
**ASSESSMENT OF THE FACTORS AFFECTING THE ADOPTION OF
BEEKEEPING AMONG SMALL HOLDERS FARMERS IN PAIULA SUB-
COUNTY, PADER DISTRICT**

BY

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Declaration

I Aber Sharon do declare that this report is the original copy of my own work and it has not yet received any academic credit in any university or any higher institution of learning.

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Sign... 

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Approval

This special project report on the assessment of the factors affecting the adoption of beekeeping in Paiula sub-county, Pader district has been supervised and approved by

Research supervisor

Mr. Lisa Augustine

Date..... 07/06/2023

Sign..... *Lisa Augustine*

Dedication

With love and shower of more blessing for the endlessly support that had been granted toward my academic progress, I would like to dedicate this report to my lovely Dad Mr. Omona Charles, Mum Ms. Aryemo Rose, lovely daughter Daker Promise, Mr. Kilama Philip, Uncles and all the family members for their hard work toward my academic life journey.

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This special project was as a result of my effort, determination and focus. However; it would never have been possible without combined support from different loving people to whom it is a pleasure for me to extend my gratitude. First of all, I would like to express my sincere gratitude to my academic supervisor Mr. Iisa Augustine who tirelessly guided and worked with me right from the beginning of this research up to the point of its accomplishment. Secondly, I would like to extend my gratitude to the entire administration of Busitema university particularly to the department of Agribusiness and Extension for endlessly support and guidance throughout the time I have been in school and Finally, I would like to express my gratitude to my father Mr. Omona Charles Lanyoya, my mother Mrs. Aryemo Rose, my sisters and brothers for the great contribution made to my education without forgetting the moral and emotional support granted whenever needed. Since it is because of them that I have achieved up to this point in life, then this work is dedicated to them and may the almighty God bless them abundantly.

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Lists of Acronyms

MAAIF : Ministry of Agriculture, Animal industries and Fisheries

FAO : Food and Agricultural Organization

TUNADO : The Uganda National Apiculture Development Organization

TONS : Tonnes

i.e. : That is to say

IDPs : Internal Displaced Persons

e.g. : For example

UCSAT : Uganda Climate Smart Agricultural Transformation

Abstract

The main objective of the study was to assess the factors affecting the adoption of beekeeping in Paiula sub-county, Pader district. A Total of 72 smallholder farmers were randomly selected from Paiula sub-county for the study. During the survey, 18 beekeepers and 54 non- beekeepers were randomly selected. Results revealed that majority of the respondents were in the age bracket of 18-35 years (48.6%), 36-50 years old were 36.1% and only 15.3% were in the age bracket of above 50 years old. Majority of the respondents had attained primary level of education of 40%, those who did not go to school had 17%, secondary with 25%, tertiary institution had 12% and lastly those who had attained university level of education were only 6% of the respondents. Number of beekeepers who had spent 1-5 years in beekeeping were 33.3%, respondents who had spent 6-10 years were 38.9% ,from 11-15 years were 22.2% and from 16-20 were only 5.6%. Question on people's perceptions concerning beekeeping were only administered to only non-beekeepers and all of their responses were negatives, where 59.3% of the none adopters said that it is less comparatively good as like other agricultural enterprises, 27.8% of none beekeepers had the view that it occupy land for crop production, 9.3% said beekeeping bring hunger in the house and only 1.9% of the none beekeepers had the perception that allergies due to bee stings make it a risky enterprise. The major constraints hindering beekeepers were reported to be bushfires, theft and low colonization rate yet in actual sense bad weather, pests and diseases are also among those constraints being faced by bee farmers in Paiula sub-county but they were not reported by the respondents as seen in some few apiaries visited. The study concludes that the various factors affecting the adoption of beekeeping by non-adopters were reported as: No land for sitting apiaries in beekeeping (was ranked as the major factor with 37%), followed by no interest in beekeeping (33.3%), limited knowledge (13%), theft (9.3%) ,limited capital (3.7%), and fears of honeybees aggressiveness as the least factors affecting adoption.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Beekeeping is a branch of production that can be carry out with other agricultural activities in rural areas .It is the best practices of improving the lives of poor rural population because of little investment and it offers multiple benefits to the rural poor such as increased household income streams (Chanthayod et al., 2017), improves and provides medicinal products for sale or home use as well as improving pollination services essential for increased yields (Cairns et al., 2017). It is also an activity that is suitable for a wide range of tropical and sub-tropical climate and has been promoted world-wide as a major rural development project with bee products such as honey, bee wax, propolis, pollen bee venom and royal jelly being of high socio-economic value (Akullu & Mwesigwa, 2021). The sector also have contributed towards employment and economic growth as it is easy and less expensive to operate than any other income generating activity since it does not requires purchasing of bee feeds as bees collect nectar and pollen from the available sources of existing natural bee plants. The bee hives mostly used in Uganda ranged from traditional to modern beehives. The traditional/fixed comb bee hives are of various types depending on the location with locally available materials for hive construction ranging from bamboos, plant tree logs, twigs to sticks while the modern types are made from timbers (Masuku, 2013).

