ASSESMENT OF CAUSES OF LOW ADOPTION OF ANIMAL TRACTION TECHNOLOGY AS AN ALTERNATIVE SOURCE OF FARM POWER IN MASAFU SUB-COUNTY, BUSIA DISTRICT

BY

NATOCHO IRENE

REG. NO: BU/UP/2012/176

Email-natochoirene2016@gmail.com

A DISSERTATION SUBMITTED TO THE FACULTY OF AGRICULTURE AND ANIMAL SCIENCES IN PARTIAL FULFILLMENT OF REQUREMENTS FOR THE AWARD OF THE DEGREE OF ANIMAL PRODUCTION AND MANAGEMENT OF BUSITEMA UNIVERSITY

JUNE, 2016

DECLARATION

I, Natocho Irene, do hereby declare that this dissertation is my own work and has not been submitted to any institution for any academic award.

Signature ..... Date 9/07/2016

APPROVAL

This dissertation has been submitted for examination with the approval of my supervisor

Mr. KATENYA GEORGE

BAPTM-(MUK)

Teaching Assistant

Department of Animal Production and Management

Faculty of Agriculture and Animal Sciences

Busitema University Arapai campus

Signature..... Date 10/07/2016

DEDICATION

This dissertation is dedicated to the family of Mr. and Mrs. Mangeni George for their support towards my education. And my beloved friends Matovu Jacob, Masayi Peter for caring and being there for me during the course of the study.

ACKNOWLEDGEMENTS

Many people have contributed in various ways to the completion of this dissertation. Foremost, I wish to express my sincere gratitude to my supervisor, Mr.Katenya George for his encouragement and willingness to offer time for discussing and critiquing my work. I also thank the members of staff of the Department of Animal Production and management for their cooperation and technical guidance during this course. Finally, I acknowledge the outstanding role of my family members and friends. Your patience, love, financial support and prayers for the three years are invaluable. Lastly, I thank the almighty God, for the gift of life and provision throughout my academic journey.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ATNESA	Animal Traction Network for Eastern and Southern Africa
DAP	Draught Animal Power
FAO:	Food and Agriculture Organization
IFAD	International Fund for Agricultural Development
NAADS	National Agricultural Advisory Services
SAARI	Serere Agricultural and Animal Production Research Institute
SAIMMCO	Soroti agricultural Implements and Machinery Manufacturing Company
UBOS	Uganda Bureau of Statistics

ABSTRACT

This study was conducted from March to April to assess the causes of low adoption of draught animal traction technology as an alternative source of farm power in Masafu subcounty, Busia district Eastern Uganda. One hundred households were randomly sampled from four parishes. The data was collected using questionnaire and observation methods and data was based on demographic characteristics, factors causing low adoption of draught animal traction technology, animals used for traction, and implements used. Research findings indicated that the causes of low adoption of DAP included the following; Ignorance about the technology (22%), lack of appropriate equipment 8%. 11% expensive nature of the implements. 18% lack of animals. 27% high hire services of equipments and animals limited land 5%. The type of animals used for Draught animal execution in Masafu Sub County was only cattle whereby 72% of the respondents used only male cattle and 28% of the respondents used both male and female cattle and the breed was the Zebu breed of cattle whereas the implements used were, the oxplough for ploughing and the harnessing system was double shoulder yoke, rope and chain. Findings showed that 94% of the respondents were aware of the use of work animals specifically in ploughing and only 4% were aware about the use of animal traction technology in other agricultural activities such as weeding, planting, transportation and only 2% were not aware about the use of animal traction technology. Further research should be carried out on the possibility of farmers using other animal species for traction apart from cattle. Therefore, the government and NGOs should provide loans and subsidies, for animal traction implements, also implements and their spare parts should be made locally available for easy accessibility by the farmers, sensitization of farmers about animal DAP through extension agent.

