

Commercialization of Livestock Agriculture in Africa: Challenges and Opportunities

The 5th All Africa Conference on Animal Agriculture and the 18th
Annual Meeting of the Ethiopian Society of Animal Production
(ESAP)

Book of Abstracts

Editors: Aynalem Haile and Feven Tadesse

Program committee: Dr Aynalem Haile, Dr Getachew Gebru, Ato Alemayehu Mengistu,
Dr Aduga Tolera, Dr Solomon Desta and Dr Tadelle Dessie

PREFACE

Africa is yet to utilize its wealth of animal resources for the benefit of its people. Annual exports of live animals and meat has to take off in a significant way to meet the potentially lucrative opportunities from rising incomes and increased livestock products in diets in parts of Asia, the Middle East, and within Africa itself.

For too long, the potential of the livestock sector in Africa has not received the attention it deserves. Policies and other institutions promoting livestock development have been weak or absent in most African countries. Commercialization has not been a focus and livestock production has remained predominantly subsistence-oriented. Market-oriented animal production systems are more likely to respond to demand and price signals, thus resulting into allocation of scarce resources more efficiently. Commercial orientation is also likely to have a more sustainable effect in increasing incomes, improving food security and judicious use of the natural resource base. Hence, it is crucial for Africa to develop policies, strategies and programs that address constraints to the commercialization of its animal agriculture. These interventions should consider the entire value chain, including input delivery, production, processing, marketing and distribution.

In this connection, a number of questions need to be addressed. For example, how can Africa tap into the growing demand for livestock and livestock products while maintaining its resource base? How will growth in the livestock sector affect poor livestock producers, or poor consumers (urban and rural)? What policies and other institutions are needed to strengthen markets in the livestock sector, and how can we ensure the development of pro-poor livestock policies and institutional arrangements?

This Conference addresses key issues around these questions and has identified 'Commercialization of livestock agriculture in Africa - Challenges and opportunities' as its theme. The overall objective of the conference is to provide an opportunity for African scientists and the broader stakeholder groups of the livestock sector to discuss challenges and opportunities in commercialization of livestock agriculture in Africa.

The conference is organized by the All Africa Society for Animal production (AASAP) in association with the Ethiopian Society of Animal Production (ESAP). Special thanks are due to the Government of Ethiopia for hosting the conference. We would like to express our gratitude to the sponsors of the conference. We would also like to acknowledge presenters and authors of papers and posters, our colleagues on the organizing committee, institutions, groups and individuals who have assisted in one way or another, as well the conference attendees.

Preface

We hope that this book of abstract will provide an insight into what has been presented and discussed during the conference and will serve as a guide until the main proceedings of the conference are published.

We wish all participants a most experience.

Ed Rege, President, All Africa Society for Animal Production

Tadelle Dessie, President, Ethiopian Society of Animal Production

October, 2010

Contents

PREFACE.....	iii
KEYNOTE ADDRESS	
THE AGENDA FOR PUBLIC RESEARCH IN ANIMAL AGRICULTURE IN AFRICA: OLD PROBLEMS, NEW PARADIGMS.....	1
<i>Carlos Sere</i>	
OPPORTUNITIES TO IMPROVE THE LIVES OF POOR FARMERS THROUGH LIVESTOCK INTERVENTIONS IN AFRICA: PERSPECTIVES OF THE BILL & MELINDA GATES FOUNDATION.....	3
<i>Gress Bevier & Kristin Grote</i>	
PLENARY	
LIVESTOCK MARKETING IN SUB-SAHARAN AFRICA.....	7
<i>Berhanu Gebremedhin</i>	
LAND, LIVESTOCK AND WATER MANAGEMENT FOR INCREASED INCOME, ENHANCED RESILIENCE AND REDUCED ENVIRONMENTAL DEGRADATION	8
<i>Tilahun Amede</i>	
HARNESSING LIVESTOCK GENETIC IMPROVEMENT TO MEET DEVELOPMENT OBJECTIVES.....	9
<i>J.P. Gibson</i>	
MANAGING ANIMAL DISEASES FOR AFRICAN PROSPERITY	10
<i>Mark M. Rweyemamu</i>	
DUAL-PURPOSE CROP DEVELOPMENTS, FODDER TRADING AND PROCESSING OPTIONS FOR IMPROVING FEED VALUE CHAINS	12
<i>M. Blümmel, S. A. Tarawali, N. Teufel and I. A. Wright</i>	
MAKING LIVESTOCK SERVICES ACCESSIBLE TO THE POOR: MOVING TOWARDS A NEW VISION FOR LIVESTOCK SERVICE DELIVERY	13
<i>Christie Peacock</i>	
LIVESTOCK TRADE AND MARKETS — Oral Presentations	
COMMERCIALIZATION OF BEEF PRODUCTION AFTER THE FAST TRACK LAND REFORM PROGRAM IN ZIMBABWE: A CASE STUDY OF NEW SETTLEMENTS IN MANGWE DISTRICT.....	17
<i>Carroll Themba Khombe</i>	
INCREASING WOMEN’S PARTICIPATION AND BENEFITS FROM LIVESTOCK AND LIVESTOCK PRODUCT MARKETS.....	18
<i>Njuki, J. J. Kariuki, E. Waithanji, S. Mburu, J. Lyimo-Macha</i>	
ANALYSIS OF HOUSEHOLD SPECIFIC TRANSACTION COST FACTORS IN LIVESTOCK OUTPUT MARKETS IN ETHIOPIA	19
<i>Moti Jaleta, Berhanu Gebremedhin, Samson Jemaneh and Aklilu Bogale</i>	
ANALYSIS OF LIVESTOCK EXPORT BENEFITS BY PASTORAL WEALTH GROUPS IN EAST AFRICAN COUNTRIES.....	20
<i>Yacob Aklilu and Andy Catley</i>	

PROBLEMS AFFECTING PRODUCTION AND MARKETING OF SMALL STOCK IN BOTSWANA.....	21
<i>Tassman Jackson Cebani</i>	
SHEEP AND GOAT MARKETING AND CONSUMPTION IN RELATION TO RELIGIOUS FESTIVITIES IN SHIFTING AND PERMANENT FARMING SYSTEMS IN WESTERN ETHIOPIA.....	22
<i>T. Yilma, H. Aklilu, T. Yayneshet</i>	
FACTORS INFLUENCING BEEF CATTLE SALES IN THE PASTORAL COMMUNITIES OF WESTERN AND CENTRAL UGANDA.....	23
<i>G. Ruhangawebare, D. Mpairwe, B. Bashaasha, D. Mutetikka, and J. Madsen</i>	
ECONOMIC EFFICIENCY AND RETURNS TO SCALE IN DAIRY PRODUCTION: A CASE STUDY OF SELECTED SMALLHOLDER FARMS IN EAST AFRICA.....	24
<i>Ayele Gelan and Beatrice Muriithi</i>	
REVEALED PREFERENCE BASED VALUATION OF INDIGENOUS SHEEP TRAITS.....	25
Zelalem Gutua, Girma T. Kassie, Derek Baker, and A. Haile	
LIVESTOCK TRADE AND MARKETS — Posters	
ANALYSIS OF THE SYSTEM OF COMMERCIALISATION OF LOCAL BREED CHICKEN IN THE DAKAR.....	26
<i>Gabriel Teno</i>	
CATTLE MARKETING IN HIGH AND LOW MARKET ACCESS AREAS IN THE BORENA PASTORAL REGION OF ETHIOPIA.....	27
<i>O. Abebe and H. Aklilu</i>	
CHARACTERIZATION OF SMALLHOLDER POULTRY PRODUCTION AND MARKETING SYSTEM OF DALE, WONSHO AND LOKA ABAYA WEREDAS OF SOUTHERN ETHIOPIA.....	28
<i>Mekonnen G/Egziabher, Aberra Melesse and Tadelle Dessie</i>	
COMMERCIALIZATION OF MEAT TRADE: POTENTIAL ROLE OF PRIVATE-PUBLIC SECTOR IN QUALITY ASSURANCE IN MEAT TRADE IN REGIONS OF SOMALIA.....	29
<i>Massimo Castiello, Munyua Solomon, Jotham Musiime, Wamalwa Kinyanjui, Innocente Sergio, George Matete</i>	
HANDLING, PRESERVATION AND MARKETING OF COW AND GOAT MILK IN KOMBOLCHA WOREDA, EASTERN ETHIOPIA.....	31
<i>Helen Nigussie and Eyassu Seifu</i>	
LIVESTOCK MARKETING IN ETHIOPIA: A REVIEW OF STRUCTURE, CONDUCT AND PERFORMANCE.....	32
<i>Rehima Mussema</i>	
LIVESTOCK TRADE AND MARKETS FOR POVERTY ALLEVIATION: POTENTIAL OPPORTUNITIES AND CHALLENGES IN EXPORT TRADE IN SOMALIA.....	33
<i>Massimo C, Wamalwa K, Sergio I, Musiime J, Munyua S, Abdulkhadir F and Matete G</i>	
MARKET ACCESS FOR SMALLHOLDER DAIRY FARMERS THROUGH PRIVATE PUBLIC PARTNERSHIPS: RECENT EXPERIENCES FROM WESTERN KENYA.....	34
Michael B. Kibiego and Odhiambo M.O	
SHEEP AND GOAT PRODUCTION AND MARKETING IN RELATION TO AGRO-ECOLOGICAL ZONES IN TIGRAY, ETHIOPIA.....	35
<i>E. Hassen, H. Aklilu, G.Haileselassie</i>	

THE DYNAMICS OF LOCAL MARKETS AND CATTLE OFF-TAKE DECISION AMONG SMALL-HOLDERS PRODUCERS: A LITERATURE REVIEW	36
<i>D M Motiang, L E Matjuda¹ and N B Nengovhela</i>	
PASTORALISM/ LIVESTOCK AND NATURAL RESOURCE MANAGEMENT — Oral Presentations	
THE PERCEIVED IMPACT OF CLIMATE CHANGE ON SMALLHOLDER DAIRY PRODUCTION IN NORTHERN MALAWI	39
<i>Victor Kasulo, Susan Chikagwa-Malunga, Mizeck G.G. Chagunda, David J. Roberts</i>	
AN ASSESSMENT OF ATTITUDE TOWARDS SELLING LIVESTOCK AMONG THE PASTORALISTS IN NGORONGORO DISTRICT OF TANZANIA.....	40
<i>M.E. Haule, G.H. Laswai D.L. Mwaseba and A.E. Kimambo</i>	
PASTORAL–FARMERS CONFLICTS OVER NATURAL RESOURCES IN THE LAKE RUKWA BASIN: CHALLENGES FACING POLICY MAKERS IN TANZANIA.....	41
<i>Pius Mwambene, Mary Mashingo, Ignatius Mwakalile, and Udo H'ggel</i>	
BETWEEN EMBEDMENT AND DEPENDENCY: ECONOMIES OF PASTORAL TUAREG AND REGIONAL MARKET-CHAINS (NIGER).....	42
<i>Tilman Musch</i>	
AN EASY METHOD TO MEASURE THE METHANE PRODUCTION OF RUMINANTS	43
<i>J. Madsen, T. Hvelplund, and M. R. Weisbjerg</i>	
REDESIGN AND MANAGEMENT OF NATIVE GRASSLAND AGROECOSYSTEM AND ITS IMPACT IN SOIL QUALITY AND HEALTH.....	44
<i>Silvino Vargas Hernández, Digna Ibis Gutiérrez Aguiar, Pedro Cairo Cairo</i>	
IMPLICATIONS OF PASTORALISTS' DIVERSE WEALTH PROFILES FOR LIVESTOCK TRADE AND MARKETS IN TANZANIA.....	45
<i>T.D. Baird and G. Saitoti</i>	
ECOLOGICAL NICHE SEPARATION OF <i>DICHAPETALUM CYMOSUM</i> (GIFBLAAR) ON SOUTH AFRICAN RANGELAND COMMUNITIES	46
<i>Gilbert Hosia Pule, Wayne Truter, Luthando Dziba</i>	
PASTORALISM/ LIVESTOCK AND NATURAL RESOURCE MANAGEMENT — Posters	
QUANTIFYING HEIFER LOSSES IN PASTORAL AND PERI-URBAN CAMEL HERDS OF NORTHERN KENYA....	47
<i>G.S. Mumina, G. Owuor and B.O. Bebe</i>	
ANIMAL GENETICS AND POVERTY ALLEVIATION IN AFRICA — Oral Presentations	
EXPERIENCES WITH BREEDING STRUCTURES FOR GENETIC IMPROVEMENT OF SMALL RUMINANTS	51
<i>J.P. Mueller</i>	
INFRASTRUCTURE FOR SUSTAINABLE UTILIZATION OF ANIMAL GENETIC RESOURCES IN SOUTHERN AND EASTERN AFRICA	52
<i>E. Zonabend, A.M. Okeyo, J.M.K. Ojango, S. Moyo, J. Philipsson</i>	
DESIGNING AND IMPLEMENTATION OF COMMUNITY-BASED BREEDING PROGRAMS FOR ADAPTED LOCAL SHEEP BREEDS IN ETHIOPIA	53
<i>Haile A., Duguma G. , Mirkena T. , Tibbo M., Iñiguez L., Rischkowsky B., Okeyo M., Wurzinger M., and Sölkner J.</i>	

IMPORTANT ASPECTS AND LIMITATIONS IN CONSIDERING COMMUNITY-BASED BREEDING PROGRAMS FOR LOW-INPUT SMALLHOLDER LIVESTOCK SYSTEMS	54
<i>M. Wurzinger, A. Haile, J. Sölkner and L. Itñiguez</i>	
GROWTH PARAMETERS OF INDIGENOUS CHICKEN POPULATIONS REARED INTENSIVELY IN KENYA	55
<i>K. Ngeno, B. O. Bebe and A. K. Kahi</i>	
OPTIMIZED BREEDING STRATEGIES FOR THE LOCAL SAHIWAL CATTLE IN KENYA	56
<i>R. Roessler, E. Ilatsia, A. Valle Zárate</i>	
POTENTIAL OF INDIGENOUS SMALL RUMINANTS OF ETHIOPIA FOR MARKET ORIENTED PRODUCTION.....	57
<i>Solomon Abegaz</i>	
GENETIC DIVERSITY AND POPULATION STRUCTURE OF THE INDIGENOUS SHEEP IN KENYA BASED ON MICROSATELLITE ANALYSIS	58
<i>Mukhongo M. Denis, Muigai Anne, Tapio Miika, Okeyo Mwai</i>	
CHARACTERISATION OF ZULU (NGUNI) SHEEP FOR UTILIZATION, IMPROVEMENT AND CONSERVATION	59
<i>N.W. Kunene C.C. Bezuidenhout, I. V. Nsahlai, E.A. Nesamvuni</i>	
CARCASS CHARACTERISTICS AND MEAT QUALITY OF PURE ANKOLE CATTLE AND THEIR CROSSBREDS WITH BORAN AND FRIESIANS FISHED IN A FEEDLOT.....	60
<i>K. Kamatara, D.Mpairwe, M.Christensen, D.Mutetikka, J.Madsen</i>	
ANIMAL GENETICS AND POVERTY ALLEVIATION IN AFRICA — Posters	
CALVING SPREAD FROM UNRESTRICTED BREEDING SEASON AND ITS IMPACT ON PERFORMANCE OF COMMUNAL, DEVELOPING AND COMMERCIAL BEEF CATTLE FARMING.....	61
<i>D. Nembilwi, N. B. Nengovhela, D. Motiang, N.J. Mulaudzi, A. L. Mogashoa, L. T. Raphahlelo I.</i>	
CATTLE POPULATION IN LIBYA: IMPORTED AND LOCAL THREATENED CATTLE BREEDS.....	62
<i>Akraim Fowad</i>	
COMPARATIVE EVALUATION OF TWO NIGERIAN LOCAL CHICKEN ECOTYPES AND THEIR CROSSES FOR GROWTH TRAITS	63
<i>Momoh, O.M, Nwosu, C.C and Adeyinka I.A</i>	
DEVELOPMENT OF A STANDARDIZED BODY CONDITION SCORE FOR NATIVE CATTLE IN UGANDA	64
<i>Dierenfeld E.S and Lukuyu B</i>	
EVALUATING OPTIONS FOR SECURING CAMEL BREEDING STOCK IN THE SHIFT FROM PASTORAL TO PERI-URBAN PRODUCTION SYSTEM IN NORTHERN KENYA.....	65
<i>G.S. Mumina, G. Owuor and B.O. Bebe</i>	
HERITABILITIES AND CORRELATIONS BETWEEN BODY WEIGHTS AND GROWTH CURVE PARAMETERS OF INDIGENOUS CHICKEN POPULATIONS REARED INTENSIVELY IN KENYA.....	66
<i>K. Ngeno, T. M. Magothe, T. O. Okeno, B. O. Bebe and A. K. Kahi</i>	
INCIDENCE OF UDDER ABNORMALITIES AND THEIR EFFECTS ON NUMBER OF KIDS BORN AND WEANED IN WEST AFRICAN DWARF GOAT	67
<i>M.N. Benji and S.A. Popoola</i>	

