



**BUSITEMA
UNIVERSITY**
Pushing Frontiers

P.O. Box 236, Tororo
Gen: +256-454448842
Dir: +256-454448864
Mob: +256-782999874
Fax: +256-454436517
Email: ar@acadreg.busitema.ac.ug
Website: www.busitema.ac.ug

**MAJOR DEFECTS AFFECTING QUALITY OF CATTLE HIDES DURING
SLAUGHTER AT SOROTI MUNICIPAL ABATTOIR, SOROTI DISTRICT.**

BY

OROMA CHRISTINE

BU/UG/2013/140

oromac@ymail.com



**A DISSERTATION SUBMITTED TO THE FACULTY OF AGRICULTURE AND
ANIMAL SCIENCES IN PARTIAL FULFILMENT OF REQUIREMENT FOR THE
AWARD OF DEGREE OF BACHELOR OF ANIMAL PRODUCTION AND
MANAGEMENT OF BUSITEMA UNIVERSITY**

JUNE, 2016

DECLARATION

I, **OROMA CHRISTINE**, hereby declare that this dissertation is out of my original concept and has never been submitted to any University or institute of higher learning for any academic award.

Signature  Date 14th JULY 2016

This dissertation has been submitted with my approval as the University supervisor.

Signature  Date 15/JULY/2016

Mr. Amosing Joseph BAPTM-(MUK)

Department of Animal Production and Management

Faculty of Agriculture and Animal sciences

Busitema University



© 2016, **OROMA CHRISTINE**

All rights reserved. No part of this dissertation may be reproduced, stored in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without prior permission of the author or Busitema University

DEDICATION

I dedicate this piece of work to all those who has and is still putting hands in shaping me. Without you I would not be able to reach this level. may God the Almighty bless your hands abundantly.

ACKNOWLEDGEMENT

I acknowledge the guidance of my supervisors: Mr. Amosing Joseph for the unwavering encouragement and loving appreciation that has brought the best out of me; Madam Jolly Akullo for the various assistant she rendered to me.

I thank the staff of the Department of Animal Production and Management for their willingness to support the program; my course mates, my lovely parents, sisters and brothers for the invisible support and encouragement

In a very special way I acknowledge the contribution of the management of Soroti municipal abattoir for permitting me to carry out my research and not forgetting all the workers especially Dr. Odokorach Isaiah, Dr. Okello Michael and all the flayers for their cooperation during data collection.

TABLE OF CONTENTS

DECLARATION	i
DEDICATION	ii
ACKNOWLEDGEMENT	iii
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF ABBREVIATION	viii
ABSTRACT	ix
CHAPTER ONE: INTRODUCTION	1
1.1 Background	1
1.2 Problem statement	3
1.3 Overall Objective:	3
1.4 Specific objectives	3
1.5 Research question	3
1.6 Significance of the study	4
1.7 Justification	4
1.8 Scope	4
CHAPTER TWO: LITERATURE REVIEW	5
2.1 Livestock population in Uganda	5
2.3 Livestock products	6
2.4 Defects on hides	6
2.4.1 Pre-slaughter defects	6
2.4.2 Peri-slaughter defects	7
2.4.3 Post slaughter defects	8
2.5 Causes of defects on hides	8
2.5.1 Slaughtering facilities and equipment	8
2.5.2 Man related causes	9
2.5.3 Slaughter process	10
2.5.4 Flaying and ripping process	11
2.5.5 Bleeding	11
2.6 Grading of hides and skin	12

