

TadeleTolosa, (2008). Challenges and opportunities of honey production on Gomma district of Jimma zone, south west Ethiopia. Journals of agriculture and animals science. Ethiopia.

Tames AtekerOkiria, (2010). Bee keeping restoration of degraded ecosystems and improving livelihood in east Africa. National resource management and biodiversity programme,

TarkIsssa and Abdel-Wahab ,(1987). Apiculture in Egypt. Journal of immunology Egypt

TUNADO and UEPB report, (2007). Assessment of the status and capacity of honey packers and bee keeping in Uganda. Bee for development, strengthening trade in honey and other bee products in Uganda. Kampala Uganda.

TUNADO Report, (2012). A market information report on honey brands sold in selected towns in Uganda. Bee for development under Uganda honey trade project Kampala Uganda.

Victor Owuor, (2012). Market analysis for honey production in Somalia.SHURAAKO organization. Somalia.

Waiswa baker Charles, (1997). Solving the low productivity problems in the east African bee keeping, the Ugandan perspectives. Arusha international conference center. Trust Uganda.

Webster T and burgess S, (2013) .Bee keeping and honey production. Cooperatives extension services, university of Kentucky, collage of agriculture.

http://www.sfp.forprod.vt.educ/factsheet/honeypdf.

Yirga G and Tafari M, (2008) Participatory technology and constraints assessments to improve the livelihood of bee keepers in Tigray regions, northern Ethiopia. Biology department, collage of national and computational sciences, Makellele University. Ethiopia

Yirhga G, Koni B, Kindane D, Mebrahatu A, (2012). Assessment of bee keeping practices in AsgadeIsimbia district, absconding, bee forage and bee pest. African journals of agricultural research vol 7(1),pp.15. Ethiopia.www.acedemicjournals.organisation

Yossi Barack, (2002). Honey production and marketing in Israel. Global agricultural information net work. Israel