MODELLING OF LACTATION CURVES OF COWS USED IN MEDIUM AND SMALLHOLDER DAIRY SYSTEMS IN KENYA.....	68
<i>Wasike C. B., A. K. Kahi and K. J. Peters</i>	
PART-PERIOD EGG PRODUCTION AND EGG QUALITY CHARACTERISTICS OF TWO ECOTYPES OF NIGERIAN LOCAL CHICKEN AND THEIR F ₁ CROSSES	69
<i>Momoh, O.M, Ani A.O and Ugwuowo, L.C</i>	
PERFORMANCES OF MURRAH BUFFALOES UNDER TROPICAL CLIMATIC CONDITIONS OF TAMIL NADU, INDIA.....	70
<i>A.K. Thiruvenkadan and S. Panneerselvam</i>	
PRODUCTIVITY AND DESIRABLE TRAITS OF SMALL EAST AFRICAN GOATS IN SEMI-ARID AREAS OF CENTRAL TANZANIA	71
<i>Chenyambuga S.W., Komwihangilo D.M. and Jackson M.</i>	
ROBUSTNESS IN THE TAURINE SHEKO AND ITS PERSPECTIVES IN FOOD AND AGRICULTURE PRODUCTION IN ETHIOPIA	72
<i>Takele Taye</i>	
THE RELATIONSHIPS AMONG BREED, MILKING TRAITS, BODY AND UDDER MEASUREMENT IN HOT CLIMATE AREA IN YEMEN.....	73
<i>Mahfoudh. A. A. Al- Hered</i>	
USE OF PROGESTERONE LEVELS TO DEVELOP GESTATION CURVE AND DETECT REPRODUCTIVE DEFICIENCIES AMONG FRIESIAN DAIRY COWS	74
<i>Hoka.A.I, Indetie, W.D. , Kinywa, J. , Ojango, N.F.</i>	
HERITABILITIES AND GENETIC AND PHENOTYPIC CORRELATIONS FOR EGG PRODUCTION TRAITS IN HORRO CHICKEN OF ETHIOPIA.....	75
<i>Nigusie Dana, E.H. vander Waaij and J.A.M. van Arendonk</i>	
EMERGING ANIMAL HEALTH ISSUES — Oral Presentations	
EMERGING ANIMAL HEALTH ISSUES: IMPLICATIONS FOR AFRICAN LIVESTOCK KEEPERS AND PRIORITY INTERVENTIONS IN A GLOBALIZING WORLD: A EUROPEAN PERSPECTIVE.....	79
<i>Dr. J. Vanhemelrijck DVM</i>	
SURVEY OF MAJOR LIVESTOCK DISEASES IN PASTORAL AND AGRO-PASTORAL COMMUNITIES OF BORANA ZONE, SOUTHERN ETHIOPIA	81
<i>Bedane Adane, Berecha Bayissa, and Abebe Olkeba</i>	
QUALITATIVE RISK ASSESSMENTS (RELEASE AND EXPOSURE ASSESSMENTS) FOR THE RISK OF INTRODUCTION OF HIGHLY PATHOGENIC AVIAN INFLUENZA (H5N1) VIRUS INTO ETHIOPIA VIA WILD BIRDS TRADE TRANSITING IN THE COUNTRY.....	82
<i>Bewket Siraw, Hassen Chaka, Bernard Bett, Raphaëlle Métras, Solenne Costard Dirk Pfeiffer</i>	
TRYPANOSOMOSIS IN FOUR INDIGENOUS CATTLE BREEDS IN AN ETHIOPIAN FIELD STUDY.....	83
<i>J. Stein, W. Ayalew, W. Mulatu, T. Dessie, J. E. O. Rege, B. Malmfors, H. Lemecha, J. Philipsson</i>	
RISK FACTORS ASSOCIATED TO PORCINE CYSTICERCOSIS PREVALENCE IN SMALLHOLDER PIG PRODUCTION SYSTEMS IN MBEYA REGION, SOUTHERN HIGHLAND OF TANZANIA	84
<i>E.C. Kimbi, S.M. Thamsborg, F.P. Lekule, J. Mlangwa</i>	

SOME SERUM BIOCHEMICAL AND HEMATOLOGICAL PARAMETERS OF ARSI BALE SHEEP NATURALLY INFECTED WITH <i>fasciola sp.</i>	85
<i>Sandip Banerjee, Kefelew, B and Sintayehu, Y</i>	
THE EFFECTS OF PARASITIC PLANT (<i>VISCUM VERROCOSUM</i>) ON LIVE WEIGHT GAIN AND FAECAL EGG COUNT IN FEMALE TSWANA GOATS.....	86
<i>O. R. Madibela, S. Ramabu and J. Machete</i>	
ALIGNMENT OF POULTRY SECTOR ACTORS WITH AVIAN INFLUENZA CONTROL MEASURES IN ETHIOPIA.....	87
<i>F. Kelemework, B. Belay, B. Bett, T. Randolph</i>	
EMERGING ANIMAL HEALTH ISSUES — Posters	
THE IMPACTS OF AVIAN INFLUENZA ON THE LIVELIHOODS OF POULTRY KEEPING COMMUNITIES IN ETHIOPIA – A QUALITATIVE ASSESSMENT	86
<i>F. Kelemework, K. Kelemu, N. Mango, B. Bett, T. Randolph</i>	
ANIMAL FEED AND FEED MARKETS — Oral Presentations	
FEED RESOURCES DEVELOPMENT: SOME LESSONS FROM BUSINESS UNUSUAL	91
<i>Ranjitha Puskur, Anteneh Girma</i>	
FEED MARKETING SITUATIONS IN ETHIOPIA: CONSTRAINTS OF AND OPPORTUNITIES FOR LIVESTOCK DEVELOPMENT	92
<i>Mesfin Dejene, Seyoum Bediye, Dawit Alemu, Getu Kitaw, Aemiro Kehaliw and Getnet Assefa</i>	
USING GENOTYPE AND FEEDING REGIME TO ANALYZE EXISTING SMALLHOLDER DAIRY SYSTEMS IN NORTHERN MALAWI.....	93
<i>Mizeck G.G. Chagunda, Victor Kasulo, Susan Chikagwa-Malunga, David J. Roberts</i>	
EFFECT OF VARYING DIETARY ENERGY TO PROTEIN RATIO LEVEL ON FEED INTAKE, DIGESTIBILITY, GROWTH RATE, FEED CONVERSION RATIO, LIVE WEIGHT AND CARCASS CHARACTERISTICS OF INDIGENOUS VENDA CHICKENS RAISED IN CLOSED CONFINEMENT FROM A DAY UP TO 13 WEEKS OLD.....	94
<i>C.A. Mbajiorgu, J. W. Ng'ambi and D. Norris</i>	
IMPACT OF LIVESTOCK GRAZING ON VEGETATION STRUCTURE, HERBACEOUS BIOMASS AND SOIL NUTRIENTS IN SEMI-ARID RANGELANDS OF ETHIOPIA.....	95
<i>Z.K.Tessema, W.F. de Boer, H.H.T. Prins, R.M.T. Baars</i>	
FEED RESOURCE PRODUCTION: CURRENT PRACTICES IN SMALLHOLDER AND AGRO PASTORAL SYSTEMS OF EAST AFRICA.....	96
<i>Lukuyu, B., Duncan, A., and Baltenweck, I</i>	
UTILISATION OF <i>Acacia karroo</i> AS A PROTEIN SUPPLEMENT FOR BEEF CATTLE UNDER LOW-INPUT PRODUCTION SYSTEMS IN THE SEMIARID AREAS OF SOUTHERN AFRICA: REVIEW	97
<i>C. Mapiye, M. Chimonyo, K. Dzama and M. C. Marufu</i>	
GROWTH AND INTAKE PERFORMANCE OF BROILERS ON <i>Acacia angustissima</i> LEAF MEAL BASED DIETS.....	98
<i>S. Ncube, H. Hamudikuwanda and P. T. Banda</i>	

YIELD AND NUTRITIVE QUALITY OF GENETICALLY DIVERSE COWPEA ACCESSIONS FOR USE AS FOOD-FEED CROPS	99
<i>E.E. Grings-M. Blümmel, O. Boukar, C. Fatokun, S.Hearne</i>	
ANIMAL FEED AND FEED MARKETS — Posters	
BOTANICAL DIVERSITY OF POTENTIAL FORAGE PLANTS IN RANGE AND FARMING SYSTEMS OF GILGEL GIBE CATCHMENTS/JIMMA ZONE.....	100
<i>K.Yisehak, D. Belay, T.Ayalew, T.Taye, G.P.J. Janssens</i>	
COMMERCIALISING SORGHUM AND CASSAVA ROOTS FOR LIVESTOCK FEEDS.....	101
<i>F.P. Lekule and J. Malole</i>	
DIETARY LEVELS OF PROTEIN AND SUSTAINABLE BROILER PRODUCTION	102
<i>S.A. Bolu, P.O. Oladele and T.O. Olonijolu</i>	
EFFECT OF INDOMIE WASTE ON THE PERFORMANCE OF BROILERS AT STARTER PHASE	103
<i>F. A. Aderemi, O.M. Alabi and E.O. Oloruntobi</i>	
EFFECT OF <i>Lucaena leucocephala</i> HAY ON INTAKE, DIGESTIBILITY AND PERFORMANCE OF SAANEN GOATS FED A TOTAL MIXED RATION	104
<i>K. Leketa, A. Hassen, E.F. Donkin.</i>	
EFFECT OF PROTEIN SOURCE ON THE CARCASS QUALITY AND GROSS MARGIN FROM MEAT GOATS FED GUINEA GRASS HAY	105
<i>Kato H. W.F. Kabi and Mutetikka D.</i>	
EFFECT OF PROTEIN SOURCE ON THE PERFORMANCE OF MEAT GOATS FED GUINEA GRASS HAY	106
<i>Kato H. W, F. Kabi and D. Mutetikka</i>	
EFFECT OF REPLACEMENT OF RICE OFFAL WITH GRADED LEVELS OF MELON SEED (<i>CITRULLUS VULGARIS</i>) OFFAL ON LIVE PERFORMANCE OF GROWING RABBITS	107
<i>S. Attah D.D Orterga and F.O.Ianugwa</i>	
EFFECTS OF DIFFERENT DIETARY INCLUSION LEVELS OF ENSILED POTATO HASH ON NUTRIENT DIGESTIBILITY IN PIGS	108
<i>R.S. Thomas, A.T. Kanengoni, D.O. Umesiobi and B.D. Nkosi</i>	
ENHANCING MEAT SUPPLY THROUGH COMMERCIALIZING SMALL SCALE SHEEP PRODUCTION USING LOCAL FEED RESOURCES IN ETHIOPIA.....	109
<i>G. Haileselassie, T. Yayneshet, H. Aklilu</i>	
EFFECT OF ENZYME SUPPLEMENTATION ON PERFORMANCE OF BROILERS FED DRIED RUMEN DIGESTA MEAL	110
<i>Esonu, B.O; Osegbue, A.I; Udedibie, A.B.I, Emenalom, O.O ;Azubuike, J.C; Ayo-Enwerem, C.M and Etuk, E. B.</i>	
FODDER MARKETING IN ETHIOPIA: A SYNTHESIS OF CASE STUDIES IN OROMIYA AND TIGRAI REGIONS	111
<i>Duncan A.J., Ergano, K., Haileselassie, A., Hagos, T., Assefa T., Muleta, M., &Yehlaeshet T</i>	
IMPACT OF 'FADAMA' ON FEED, FOOD AND POVERTY IN IMO STATE NIGERIA.....	112
<i>C.T. Ezeokeke, N.J. Anyanwu and V.M. Okoro</i>	

INFLUENCE OF COMMERCIAL FEEDS MARKETS ON COMMERCIAL LAYERS EGG PRODUCTION PERFORMANCE MBARARA DISTRICT UGANDA.....	113
<i>Bahame, J.Oloya</i>	
INTEGRATION OF FOOD AND IMPROVED FORAGE CROPS FOR SUSTAINABLE CROP/LIVESTOCK PRODUCTION UNDER SMALLHOLDER CONDITIONS IN ETHIOPIA: A REVIEW	114
<i>Z.K. Tessema</i>	
NUTRITIONAL STATUS OF CATTLE AROUND THE GILGEL GIBE DAM IN ETHIOPIA: THE SEARCH FOR EASY-TO-ESTABLISH INDICATORS.	115
<i>V. Dermauw, D. Belay, K. Yisehak, D. Solomon, B. Seleshi, G. P. J. Janssens</i>	
ON-FARM POULTRY FEED FORMULATION: A SOURCE OF FEED COST REDUCTION IN POULTRY PRODUCTION IN NIGERIA.	116
<i>A.A. Hassan, M. G. Maiangwa, S. Isiaku, A. Mohammed</i>	
PERFORMANCE OF GRAZING AND SUPPLEMENTED MUBENDE GOATS AND THEIR CROSSBREDS WITH BOER	117
<i>D. Asizua, D. Mpairwe, F. Kabi, D. Mutetikka, H. Kamatara, T. Hvelplund, M. R Weisbjerg, and J. Madsen</i>	
PHYSICAL CHARACTERISTICS OF COMMERCIAL POULTRY FEEDS PRODUCED IN NIGERIA.....	118
<i>I. C. Okoli, A. A. Omede, M. C. Uchegbu, O. O. Emenalom and U. E. Ogundu</i>	
POTENTIAL FOR USING MULTINUTRIENT BLOCK FOR SUPPLEMENTING FEEDING OF GROWING GOATS	119
<i>Tendonkeng F, Boukila B, Pamo T. E. and Mboko A.V</i>	
PREDICTION OF URINARY NITROGEN FROM DAIRY CATTLE FED MAIZE SILAGE BASED TOTAL RATIONS	120
<i>M E Phoko, MC Muya, D M Motiang, J Olivier</i>	
RESPONSE IN MILK PRODUCTION BY CROSSBRED COWS IN ETHIOPIA FED ADDITIONAL CONCENTRATES.....	121
<i>J. Madsen and T. N. Beshu</i>	
SOCIO-ECONOMIC FEASIBILITY OF USING SELECTED INDIGENOUS BROWSES AS PROTEIN SUPPLEMENTS TO GOATS IN KONGWA AND MPWAPWA DISTRICTS, TANZANIA.....	122
<i>Daniel M. Komwihangilo</i>	
THE EFFECTS OF ENERGY DENSITY ON THE GROWTH PERFORMANE OF GROWER PIGS RAISED IN TWO REARING SYSTEMS	123
<i>O.G. Makgothi, A.T. Kanengoni and D.O. Umesiobi</i>	
THE INFLUENCE OF WET DISTILLERS GRAINS WITH SOLUBLE ON THE QUALITY OF MAIZE SILAGE.....	124
<i>R.M. Moyo, W.A. van Niekerk, Abubeker Hassen and R.J. Coertze</i>	
UTILIZATION OF LOW COST AGRO BY PRODUCTS IN TURKEY DIETS	125
<i>E. B. Etuk, C. Umeobi, L. N. Azodo, I. U. Obasi and O. O. Emenalom</i>	

VELVET BEAN (<i>Mucuna pruriens</i>): A POTENTIAL FEED INGREDIENT IN POULTRY AND PIG DIETS.....	126
<i>O.O. Emenalom, E.B. Etuk, B.O. Esonu, A.B.I Udedibie and I.C.Okoli</i>	
MAKING LIVESTOCK SERVICES ACCESSIBLE TO LIVESTOCK KEEPERS — Oral Presentations	
MAKING INNOVATION PLATFORMS WORK: ALTERNATIVE INSTITUTIONAL ARRANGEMENTS FOR INNOVATION – BASED ON CASE STUDIES IN EASTERN AND SOUTHERN AFRICA	129
<i>Jürgen Haggmann, Edward Chuma, Hlami Ngwenya, Joe Ramaru</i>	
TOWARDS AGRICULTURAL EDUCATION FOR INNOVATION DRIVEN DEVELOPMENT: CHALLENGES AND CONSTRAINTS OF THE AFRICAN UNIVERSITIES	131
<i>Paul Kibwika</i>	
RENEWING RURAL EXTENSION SERVICES: LESSONS FROM AN APPROACH DEVELOPED IN AFRICA, ASIA AND LATIN AMERICA.....	132
<i>Edward Chuma, Jürgen Haggmann, Hlami Ngwenya, Joe Ramaru</i>	
ANALYSIS OF HOUSEHOLD SPECIFIC TRANSACTION COST FACTORS IN LIVESTOCK INPUT MARKETS IN ETHIOPIA	133
<i>Berhanu Gebremedhin, Moti Jaleta, Samson Jemaneh and Aklilu Bogale</i>	
PRODUCERS’ WILLINGNESS TO PAY FOR DAIRY ADVISORY SERVICES IN DEBREZEIT MILKSHED: IMPLICATION FOR PLURALISTIC SERVICE DELIVERY FOR THE COMMERCIALIZATION OF LIVESTOCK AGRICULTURE IN ETHIOPIA	134
<i>Anteneh Girma, Mohamadou Fadiga, and Ranjitha Puskur</i>	
THE IMPACT OF ACCESSIBILITY OF LIVESTOCK SERVICES ON DEVELOPING BEEF FARMERS	135
<i>L.T. Raphahlelo , L.A. Mogashoa , D. Nembilwi , M.E. Phoko , S. Nini and N.J. Mulaudzi</i>	
ELEMENTS TO CONSIDER FOR PROPER SUPPORT OF LOW-INCOME BEEF FARMERS TO ACHIEVE HERD PRODUCTIVITY AND PROFIT IMPROVEMENT	136
<i>Nengovhela NB, Motiang MD, Beeton RJS, Clark R A</i>	
MAKING LIVESTOCK SERVICES ACCESSIBLE TO LIVESTOCK KEEPERS — Posters	
A PIG-OUT-GROWER STORY STILL-BIRTHED BY AN ECONOMIC CRISIS.....	137
<i>Charles S Moyo, Innocent J Sigwadi & Bethule Nyamambi</i>	
DAIRY BUSINESS DEVELOPMENT SERVICES AFTER THE POST ELECTION CRISIS IN UASIN GISHU DISTRICT, KENYA.....	138
<i>M.K. Korir, J. Kibet, M.J. Kipsat, M. Rirei and P.M. Nyangweso</i>	
INTEGRATING BUSINESS KNOWLEDGE WITH PRODUCTION PRACTICES TO IMPROVE SMALL-HOLDER CATTLE PRODUCERS IN THE NORTH WEST AND NORTHERN CAPE PROVINCES OF SOUTH AFRICA.....	139
<i>L.A Mogashoa, N B Nengovhela D M Motiang, N J Mulaudzi</i>	
SUSTAINABLE COMMERCIALIZATION OF DEVELOPING BEEF CATTLE FARMERS THROUGH IMPROVEMENT OF PRODUCTION PARAMETERS	140
<i>N. J. Mulaudzi and J. van Niekerk</i>	

INFORMATION AND KNOWLEDGE MANAGEMENT — Oral Presentations

A CONTENT EVALUATION OF THE PROCEEDINGS OF THE 4TH ALL AFRICA CONFERENCE
ON ANIMAL AGRICULTURE: AN UNSUPERVISED leximacer™ ANALYSIS143
Madzivhandila T.P. and Griffith G.R.