2.6.1 Grading process and grade of hides	12
2.6.2 Relationship between grading of hides and defect.....	13
2.6.3 Relationship between grade and pricing	13
CHAPTER THREE: MATERIALS AND METHODS.....	14
3.1 Research approach	14
3.2 Study area.....	14
3.3 Sampling design:.....	14
3.4 Operational design:.....	14
3.5 Observational design:.....	15
3.7 Statistical design	15
3.8 Data presentation	15
3.9 Ethical Consideration.....	15
3.10 Environmental Considerations	15
CHAPTER FOUR: RESULT	16
4.1 Major defects inflicted on cattle hides during slaughter.....	16
4.1.2 Distribution of flay cuts in the different regions.....	16
4.2 Causes of defects on hides during slaughter at Soroti Municipal Abattoir.....	17
4.3 Relationship between defects and grading of hides	19
CHAPTER FIVE: DISCUSSION.....	20
<i>Defects inflicted of hides during slaughter</i>	20
<i>Causes of defects on hides during slaughter</i>	21
<i>Relationship between defects and grading of hides</i>	23
CHAPTER SIX: CONCLUSION AND RECOMMENDATION	24
6.1 Conclusion	24
6.2 Recommendations.....	24
References.....	25
Appendices.....	30
Appendix 1 Map of Uganda showing study area	30
Appendix 2: Data collection sheet.....	31
Appendix 3: Questionnaire.....	32
Appendix 4: Peri -slaughter defects.....	34
Appendix 5: Recommended Knives	35

LIST OF TABLES

Table 1: Prevalence of major defects during slaughter.....	16
Table 2 Grade of hides and flay cuts.....	19
Table A. 1 Data collection sheet for major defects affecting quality of hides at Soroti Municipal abattoir	31

LIST OF FIGURES

Figure 1 Number of flay cuts according to the different regions	16
Figure 2 Classification of gouge marks on hides	17
Figure 3 Experience of Flayers in years.....	18
Figure A 1: Map of Uganda showing the location of Soroti.....	30
Figure A 2: Peri-slaughter defects inflicted on hides (gouge marks, bruises, veinness and flay cuts)	35
Figure A 3: Flaying knives used by different flayers.....	35

LIST OF ABBREVIATION

UNBS	Uganda National Bureau of Standards
UNDP	United Nations Development Programme
UNIDO	United Nation Industrial Development Organization
CFC	Common Fund for Commodities
CfD	Conference for Financing Development
ESALIA	Eastern and Southern Africa Leather Industries Association
FAO	Food and Agriculture Organization
GDP	Gross Domestic Productivity
ESGPIP	Ethiopia Sheep and Goat Productivity Improvement Program
MDGs	Millennium Development Goals
PEAP	Poverty Eradication Action Plan
QSAE	Quality and Standard Authority of Ethiopia
UBOS	Uganda Bureau of Statistics
UMA	Uganda Manufacturers Association

ABSTRACT

A study to assess the major defects affecting quality of cattle hides during slaughter was conducted from March to April 2016 at Soroti municipal abattoir in Soroti district, to identify defects inflicted on hides of cattle during slaughter; causes of defects on hides during slaughter and to establish the relationship between defects and grading of hides. Seventy five (75) cattle, their hides and fifteen flayers were used in the study. Data on defects on hides, causes on defects and grade of hides were collected and analyzed using SPSS version 16. The results were presented using pie charts, graphs and tables. Seventy three (97.3%) hides had one or more defects. The major defects were: flay cuts (49.3%), incorrect shape (5.3%), bruises (28%), and veininess (70.6%) while others were: gouge marks (96%) and dirt (85.3%). Majority of flayers had enough experience in flaying: 16-20 years (26.7%), 11-15 years (45%), 6-10 years (20%). Whereas none had any training on flaying and handling of hides. Major causes of defects were: inhumane slaughter, lack of training of the flayers, use of un-recommended facilities and equipment. The hides recovered were: 50.6% (grade I), 28.0% (grade II) and 21.3% (rejects). The study concluded that the quality of hides during slaughter were mainly affected by flay cuts which end up lowering the grade of the hides and the money paid to the farmers. It was recommended that abattoir should put in facilities for humane slaughter, carry out rigorous training on flaying methods and procedures while emphasizing the need to replace equipment such as worn out flay knives and provide electricity to improve of quality hides.