Currently, there are around 56 million beehives in the world and 1.2 million tons of honey is produced from them. Approximately $\frac{1}{4}$ of the honey produced is traded and 90% of the export is made from around 20 honey producing countries (Vural & Karaman, 2011). According to FAO (2018), China is in the first place with 9 million 148 thousand colonies, follow by turkey in the second place with 8 million 133 thousand of colonies .In terms of honey production globally, China was rank as the leading honey producing country in the world with a production volume amounted to 458,000 metric tonnes of honey, Turkey with 114,000 tonnes and United states with 73,000 tonnes among others. The African continent currently produces 10%, above (169,000 tonnes) of honey and 23% of the beeswax produced worldwide and it is used for both home consumption and export (Peter et al., 2022).

APPENDICES

Appendix 1: References

- Abera, A., Yakob, H., & Yasin, G. (2016). Assessment of production system and constraints of bee keeping practices in damot gale woreda, wolaita zone, southern ethiopia. *Journal of Horticulture and Forestry*, 6(11), 109–114.
- Ahikiriza, E. . e. al. (2016). Faculty of Bioscience Engineering Beekeeping as an alternative source of livelihood in Uganda. *Journal Article*, 22–38.
- Akullu, P., & Mwesigwa, D. (2021). Embracing bee-keeping technology to enhance smart farming: evidence from Lira city, mid-north Uganda. *International Journal of Interdisciplinary Research and Innovations*, 9(2), 114–123.
<https://ir.lirauni.ac.ug/handle/123456789/278>
- Amulen, D. R. (2017). *Towards an increasing honey production in Northern Uganda : a multi-perspective approach*. June. <https://biblio.ugent.be/publication/8524077/file/8524078>
- Amulen, D. R., D’Haese, M., D’Haene, E., Acai, J. O., Agea, J. G., Smagghe, G., & Cross, P. (2019). Estimating the potential of beekeeping to alleviate household poverty in rural Uganda. *PLoS ONE*, 14(3), 1–19. <https://doi.org/10.1371/journal.pone.0214113>
- Andaregie, A., Worku, A., Worku, A., Atinkut, L., & Astatkie, T. (2022). The drivers and intensity of adoption of beekeeping in northwest Ethiopia. *Agriculture and Food Security*, 11(1), 1–15. <https://doi.org/10.1186/s40066-022-00378-1>
- Anja, A., & Seyoum, E. (2018). Assessment of beekeeping production system and constraints in basketo special woreda, Southern Ethiopia. *Horticulture International Journal* , 2(3), 124–127. <https://doi.org/10.15406/hij.2018.02.00039>
- Banana, A. Y., Bukenya, M., Arinaitwe, E., Birabwa, B., & Sekindi, S. (2012). *Gender, tenure and community forests in Uganda. Working Paper 87*. 36.
- BRASIL, 2011. (2011). No Title p . *Phys. Rev. E*.
<http://www.ainfo.inia.uy/digital/bitstream/item/7130/1/LUZARDO-BUIATRIA-2017.pdf>
- Cairns, C. E., Villanueva-gutiérrez, R., Koptur, S., David, B., Kluser, S., Peduzzi, P., Mayberry, R. J., & Elle, E. (2017). SUMMARY FOR POLICYMAKERS OF THE ASSESSMENT

REPORT OF THE INTERGOVERNMENTAL SCIENCE-POLICY PLATFORM ON
BIODIVERSITY AND ECOSYSTEM SERVICES (IPBES) ON POLLINATORS ,
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UNEP/GRID Europe (Vol. 37, Issue 4). <https://doi.org/10.1007/s00442-010-1809-8>