ETHIOPIAN LIVESTOCK MARKET INFORMATION SYSTEM: EXPERIENCE FROM
A PILOT PHASE144
Z. Yilma, M. Hunegnaw, M. Girma, F. Tadesse, D. Geleti, A. Haile and T. Dessie

INNOVATION PLATFORMS TO IMPROVE SMALL-SCALE FARMERS' ACCESS TO
LIVESTOCK SERVICES IN SOUTHERN AFRICA146
A. F. van Rooyen and S. Homann-Kee Tui

SUPPORT TO CAPACITY BUILDING TO PROMOTE TRADE OF LIVESTOCK AND
LIVESTOCK PRODUCTS FROM THE HORN OF AFRICA.....147
Emmanuelle GuerneBleich, Susan Minae and Ameha Sebsibe

NAPIER: PLANNING FOR AND MONITORING OUTCOMES IN ACTION-RESEARCH
PROJECTS148
J Nyangaga, Janice Proud, Margaret Mulaa, Jolly Kabirizi and Beatrice Pallangyo

RAISING LIVESTOCK AND POULTRY TO IMPROVE LIVELIHOODS OF RESOURCE POOR FARMERS IN
BANGLADESH149
M. Saadullah

INFORMATION AND KNOWLEDGE MANAGEMENT — Posters

AN INFORMATION AND KNOWLEDGE MANAGEMENT TECHNOLOGY FOR
PERFORMANCE OF COMMERERICIAL DAIRY UNIT OF CHHATTISGARH STATE
IN INDIA: A CASE STUDY150
Vijay K. Choudhary & K.K.Choudhary

OTHER POSTERS

ASSESSMENT OF PERCEPTIONS AND LIVESTOCK MANAGEMENT PRACTICES ON
MESQUITES INVADED (*P. juliflora*)(Sw.) GRAZING LANDS IN AMIBARA DISTRICT OF
AFAR REGIONAL STATE, NORTHERN ETHIOPIA155
Dawit Terefe, Solomon Melaku and Habtemariam Kassa

BEEF PRODUCTION IN SOUTHERN AFRICA: CHALLENGES AND OPPORTUNITIES.....156
M. M. Scholtz and A.M. Okeyo

BUTTER MAKING FROM CAMEL MILK157
Yohannes Mehari, Zeleke Mekuriaw, and Getachew Gebru

CARCASS CHARACTERISTICS AND MEAT QUALITY OF THREE ETHIOPIAN
GOATS REARED UNDER EXTENSIVE SYSTEM158
Ameha Sebsibe, N.H. Casey, W.A. Van Niekerk and Azage Tegegne

CONSTRAINTS AND OPPORTUNITIES OF DAIRY PRODUCTION IN CENTRAL
ZONE OF TIGRAY, NORTHERN ETHIOPIA.....159
Gebrekidan Tesfay Weldeslasse, Zeleke Mekuriaw Zeleke and Aklilu Hailemichael

ECONOMETRIC ANALYSIS OF PRODUCTION FACTORS OF SMALL-SCALE POULTRY PRODUCTION IN KENYA	160
<i>By Ngeno Vincent, Langat B.K, Korir M.K, Ngeno E.K & Kipsat M.J</i>	
EFFECT OF ANIMAL AGE AND CARCASS SUSPENSION ON TOUGHNESS OF longissimus dorsi FROM ANKOLE BULLS	161
<i>C.A. Eskildsen, D. Mpairwe, K. Kamatara, D. Mushi, A.E. Kimambo, J. Madsen, and M. Christensen</i>	
EFFECTS AND INTERACTIONS OF SHEEP BREED AND LENGTH OF FEEDING PERIODS ON CARCASS PH AND COLOR OF HIGHLAND (ARSI-BALE) AND LOWLAND (BLACK HEAD OGADEN) MALE SHEEP OF ETHIOPIA	162
<i>Chala Merera, Girma Abebe, Ameha Sebsibe, and A. L. Goetsch</i>	
EFFECTS OF BODY WEIGHT AND BODY CONDITION CHANGES AFTER PARTURITION ON REPRODUCTIVE PERFORMANCE OF SAHIWAL AND FRIESIAN CATTLE	163
<i>D. Indetie, L. Musalia, B. Bebe, E. Wathuta, A. Indetie, J. Kinywa, and F. Lukibisi</i>	
TABLE EGG SORTING IN SMALLHOLDER FARMS: A VERITABLE AND EFFICIENT ECONOMIC AND WASTAGE REDUCTION STRATEGY	164
<i>O.T.F. Abanikanda, A.O. Leigh and A.O. Giwa</i>	
GROWTH PERFORMANCE AND THE ECONOMY OF PRODUCING QUALITY BEEF IN TANZANIA	165
<i>A.J. Mwilawa, A.E. Kimambo, L.A. Mtenga, G.H. Laswai, J. Madsen T. Hvelplund, M. Weisbjerg, M. Christensen, and D.M. Mgheni</i>	
INFLUENCE OF HEN'S AGE ON SHELL THICKNESS OF TABLE EGGS IN LAGOS STATE, NIGERIA	166
<i>O.T.F. Abanikanda, A.O. Leigh and A.O. Giwa</i>	
INNOVATIVE MANAGEMENT TO INCREASE REPRODUCTIVE PERFORMANCE IN BEEF CATTLE.....	167
<i>S. M. Grobler, M. M. Scholtz</i>	
MEASURING WELFARE OF DAIRY CATTLE IN MALAWI – CHALLENGES, CONSTRAINTS AND OPPORTUNITIES	168
<i>J.M. Gibbons, B.Kawonga, T.N. Gondwe, M.G.G. Chagunda and D.J. Roberts</i>	
OPPORTUNITIES FOR PRODUCTION OF TENDER HIGH QUALITY BEEF IN TANZANIA.....	169
<i>J. Madsen, A. E. Kimambo, G. H. Laswai, T. Hvelplund, and M. R. Weisbjerg</i>	
PERFORMANCE OF CATTLE FATTENING ENTERPRISES IN MWANZA REGION, TANZANIA	170
<i>F.G. Mawona, A.E Kimambo, G.H. Laswai, L.A. Mtenga and D.M. Mgheni</i>	
PUBLIC-PRIVATE PARTNERSHIPS FOR UNLOCKING THE POTENTIAL OF DAIRY CATTLE PRODUCTIVITY IN UGANDA FOR IMPROVED LIVELIHOODS.....	171
<i>F. Kabi, F. B. Bareeba, M. Kwizera, P. Walekhwa, V.D.S.R. Prasad, D.V.N. Raju, J. Rubaramira and A. Sekitoleko</i>	
SERVICING RESOURCE POOR FARMERS WITH ADVANCED TECHNOLOGIES	172
<i>S. Nini, N.B Nengovhela, T.L Nedambale, B. Greyling, D Nembilwi, M. Mphaphathi and P. Malusi</i>	

SHEEP AND GOAT PRODUCTION IN SHIFTING AND PERMANENT FARMING SYSTEMS IN WESTERN ETHIOPIA	173
<i>T. Yilma, H. Aklilu, T. Yayneshet</i>	
TRADITIONAL SHEEP PRODUCTION SYSTEMS IN SOUTH GONDER ZONE OF AMHARA REGION, ETHIOPIA.....	174
<i>Shigdaf Mekuriaw, Asresu Yitayew, Mengistie Taye, Hailu Mazengia and Tewodros Bimerow</i>	
TRENDS IN LIVESTOCK PRODUCTION SYSTEMS, CONSTRAINTS AND COPING MECHANISMS IN L. VICTORIA BASIN	175
<i>F. B. Bareeba, M. Mbaabu, J. Bwire and K. Ngetich</i>	
WOMEN GROUP- BASED PULLET SUPPLY BUSINESS DEVELOPMENT IN SELECTED KEBELES OF DALE PLW	176
<i>Ketema Yilma, Azage Tegegene, Lemlem Aregu, Dirk Hoektra, Tesfaye Lema and Mulugeta Yigzaw</i>	
FARMERS ARTIFICIAL INSEMINATION TECHNICIANS.....	177
<i>Hizikias Ketema</i>	

THE AGENDA FOR PUBLIC RESEARCH IN ANIMAL AGRICULTURE IN AFRICA: OLD PROBLEMS, NEW PARADIGMS

Carlos Sere

Director General, International Livestock Research Institute

P.O. Box 30709

Nairobi, Kenya

ABSTRACT

The context is rapidly changing for the African livestock sector. African economies are growing, foreign direct investment is expanding in a number of countries, regional economic integration is progressing, public investment in infrastructure is expanding in a number of countries. Food prices have increased, there is a growing recognition by governments and donors that expanding investment in the agricultural sector is a cornerstone for poverty alleviation and wealth creation. CAADP is presenting a roadmap for African agricultural development. How do these changes influence the role of public sector livestock research on the continent?

This paper reviews major changing paradigms related to livestock development in Africa such as the the new approaches to capacity building among livestock keepers: from public sector extension and veterinary services to ICT enabled knowledge management, innovation platforms particularly recognizing the specific roles of men and women in these institutions; the growing recognition of the need to provide cost effective services, inputs, output markets has led to new concepts of service hubs, SME delivered services, etc. The issue of smart institutional innovations to bundle supply and increase bargaining power of smallholders is seen as central to enhancing the competitiveness of smallholder livestock producers. In terms of genetic improvement new molecular tools are helping to identify successful genotypes under the existing conditions at the farm. Reproductive technologies promise to enable much faster deployment of appropriate, adapted genotypes among smallholders. Vulnerability of livestock keepers, particularly pastoralists is being addressed through a much broader array of interventions including index based insurance schemes, payment for ecosystem services, early warning systems, etc. In the field of animal nutrition the issue has evolved from one of finding optimal diets to one of managing fed scarcity over the year through an array of interventions including the development of food feed crops, strategic use of herbaceous and tree fodder crops, crop by products and mechanical treatment of feeds to enhance their value in animal diets. Similarly important shifts are occurring in the thinking on addressing SPS measures, the role of traditional markets, the importance of understanding and managing food safety and infectious disease risks.

Keynote Address

In summary, to deliver impact research teams working on livestock research for development need to expand the scientific discipline set they harness to include a range of disciplines traditionally not present in livestock research institutions and/or engage partners with such expertise. The ability to contribute to and sometimes manage such complex impact oriented partnerships will be a hallmark of successful livestock research organizations over the coming years.

OPPORTUNITIES TO IMPROVE THE LIVES OF POOR FARMERS THROUGH LIVESTOCK INTERVENTIONS IN AFRICA: PERSPECTIVES OF THE BILL & MELINDA GATES FOUNDATION:

Gress Bevier & Kristin Grote

Bill and Melinda Gates Foundation

ABSTRACT

Market access interventions focus on linking farmers to livestock value chains by addressing critical constraints to enhancing value created and captured by the farmer and increasing the quality and quantity of products sold. There are numerous potential areas for intervention along livestock value chains, ranging from science and technology to market linkages. Accordingly, livestock intervention will help support the Bill & Melinda Gates Foundation's Agricultural Strategy goal of tripling income for 286 million impoverished livestock keepers in Sub-Saharan Africa, and 478 million in South Asia, who currently survive on < \$2 a day. Focusing on livestock can also help the foundation achieve its vision of success for addressing the needs of women producers. Yet initiatives to drive sustainable impact for poor smallholder producers through livestock carry a unique set of opportunities and challenges. This paper considers these through a discussion of the foundation's key areas of intervention across the value chain, including R&D (namely genetics, nutrition, animal health, on-farm maintenance); delivery of inputs by way of storage, aggregation, transportation, and processing; and facilitating farmer access to local, regional, and global markets.

Keywords: *market access; livestock value chain; livestock intervention*

PLENARY

LIVESTOCK MARKETING IN SUB-SAHARAN AFRICA

Berhanu Gebremedhin

International Livestock Research Institute

Addis Ababa, Ethiopia

Contact address: b.gebremedhin@cgiar.org

ABSTRACT

Well-functioning livestock markets perform an important function of signal transmission for macro and sectoral policies to effectively change the incentives and constraints faced by livestock producers. Well-functioning livestock markets also strengthen micro level welfare improvement opportunities that could aggregate into economy wide growth. Moreover, well-functioning livestock markets are important instruments to manage risk associated with demand and supply fluctuations. This paper presents a review of the status and performance of livestock markets in sub-Saharan Africa focusing on market participation of livestock producers, dairy markets, live animals markets and international and regional trade. Implications for future research are drawn.

Keywords: *Livestock marketing; sub-Saharan Africa; market participation*

LAND, LIVESTOCK AND WATER MANAGEMENT FOR INCREASED INCOME, ENHANCED RESILIENCE AND REDUCED ENVIRONMENTAL DEGRADATION

Tilahun Amede

International Livestock Research Institute and International Water Management Institute, Addis Ababa, Ethiopia. Contact address t.amede@cgiar.org

ABSTRACT

Livestock perform multiple functions in the African economy. Animals produce food, provide security, enhance crop production, generate cash income and produce value added goods which can have multiplier effects and create a need for services. Draught power provides about 80% of the power used for farming in Sub-Saharan Africa. Livestock are the major agent in nutrient recycling and soil fertility maintenance but also a resilience mechanism to sustain livelihoods, particularly in years when crop production fails. Currently, about 53% of the agricultural capital stock, 30% of the GDP and 70% of Africans depend on livestock. The share could be even higher in major livestock producing countries like Ethiopia, Sudan, Nigeria and Tanzania. Moreover, the contribution of livestock to the African economies is expected to rise as the demand for livestock products is expected to increase by 4.2% annually, thanks to increasing urbanization and improved income, particularly in developing countries. On the other hand, livestock facilitate water and land degradation by disturbing natural ecosystems through encroaching into wetlands, protected mountainous and hill sides, cause rangeland degradation and soil fertility decline of crop lands. Moreover, with increasing population pressure, declining resources base and shrinking grazing area, livestock keepers are becoming more prone to drought, poverty, famine and environmental degradation; threatening both the economic prospects of future generations and the livelihood of current users. This is particularly evident in countries, where there are limited economic incentives and institutional support for sustainable land, water and livestock management.

This paper will display innovations for improved livestock-water-land management emerged from the collaborative efforts of the International Livestock Research Institute (ILRI) and International Water Management Institute (IWMI) that would minimize the negative impacts and magnify the economic and social values of livestock. These innovations include targeting models that would help development actors disseminate livestock, water and land management interventions across production systems and socio-economic niches at local, national, regional scales, forage technologies that would increase feed availability without competing with crop lands, water management, strategies enhancing water productivity and minimizing water depletion; collective action schemes for enabling improved governance of land, livestock and water resources and policy suggestion for creating incentive mechanisms for livestock-keeping communities to invest in natural resources management.

Keywords: *Land; livestock; water management; environmental degradation*

HARNESSING LIVESTOCK GENETIC IMPROVEMENT TO MEET DEVELOPMENT OBJECTIVES

J.P. Gibson¹

¹ Centre for Genetic Analysis and Applications, University of New England, Armidale, NSW 2350 Australia. Email: jgibson5@une.edu.au

ABSTRACT

Large benefits (to individual livelihoods and/or society) can result from the interaction among simultaneous improvements in genotype, production system (particularly feed and health management) and market access. Substantial changes in a single component, such as improving genotypes, will rarely result in large benefits and can often be detrimental. Smaller changes in a single system component, such as those from within-breed genetic improvement programs, can yield modest benefits but can be vulnerable to larger systems change and generally have low benefit-to-cost ratios making them difficult to sustain. Modern technologies can improve the probability and level of impact of genetic improvement provided appropriate infrastructure, expertise and funding is available to implement. This argues for use of technologies that can be delivered on a large scale under a sustainable business model (which usually requires costs to be low) or for use of technology on an occasional basis, where infrastructure, expertise and funding are only required for a short period.

Keywords: *genetic improvement; new technologies*

MANAGING ANIMAL DISEASES FOR AFRICAN PROSPERITY

Professor Mark M. Rweyemamu BVSc, PhD, FRCVS

Southern Africa Centre for Infectious Disease Surveillance (SACIDS)

Sokoine University of Agriculture

Morogoro, Tanzania

www.sacids.org

ABSTRACT

During the 1970s, most Sub-Saharan African countries were suffering from severe budget deficits. Some authors referred to this period as the “Great African depression”. An indication is that, except for rinderpest, the infectious animal disease burden in much of Sub-Saharan Africa worsened during the 3 decades between 1970 and 2010 even for countries, like Tanzania, that remained peaceful without wide-scale civil strife during the period. This deteriorating situation of infectious diseases could readily be attributed to such factors as:

- Weaknesses in the national budgets; Constant policy and structural changes;
- Donor driven structural adjustment policies which initially appeared to lump all animal health activities as primarily a private agricultural technical service to the farming community;
- Consequential weakness in the national veterinary services;
- Even weaker capacity for sustained laboratory diagnostic services and capacity for detection, identification and monitoring (DIM) of infectious diseases;
- Weak livestock farming industry with little political influence and thereby no bargaining power in demanding an efficient animal health service;
- Grossly inadequate private service providers for the livestock sector, especially for animal health;
- Inadequate incentive for access to formal livestock markets.