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND

Munzinger, (1982) defined animal power as implements and machines utilizing animal muscles as the main power source with a view to reducing the drudgery of farm work. Animal traction is generally understood to also include transport as well as the pulling work of animal (Chisango, 2008; Starkey, (1978).

Some 400 million beasts of burden throughout the world still work for man today. They contribute more than half the energy the third world uses for agriculture and provide some developing countries, especially the semi-arid and highland zones, with as much as 90% of their agricultural power (FAO, 1990). Domestic work animals exist in all regions of the world (FAO, 1990). Animals assist in eliminating poverty, reducing drudgery and creation of wealth. Animal traction is particularly important for food security in smallholder farming systems also using animals for soil tillage allows people to prepare more land than human labor (Starkey, 2010).

Although draught animal power has been superseded by tractors on many of large commercial farms in Africa; it remains a relevant farm technology in small-scale agriculture, mainly for economic and agro-ecological reasons (Mersh, 2012),. Purchase and maintenance costs of tractors are high in many of the Sub-Saharan African countries whereas animal traction is cheaper, locally available and easy to maintain when compared with motorized forms of power. Some cultivable areas, particularly on hillsides and in steep valleys are inaccessible to tractors and can only be worked by animal or man power.

In Uganda, animal traction technology was introduced in 1909 in the then Bukedi (Tororo) district, (Akou, 1972). A year later a farmer training school in ox cultivation was opened in Kumi and in 1920 the current Serere Agricultural and Animal Production Research Institute [SAARI] was established as a centre for research, testing, demonstration and training of farmers in ox cultivation techniques. Through the extension efforts of the Ministry of Agriculture as well as of the relevant institutions including NGO's, the use of work animals rapidly spread throughout the Eastern and North-eastern parts of the country where ecological and cultural conditions favored its development. In these areas the technology created remarkable impact in increasing the acreage under cultivation (ATNESA, 2002).

REFERENCES

Abubakar M. S., & D. Ahmad. (2010) *Utilization of and Constraints on Animal Traction in Jigawa State, Nigeria*: Australian Journal of Basic and Applied Sciences, 4(6): 11521156, 2010

Adebiyi G, D. (1999). The potential for animal traction in south-western Nigeria: In: Starkey P & Kaumbutho P (1999) *Meeting the challenges of animal traction.* A resource book of the Animal Traction Network for Eastern and Southern Africa, (ATNESA); Harare, Zimbabwe; Intermediate Technology Publications, London 326p

Adu I F, Omotayo A M, Aina A B J, Iposu S O (2000) Animal traction technology in Ogun state: Nigeria's potential and constraints. Nigerian Journal of animal production. Vol. 27 pp 95-98 ISSN 0331-2064. Nigeria.

Adunni S (2008) Animal Traction: An underused low external input technology among farming communities in Kaduna state, Nigeria. Tropicultura, 26, 1, 48-52, Nigeria.

Bangura J V (1993), appropriate animal drawn equipments for Sierra Leone. The International Livestock Centre for Africa (ILCA) proceedings of the fourth workshop of West Africa Animal Network held in Kano Nigeria. ISSBN 92- 9053-276-9, Sierra Leone.

Barwell I & Ayrem (1982) The harnessing of draught animals. Intermediate technology publication. Chaundhury M.S.U and H .L

BolajiA (1989) Socio economic factors associated with Draught Animal utilization in Nigeria. Draught Animal power research and development, Nigeria.

Bossio D. (2009) livestock and water; understanding the context based on the compressive Assessment of water management in Agriculture .the range land journal 31(2) p179-186

Chinembiri F M, (1993) Communal area livestock management systems in Zimbabwe. FAO

Dijkman J &Campbell L (1990) drought animals on oil palm plantations in Colombia. DROUGHT animal news no 13, centre for veterinary medicine, university of Edinburgh p.31 Empowering farmers with rural traction; proceedings of workshop for ATNESA 344P. ISBN O-907146-104. South Africa.