- Caroline Jemase, Y., & Chesikaw, L. (2021). Gender Roles and Women Participation in Bee Keeping: A Focus on Baringo South Sub-County, Baringo County. *Advances in Sciences and Humanities*, 7(2), 32. <https://doi.org/10.11648/j.ash.20210702.14>
- Chanthayod, S., Zhang, W., & Chen, J. (2017). People's perceptions of the benefits of natural beekeeping and its positive outcomes for forest conservation: A case study in Northern Lao PDR. *Tropical Conservation Science*, 10. <https://doi.org/10.1177/1940082917697260>
- Chazovachii, B., Chuma, M., Mushuku, A., Chirenje, L., Chitongo, L., & Mudyariwa, R. (2012). Livelihood Resilient Strategies through Beekeeping in Chitanga Village, Mwenezi District, Zimbabwe. *Sustainable Agriculture Research*, 2(1), 124. <https://doi.org/10.5539/sar.v2n1p124>
- Chemurot, M., Kasangaki, P., Francis, O., Sande, E., & Isabirye-Basuta, G. (2013). Beehive and Honey Losses Caused by Bush burning in Adjumani District, Uganda. *Bee World*, 90(2), 33–35. <https://doi.org/10.1080/0005772x.2013.11417529>
- Conte, Y. Le, & Navajas, M. (2008). Climate change: Impact on honey bee populations and diseases. *OIE Revue Scientifique et Technique*, 27(2), 485–510. <https://doi.org/10.20506/rst.27.2.1819>
- Dafar, A. (2018). Review of Economical and Ecological Importance of Bee and Bee Products in Ethiopia. *Journal of Animal Husbandry and Dairy Science*, 2(2), 18–26.
- Drost, S., Boer, D. De, & Wijk, J. Van. (2013). *Human Security in Fragile States Including conflict- affected producers in agri-food chains*. 52.
- Endale, W. (2020). Short Communication: Profitability of beekeeping using locally made transitional top bar beehive in Wolmera Woreda, Oromia Region, Ethiopia. *Asian Journal of Agriculture*, 4(1), 1–4. <https://doi.org/10.13057/asianjagric/g040101>
- Etxegarai-Legarreta, O., & Sanchez-Famoso, V. (2022). The Role of Beekeeping in the Generation of Goods and Services: The Interrelation between Environmental, Socioeconomic, and Sociocultural Utilities. *Agriculture (Switzerland)*, 12(4). <https://doi.org/10.3390/agriculture12040551>
- Framework, S. M. (2022). *Uganda Climate Smart Agricultural Transformation (UCSAT) Project - P173296*. September.
- Gary, B. N. E., & Sales, H. (n.d.). *Beekeeping as a Hobby or Economic Sideline*. 244–255.
- Godfrey, N. (2018). Anthropogenic and climatic factors affecting honey production: The case of selected villages in Manyoni District, Tanzania. *Journal of Agricultural Biotechnology and Sustainable Development*, 10(3), 45–57. <https://doi.org/10.5897/jabsd2017.0292>
- Guesh Godfey. (2015). Cepidemiology of Honey Bee Disease and Pests in Selected Zones of Tigray Region, Northern Ethiopia. *Cgiar, NA(NA)*, 10–71.

- Harb Faramand, T., Ivankovich, M., & Holtemeyer, J. (2017). A guide to integrating gender in improvement. *Usaid, August*.
- Hecklé, R., Smith, P., Macdiarmid, J. I., Campbell, E., & Abbott, P. (2018). Beekeeping adoption: A case study of three smallholder farming communities in Baringo County, Kenya. *Journal of Agriculture and Rural Development in the Tropics and Subtropics*, 119(1), 1–11.
- Hristov, P., Shumkova, R., Palova, N., & Neov, B. (2020). *veterinary sciences Factors Associated with Honey Bee Colony Losses* :
- Jenčič, V. (2009). Overview of bee diseases and available treatment options. *Medicines for Bees -What Can EMEA Do to Increase Availability, December*.
- JICA. (2011). *Present status of study area 3.1 (1). 2*.
- Kajobe, R., Kato, E. K., Otim, S. A., Kasangaki, P., & Abila, P. P. (2016). The Status of Honeybee Pests in Uganda. *Bulletin of Animal Health and Production in Africa, January*, 105–117.
- Kamanyire, M. (2000). Natural resource management and policy in Uganda: Overview paper. *Economic Policy Reserach Center (Sustainability Indicators for Natural Resource Management & Policy), Working Paper 3*, 1–55.
- Kasangaki, P. (2018). Assessment of Honeybee Colony Performance in the Agro-Ecological Zones of Uganda. *Current Investigations in Agriculture and Current Research*, 1(5). <https://doi.org/10.32474/ciacr.2018.01.000121>
- Kilimo Trust. (2012). Development of Inclusive Markets in Agriculture and Trade (DIMAT). *Undp*, 1–48. http://www.undp.org/content/dam/uganda/docs/UNDPUG_PovRed_Value Chain Analysis Report Honey 2013 Report.pdf
- Limited, A. africa company. (2011). *the Uganda'S Apiculture Sector Profile. second edi*(December), 1–43.
- Lloyd, K. (2021). Apiculture Adaptations in a Shifting World: the Beekeeper'S Experience Across the Globe. *Capstone Collection, August*. <https://digitalcollections.sit.edu/capstones/3242>
- Lydiah, M., Ngare, W., Casper, M., & Immaculate, M. (2019). Gender Gaps in the Levels of Participation in Improved Bee Keeping: Case of the Maasai Community in Trans Mara, Narok County, Kenya. *Journal of Livestock Policy*, 1(1), 1–22. <https://doi.org/10.47604/jlp.v1i1.846>
- Masehela, T. S. (2017). *An assessment of different beekeeping practices in South Africa based on their needs bee (forage use), services (pollination services) and threats (hive theft and vandalism)*. March, 239.
- Masiga, M. (2012). *Analysis of Adaptation and Mitigation Options; Territorial Approach to Climate Change*. May, 100.
- Masuku, B. (2013). Socioeconomic analysis of beekeeping in Swaziland: A case study of the