In those countries where there has been civil strife, the spread of animal diseases has been even worse. The exception to this generalization has been the countries of southern SADC, i.e. Namibia, Botswana, South Africa, Lesotho and Swaziland and the Island countries. These countries have a vibrant export trade in livestock commodities and thereby an internal demand for high animal health standards.

Elsewhere, there have been disturbing examples of spread of FMD, contagious bovine pleuropneumonia, African swine fever, bovine tuberculosis in livestock and wildlife animals, peste de petits ruminants (PPR) and the weather dependent diseases such as Rift Valley fever, bluetongue and the vector-

borne haemoparasitic diseases. On the positive side, however, the continent has witnessed the eradication of rinderpest.

Concomitant with this is that the economic performance for Africa has improved considerably and the outlook is promising. In many livestock dependent communities, even among the traditional pastoralists, livestock is increasingly being viewed as a financial asset and animal agriculture is being increasingly being regarded as a pathway out of poverty. The question is whether the African livestock industry is adequately oriented to participate effectively in international trade in animal products that is part of the demand driven so-called “Livestock Revolution.”

A major pre-requisite is that veterinary programmes need to be sufficiently robust to be able to assure a sustained animal health status. To do so it will be essential that animal health programmes be underpinned by consistent research that is driven by the African agenda of health assurance and risk management of diseases rather than one that simply feeds into the external agenda of international disease intelligence.

The future trend in Africa for effective risk management of the infectious disease risk and for progressive access to international trade in animal commodities will depend on whether:

- There will be innovative schemes for stimulating the access of African livestock commodities to formal markets. At the moment the majority of livestock farmers in SS-Africa are agro-pastoral and pastoral communities. Unless their commodity is part of the formal market chain they will have little stake in either research or coordinated programmes for animal disease control, except for those diseases which threaten livestock life.
- There will be determination on the part of governments and the international donor community that infectious animal diseases threaten a common or public good.
- There will be an enabling national, regional and international regulatory framework that is based on objective science rather disguised protectionism and one that is geared to stimulating trade under a risk management regime.
- There will be innovative schemes for enhancing the effectiveness of research for both animal and human infectious diseases.
- There will be schemes for stimulating rural private veterinary practices and primal animal health care.

Keywords: animal disease; veterinary program; African prosperity

DUAL-PURPOSE CROP DEVELOPMENTS, FODDER TRADING AND PROCESSING OPTIONS FOR IMPROVING FEED VALUE CHAINS

*M. Blümmel*¹†, *S. A. Tarawali*², *N. Teufel*³ and *I. A. Wright*³

¹International Livestock Research Institute, c/o ICRISAT, Patancheru 502324, AP, India

²International Livestock Research Institute, P.O. Box 5689, Addis Ababa Ethiopia

³International Livestock Research Institute, NASC, New Delhi 110012, India

ABSTRACT

Crop residues (CR) are major feed resources in small holder systems in Africa and Asia and, given the increasing demand for livestock products and the shortage of arable land and water, their importance is likely to increase further. Multidimensional improvement has shown that cultivars of rice, wheat, maize, sorghum, pearl millet, cowpea, groundnut and chickpea differ by 5 to 10% percentage units in CR digestibility without significant differences in grain yields. Surveys of fodder trading in India showed that CR with higher fodder quality traits fetched premium prices. The value of CR can be further increased by processing. Total mixed ration feed blocks based on more than 80% crop residues and other agro byproducts supported, in dairy buffalos, daily milk yields of 12 to 17 liters while weight gains cattle were more than 1 kg/day. Mashing and pelleting can add further value depending on processing, transport and storage costs.

Keywords: *crop residues; dual purpose crops; fodder trading; feed processing; feed blocks*

† Corresponding Author: m.blummel@cgiar.org

MAKING LIVESTOCK SERVICES ACCESSIBLE TO THE POOR: MOVING TOWARDS A NEW VISION FOR LIVESTOCK SERVICE DELIVERY

Christie Peacock, CEO, FARM-Africa,
Clifford's Inn, Fetter Lane, London EC4A 1BZ, UK

ABSTRACT

The broad range of services required by 21st century livestock keepers in Africa are considered, including an emerging range of financial, marketing, information and environmental services. Access to quality and affordable livestock services is constrained by many factors including limited service providers, physical distance, price, information and socio-cultural barriers. The changing role of the state opens up new business opportunities for the private sector, including farmers groups. However there are many constraints to private sector development which governments and financial institutions need to address. A new vision for livestock service provision is needed so that the roles and responsibilities of state and non-state actors can be supported by progressive legislation and regulation. Fundamental to this is a clear definition of what constitutes a public and private good, so that state and non-state actors co-operate and do not compete. The issue of quality of products and services is discussed and solutions proposed. Some innovative business models are described including contract farming and micro-franchising, which could be applied to unlock the value and income generating potential of livestock kept by poorer livestock producers. Examples are given from livestock programmes in East and Southern Africa.

Keywords: *livestock services; private sector development; innovative business models*

LIVESTOCK TRADE AND MARKETS

COMMERCIALIZATION OF BEEF PRODUCTION AFTER THE FAST TRACK LAND REFORM PROGRAM IN ZIMBABWE: A CASE STUDY OF NEW SETTLEMENTS IN MANGWE DISTRICT.

Carroll Themba Khombe[†]

Institute for Rural Technologies, Bulawayo, Zimbabwe

ABSTRACT

The Fast Track Land Reforms in Zimbabwe resulted in a radical transformation of the agricultural sector as 3 000 mainly white commercial farmers ceded the land to about 20 000 mainly black farmers resulting in the break-down of the beef industry. This paper reports on the findings of a case study of settlements in Mangwe district that determined the potential of the farmers to engage in market driven production. The study showed that the farms had adequate infrastructure and grazing resources and adequate husbandry knowledge. However average herd size was small and service delivery institutions were weak. A deterministic model was used to illustrate the stages necessary to create commercially viable herds. Recommendations were made that investments should be made in restocking using adapted high yielding breeds, strengthening farmers-driven commodity associations and establishing linkages with high value markets.

[†] Corresponding Author: ctkhombe@mweb.co.zw

INCREASING WOMEN'S PARTICIPATION AND BENEFITS FROM LIVESTOCK AND LIVESTOCK PRODUCT MARKETS

Njuki, J[†], J. Kariuki¹, E. Waithanji², S. Mburu¹, J. Lyimo-Macha³

¹International Livestock Research Institute, Nairobi, Kenya

²Independent Consultant, Nairobi Kenya

³Sokoine University of Agriculture, Morogoro, Tanzania

ABSTRACT

The recent livestock revolution provides new opportunities and incentives for using livestock as an instrument to help poor people escape poverty. The extent to which women benefit from these incentives and markets is however not known. Women participate in and benefit differently from livestock value chains and from different points within these chains. This study sought to identify the value chains that offer the greatest benefits to women and used focus groups and household surveys to collect data on five livestock value chains (dairy, poultry, eggs, goats, honey) in Kenya and Tanzania. Results show that women preferred and participated more in the informal markets and at farm gate compared to men. Income control by women varied across the value chains and was influenced by membership in groups, type of value chain and type of markets. Focus on both formal and informal markets is essential if women are to benefit.

Keywords: *Women; Markets; Value Chains; Income share*

† Corresponding Author: J.Njuki@cgiar.org

ANALYSIS OF HOUSEHOLD SPECIFIC TRANSACTION COST FACTORS IN LIVESTOCK OUTPUT MARKETS IN ETHIOPIA

Moti Jaleta†, Berhanu Gebremedhin*, Samson Jemaneh* and Aklilu Bogale**

*International Livestock Research Institute (ILRI), Improving Productivity and Market Success (IPMS) Project, P.O. Box 5689, Addis Ababa, Ethiopia.

ABSTRACT

This paper assesses institutional characteristics of first-level livestock and livestock product markets using a household level survey data collected in 2009 from 1192 sample smallholder farmers in 10 districts of Ethiopia. Both descriptive analyses and econometric model estimation methods are used in examining the institutional characteristics of these markets. Results show that almost all sample households (99%) own some type of live animals including poultry with more than 65% of them keeping at least two types of live animals. Close to 80% of the sample households participate in live animals market either as buyer, seller or both. Similarly, about 63% of the sample farmers sell different dairy products among which fluid milk and butter are the major ones. Comparing the possible market outlets (farmers, traders, urban consumers, cooperatives, processors) reported by sample farmers, the problem of hidden action by buyers on prices and measurement units in live animals and dairy products marketing are lower when transactions are farmer-to-consumer and farmer-to-cooperatives. Similarly, when there are contracts in live animals and dairy products markets, they are more respected when the arrangement is farmer-to-consumer and farmer-to-cooperatives than with other possible market actors. This is reinforced by the relatively short time requirement in price negotiations and better contract enforcement mechanisms in these two arrangements. Finally, factors explaining the performance of different institutional issues as perceived by sellers in live animals and dairy products markets are estimated using econometric models. Conclusions and implications are drawn from these results for the improvement of first-level livestock and livestock products markets.

Keywords: *institutions; livestock; livestock outputs; first-level markets; smallholders*

† Corresponding Author: m.jaleta@cgiar.org

ANALYSIS OF LIVESTOCK EXPORT BENEFITS BY PASTORAL WEALTH GROUPS IN EAST AFRICAN COUNTRIES

Yacob Aklilu[†] and Andy Catley¹

¹Feinstein International Center, Tufts University

ABSTRACT

For more than 30 years, substantial investments were made by aid donors in livestock marketing in pastoral areas of the Horn of Africa. Most recently, this support has included attention to the export of live animals and meat from the region including related activities. In line with broader economic narratives, it has often been assumed that in pastoralist areas a linear and simple relationship exists between better access to export markets and poverty alleviation. Our research examined the benefits derived from the livestock export trade from pastoral areas of Ethiopia, Kenya and Sudan by wealth group to identify as which groups benefited more than others and the extent to which livestock export systems can be justified in terms of reducing pastoral poverty. The research design included a review of relevant secondary sources on pastoral wealth stratification, food and income sources of pastoral wealth groups, livestock marketing behaviors and changes in household livestock assets over the years. Further field research was conducted where pastoral, traders and middlemen focus groups including key informants in the private and public sectors were interviewed to develop case studies. Our findings established that (i) most of the animals sourced for the export market originate from middle income and better-off households; (ii) these groups rely on livestock sources for nearly all of their annual household income; (iii) the cash needs of such households is far greater and they own quality animals sought by the export market. In contrast, poorer households variably rely on non-livestock sources for their annual income and prefer to re-build livestock assets by minimizing sales until a certain herd size is reached. Export bans also affect wealthier groups disproportionately in terms of absolute loss of income because they sell far less animals. Bans impact poorer groups because, in times of bans, they lose domestic livestock markets to wealthier households and other employment opportunities linked to the export trade. In summary, the main cause of poverty in pastoral areas is the diminishing household herd size rather than lack of access to livestock markets. Poverty alleviation efforts should therefore focus on re-building the household herd size of the poor where alternative livelihoods are not feasible.

[†] Corresponding Author: yaklilu@ethionet.et

PROBLEMS AFFECTING PRODUCTION AND MARKETING OF SMALL STOCK IN BOTSWANA

Tassman Jackson Cebani

President of the Small Stock Breeders Association of Botswana

ABSTRACT

This paper focuses on the problems affecting production and marketing of sheep and goat in Botswana. The major production problems identified include low productivity, poor management, poor breeding practices, under nutrition, and poor marketing systems. The literature of sheep and goat production in some African countries were reviewed and it was discovered that generally the problems facing Botswana as a country is similar to those other African countries whose literature were reviewed. Thus African countries as a whole, need to work together to alleviate these problems, so as to boost the production of sheep and goat.

SHEEP AND GOAT MARKETING AND CONSUMPTION IN RELATION TO RELIGIOUS FESTIVITIES IN SHIFTING AND PERMANENT FARMING SYSTEMS IN WESTERN ETHIOPIA

T. Yilma[†], *H. Aklilu*², *T. Yayneset*³

¹ Ethiopian Institute of Agricultural Research, Livestock Research Process, Assosa, Ethiopia

² Aksum University, Department of Animal Production and Technology, Aksum, Ethiopia

³ Mekelle University, Department of Animal Science, Mekelle, Ethiopia,

ABSTRACT

This study explores sheep and goat marketing and consumption in shifting and permanent farming systems in relation to festivities. A cross-sectional random survey of 180 households, marketing survey that provided 676 observations, and focus group discussions were used to collect marketing and consumption data from two locations in Western Ethiopia representing the two farming systems practiced largely by Muslims and Christians, respectively. The largest supply and sales was recorded during Christmas followed by Eid Al-Adha, Eid Al-Fetir in both farming systems. Prices and consumption per household increased by up to 11.2% and 73.0% in the shifting farming system and by 19.2% and 82.2% in permanent farming system during festivals, respectively. Skin colour, buyer and seller types affected prices. Sheep was preferred for consumption in both communities. For producers to better benefit from higher prices during festivals, they have to plan their production and supply to match with the fluctuating but predictable patterns of demand.

Keywords: *Prices; consumption; religion; communities; Ethiopia*

[†] Corresponding Author: yiltadesse@yahoo.com

FACTORS INFLUENCING BEEF CATTLE SALES IN THE PASTORAL COMMUNITIES OF WESTERN AND CENTRAL UGANDA

G. Ruhangabwebare¹, D. Mpairwe[†], B. Bashaasha¹, D. Mutetikka¹, and J. Madsen²

¹Department of Animal Science, Faculty of Agriculture, Makerere University, Kampala, Uganda

²Department of large ruminant production, University of Life Sciences, Copenhagen, Denmark

ABSTRACT

Despite government policy to commercialize agriculture in Uganda through market liberalization, cattle off-take has remained low at about 10%. A survey was conducted to establish the factors affecting cattle sales among the major beef producers (pastoralists). Results indicated that 96% of the respondents participated in livestock marketing during the year and that abattoir dealers bought most of the cattle (56.2%) directly from farmers, while 18.2% was sold in the local markets, 16.3% to fellow farmers and 9.4 % to local butcherries / slaughter slabs operators. Cattle sales rate of 17.6% was recorded and was highly influenced by price variability followed by quarantine imposed due to diseases outbreaks, limited number of cattle traders, inaccessibility to market information and poor roads, respectively. It was concluded that cattle sales in pastoral areas can be improved by providing livestock keepers with sufficient market information which stimulate livestock keepers to make informed decisions while marketing their livestock.

Keywords: *Livestock marketing; sales-rate; pastoralists*

[†] Corresponding Author: dmpairwe@agric.mak.ac.ug

**ECONOMIC EFFICIENCY AND RETURNS TO SCALE IN DAIRY
PRODUCTION: A CASE STUDY OF SELECTED SMALLHOLDER FARMS IN
EAST AFRICA**

Ayele Gelan[†] and Beatrice Muriithi

International Livestock Research Institute
Nairobi, Kenya

ABSTRACT

This paper measures and explains efficiency of 371 dairy farms located in seventeen districts in East African Countries. Three output and ten input types were used to calculate efficiency scores for each farm. A two stage analysis was conducted to measure and explain the efficiency scores. First, the efficiency scores were measured by using a data envelopment analysis (DEA) approach which was implemented with a linear programming. About 18% of the farms are fully productive, each with efficiency scores of unity, which meant that this group is currently operating on the production possibility frontier. On the other hand, about 32% of the farms have efficiency scores below 0.25, which means that about a third of the dairy farms would need to expand dairy production by at least 75% from the current level without any increase in the level of inputs. Second, a fractional regression method was used to explain the efficiency scores by relating them to a range of explanatory variables. The findings indicate that technology adoption such as the existence of improved breeds; feed and fodder innovations (e.g. growing legumes) have positive and statistically significant effects on the level of efficiency. Similarly, zero-grazing seem to have positive and highly significant effects. As far as marketing variables are concerned, interestingly selling milk to individual consumers or organizations seems to contribute to dairy efficiency positively and significantly than other marketing outlets such as traders of chilling plants. Membership of dairy cooperative has a positive effect but this is not statistically significant.

Keywords: *Dairy farms; efficiency scores; Data Envelopment Analysis; fractional regression; returns to scale.*

[†]Corresponding Author: a.gelan@cgiar.org

REVEALED PREFERENCE BASED VALUATION OF INDIGENOUS SHEEP TRAITS

Zelalem Gutu^{a†}, Girma T. Kassie^b, Derek Baker^c, and A. Haile^d

^aHaramaya University, P.O. Box 138, Dire Dawa, Ethiopia;

^bCIMMYT, P.O. Box 5689, Addis Ababa, Ethiopia;

^cILRI, Nairobi, Kenya;

^dILRI, Addis Ababa, Ethiopia

ABSTRACT

In this study, hedonic pricing model is fitted to examine the determinants of observed sheep price. Transaction data were generated from rural markets of Horro-Guduru, Wollega Zone of Ethiopia. Both OLS and Heteroscedasticity consistent estimations were made. The empirical results consistently indicate that phenotypic traits of traded indigenous sheep (age, color, body size, and tail condition) are major determinants of price implying the importance of trait preferences. Season and market locations are also very important determinants of price suggesting the need to target season and market place in breeding programs so that sheep keepers benefit from the intervention and hence the program become sustainable. Therefore, development of comprehensive breeding program is crucial.

Keywords: *Hedonic model; Heteroscedasticity; phenotypic traits; trait preference*

[†] Corresponding Author: zedgutu@gmail.com

ANALYSIS OF THE SYSTEM OF COMMERCIALISATION OF LOCAL BREED CHICKEN IN THE DAKAR

Gabriel Teno

ABSTRACT

This study is aimed at analysing the marketing system and the level of commercialisation of the local breed chicken in the Dakar department (Senegal). Results are based on literature review and data collected from 34 traders in 14 markets and points of sale in the Dakar department. The study reveals a lack of trader's organization in the market. The traders are for the majority old persons of the Wolof ethnic group, most of them originally from Louga. The main motivation of involvement in the activity is to fight against unemployment, as confirmed by 64.7% of the traders. Other traders (26.5%) reported that they have inherited the business from their parents. It is also noticed that there was high price difference (820 + / - 65 FCFA), between prices used by the traders in the Dakar department and prices in regions in the weekly markets. An average of a clear profit of 505 +/- 175 FCFA was estimated per each chicken sold. A monthly average profit of 439 350 FCFA was also estimated for a trader of local breed chicken in the Dakar department. I find that the family poultry production, an important means to fight poverty and to achieve food security is a profitable business financially. The family poultry production must therefore be supported in the perspective of sustainable development.