CHAPTER ONE: INTRODUCTION

1.1 Background

According to Jabbar *et al.* (2002), Livestock contribute up to 28% of the Agricultural Gross Domestic Production (GDP) of sub-Saharan Africa with the major products such as milk, meat, eggs, wool, hides and skin and it is one of the main component of agricultural industry in Uganda contributing 9% of the total GDP and 18% as agricultural GDP (UBOS, 2011; Mbabazi and Mahmud, 2012). Livestock does not only provide food and income but also social security/insurance and serves as mobile banks, wealth accumulation and social esteem (Ruhangaverbare, 2010). Over 85% of the Uganda's population lives in rural areas in which agriculture is the major contributor to their livelihoods.

Globally, it is estimated that cattle hide production grew by 70% between early 80s and late 90s, with two third taking places in developing countries. In this period the share of Africa remained around 10% (Rafik, 2002). According to Leach and Trevor (2009), the production of cattle hides was projected to increase in developing countries and expected to be equivalent to 75% of global production of cattle in 2010. In Uganda, livestock production stands at 12.8 million cattle, 14.0 million goats and 3.8 sheep. In 2000 and 2001 alone 27,992 tons of raw hides and skins were exported worth US \$ 54.4 million (Temsch & Merchich, 2002; UBOS 2011). Footwear industry alone: a subsector of leather is employing over 1600 and it is not producing to its full capacity.

However, the huge resource potential of cattle populations of the country are constrained and threatened by compound effect of various defects of pre-, peri- and post-slaughter origins (Leach, 2002; Okuni *et al.*, 2011). Peri-slaughter defects of flay cuts and bruises caused by unskilled flayers, use of inappropriate flaying tools, and inhumane slaughter are among these threats resulting in serious economic losses to the tanning industry and the country as a whole (Yacob, 2013).

In Uganda, 80% of the hides are rejected based on quality grounds but mostly due to poor flaying. The Uganda Leather and Allied Industries Association (ULAIA) in 2000/2001 reported that between 50% and 80% of Uganda cattle hides were rejected because of poor flaying and putrefaction. ULAIA also estimated that losses due to flay damages in Uganda varies between 60-80% in raw hides (King, 2002).

References

- Abadi, M., (2000).** Africa economies, national workshop, from 11 Sep. to 5 Oct. 1995, Addis Ababa, Ethiopia.
- Ayale, S., Assegid, W., Jabbar, M.A., Ahmed, M.M and Belachew, (2003).** A Review of Structure, Performance and Development Initiatives, Working Paper No. 52, Addis Ababa, Ethiopia, pp: 1-14.
- Balungi, F., (2010).** Using GIS to create an agro climate zone map for Soroti district. Makerere University Uganda, Department of survey faculty of surveying.
- Bayou, K., 2005.** Pre-slaughter defects of hides/skins and intervention options in East Africa: Harnessing the leather industry to benefit the poor. In: Proceedings of the Regional Workshop, April 18-20, 71-82 pp, Addis Ababa, Ethiopia.
- Bayvel, D. A. C., (2009).** Animal welfare in New Zealand: the Animal welfare Act 1999 and operational research p8-12. 4th edition ISBN 978-0-478-35116-3(print) and ISBN 978-0-478-35117-0 (online) Wellington 6140, New Zealand.
- Berhann, W., H. Negussie, S. Alemu and H. Mazengia, (2011).** Assessment on major factors that cause hide/skin rejection at Modjo export tannery, Ethiopia. Trop. Anim. Health Pro., 43(5): 989-993.
- Berhe, A. N., (2009)** Assessment of hides and skins marketing in Tigray Region: The case of AtsbiWembertaWereda, Eastern Tigray. Addis Ababa University School of Graduate studies.
- Conference on Financing forDevelopment, (March, 2002)** Summary report on financing development goals; an analysis of Tanzania, Cameroon, Malawi, Uganda and Philippines
- Dijkstra, T., (2001).** Export Diversification in Uganda: Developments in Non-Traditional Agricultural exports. ASC Working Paper 47/2001. Africa studies centre P.O Box 9585, 2300 RB Leiden, The Netherlands.