Ellis-Jones J & O-Neill D (2000) the contribution of draught power to sustainable livelihoods in Sub-Saharan A example from Zimbabwe. Paper presented to Animal Traction, Health and technology, the role of draught and pack animals in the 21st century. World Association for Transport Animal Welfare and studies, Hawks hear campus, U.K.

FAO, (2007) Draught animal power resources. Italy, Rome.

Goe M R (1993) Overcoming constraints to animal traction through collaborative research network. The International Livestock Centre for Africa (ILCA). ISBN 92-9053-276-9. Ethiopia.

Harif M &Sarker R.I (1990) Drought power requirement and performance of animal driven sugarcane crushers' .Drought Animal news NO.13.p 10

Henriksson, M., & Lindholm, E. L. (2000). *The use and role of animal draught power in Cuban Agriculture: a field study in Havana Province*. Swedish University of Agricultural Sciences.Intensification: A farmer Discovery process going to scale Integrated crop management, vol 7 Burkina Faso.

Jahnke H.E,Tacher G,Keil P &Rojat D(1988) livestock production in tropical Africa ,with specify reference to the Tsetse fly–affected zone .in live stock production in tsetse fly affected areas of Africa, pp 3-21 Nairobi

Jibril A & Gwarzo M A (1993) , an extension delivery system for animal traction technology in developing countries. The International Livestock Centre for Africa (ILCA).ISBN 92-9053-276-9. Ethiopia.

Kabbiri R, (2009) Economic analysis of draught animal power in Tanzania. V D M Verlag Dr Muller Aktiengesellchaft & Co.KG.ISSN:978-3-639-21359-1.Tanzania.

Kassam A, Kueneman E, Kebe B, Ouegraogo S, &Youdeowei (2009) Enhancing crop livestock systems in conservation agriculture for sustainable production.

Kepner R.A., Bainer R & Berger E.L. (1990) Principles of Farm Machinery; 3rd Ed, VAI Pub., Inc. West Port Connecticuit, USA: PP. 122-163.

Kinsey B.H, (1984) Equipment innovations in cotton –millet farming in Uganda pp 209-252 in: Ahmed I & Kinsey B H Farming equipment innovations in EASTERN and Central Southern Africa. Gower Publishing Aldershot, ISBN: 0-566-00697.UK

Kruit F (1993), Effects of introducing animal drawn-implements and equipments within the Sahelian farming system in Niger. The International Livestock Centre for Africa (ILCA) proceedings of the fourth workshop of West Africa Animal Network held in Kano Nigeria. ISSBN 92-9053-276-9, Nigeria.

Kwiligwa E , J Rock , M Massunga & M Sizya (1999) Farmers' informal knowledge in animal traction: case studies from the Southern Highlands of Tanzania; In: Starkey P & Kaumbutho P (1999) *Meeting the challenges of animal traction.* A resource book of the Animal Traction Network for Eastern and Southern Africa, (ATNESA); Harare, Zimbabwe; Intermediate Technology Publications, London. 326p

Kwiligwa E, Mbepera A J and Rock J, (1995). *Ethno veterinary medicines and improved traditional ox-carts in Ileje, Tanzania*, Proceedings of a workshop organized by Ileje FCPP 15–19 March 1994. IFCPP (IlejeFood Crop Production Project), Itumba, Ileje, Mbeya, Tanzania.

Kwiligwa, E. M., Shetto, R. M., Rees, D. J., & Ley, G. J. (1994). Weed management systems based on animal-drawn cultivators for maize production in the Southern Highlands of Tanzania. *Soil and Tillage Research*, *29*(4), 383-395.

Makwanda A, Shemdoe M.S &Msagusa M (2000) Experience in the promotion of animal powered weeding amongst small holder farmers in Tanga region Tanzania

Mamabolo M J & Webb E.C (2005), Goat production survey- fundamental suspects to model goat production systems in southern Africa. Case study –agricultural commission

MasekeR, Mgabo K, Masune M (2012), Utilization of Draught Animals for improving agriculture production in Dodoma region JASS 2(8) ISSN 2249-5894. United republic of Tanzanian

Masikati P (2004) improving the water productivity of integrated crop-livestock systems in the semi-arid topics of Zimbabwe: An ex-ante analysis using simulating modelling.