Keywords: *local breed chicken; commercialisation; Dakar department; Senegal*

CATTLE MARKETING IN HIGH AND LOW MARKET ACCESS AREAS IN THE BORENA PASTORAL REGION OF ETHIOPIA

O. Abebe[†] and H. Aklilu²

¹Yabello Pastoral and Dryland Agriculture Research Center, Yabello, Oromia Agricultural Research Institute- Ethiopia

²Department of Animal Production and Technology, Aksum University, Axum, Ethiopia

ABSTRACT

Borana is an economically important pastoral region of Ethiopia. Livestock mainly cattle exports from Borena contribute substantially to national foreign exchange earnings. Market access is a critical factor influencing market participation of pastoralists. This study explored cattle marketing in low and high market access areas of Borena. A cross-sectional survey of 169 pastoral households and marketing monitoring study that provided 2818 records were used to collect data from two locations representing high market access (HMA) and low market access (LMA) areas. A higher proportion of HMA pastoralists practiced selling (90%) than in LMA (76%). Households in HMA sold 1.4 times more number of cattle with significantly ($P<0.05$) higher prices than in LMA. There was more broker interference in LMA. Livestock export is an emerging opportunity for pastoral households to improve their livelihoods. However, market information and communication systems and cooperatives need to be developed to enable remotely located pastoral households to benefit from the export business.

Keywords: *cattle; market information; pastoral households; cooperatives; Ethiopia*

[†] Corresponding Author: abebeol1980@gmail.com

CHARACTERIZATION OF SMALLHOLDER POULTRY PRODUCTION AND MARKETING SYSTEM OF DALE, WONSHO AND LOKA ABAYA WEREDAS OF SOUTHERN ETHIOPIA

Mekonnen G/Egziabher, Aberra Melesse and Tadelle Dessie[†]

ABSTRACT

A longitudinal data collection (repeated survey) and a cross sectional survey was conducted in three weredas of southern Ethiopia to characterize the smallholder poultry production and marketing systems in order to identify the major constraints and priorities for poultry improvement and extension interventions. A structured questionnaire and participatory rural appraisal (PRA) methods relevant to rural poultry production were used to collect data. Using a stratified random sampling technique, 160 households were included in the survey. The result showed that the main objectives of chicken production in the study area were for sale (44%), replacement (34%) and consumption (22%). The main reason for egg production were for hatching (47%), sale (33%) and home consumption (20%). The most dominant chicken production system in the study area was a subsistence extensive system which is based on indigenous chickens with scavenging and seasonal supplementary feeding of homegrown grains and household food refusals. The overall mean flock size for the three weredas was 9.22 ± 0.35 with a range of 3 -26. Nearly all (97.6%) of the respondents do not have a separate house to their chickens and only 10% of the respondents have access to veterinary services. Poultry production was managed based on indigenous or local knowledge they have acquired over their lifetime. The high hatchability (89.1%) and mortality (80%) are the two conflicting features of the system. Men and women took 35% and 24.4% ownership respectively. The major decision making role belongs to men. However, the major management was the responsibility of women. The overall average age at first egg was 7.07 ± 0.08 ranging 5-10 months. The average egg production per clutch was 14.9 ± 0.23 ranging (6-26) with a mean of 3.7 ± 0.04 clutches per year ranging 2-5 clutches with a clutch length of 26.2 ± 0.41 days. The overall mean cock: hen ratio was 1:2.2. Chickens in Wonsho (Dega) wereda showed significantly ($p < 0.05$) best performance with the highest egg production (62.95 eggs/hen/year), lowest chick mortality (45.15) and highest clutches per year (3.8) compared to other Weredas. The mean live-weights for matured male and female at farm Gate were 1.58 ± 0.02 (kg) and 1.30 ± 0.02 (kg), respectively. The corresponding price for matured male and female at farm gate were 21.74 ± 0.54 and 13.95 ± 0.43 birr, respectively during ordinary days. More than half of the respondents (65%) do not have

[†] Corresponding Author: t.dessie@cgiar.org

any information about the price of the chicken. Only 31.67% of the volumes of sale pass directly to the consumer. Critical constraints of the smallholder poultry production in the study area were partly due to the prevailing poor management practices, in particular predation, lack of proper health care, and poor housing. It was concluded that efforts have to be made to shift the production paradigm to semi intensive focusing on market oriented production based on scavenging with a holistic support of services such as health, housing, extension, credit and marketing to make it productive and sustainable.

Keywords: *Indigenous chickens; scavenging; chicken production and marketing systems; marketing channel*

COMMERCIALIZATION OF MEAT TRADE: POTENTIAL ROLE OF PRIVATE-PUBLIC SECTOR IN QUALITY ASSURANCE IN MEAT TRADE IN REGIONS OF SOMALIA

Massimo Castiello[†], Munyua Solomon*, Jotham Musiime*, Wamalwa Kinyanjui*, Innocente Sergio*, George Matete*

*Food and Agriculture Organization of United Nations, Somalia,
P.O Box 30470-00100, Nairobi;

ABSTRACT

Food safety and quality assurance practices in production of foods of animal origin deserve top priority at all stages of production since meat has been a vehicle for transmission of several food-borne diseases. Producers are responsible for ensuring safety and quality while governments have to provide the legal framework, regulations and the controls. Ensuring safety and quality assurance is a constant challenge to meat trade since it entails continuous adaptation to new scientific findings and technologies. Without a central government for 18 years since 1991, Somalia has experienced great challenges in meeting the rising standards of meat importing countries in the Middle East in addition to facing vicious cycles of trade bans on perceived outbreaks of TADs. To mitigate this, Somalia investors invested in export slaughterhouses for the export of chilled small ruminant carcasses. This paper describes efforts by FAO Somalia to build the capacity of public-private sectors in Somalia to be responsive to the changing standards in meat sector of the traditional markets in the middle east and other emerging markets.

Keywords: *Livestock and products export; trade bans; mitigation and international standards*

[†] Corresponding Author: massimo.castiello@fao.org

HANDLING, PRESERVATION AND MARKETING OF COW AND GOAT MILK IN KOMBOLCHA WOREDA, EASTERN ETHIOPIA

Helen Nigussie^{1†} and Eyassu Seifu²

¹Department of Animal Science, Ambo University, PO Box 19, Ambo, Ethiopia

²Department of Animal Sciences, Haramaya University, PO Box 287, Alemaya, Ethiopia

ABSTRACT

In order to assess the traditional handling practices, preservation methods and marketing of cow and goat milk in Kombolcha woreda, eastern Ethiopia, a total of 120 farmers were selected using purposive stratified random sampling technique. Both cow and goat milk production in the study area is low. Average daily production was 1.8 liters and 0.4 ml per cow and per goat, respectively. The milk handling practice was not up to standard. However, Cleaning and smoking of milking and handling container by using different plant materials is common as traditional preservation methods. About 86.9 % of the farmers sell fresh cow milk because of the higher demand for fluid milk in the market. Whereas over 94 % of the farmers sell fresh goat milk due to the small amount produced and its suitability for “Hoja” making. Most of the farmers (65.3 %) deliver their milk to the market by organizing milk marketing groups known as “Afosha”. Therefore, higher demand for fresh milk and presence of milk marketing groups is an opportunity to promote dairy technology and expand dairy related extension services in the area.

Keywords: *milk handling; milk preservation; market system*

[†] Corresponding Author: helbariye@yahoo.com

LIVESTOCK MARKETING IN ETHIOPIA: A REVIEW OF STRUCTURE, CONDUCT AND PERFORMANCE

Rehima Mussema

ABSTRACT

Ethiopia is the largest livestock producer in Africa and one of the largest in the world. Livestock in Ethiopia accounts for 1/3 of agricultural GDP, creates livelihood for 65% of farmer/producer and generates 14% of foreign exchange earnings. However the contribution of the sector is low compared to its potential. The objective of this paper is to review the structure, conduct and performance of livestock market; assess the main actors in livestock marketing and the role they play and to assess the live animals and animal product export situation. Three livestock marketing outlets co-exist in Ethiopia: domestic, formal export, and the informal cross-border trade. The involvement of brokers/middlemen in every segment of the marketing chain is the special features of livestock marketing. Livestock marketing system is characterized by several constraints including lack of market information, and multiple service fees and charges which create black markets and cross border trade. Livestock export market was unstable and showed decreasing trend and accounted only for 11% of the national exports during 1999/00–03/04; However the export value increased during 2004-2006. Recently annual illegal flow across the Ethiopian borders is estimated at 320,000 cattle. Based on the findings of the review, market information services needs to be established and export market infrastructure improved.

**LIVESTOCK TRADE AND MARKETS FOR POVERTY ALLEVIATION:
POTENTIAL OPPORTUNITIES AND CHALLENGES IN EXPORT TRADE IN
SOMALIA**

Massimo C†, Wamalwa K*, Sergio I*, Musiime J*, Munyua S*, Abdulkhadir F* and Matete G**

*Food and Agriculture Organization of United Nations, Somalia,
P.O Box 30470-00100, Nairobi

ABSTRACT

Somalia's livestock sector accounts for about 40% of its GDP, plays a significant role in food security and socio-economic development of the pastoral societies who rely on enhanced market integration. An estimated 3.2 million livestock are exported annually. However, these exports have been characterized by cycles of trade bans by major importing countries in the Middle East on suspicion of the presence of transboundary animal diseases and the country's failure to meet the rising international animal health and food safety standards due to lack of a central government. This paper describes measures taken by FAO Somalia to mitigate the trade bans by carrying out capacity building, support to existing veterinary institutions and policy provision, disease surveillance, livestock treatments, vaccinations, fodder and pasture development, and conservation and establishment of water catchments to ensure sustainable livestock exports for poverty alleviation.

Keywords: *Livestock; Poverty; Sustainability; Standards; Trade bans*

† Corresponding Author: massimo.castiello@fao.org

MARKET ACCESS FOR SMALLHOLDER DAIRY FARMERS THROUGH PRIVATE PUBLIC PARTNERSHIPS: RECENT EXPERIENCES FROM WESTERN KENYA

Michael B. Kibiego[†] and Odhiambo M.O²

¹Smallholder Dairy Commercialization Programme (SDCP) P.O. Box 12261 Nakuru 20100, Kenya

²Moi University, School of Business and Economics, P.O. Box 3900, Eldoret.

ABSTRACT

Western Kenya is facing low milk output and various constraints on milk market access. This paper identifies the market access constraints faced by poor farmers and the role of public-private partnership in enhancing it. Data were generated from a survey of 31 poor farmers of Kisii Central district of Kenya using systematic random sampling method. Data analysis included descriptive statistics and regression analysis. The results showed that farmers face constant and low market prices of milk in the local market. Friends and relatives are the major sources (80.6%) of market information. Farmers may not have access to markets that are lucrative but relatively far. Thus a Low Cost Market Information System is being developed through a Public-Private partnership that will expand the milk marketing channels and provide more efficient market information flow. Therefore government policies that support information provision and institution building are necessary to support the resource poor smallholder dairy farmers in the study area.

Keywords: *Market Access; Public-Private Partnership*

[†] Corresponding Author: kibiegomb@yahoo.com

SHEEP AND GOAT PRODUCTION AND MARKETING IN RELATION TO AGRO-ECOLOGICAL ZONES IN TIGRAY, ETHIOPIA

E. Hassen[†], H. Aklilu¹, G. Haileselassie¹

¹ Aksum University, Department of Animal Production and Technology, Aksum, Ethiopia

ABSTRACT

In Ethiopia, Agro-ecological zones (AEZ) differ not only in biophysical but also in infrastructure and socio-economic settings affecting livestock farming. This study explores how AEZ's influence production and marketing of sheep and goats in the Tigray region of Ethiopia. Three locations representing highland (HL), Midland (ML) and Lowland (LL) were taken in Tigray. A cross-sectional random survey of 50 households and market surveys were conducted in each location. Disease was the top constraint for LL, while feed shortage is the major constraint in the HL and ML areas. Sheep and goat mortality rates were twice higher in LL than in the other agro-ecologies. Goat milk consumption was higher in LL (44%) than HL (4%) and ML (4%). Prices of sheep and goats were higher by 40% in HL and ML than in LL. During religious festivities, prices were more than double especially in the HL and ML. For poor producers to benefit through commercialization of the sector, interventions should be planned and implemented considering agro-ecological context.

Keywords: *Sheep; goat; agro-ecology; Ethiopia*

[†] Corresponding Author: hassenwukro@yahoo.com

THE DYNAMICS OF LOCAL MARKETS AND CATTLE OFF-TAKE DECISION AMONG SMALL-HOLDERS PRODUCERS: A LITERATURE REVIEW

D M Motiang[†], L E Matjuda¹ and N B Nengovhela¹

¹Agricultural research Council, Pretoria, South Africa

ABSTRACT

Despite the role of cattle in livelihoods systems, small-holder cattle producers in sub-Saharan Africa operate under a complex socio-economic and harsh natural environment. Although it is well accepted that livestock productivity in sub-Saharan Africa is lower than that of other developing regions, little is known about the attribute of producer marketing decision patterns and current productivity levels. Literature shows that improved cattle off-take rates could increase productivity within farmers' socio-economic environment. This review identified socio-economic factors, natural factors, as well as production practices, which improve off-take. Unlike current methods for estimating off-take at macro level, farm level assessments could be consolidated and used for establishing farm level instruments, databases and extension messages. It is concluded that cattle off-take data should be monitored at micro level to enable evidence based trade and marketing policies, to enhance the efficiency of extension as well as the growth of small-holder cattle production systems.

Keywords: *Small-holder; off-take; Cattle; Policies; Extension*

[†] Corresponding Author: dan@arc.agric.za

PASTORALISM/ LIVESTOCK AND NATURAL
RESOURCE MANAGEMENT

THE PERCEIVED IMPACT OF CLIMATE CHANGE ON SMALLHOLDER DAIRY PRODUCTION IN NORTHERN MALAWI

Victor Kasulo[†], Susan Chikagwa-Malunga, Mizeck G.G. Chagunda, David J. Roberts

Department of Forestry, Mzuzu University, Private Bag 201, Luwinga, Mzuzu, Malawi.
Lunyangwa Research Station, P.O. Box 59, Mzuzu, Malawi.
Sustainable Livestock Systems Group, SAC Research, King's Buildings, West Mains Road,
Edinburgh, EH9 3JG, Scotland, UK.

ABSTRACT

The vulnerability of smallholder dairy farmers to climate change remains a major concern for many researchers. This paper analyses the perceived impact of changes in rainfall patterns on water availability, disease occurrences, pasture production, and in turn on milk production. Farmers' perception was obtained through a survey and analyzed using a multi-nominal regression model. The results showed a statistically significant relationship between a fall in milk production and a decrease in water availability ($p < 0.05$), constant water availability ($p < 0.01$), and decrease in pasture production ($p < 0.05$). Constant milk production resulted from constant water availability ($p < 0.01$), and constant disease occurrences ($p < 0.05$). The model explained between 32% and 36% of the variation in milk production with the accuracy in classification of 60%. The results highlight the need for further analysis in the vulnerability and adaptation of smallholder dairy farmers to climate change.

Keywords: *Climate change; dairy production; Malawi.*

[†] Corresponding Author: vkasulo@mzuni.ac.mw

AN ASSESSMENT OF ATTITUDE TOWARDS SELLING LIVESTOCK AMONG THE PASTORALISTS IN NGORONGORO DISTRICT OF TANZANIA

M.E. Haule, G.H. Laswai[†], D.L. Mwaseba and A.E. Kimambo

Sokoine University of Agriculture, P.O. Box 3004, Morogoro. Tanzania

ABSTRACT

A study was done in Ngorongoro District in Tanzania to examine and document the factors influencing the attitude of pastoralists towards selling livestock. Data was collected through key informant interviews, focus group discussions, household questionnaire and visits to livestock markets. Descriptive statistics were generated and Tobit model was employed. The respondents showed positive attitude in selling cattle (42.2%) and goats (45.6%). Tobit estimates showed significant ($P < 0.05$) relationships between the attitude of respondents towards selling livestock and distance to livestock markets (-0.052), livestock price (0.604), household size (0.858), sex of respondent (0.752) and herd size (-0.70). It is concluded that livestock sale rate increases with short distances to markets, high livestock prices, large households, small herd sizes and being a male headed households. Existence of reliable livestock markets and market linkages between livestock producers and consumers could enhance livestock selling in the pastoral areas.

Keywords: *livestock selling; attitudes; markets; pastoralists*

[†] Corresponding Author: laswaig@suanet.ac.tz

PASTORAL-FARMERS CONFLICTS OVER NATURAL RESOURCES IN THE LAKE RUKWA BASIN: CHALLENGES FACING POLICY MAKERS IN TANZANIA

Pius Mwambene[†], Mary Mashingo¹, Ignatius Mwakalile², and Udo H'ggel³

¹Ministry of Livestock Development and Fisheries, P.O. Box 9152, Dares Salaam, Tanzania

²Southerh Highlands Livestock Development Association, P.O. Box 252, Iringa, Tanzania

³Centre for Development and Environment, University of Bern, Switzerland

ABSTRACT

Pastoralism is a livelihood system seeking to maintain an optimal balance between pastures, livestock and people in uncertain and variable environments. Despite the important role the system plays in supporting local livelihoods, national economy and diverse ecological services, its capacity to adapt to change is facing many challenges including poor local institutional framework, adverse policy, conflicts with farmers, and more recently, adverse climate change. A study to analyze local institutional framework, policies, and laws/ regulations governing Natural Resources utilization by pastoral and crop farmers was conducted in the Lake Rukwa Basin in 2008 through farmers interviews and stakeholders workshops. Livestock production systems, situation, extent and impacts of conflicts were also evaluated. The study noted violent conflicts and their causes, mainly the scarcity of NRs, inappropriate regulations and deeper socio-cultural factors between pastoralists and farmers. It was further revealed that violent conflicts have increasingly become major impediments to developmental activities in the study areas, to a degree that requires immediate intervention. Thus, there is a need to reorganize local structures and regulatory framework for conflict management and participatory management of NRs as part of sustainable intervention.