- Directorate of Animal Resources, (2005), "Animal Health Strategy, 2005/06-2007/08".**
Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Entebbe, Uganda.
- Egeru, A., and Majaliwa, M.G.J., (2009),** Land use and cover change trend in Eastern Uganda, *Journal of Applied Sciences and Environmental management*, Volume 13(4) 77-79, Institute of Environment and Natural Resources, Makerere University. JASEM ISSN: 1119-8362.
- Ekou, J. and Okello, S (2012),** Management of veterinary drugs and chemicals in retail drug shops in Soroti Municipality, Eastern Uganda. *Africa Journal of Animal and Biomedical Sciences* 7(1), 2012 ISSN: 1819-4214.
- Ekou, J., (2013),** Eradicating extreme poverty among the rural poor in Uganda through poultry and cattle improvement programmes, *Journal of Development and Agricultural Economics*, Vol. 5(11), pp.444-449, ISSN 2006-9774@2013 Academic Journals.
- FAO, (2013).** Guidelines for the humane handling, transport and slaughter of animals, animal production and health. Rome.
- FAO., (1998).** Development of the hides, skins and leather sector in Africa, Sixth Session, Cape Town, South Africa, Rome.
- Jabbar, M. A., Kiruthu, S., Gebremedhin, B., and Ehui, S., (2002).** Essential Actions to meet quality requirement of hides, skins and semi-processed leather from Africa, A report prepared for the common, the Netherlands.
- Kagonyu, A., E. Ngari and M. Lengarite (2010).** Factors affecting marketing of hides and skins of pastoral, 12th KARI Scientific Conference Proceedings.
- Kalunda, P.K., (2008).**The skins, hides and leather sector. The Global Value Chain, Kenya
- Kolb, E. ed (1984).**Fisiologiaveterinária. 4 ed. Rio de Janeiro; Ed. Guanabara Koogan, p612
- Koloka, O., and Moreki, J.C., (2010).** Performance of hides and skins subsector in Botswana: A critical review. *Livestock Research for Rural Development* 22 (5).

- Leach I., (2002).** 'Marketing Requirements of Importers of African Hides' (CFC) presented at the Expert Group Meeting on Trade Development of the Leather Industry in Africa, October 7-9, in 'Meet in Africa 2002', Tunis, October 6-13, 2002.
- Leach, I., and Trevor, W.R., (2009).** Higher value addition through hides and skins, Diversification booklet. Rural Infrastructure and Agro-industrial Division, Food and Agriculture Organization of United Nation Rome.
- Leach, I.B., and Ijaz H.S., (1993).** Improvement of hides, skins and animal by-products. Proceeding of the butchery by-products improvement seminar, College of Veterinary science, Lahore, 2-3 October.
- Mahmud, A., (2000).** Development potential and constraints of hides and skins marketing in Ethiopia, Proceedings of a conference held at Debub University, Awassa, Ethiopia from 10 to 12, 2000. E (Kika) *del*Garza Institute for Animal Research, Langston University.
- Mbabazi, M.C., and Mahmud A., (2012).** Analysis of incentives and disincentives for beef in Uganda. Technical notes series, MAFAP, FAO, Rome. <http://www.fao.org/mafap>.
- Mbogo, E., and Malala, E., (2007).** Hides and skins manual for the arid and semi-arid lands of Kenya. Ministry of Livestock and Fisheries Development, ASAL Based Livestock and Rural livelihoods Support Project, Nairobi, Kenya.
- Musiime, S., BlomJaap, Kasirye, F., MacOpiyo, L., Diboma, M., Gea, B., and Janszen, A.,(2012).** Identification of livestock investment opportunities in Uganda, Final report of project 12at-5813, Agriterra P.O. Box 158 6800 AD Arnhem Willemsplein 42, The Netherland www.agriterra.org.
- Ocaido, M., Muwazi, R.T., and Opuda-Asibo, J., (2009).** Financial analysis of livestock production systems around Lake Mburo National Park, in South Western Uganda, *Livestock Research for Rural Development* 21 (5).
- Ocaido, M., Otim C.P., Erume, J., Okuna, N.M., Ssekitto, C., Wafula, R.Z.O., Walubengo, J., and Monrad, J., (2005).** Socio-economic and livestock disease survey of

agropastoral communities in Serere County, Soroti District, Uganda. *Livestock Research for Rural development* 17 (8).