Mersha C, Tewodros F., Tadegegne & Malede Berhan (2012) *Strategies for Improvement of Draft Animal Power Supply for Cultivation in Ethiopia: A Review*; European Journal of Biological Sciences 4 (3): 96-104, 2012, ISSN 2079-2085

Mgabo, M. R., & Masune, K. M. (2012). Utilization of draught animals for improving agriculture production in Dodoma region. A case of Msisi ward. *International Journal of Physical and Social Sciences*, *2*(8), 179-198.

Mgabo, M. R., & Masune, K. M. (2012). Utilization of draught animals for improving agriculture production in Dodoma region. A case of Msisi ward. *International Journal of Physical and Social Sciences*, *2*(8), 179-198.

Mrema G C &Mrema M J I (1993) Draught technology and agricultural mechanization in Africa: Its potential role and constraints. 2; 12-33.

Myaga G.J. M., Simalenga T. E & Hatibu N. (1994). Care and Management of work oxen in Tanzania: Initial survey results. In: Starkey, P, Mwenya, E and Stares, J (Eds).

Improving animal traction technology;. Proceedings of Animal Traction Network for Eastern and Southern Africa:. Workshop held on 18- 23 in January 1992, Lusaka, Zambia. CTA, Wageningen, the Netherlands. ISBN 92- 9081-127-7 496.

Oguejiofo O I (1993) appropriate animal traction technology for rural women in Nigeria. The International Livestock Centre for Africa (ILCA) proceedings of the fourth workshop of West Africa Animal Network held in Kano Nigeria. ISSBN 92-9053-276-9, Nigeria.

Ogwang, V (1999) A note on improving animal-drawn transport in Uganda In: Starkey P & Kaumbutho P (1999) *Meeting the challenges of animal traction.* A resource book of the Animal Traction Network for Eastern and Southern Africa, (ATNESA); Harare, Zimbabwe; Intermediate Technology Publications, London. 326p

Oladeji J.O, Ogunleye K.Y & Aderinto. (2012)Attitude of farmers towards the use of animal traction technology in Savannah Zone OF Oyo State .Globle journals Inc.ISSN 2249-4626.Vol12 (8) Nigeria

Plasse, D., Koger, M., & Warnick, A. C. (1968). Reproductive Behavior of Females in a Subtropical Environment. III. Calving Intervals, Intervals from First Exposure to Conception and Intervals from Parturition to Conception. *Journal of animal science*, *27*(1), 105-112.

Rahji M.A.Y. (1999) Factors influencing the level and intensity of animal traction technology adoption in bauchi state, Centre Point journal, 9(1):30-41

Schwartz, H.J. & M. Doli, (1992) the One-Humped Camel in Eastern Africa; A Pictorial Guide to Disease, Health Care and Management, pp: 62-199.

Srivastava N S L (1989) Draught animals in rural development: proceedings of an international research symposium, Cipanas, Indonesia, pp 53-60; 1-86320-003-7 Indonesia.

Starkey P (1997) Moving forward with animal power for transport: how people, government and welfare organizations can make impact ,example from Africa and Madagascar, North Court Avenue, Reading

Starkey P. (1989). Harnessing and Implements for Animal Traction.; An animal traction resource book for Africa; GATE publication GTZ, Germany.

UBOS, (2009) National Livestock cencus report, Uganda Bureau of Statistics

Umaru, M. A., Dalhatu, M., Bello, A., & Nawawi, H. (2013). Animal traction as source of farm power in rural areas of Sokoto state, Nigeria. *Health, Safety and Environment (HSE)*, *1*(1), 23-28.

Wella E & Roeleveld K. (2000) Participatory research on oxen-drawn weeders in lower zone, Tanzania,