Keywords: *Pastoralism; Policies; Natural Resources; Conflicts management*

[†] Corresponding Author: piusmwambene@yahoo.co.uk

**BETWEEN EMBEDMENT AND DEPENDENCY: ECONOMIES OF PASTORAL
TUAREG AND REGIONAL MARKET-CHAINS (NIGER).**

Tilman Musch

INALCO / CRREA

M Tilman Musch

49bis avenue de la Belle Gabrielle

75012 Paris

France

tilmanmusch@yahoo.de

ABSTRACT

The paper deals with the embedment of pastoral Tuareg household-economies (Niger) in a framework of local, national and regional market-chains. It investigates on how households could be more profitably sell livestock and on how supra-local policy can support this amelioration. How can herders react better to national and regional impacts on the market? How dependency of pastoralists can be reduced? These problems are understudied as they demand a supra-local approach which is proposed as the main contribution of the paper. Fieldwork in Niger investigated possibilities of a better organization of trade. A second contribution consists in a short comparison to post-soviet livestock marketing (Kyrgyzstan) in order to inquire on advantages and disadvantages of (formerly) collective organization of trade. Findings are addressed to researchers as also to governmental institutions and NGOs in order to improve the herder's participation in market-chains.

AN EASY METHOD TO MEASURE THE METHANE PRODUCTION OF RUMINANTS

J. Madsen^{1†}, T. Hvelplund², and M. R. Weisbjerg²

¹Department of Large Animal Sciences, Faculty of Life Sciences, University of Copenhagen, Denmark

²Department of Animal Health and Bioscience, Faculty of Agricultural Sciences, Aarhus University, Denmark

ABSTRACT

The purpose of this study was to develop a simple, fast, reliable and cheap method to predict the methane (CH₄) production by animals using the CH₄ and CO₂ concentrations in air near the animals. By using portable equipment to analyse the air near individual animals or in livestock buildings it is possible to calculate the proportion of the carbon that is not metabolized to CO₂, but excreted as the greenhouse gas CH₄. The CH₄/CO₂ ratio in breath gives by itself useful information and can be seen on the spot when measuring. A more detailed use of the data in combination with feedstuffs analysis can be used to predict the quantitative CH₄ production by the animals. Data from repeated measurements on approximately 100 cows in an automatic milking system (AMS) and data from measurements on 8 kangaroo in Copenhagen Zoo will be presented.

Keywords: *Greenhouse gas; marker; carbon dioxide; kangaroo;*

[†] Corresponding author: jom@life.ku.dk

**REDESIGN AND MANAGEMENT OF NATIVE GRASSLAND
AGROECOSYSTEM AND ITS IMPACT IN SOIL QUALITY AND HEALTH**

Silvino Vargas Hernández^{1†}, Digna Ibis Gutiérrez Aguiar², Pedro Cairo Cairo².

¹Faculty of Veterinary Medicine. P.O. Box 34. Debre Zeit. Addis Ababa University

²Faculty of Agricultural Sciences. Las Villas Central University. Villa Clara. Cuba.

ABSTRACT

The research was carried out at Las Villas Central University during three years time using rational grass management in a native grassland agroecosystem (NGA) with the objective of evaluating the soil quality and health. Regarding quality the evaluated physical indicators were: soil structure factor (SSF) and permeability (PER); chemical: pH in H₂O, soil organic matter (SOM), assimilable phosphorus(P₂O₅) and potassium(K₂O). Concerning soil health the density of earthworm and microbial populations containing bacteria, fungi and actinomycetes was determined. A randomized design was applied to analyze the physical and chemical indicators of soil, with 7 repetitions. Five paddocks were used with an average area of 0.33 ha in the NGA. The sampling was carried out in two periods of the year (PY), late November, at the end of rainy period (FPLL), and late May, at the beginning of the rainy period (IPLL). Two soil depth (SD) were evaluated, 0-10 and 10-20 cm. The density of earthworms was determined with the manual extraction of soil monoliths (20x20x20 cm). The samplings to determine soil microbiology were done in 0-10 cm, using the same paddocks. The contents of SOM and their assimilable nutrients, described a dynamics corresponding with the mineralization processes regulated by the edafoclimatic and management conditions. The dynamics of the earthworms and the microbial populations' increment were a clear indication of good management practices applied to the plant-animal – soil system during the studied years.

[†] Corresponding Author: vargas.silvino91@gmail.com

IMPLICATIONS OF PASTORALISTS' DIVERSE WEALTH PROFILES FOR LIVESTOCK TRADE AND MARKETS IN TANZANIA

T.D. Baird^{1†} and G. Saitoti²

¹University of North Carolina at Chapel Hill, Department of Geography & Carolina Population Center, Chapel Hill, NC, USA

²CU-UNC Savanna Land Use Project, Arusha, Tanzania

ABSTRACT

Policies to promote livestock trade and reduce poverty must accommodate the land-use trade-offs that shape smallholders decisions regarding livestock production. In pursuit of strategies to increase wealth and diversify their livelihoods, pastoralists in northern Tanzania are increasingly concerned with the marginal returns to multiple land uses, especially cash cropping and livestock grazing. To better understand smallholders' land-use decisions, this study examines household wealth statuses and relative contributions to wealth from livestock herding and farming from 2005 in four agro-pastoral villages in Simanjiro District. Preliminary findings suggest that while poor households rely on crop-based agriculture more than wealthy households, wealth profiles are characterized by great diversity within and between villages. This study offers support for the idea that outcomes, including market activities, within the livestock sector are linked to diverse, wealth-sensitive processes operating in other sectors especially crop-based agriculture. Policy makers targeting smallholders may benefit from greater understanding of these connections.

Keywords: *Tanzania; Land-Use; Agriculture; Pastoralism*

[†] Corresponding Author: tbaird@unc.edu

ECOLOGICAL NICHE SEPARATION OF *DICHAPETALUM CYMOSUM* (GIFBLAAR) ON SOUTH AFRICAN RANGELAND COMMUNITIES

Gilbert Hosia Pule^{1,†}, Wayne Truter², Luthando Dziba¹

¹ARC- Animal Production Institute, Irene, 0062, South Africa,

²University of Pretoria, Department of Plant Production and Soil Science:

ABSTRACT

The study investigated balance competition and niche separation model, mechanisms of species interaction and coexistence. Main focus was on factors influencing the relative abundance of *D. cymosum* in rangeland communities where it occurs. We used fifteen 100 x 100 m plots, three provinces and spatial pattern analysis to investigate the role of competition in the spacing of trees and shrubs within *Dichapetalum cymosum* infested communities. The dispersion analysis revealed aggregated population for all species (values approached 0). Competitive interaction was found in some species and provinces when a correlation analysis was done between nearest neighbour distance and the combined canopy sizes of the nearest neighbour pair. All species were segregated ($S > 0$), with interspecific nearest-neighbour pairs occurring less often than expected. More ecological research is needed to better understand other mechanisms by which *D. cymosum* interact and coexist with other species in communities where it occurs.

Keywords: *Aggregation; dispersion; facilitation; interspecific competition; niche separation*

[†] Corresponding Author: Gpule@arc.agric.za

QUANTIFYING HEIFER LOSSES IN PASTORAL AND PERI-URBAN CAMEL HERDS OF NORTHERN KENYA

G.S. Mumina, ^{1†}, G. Owuor ² and B.O. Bebe ³

¹Kenya Agricultural Research Institute (KARI), Box 147-60500, Marsabit, Kenya

²Department of Agricultural Economics and Agribusiness management, Egerton University, Box 536-20115, Egerton, Kenya.

³Department of Animal Sciences, Egerton University, Box 536-20115, Egerton, Kenya.

ABSTRACT

Arid and semi-Arid rangelands are vulnerable to climate change and socio-economic factors forcing pastoralists settle. Camels (*Camelus dromedarius*) are primary livelihood assets providing both tangible and intangible benefits to pastoral households. Consequently, peri-urban system has emerged from predominantly pastoral system. Therefore, loss of camel heifer replacements to first calving was compared between pastoral and peri-urban production systems of northern Kenya. Using multistage sampling techniques primary data was collected with 729 and 1271 cases of loss in pastoral and peri-urban systems respectively analyzed with T test and Tobit model. Of the heifer calves born in the peri-urban system 0.505 do not reach first calving, 11.8% higher than the loss in pastoral system (0.387) with large proportion ($\geq 50\%$) attributed to diseases at preweaning age. Policy intervention to support peri-urban camel production system need targeting improving infrastructure to enhance delivery of veterinary services, security situations and provision of herd labour by the owner.

Keywords: *Heifer losses; pastoral; peri-urban and camel*

† Corresponding Author: muminalu@yahoo.com

**ANIMAL GENETICS AND POVERTY
ALLEVIATION IN AFRICA**

EXPERIENCES WITH BREEDING STRUCTURES FOR GENETIC IMPROVEMENT OF SMALL RUMINANTS

J.P. Mueller

National Institute for Agricultural Technology, Bariloche, Argentina
jmueller@bariloche.inta.gov.ar

ABSTRACT

Theoretical aspects in the design of breeding structures for purebred genetic improvement programs are briefly reviewed and discussed in the light of practical experiences with small ruminants. If a conventional hierarchical breeding structure is already in place, its efficacy has to be examined in terms of genetic progress and dissemination. If a new breeding structure is planned, open nucleus breeding theory is helpful to formulate sensible options. The main challenge is to choose and implement structures which can make the breeding program self-sustainable in time. This usually requires overcoming a variety of difficulties for which past and ongoing experiences can be helpful. Guidance by technical advisors with such experience and with a solid understanding of the underlying genetic principles is crucial to avoid repeating mistakes and to reproduce positive experiences. A successful program is largely related to the level of involvement of the participants in its design, implementation and operation.

Keywords: *Sheep; goats; open nucleus; selection*

INFRASTRUCTURE FOR SUSTAINABLE UTILIZATION OF ANIMAL GENETIC RESOURCES IN SOUTHERN AND EASTERN AFRICA

E. Zonabend^{1†}, A.M. Okeyo², J.M.K. Ojango², S. Moyo³, J. Philipsson¹

¹Swedish University of Agricultural Sciences, Department of Animal Breeding and Genetics, Uppsala, Sweden

²International Livestock Research Institute, Nairobi, Kenya

³International Livestock Research Institute, Maputo, Mozambique

ABSTRACT

Sustainable conservation or improvement of Animal Genetic Resources are important for food security and require appropriate recording of key traits and breed utilization by selection of superior breeding stock. The aim of this study was to undertake an assessment of current policies and infrastructure related to livestock breeding in Southern and Eastern Africa. In 2009 ILRI, FAO and SLU, in collaboration with EAC and SADC, organized a workshop with participants from various institutions to collate information on the current infrastructure. Semi-structured qualitative interviews were then done at country level with key informants within the animal breeding sector. The study showed that major constraints to implement efficient breeding programs include lack of appropriate breeding policies or strategies, shortage of human and institutional capacity, and lack of collaboration between organizations and stakeholders in the breeding sector. Strengthening and capacitating farmer organizations and research institutions offer opportunities for implementing improved breeding strategies.

Keywords: *Breeding strategies; Infrastructure; Institutions; Livestock*

[†] Corresponding Author: Emelie.Zonabend@hgen.slu.se

DESIGNING AND IMPLEMENTATION OF COMMUNITY-BASED BREEDING PROGRAMS FOR ADAPTED LOCAL SHEEP BREEDS IN ETHIOPIA

Haile A.^{1†}, Duguma G.¹², Mirkena T.¹², Tibbo M.³, Iñiguez L.³, Rischkowsky B.³, Okeyo M.⁴, Wurzinger M.², and Sölkner J.²

¹International Livestock Research Institute (ILRI), PO Box 5689, Addis Ababa, Ethiopia

²BOKU - University of Natural Resources and Applied Life Sciences, Department of Sustainable Agricultural System, Division of Livestock Sciences, Gregor – Mendel Strasse 33, A-1180 Vienna, Austria.

³International Centre for Agricultural Research in the Dry Areas (ICARDA), PO Box 5466, Aleppo, Syria

⁴ILRI, PO Box 30709, Nairobi, Kenya

ABSTRACT

Within-breed selection programs based on developed country approaches, and importation of exotic breeds for crossbreeding, have generally failed in developing countries. Main reasons for the failures were lack of involving or inadequate participation of livestock keepers in the design and implementation of the programs in addition to due considerations for infrastructural and institutional arrangements. A community-based breeding program for indigenous breeds owned mostly by small-scale farmers is an attractive option. The research project presented here, is designing community-based sheep breeding strategies in four locations of Ethiopia representing different agro-ecologies that are habitat to four indigenous sheep breeds (Afar, Bonga, Horro and Menz). The steps followed in designing the community-based breeding program included characterization of the production system and the breeds, assessment of constraints to access to inputs and market services, definition of breeding goals, assessment of alternative breeding strategies, and implementing of the most appropriate and acceptable breeding strategy. Methods such as participatory rural appraisal, formal surveys, choice experiments, ranking of animals from own flock and ranking of animals of other farmers, and simulation studies were used. The approach ensured full participation of livestock keepers from the initial inception of the program to full implementation and ownership of the scheme. At present 500 smallholder households owning about 8,000 sheep are registered in the program. The first indication of success has been the implementation of participatory selection of the first sets of best replacement rams based on performance records and dam history.

Keywords: *community based breeding; indigenous sheep breed; Ethiopia*

† Corresponding Author: a.haile@cgiar.org

**IMPORTANT ASPECTS AND LIMITATIONS IN CONSIDERING
COMMUNITY-BASED BREEDING PROGRAMS FOR LOW-INPUT
SMALLHOLDER LIVESTOCK SYSTEMS**

M. Wurzinger[†], A. Haile², J. Sölkner¹ and L. Iniguez³

¹BOKU - University of Natural Resources and Applied Life Sciences, Department of Sustainable Agricultural System, Division of Livestock Sciences, Gregor – Mendel Strasse 33, A-1180 Vienna, Austria.

²ILRI-International Livestock Research Institute, Addis Ababa, Ethiopia

³ICARDA - International Center for Agricultural Research in the Dry Areas, P.O. Box 5466, Aleppo, Syrian Arab Republic

ABSTRACT

There are evidences which indicate failure of many smallholder breeding programs in developing countries because they neglected basic conditions, particularly the involvement of farmers in a participatory manner from design to the implementation of the programs. Inadequately planned centralized breeding programs to improve local breeds and many plans prescribing crossbreeding with European highly productive breeds failed, although there are some success stories. Though some nucleus breeding programs were successful and attained some sustainability when farmers' participation was considered, they still are vulnerable once the funding provided ends. An evolving approach, emerging from participatory research experiences, involves community-based breeding programs for low-input smallholder farmers. These are being implemented in pilot research sites with promising results and there are already lessons learnt that merit consideration with regard to program sustainability. The paper discusses important factors for the success of these breeding programs. Farmer participation along with main issues for program implementation are highlighted in relation to site selection, the communication processes, recording schemes, role of scientists, the institutionalisation of cooperation, and the enabling environment. Ongoing case studies of successful community-based breeding programs are also highlighted.

Keywords: *Community-based breeding; low-input small holders; farmer participation*

[†] Corresponding Author: maria.wurzinger@boku.ac.at

GROWTH PARAMETERS OF INDIGENOUS CHICKEN POPULATIONS REARED INTENSIVELY IN KENYA

K. Ngeno¹, B. O. Bebe² and A. K. Kahi^{3}*

¹International Livestock Research Institute (ILRI), P.O Box 30709, Nairobi, Kenya.

²Livestock Production Systems Group, Department of Animal Science, Egerton University, P. O. Box 536, 20115, Egerton, Kenya.

³Animal Breeding and Genetics Group, Department of Animal Sciences, Egerton University, P. O. Box 536, 20115, Egerton, Kenya.

ABSTRACT

This study compared body weights of indigenous chicken (IC) ecotypes and modeled the growth curves to estimate the associated parameters and their relationship using four growth models namely Von-Bertalanffy, Gompertz, Logistic, and Brody. Five ecotypes namely Kakamega (KE), Bondo (OE), West Pokot (WE), Narok (NE) and Bomet (BE) were evaluated. Over the growth period, OE was the heaviest from week 2 onwards. However, from week 12 onwards there was no significant difference in body weight between the ecotypes. The fitted parameters for growth demonstrated ecotype differences ($P<0.05$) in the asymptotic weights (A), maturity index (k) and scaling parameters (b) in all the models. The study revealed differences in growth curve parameters and patterns among the ecotypes which indicate genetic influences. Such differences among the ecotypes present an opportunity to choose the best parental lines for practical IC breeding and development of commercial stock through selection and/or crossbreeding.