Rafik, A.B.B., (2002). A blueprint for the Africa leather industry: A development, investment and trade guide for the Leather Industry in Africa (UNIDO). Vienna International Centre A-1400 Vienna.

Ratnakar, A., Navin, D., and Manisha, P., (2008). Ensuring Development supportive Accession of Least-developed Countries to the WTO, International Institute for Sustainable Development 161 Portage Avenue East, 6th Floor Winnipeg, Manitoba Canada R3B 0Y4 Web site: <http://www.iisd.org>.

Roça, R.O., (2002), Humane slaughter of Bovine. Embrapa First Virtual Global Conference on Organic Beef Cattle Production September, 02 to October, 15 — — Via Internet. Accessed on 21th April, 2014 at <http://www.cpap.embrapa/pdf>

Ruhangawebare, K .G., (2010). Factors affecting the level of commercialization among cattle keepers in the pastoral areas of Uganda. Makerere University, the school of undergraduate studies. Slaughter fact-sheet Feb. 2010 Compassion in farming.

Temsch, R., and Merchich, M., (2002). UNIDO programs funded by Austria to strengthen the leather sector in Uganda US/UGA/92/200. US/UGA/96/300 Joint In-Depth Evaluation Mission Report.

Thrusfield, M.V., (2005). *Veterinary epidemiology*. 3rd ed. Blackwell Sciences, Oxford, pp: 234-238.

Uganda Bureau of Statistics (UBOS), (2011). Demographic and Health Survey: Preliminary Report. Plot 9 Collville Street, P.O Box 7186, Kampala, Uganda; Email: ubos@ubos.org; Internet: <http://www.ubos.org>.

Uganda Bureau of Statistics (UBOS). 2009b. National Livestock Census Report 2008

Uganda Business Development Profile, prepared by the Royal Danish Embassy. (2011). plot 3 Lumumba Avenue P.O. Box 11243, Kampala Uganda. www.ambkampala.um.dk.

- Uganda National Bureau of Standards, (2000).** Code of practice for grading and preservation of raw hides and skins, pp.1
- UNDP, (2008).** From the Drylands to the Market: Policy Opportunities and Challenges in Dryland Areas of East Africa, Drylands Development Centre United Nations Avenue, Gigiri P.O. Box 30552 Nairobi, 00100, Kenya. www.undp.org/drylands.
- UNIDO, (2007).** Integrated Industrial Policy for Sustainable Industrial Development and Competitiveness. Part I. Industrial development: analyzing competitiveness, growth potentials and investment opportunities in consultation with Ministry of Finance, Planning and Economic Development, UMA, Uganda National Chamber of Commerce and Industry Private Sector Foundation Uganda, Ministry of Tourism, Trade and Industry UNIDO Vienna, 2007.
- Wang, W., Wang, J., and Lin, J., (2013).** QMS Critical Elements EA05 Leather and products.accessed on 3rd Jan 2014 at http://www.certinnt.com/docs/CE_QMS_EA05_r1.0.pdf.
- Warriss, P.D., (1977).** The residual blood content of meat. A review. Journal of Science Food Agriculture, London, Volume 28, p457-462.
- Wayua, F.O., and Kaagunyu, A., (2008).** Empowering pastoralist's through local options for livelihood diversification: hides and skins value addition and marketing in Northern Kenya. Paper presented at the Animal Production Society of Kenya 9APSK0 Annual Symposium.
- Wayua, F.O., and Kaagunyu, A., (2012).** Constraints and opportunities in the hides and skins value chain in pastoral areas of northern Kenya. Livestock Research for Rural Development, Volume 24 (8).