- Manzini Region, Swaziland. *Journal of Development and Agricultural Economics*, 5(6), 236–241. <https://doi.org/10.5897/jdae2013.002>
- Melathopoulos, A., Rodia, R. M. (Mike), Holt, J., & Sagili, R. (2018). Residential Beekeeping Best-practice guidelines for nuisance-free beekeeping in Oregon. *Oregon State University, February*. <https://catalog.extension.oregonstate.edu/sites/catalog/files/project/supplemental/em9186/em9186print.pdf>
- Mujuni, A., Natukunda, K., & Kugonza, D. R. (2012). Factors affecting the adoption of beekeeping and associated technologies in Bushenyi District, Western Uganda. *Livestock Research for Rural Development*, 24(8).
- Muraleedharan, N., & Chen, Z. M. (1997). Pests and diseases of tea and their management. *Journal of Plantation Crops*, 25, 15–43.
- Musa, M., Ismail, M. M., Ismail, W. I., & Elpawati. (2019). Effectiveness of extension agent services in influencing the adoption of modern hive in sustainable stingless beekeeping. *Journal of Sustainability Science and Management*, 14(4), 14–24.
- Nyeko, P., Stewart, J., Franzel, S., & Barklund, P. (2004). Farmers' experiences in the management of pests and diseases of *Calliandra calothyrsus* in Uganda. *Uganda Journal of Agricultural Sciences*, 9, 520–529.
- Peter, O., Fulfilment, P., The, O. F., For, R., Award, T. H. E., & The, O. F. (2022). *ASSESSING THE INFLUENCE OF THE HONEY BEE MANAGEMENT PRACTICES USED BY MODEL FARMERS ON HONEY PRODUCTION IN TORORO DISTRICT*.
- Ricketts, K., & Shackleton, C. M. (2020). Integrating livelihoods and forest conservation through beekeeping in northern KwaZulu-Natal. *Development Southern Africa*, 37(4), 661–677. <https://doi.org/10.1080/0376835X.2019.1698408>
- Schweitzer, P., Nombé, I., & Boussim, J. (2013). Honey Production for Assessing the Impact of Climatic Changes on Vegetation. *Tropicultura*, 31(2), 98–102. <http://www.tropicultura.org/text/v31n2/98.pdf>
- Singh, B. (2019). Perception towards adoption and constraints in beekeeping. *Journal of Pharmacognosy and Phytochemistry*, 8(5), 459–461.
- Singh, B., Singh, S., Kumar, N., & Kumar, D. (2021). *Adoption of beekeeping as an enterprise in Haryana*. 9(3), 348–351.
- Thornton, P., Enahoro, D., Njiru, N., Wijk, M. van, Ashley, L., Cramer, L., Ericksen, P., & Graham, M. (2019). *Program for climate-smart livestock systems. Country stocktake: Kenya. December*. <https://cgspace.cgiar.org/handle/10568/106291>
- Trees and plants for bees and beekeepers in the Upper Mara Basin Guide to useful melliferous trees and crops for beekeepers*. (2017). December.
- Ure, J. (2013). *Complete Thesis. October*, 1–166. <https://doi.org/10.13140/RG.2.2.33067.26405>
- Veenendaal, E. M., Torello-Raventos, M., Feldpausch, T. R., Domingues, T. F., Gerard, F.,