Keywords: *Ecotypes; Indigenous Chicken*

* Corresponding Author: a.kaha@incip.org

OPTIMIZED BREEDING STRATEGIES FOR THE LOCAL SAHIWAL CATTLE IN KENYA

R. Roessler^{1†}, E. Ilatsia^{1,2}, A. Valle Zárate¹

¹University Hohenheim, Institute of Animal Production in the Tropics and Subtropics, 70593 Stuttgart, Germany

² Animal Breeding and Genetic Group, Department of Animal Sciences, Egerton University, Kenya

ABSTRACT

The formation of a National Sahiwal Stud in 1962 was the beginning of a formal Sahiwal cattle breeding program in Kenya, with the aim of improving production and functional traits. Yet, there are no structured mechanisms for the exchange of genetic material among the current small, dispersed cattle herds, and the willingness of the main beneficiaries of the program, the Maasai pastoralists in the southern rangelands and other ranchers, to participate in such a program is widely missing. The present study therefore aims at developing appropriate breeding strategies for Sahiwal cattle in Kenya by systematically evaluating cattle keepers' trait preferences, production systems and the breeding organization. It uses a combination of field data collection, modeling and literature review. Results are presented, addressing use values and relative importance of breeding traits to pastoralists and ranchers. Results will be used for modeling breeding programs that are responsive to the needs of different Sahiwal keepers.

Keywords: *Sahiwal cattle, Kenya; pastoralists; breeding program evaluation*

† Corresponding Author: regina.roessler@uni-hohenheim.de

**POTENTIAL OF INDIGENOUS SMALL RUMINANTS OF ETHIOPIA FOR
MARKET ORIENTED PRODUCTION**

Solomon Abegaz

Institute of Biodiversity Conservation

Addis Ababa, Ethiopia

Solo_abegaz@yahoo.co.uk

ABSTRACT

Indigenous sheep and goats are mainly kept under low-input low-output extensive system of production. Changes are taking place which enforce market oriented and commercial type of production. Looking into the market requirement and finding ways of meeting that efficiently and profitably is important to fit indigenous breeds into the market. Published information on performance of indigenous sheep and goats were evaluated against current export market requirements. There is sufficient between and within breed variation in live weight and carcass quality to be exploited in meeting the requirement. Additionally sufficient variation in kleiber ratio (measure of efficiency) and daily weight gain exist among the indigenous sheep and goats contributing to profitability and also to mitigate climate change (efficient animals produce less GHG). Few cost benefit studies on finishing operations were also positive. There is ample opportunity for market oriented or commercial production and to ensure conservation through sustainable use.

Keywords: Market oriented; efficiency; profitability; Sheep and goats; live weight

**GENETIC DIVERSITY AND POPULATION STRUCTURE OF THE
INDIGENOUS SHEEP IN KENYA BASED ON MICROSATELLITE ANALYSIS**

Mukhongo M. Denis, ^{1, †} Muigai Anne¹, Tapio Miika², Okeyo Mwai²

¹Jomo Kenyatta University of Agriculture and Technology-Nairobi, Kenya

²-International Livestock Research Institute-Nairobi, Kenya

ABSTRACT

Knowledge of the genetic relationship and admixture among neighbouring populations is crucial for conservation efforts. This study analyzed the molecular diversity of fifteen indigenous sheep populations in Kenya. Blood samples from 582 individuals were genotyped across the 15 microsatellite markers. Values of expected heterozygosity and Mean number of alleles ranged from 0.596 to 0.807 and 6.67 to 9.33 respectively. Most populations showed significant heterozygote deficiency due to a moderately high level of inbreeding, f_{IS} (0.109). Population genetic differentiation was reasonably high ($\theta_{ST} = 0.101$). Four population clusters majorly based on geographical proximity and interbreeding among populations were detected. These results indicate levels of admixture warranting institution of conservation measures. However, a more encompassing study including all regions in the country as well as more microsatellite markers is necessary to comprehensively understand the dynamics of genetic introgression.

Keywords: *Indigenous Kenyan sheep; microsatellite markers; genetic diversity; admixture*

[†] Corresponding Author: denmismuk@gmail.com

CHARACTERISATION OF ZULU (NGUNI) SHEEP FOR UTILIZATION, IMPROVEMENT AND CONSERVATION

N.W. Kunene^{1†}, C.C. Bezuidenhout², I. V. Nsahlai³, E.A. Nesamvuni⁴

¹University of Zululand, Kwadlangezwa, . South Africa

²School of Environmental Science and Development, North-West University Potchefstroom, South Africa

³Department of Animal Science, University of Kwazulu-Natal, Scottsville, South Africa

⁴Limpopo Department of Agriculture, Research & Training Services Branch, Polokwane, 0700

ABSTRACT

The indigenous Nguni sheep of Zululand, South Africa, are called the Zulu sheep. The breed is classified as “insecure”. Documentation of characteristics of a breed is important for its utilisation, improvement or conservation. This study was undertaken to document, the utilization of the Zulu sheep, some morphological characteristics, and the intra- and inter-population genetic variation of the breed using random amplified polymorphic DNA markers. A survey conducted to a total of 76 rural farmers confirmed that the Zulu sheep in the rural areas are used as a source of protein and cash when necessary and were considered as hardy. Three populations of Zulu sheep reared extensively in three localities were used for the morphometric and genetic studies. The phenotypic traits measured were significantly different between the locations, seasons, the sex and the age of sheep. The phenotypic and genetic diversity between populations was larger than within populations indicating an opportunity of genetic exploitation by selection between populations. An open nucleus breeding scheme from lower-tier flocks of the farmers for pure breeding to nucleus flocks (Governmental ranches) could be an appropriate means of conservation.

Keywords: *Indigenous Sheep; Conservation; Extensive farming*

[†] Corresponding Author: nkunene@pan.uzulu.ac.za

CARCASS CHARACTERISTICS AND MEAT QUALITY OF PURE ANKOLE CATTLE AND THEIR CROSSBREDS WITH BORAN AND FRIESIANS FINISHED IN A FEEDLOT

K. Kamatara¹, D.Mpairwe^{1#}, M.Christensen², D.Mutetikka¹, J.Madsen²

¹Department of Animal Science, Makerere University, Kampala, Uganda.

²Department of Food Science and Department of Large Animal Sciences, Copenhagen, Denmark.

ABSTRACT

Sixteen bulls of Ankole and each of their crossbreds with Boran and Friesian with average age 18mths and 190±15kg liveweight finished in a feedlot and slaughtered after 120days, were studied regarding their carcass quality traits. Muscle pH declined faster in Boran crossbreds ($p<0.05$) within the first 45 min and attained a higher ultimate pH ($p<0.05$) than pure Ankole and Friesian crossbreds. Carcass weight and most linear carcass measurements were similar ($p>0.05$) in the three genotypes but the Boran and Friesian crossbreds exhibited higher ($p<0.001$) hind limb length and maximum width than Ankole bulls. Boran crossbreds had higher blockiness indices ($p<0.001$) than pure Ankole and Friesian crossbreds. Muscle percentage was higher ($p<0.001$) in pure Ankole and Friesian than the Boran crossbreds. However, the Boran crossbreds had higher intramuscular fat (marbling) than pure Ankole and Friesian genotypes. Ankole bulls finished in a feedlot exhibited similar potential for beef production as their Friesian crossbreds.

Keywords: *Ankole cattle; grazing, feedlot; crossbreds; carcass composition*

CALVING SPREAD FROM UNRESTRICTED BREEDING SEASON AND ITS IMPACT ON PERFORMANCE OF COMMUNAL, DEVELOPING AND COMMERCIAL BEEF CATTLE FARMING

D. Nembilwi[†], *N. B. Nengovhela*, *D. Motiang*, *N.J. Mulaudzi*, *A. L. Mogashoa*, *L. T. Raphahlelo*¹.

ARC- Animal Production Institute, Private Bag x 2 Irene, 0062, South Africa.

ABSTRACT

Cattle are expected to breed and calf within natural breeding seasons. Thus restricted breeding seasons generally fall within the natural breeding periods. The aim of this study was to determine the calving spread, growth and fertility of unrestricted breeding herds in communal, developing and commercial beef cattle farming. Data on birth-date, inter-calving-period and growth performance were collected from communal, developing and commercial herds. Averaged across all three sectors most (65%) calves were born within natural breeding season, although most (68%) of calves from communal areas were born outside the natural season. In communal areas calves born within the natural breeding season grow better than calves born outside the natural breeding season in the communal and developing sectors whereas in the commercial sector better management and supplementation made the differences insignificant. Selecting on calving spread under communal and developing sectors promise to be a leverage point to improve growth and fertility in those sectors.

Keywords: *breeding season; communal; beef cattle; calving spread; growth.*

[†] Corresponding Author: nembilwid@arc.agric.za

CATTLE POPULATION IN LIBYA: IMPORTED AND LOCAL THREATENED CATTLE BREEDS

Akram Fowad

Faculty of agriculture, Department of animal production, Omar Al-muktar university
raswanna@yahoo.com.

ABSTRACT

The Libyan cattle population is about 130,000 head. There are three major cattle breeds in the country: two imported breeds (Friesian and Jersey) and Brown Atlas local breed. Since 1970, Friesian and Jersey cattle have been imported from Europe and north America. Jersey cattle were all distributed to farmers in the Aljabal Al-Alkhdar region in the northeast of the country. The only breed that has been imported continuously is Friesian. In the 1990s, about 6,000 head of Santa Gertrudis cattle breed were imported and distributed in the southern region. Local cattle are of Brown Atlas breed common to North Africa from Libya to Morocco. Brown Atlas breed is believed to have derived from the humpless Shorthorn cattle of African or Asian origin. Local cattle have been intermixed in unplanned ways with other breeds from Mediterranean islands like Pentlaria and imported breeds (Friesian and Jersey). The pure local cattle breed is small in size, without hump, light grey or brown coat color, the horns are short with black tips. The breed has very low productivity where milk production is estimated at 500-600 kg in six months. Cows weigh about 300 kg and bulls can weigh from 350 to 450 kg. The local cattle breed is now threatened from unplanned mating with imported cattle and the negligence of farmers who have moved to Friesian and Jersey cattle. Plans were made to conserve this breed through the formation of nucleus herds in the agriculture research center stations.

Keywords: *cattle; libya*

COMPARATIVE EVALUATION OF TWO NIGERIAN LOCAL CHICKEN ECOTYPES AND THEIR CROSSES FOR GROWTH TRAITS

Momoh, O.M[†], Nwosu, C.C² and Adeyinka I.A³

¹Department of Animal Breeding and Physiology, University of Agriculture, Makurdi, Benue State, Nigeria.

²Department of Animal Science, University of Nigeria, Nsukka, Enugu State, Nigeria.

³National Animal Production Research Institute, Ahmadu Bello University, Zaria, Kaduna State Nigeria.

ABSTRACT

The Nigerian local chickens were grouped into heavy ecotype (HE) and light ecotype (LE). Comparative evaluation of body weight (BWT), body weight gain (BWG) and feed conversion ratio (FCR) at 4-weekly intervals (from 0-20 weeks) of HE, LE and their F₁ crosses; HE x LE – main cross (MCX) and LE x HE – reciprocal cross (RCX) were carried out. The total of 214, 142, 190 and 185 day-old chicks of HE, LE, MCX and RCX, respectively were used for the study. The chicks were reared on deep litter pens from 0-20 weeks using standard management procedures. Data were subjected to the ANOVA technique. Results showed that the HE differed ($P < 0.05$) from the LE in BWT (0-20 weeks). The crossbred groups overcame the initial setbacks and grew significantly heavier than the pure parents from 12-20 weeks of age. Results of FCR showed that the local chickens are less efficient in feed utilization.

Keywords: *Local chickens; heavy ecotype; light ecotype; main cross; reciprocal cross.*

[†] Corresponding Author: mykemomoh@gmail.com

DEVELOPMENT OF A STANDARDIZED BODY CONDITION SCORE FOR NATIVE CATTLE IN UGANDA

Dierenfeld E.S[†] and Lukuyu B²

¹Novus International, Inc., St. Charles, MO USA;

²International Livestock Research Centre, Nairobi, KENYA.

ABSTRACT

Standardized body condition indices (BCI) or scores (BCS) provide practical management tools for assessment of diet utilization and general quantification of fat, protein, and energy stores. They have been widely developed and applied with livestock, domestic cats and dogs, and more recently, to various wildlife species, primarily hoofstock. Comparisons between BCS developed for free-ranging versus captive wildlife species have been informative in optimizing dietary management of some species; a similar tool can also apply to production animals in extensive grazing systems. Typically, BCS is quantified on a scale of 1 to 5, or 1 to 9, with or without intermediate gradations, and accompanying physical descriptors.

We developed a BCS for assessing native Ankole cattle in Uganda, based on objective physical criteria modified from those used to categorize other dairy breeds, on a scale of 1 to 5. Physical features used for evaluation included: overall conformation/appearance (visible bone structure, muscling, fat cover, and hair coat), and more specifically the hips and pelvic region (hook and pin bone prominence), tailhead and loin (spinous processes, amount of flesh cover), ribs (visibility of individual ribs), and brisket (neck and shoulder fullness). Descriptors were reviewed and revised, and a series of photographs of individual cattle were included in a BCS guideline document. Criteria are in the process of being field-tested and calibrated against hearth-girth measurements as a collaborative effort within the East Africa Dairy Development initiative. Under this system, BCS 3 is considered Ideal, whereas BCS 2 (Underweight) and BCS 4 (Overweight) represent acceptable body status under various management considerations/individual animal parameters, but warrant closer observation and action. BCS 1 (Very Thin) and BCS 5 (Obese) are not considered acceptable health status, and are associated with decreased productivity. Loss of BCS is expected during early lactation when a cow is mobilizing reserves for milk production; typically, changes have been quantified from 0.5 to 1 condition score unit during the first 60 days postpartum. Similar alterations in body condition have been recorded with environmental/seasonal habitat/food resource shifts. A practical technique for evaluating these changes, and for monitoring efficacy of management which minimizes BCS variability, will provide a tool supporting improved milk and reproductive outputs.

Keywords: *Ankole; body condition score; dairy; breeds; production performance*

[†] Corresponding Author: Ellen.Dierenfeld@novusint.com

EVALUATING OPTIONS FOR SECURING CAMEL BREEDING STOCK IN THE SHIFT FROM PASTORAL TO PERI-URBAN PRODUCTION SYSTEM IN NORTHERN KENYA

G.S. Mumina,^{1†} G. Owuor² and B.O. Bebe³

¹Kenya Agricultural Research Institute (KARI), Box 147-60500, Marsabit, Kenya

²Department of Agricultural Economics and Agribusiness management, Egerton University, Box 536-20115, Egerton, Kenya.

³Department of Animal Sciences, Egerton University, Box 536-20115, Egerton, Kenya.

ABSTRACT

Arid and Semi-Arid Lands (ASALs) of northern Kenya are vulnerable to climate change and socio-economic factors forcing pastoralists to settle. With the changing climate, camels (*Camelus dromedarius*) are the primary livelihood assets providing both tangible and intangible benefits to the pastoral households. Pastoralists are forced to shift from their traditional culture and settled down around the urban areas to access markets and social services. Production of camels in the ASALs that has traditionally been pastoral is rapidly emerging in peri-urban areas with sedentarization process of pastoral communities in search of alternative livelihood options. The study determined factors influencing the survival of camel breeding stock to first calving in the shift from pastoral to peri-urban system in northern Kenya. Primary data was collected through progeny history techniques with 729 and 1271 cases of loss in pastoral and peri-urban systems respectively analyzed with Tobit model. The loss of potential heifers for breeding was 8.57% higher ($p < 0.01$) in peri-urban than in the pastoral system. The rising loss of breeding stock in the peri-urban system could be associated with increasing camel populations resulting from sedentarization process. Consequently reducing mobility of pastoralists and degrading the rangelands through over utilization of fodder and feed resources increasing incidences of diseases. Policy interventions to support peri-urban camel milk system need to target improved infrastructure to enhance delivery of veterinary services, improved security situation and support herd labour being provided by the herd owner rather than hired labour.

Keywords: *Securing camel breeding stock; system*

† Corresponding Author: muminalu@yahoo.com

HERITABILITIES AND CORRELATIONS BETWEEN BODY WEIGHTS AND GROWTH CURVE PARAMETERS OF INDIGENOUS CHICKEN POPULATIONS REARED INTENSIVELY IN KENYA

K. Ngeno¹, T. M. Magothe^{1,2}, T. O. Okeno^{1,3}, B. O. Bebe⁴ and A. K. Kahi^{1}*

¹Animal Breeding and Genetics Group, Department of Animal Sciences, Egerton University, Egerton, Kenya

²Livestock Recording Centre, Ministry of Livestock Development, Naivasha, Kenya

³Department of Animal Breeding in the Tropics and Sub-Tropics, Humboldt University of Berlin, Berlin, Germany

⁴Livestock Production Systems Group, Department of Animal Science, Egerton University, Egerton, Kenya

ABSTRACT

The objective of this study was to estimate heritabilities and genetic and phenotypic correlations among and between body weights and growth curve parameters (asymptotic weight, A , scaling parameter, b and maturity index, k) of indigenous chicken (IC) populations in Kenya. Four ecotypes were analysed. The growth parameter was estimated using the Gompertz model and a sire model was used to estimate (co)variance components. The heritability estimates were low for the BW at hatch (BW_0 , 0.17), moderate for BW in week 20 (BW_{20} , 0.28) and high for the BW in week 8 (BW_8 , 0.56). The high heritability estimate for BW_8 indicates that the use of BW_8 as selection criterion would seem more efficient. The heritability estimates were low for b (0.05) and moderate for A (0.26) and k (0.29). The moderate heritability estimates for the growth curve parameters could be applied to change the shape of the growth curve through selection.

Keywords: *Heritability; ecotypes; indigenous chicken.*

*Corresponding Author: a.kahi@incip.org

**INCIDENCE OF UDDER ABNORMALITIES AND THEIR EFFECTS ON
NUMBER OF KIDS BORN AND WEANED IN WEST AFRICAN DWARF GOAT**

M.N. Bemji[†] and S.A. Popoola

Dept. of Animal Breeding and Genetics, University of Agriculture,
P.M.B. 2240, Abeokuta, Nigeria.

ABSTRACT

Records of 589 West African Dwarf goats were used to determine frequency of occurrence of udder abnormalities and their effects on cumulative number of kids born and weaned/doe in South-Western Nigeria. Goats were reared extensively by small holder farmers. The incidence of supernumerary teats were 5.43%, 1.19% and 0.68% for does with three, four and six teats respectively, does with normal two-teat condition had 92.70%. Percentage of does with asymmetrical udder was 4.92% while does with symmetrical udder were 95.08%. Cumulative number of kids born or weaned/doe increased ($P < 0.001$) with parity. Primiparous does had similar estimates (1.35 kids) for both traits, while 10.97 ± 0.35 kids at birth and 9.48 ± 0.40 kids at weaning were cumulative over six parities/doe. Under symmetry and number of teats did not affect both traits significantly. It is conclusive that frequencies of udder abnormalities were low and had no significant influence on number of kids born or weaned.

Keywords: *Udder abnormalities; litter size; goat*

[†] Corresponding Author: bemjimartha2002@yahoo.com

MODELLING OF LACTATION CURVES OF COWS USED IN MEDIUM AND SMALLHOLDER DAIRY SYSTEMS IN KENYA

Wasike C. B.^{ab†}, A. K. Kahi^c and K. J. Peters^a

^aInstitute of Animal Breeding in the Tropics and Subtropics, Humboldt University of Berlin, Philippstraße 13, Haus 9, 10115 Berlin, Germany.

^bDepartment of Animal Sciences, Pwani University College. P.O. Box 95, 80108 Kilifi, Kenya.

^cAnimal Breeding and Genetics Group, Department of Animal Sciences, Egerton University, P.O. Box 536, 20115 Egerton, Kenya.

ABSTRACT

This study aimed at determining a mathematical function to describe lactation curves of cows in smallholder dairy systems in Kenya to facilitate inclusion of partial lactations in national genetic evaluation. Six lactation functions namely the incomplete gamma function of Wood (WD), exponential function of Wilmink (WIL), Mixed algorithm of guo and Swalve (GUOS), polynomial regression function of Ali and Schaeffer (ALIS) and mechanistic functions of Dijkstra (DIJ) and Pollott (APOL) were fitted on milk yield records of Jersey, Guernsey and Sahiwal cows. Functions were compared using the adjusted R squared, percentage of squared bias and correlation between the predicted and actual milk yield. The DIJ and WD functions fitted the data better than the other functions. Convergence failure was noted in some analyses using DIJ function indicating high data requirements of this function. Accuracy of prediction varied between breeds and between lactations indicating their independence. The WD function was more desirable for modelling lactation curves. It fitted the data better and adapted well to small datasets common in smallholder systems. Evaluations should consider breeds and lactations independently to enhance accuracy.

Keywords: *Lactation curves; dairy cattle; smallholder production systems*

† Corresponding Author: wasikebwire@yahoo.co.uk

**PART-PERIOD EGG PRODUCTION AND EGG QUALITY
CHARACTERISTICS OF TWO ECOTYPES OF NIGERIAN LOCAL CHICKEN
AND THEIR F₁ CROSSES**

Momoh, O.M[†], Ani A.O² and Ugwuowo, L.C²

¹Department of Animal Breeding and Physiology, University of Agriculture, Makurdi, Benue State, Nigeria.

²Department of Animal Science, University of Nigeria, Nsukka, Enugu State, Nigeria.

ABSTRACT

The Nigerian local chickens were classified into two ecotypes, heavy (HE) and light (LE). These two distinct types may differ in their egg characteristics. Short-term egg production and egg quality characteristics of HE and LE and their F₁ crosses were therefore compared. Data on percent hen-day production, egg number, egg weight and egg mass of 50 pullets each of HE, LE, HEXLE and LEXHE were collected. Also, external and internal egg quality traits were assessed on a total of 640 eggs. Data were subjected to ANOVA technique. Result showed that there was no significant (P>0.05) genetic group effect on short-term percent hen-day production, egg number and egg mass. However, genetic group significantly (P<0.05) affected egg weight. Genetic group effect was significant (P<0.01) in all the egg quality traits studied except shell weight. On the basis of short-term egg production the HE and LE may not be considered as distinct strains.

Keywords: *Short-term; egg production; egg quality traits; local chickens*

[†] Corresponding Author: mykemomoh@gmail.com

PERFORMANCES OF MURRAH BUFFALOES UNDER TROPICAL CLIMATIC CONDITIONS OF TAMIL NADU, INDIA

A.K. Thiruvenkadan^{1†} and S. Panneerselvam²

¹ Associate Professor, Department of Animal Genetics and Breeding, Veterinary College and Research Institute, Namakkal, Tamil Nadu, 637002, India

² Professor and Head, Department of Animal Genetics and Breeding, Veterinary College and Research Institute, Namakkal, Tamil Nadu, 637002, India

ABSTRACT

This study was made to assess the production performance of Murrah buffaloes purchased from their breeding areas in the hot and humid climatic conditions of Tamil Nadu, India. The data pertaining to different production traits (1828 lactation records of 395 Murrah buffaloes) distributed over a period of 29 years (1974 to 2002) were collected from History and Pedigree Sheets maintained at Central Cattle Breeding Farm, Tamil Nadu, India and subjected to Least-Squares analysis of variance. The overall least-squares means for production traits of peak yield, days to attain peak yield, 305-day milk yield, lactation length, lactation milk yield, milk yield per day of lactation and milk yield per day of calving interval were 9.09 ± 0.07 kg, 52.38 ± 0.86 days, 1706.52 ± 17.85 kg, 289.06 ± 2.37 days, 1759.65 ± 19.58 kg, 5.94 ± 0.04 kg and 3.61 ± 0.05 kg respectively. The non-genetic factors such as period of calving, season of calving and parity had highly significant ($P < 0.01$) effect on all the traits studied except lactation length. In general, the performance of Murrah buffaloes purchased in their breeding area performed quite comparable with those maintained in their breeding area indicating that there might not be any appreciable genotype x environment interaction.

Keywords: *Murrah; buffaloes; milk production; tropical climate*

[†] Corresponding Author: drthirusiva@gmail.com

PRODUCTIVITY AND DESIRABLE TRAITS OF SMALL EAST AFRICAN GOATS IN SEMI-ARID AREAS OF CENTRAL TANZANIA

Chenyambuga S.W.^{1†}, Komwihangilo D.M.² and Jackson M.²

¹Department of Animal Science and Production, Sokoine University of Agriculture, P.O. Box 3004, Chuo Kikuu, Morogoro, Tanzania.

²National Livestock Research Institute, P.O. Box 202 Mpwapwa, Tanzania

ABSTRACT

A study was carried out to determine the functions, desirable traits and performance of indigenous goats in ten villages of Central Tanzania. A total of 193 goat keepers were interviewed using a structured questionnaire. Body length, rump height, withers height, heart girth and body weight of 225 goats were measured in the households surveyed. The farmers in the study areas kept cattle, goats, sheep, chickens, pigs and donkeys. In terms of importance, indigenous goats were ranked second to local cattle. The main reasons for keeping goats, in order of importance, were generation of income, capital reserve and provision of meat. The indigenous goats were treasured by their owners for being good tolerant to diseases, drought and heat. The indigenous goats in the study areas had mean (\pm se) body weight, wither height, rump height, heart girth and body length of 26.12 ± 0.56 kg, 59.03 ± 0.37 , 56.07 ± 0.34 70.16 ± 0.61 , and 53.26 ± 0.43 cm, respectively. Average age at first kidding ranged from 14.2 to 16.8 months, average kidding interval was about eight months and average litter size was 1.14. Average weaning age was five months and the number of kids per doe's life time was between 9 and 10. It is concluded that indigenous goats in Central Tanzania serve as an important source of income, investment and meat in the households. Their body size and reproductive performances are low.

Keywords: *Indigenous goats; roles; preferred traits; body measurements; reproductive performance*

[†] Corresponding Author: chenyasw@yahoo.com

ROBUSTNESS IN THE TAURINE SHEKO AND ITS PERSPECTIVES IN FOOD AND AGRICULTURE PRODUCTION IN ETHIOPIA

Takele Taye

The Norwegian University of Life Sciences, N-1432, P. O. Box 193, Ås, Norway.

Email: takele_taye@yahoo.com

ABSTRACT

Sheko is the only taurine breed of east Africa region and is among 32 cattle breeds recognized in Ethiopia. Its trypanotolerance character is now reported in literatures. As a result, there is emerging interest to study the special qualities of this breed. The few studies conducted so far were mainly focused on Sheko's trypanotolerance. However, the special qualities of Sheko also include other economically important traits. Here I reported my analysis on robustness in the taurine Sheko. Sheko is among good milk producer indigenous breeds in Ethiopia and Sheko cows maintain their lactation for a longer period. Therefore, the trade-off between trypanotolerance and low milk production observed in West African taurines might not reflect the condition in Sheko. Moreover, despite anecdotal reports about non-functionality of Sheko cattle for draught work, it was now substantiated that Sheko outweighs the local Zebus in its traction stamina and speed. Sheko's high fecundity, high calf crop, short calving interval and long reproductive lifetime were also noted as promising traits. Sheko's special quality in adapting to terrain stress and to a wet and humid environment that harbours internal parasites is among its promising qualities. These special qualities show the Sheko's robustness under challenging environments of low input production systems. However, not much effort has yet been made to exploit these special qualities of Sheko cattle. There is potential to use Sheko cattle to support the food and agriculture production programs in some tsetse infested areas of west and southwest Ethiopia.

Keywords: *Robustness; Taurine Sheko; Special Qualities; Food and Agriculture; Production; Ethiopia*

THE RELATIONSHIPS AMONG BREED, MILKING TRAITS, BODY AND UDDER MEASUREMENT IN HOT CLIMATE AREA IN YEMEN

Mahfoudh. A. A. Al- Hared

Faculty of Agriculture and Veterinary Medicine, Thamar University, Yemen

E-mail: dralhered100@yahoo.com

ABSTRACT

The aim of this study was to estimate the relationships among breeds (Holstein Friesian and Jersey cows) and milking traits (flow rate, milking time and daily milk yield) , body measurements (heart girth, body length and withers height) and udder measurements (front teat length and circumference, rear teat length and circumference, udder height and circumference) in tropical climate area of Yemen. The average daily milk yield and milking time for Holstein-Friesian was 9.50kg and 5.06min whereas 7.25kg and 3.53min in Jersey cows respectively. The average body measurements of heart girth and withers height were 187.11 and 135.86cm for Holstein-Friesian whereas 172.85 and 124.04cm for Jersey cow respectively. There were significance different between all traits and breed, except milk flow. The mean of daily milk yield, milking time and milk flow rate with flat, cylindrical and funnel shape of teat was (8.90, 9.11 and 7.77kg) ,(4.38, 5.17 and 4.17 min) and (2.24, 1.84 and 2.06 kg/min) respectively. Negative correlations was observed between breed of cows and teats shape and milk traits. The result of this study suggests the farmers should be trained to improve management farming.

Keywords: *breed; body & udder measurement; milk traits*

**USE OF PROGESTERONE LEVELS TO DEVELOP GESTATION CURVE AND
DETECT REPRODUCTIVE DEFICIENCIES AMONG FRIESIAN DAIRY COWS**

Hoka.A.I., Indetie, W.D.¹, Kinywa, J.¹, Ojango, N.F.²

¹KARI-National Beef Research Centre, P.O. Box 3840, Nakuru, Kenya

²Delamere Estates, P. O. Private bag, Naivasha, Kenya

ABSTRACT

Herd fertility is evaluated by the percentage of pregnant females over a period of time after exposure to bulls. This attribute was tested using 500 artificially inseminated milking cows. Pregnancy diagnosis was done 24 days after insemination using radioimmunoassay. The influence of cow age, cow parity, milk production were studied. After day 24 milk sampling continued only for incalf cows upto and including the ninth month of gestation to give different levels of progesterone to aid in the development of gestation curve and also to facilitate detection of reproductive deficiencies associated with gestation. The data obtained was analyzed using SAS. Age of cow, parity and milk production showed significant ($p < 0.05$) effects on conception rates. Younger cows of 4 to 6 years old had higher conception rates ($p < 0.05$) than older cows of over 7 years of age. Low parity cows of up to 4th parity had higher conception rates than high parity cows of over the 6th parity. This could be due to younger cows being more reproductively active than their older counterparts. High yielders producing 20 liters per day had low conception rates ($p < 0.05$) compared to medium and low milk producers. There were significant interactions between milk with parity and age. This indicates that high milk producers are in negative nutrient balance thereby impairing reproduction as exhibited by the low conception rates. Older cows, producing more milk had also low rates of conception due to age effect. Gestation curve was developed and some reproductive deficiencies were detected.

Keywords: *Age; Parity; Milk; Conception; Reproductive deficiencies; Kenyan Dairy Cattle*

HERITABILITIES AND GENETIC AND PHENOTYPIC CORRELATIONS FOR EGG PRODUCTION TRAITS IN HORRO CHICKEN OF ETHIOPIA

Nigussie Dana^{1†}, E.H. vander Waaij^{1,2} and J.A.M. van Arendonk¹

¹Ethiopian Institute of Agricultural Research, P.O. Box 32, Debre Zeit, Ethiopia

¹Animal Breeding and Genomics Centre, Wageningen University, P.O. Box 338, 6700 AH Wageningen, The Netherlands;

²Adaptation Physiology Group, Wageningen University, P.O. Box 338, 6700 AH Wageningen, The Netherlands

ABSTRACT

A breeding program has been established in 2008 to improve productivity of Horro chicken, an indigenous population in the western highlands of Ethiopia. The pedigree descended from 26 sires and 260 dams. Egg production was recorded to 44 weeks of age for 1 generation. Heritabilities and correlations were estimated using animal model. Age at first egg showed a very low heritability (0.06 ± 0.15). Heritabilities of egg numbers in the first, second, third and fourth months of laying were $0.32 (\pm 0.13)$, $0.20 (\pm 0.16)$, $0.56 (\pm 0.15)$ and $0.25 (\pm 0.14)$, respectively. Early part period egg production was analyzed based on cumulative number of eggs produced from months 1 to 2 (EP12), 3 to 6 (EP36) and over the 6 months (EP16). Heritabilities of cumulative of monthly records of egg numbers were from 0.24 ± 0.16 (EP12) to 0.35 ± 0.16 (EP16). Genetic correlations among part record egg numbers ranged from 0.79 (EP12 with EP36) to 0.98 (EP36 with EP16). The correlations between monthly and cumulative part record egg numbers ranged from low to high. The highest correlations were found between the number of eggs recorded in the third month (M3) and cumulative part record of the first 2 months (EP12) ($r_g = 0.83$, $r_p = 0.39$) while the other part records, EP36 and EP16, were strongly correlated with M4 ($r_g = 0.74$ to 0.81 , $r_p = 0.68$ to 0.73). Cumulative of monthly records of egg production were relatively more heritable and consistent than monthly egg production. Particularly, cumulative egg production over the first 6 months (EP16) could be used as a selection trait to improve egg production in Horro chickens. However, the standard errors of estimates in this study were mostly high indicating that the estimates have low precision. Parameter estimations based on more data are needed before applying the current results in breeding programs.

Keywords: *indigenous chicken; egg production; heritability; correlations*

[†] Corresponding Author: negussiedana@yahoo.com

EMERGING ANIMAL HEALTH ISSUES

EMERGING ANIMAL HEALTH ISSUES: IMPLICATIONS FOR AFRICAN LIVESTOCK KEEPERS AND PRIORITY INTERVENTIONS IN A GLOBALIZING WORLD: A EUROPEAN PERSPECTIVE

Dr. J. Vanhemelrijck DVM¹

¹GALVmed Doherty Building Pentlands Science Park Bush Loan Edinburgh EH26 0PZ
Scotland, UK
E-mail: Johan.Vanhemelrijck@telenet.be

ABSTRACT

European policies have been shaped in the last decade to provide for nutritious, affordable food and feed, with the best possible guarantees on the safety and the wholesomeness. The European policies promise to the European consumer full traceability from Farm to Fork of all food, and rapid reactions of the whole food-chain if an alert occurs. In addition the whole food chain and all stakeholders are linked to each other and all movements are documented. Emerging animal health issues are rapidly detected through the Rapid alert system and corrective actions have the highest priority. This policy based on the aim for the highest standards of biosecurity generates a gap between other ways and forms of production, much more prone to an undetected health issue. The investments made at the European level, and the national level in a relative biosecure environment of well organized farms have created a situation that would require a very special plan for any African farmers to be able to give the required guarantees. The question is then should African farmers under these circumstances aim at Europe as a market?

The European authorities expect the same guarantees for the trade partners, and sometimes even more than that. The European authorities on the other hand realize that the standards and expectations need, efforts an investments in control, training and education and are ready to invest in training for safer food. There is an open question on the feasibility and the possibility to transfer the European approaches under the African circumstances. The European animal health plan 2007 -2013 is intended to protect the health of European farm animals. It still is based on border biosecurity and not enough on the development support of African farmers. Tropical, and emerging diseases are more seen as a potential threat to the European farms than a cause of animal illness, dead and consequently poverty in Africa. Pastoral keeping of animals is largely not understood, or at least underestimated. It is more seen as a strange uneconomical, risky way of keeping animals.

Emerging animal health issues - Oral Presentations

Many of the European initiatives are intended to protect Europe, European farmers and European citizens. However some of the initiatives are directed towards requests and demands of African organizations. The presentations will lay out the roadmap to interest and motivate European development agencies for African issues in the food chain and the combat against existing and emerging animal diseases. The One Health initiative, the European Animal health plan, will be put in perspective to Africa, and the paper will touch upon the initiatives of the Global platform of animal health and discontools.

GALVmed is a unique initiative that aims at upgrading the ability of African farmers to raise healthy animals by upgrading vaccines and medicines adapted to the African existing and emerging diseases, and by increasing the accountability of the health chain that should provide them. GALVmed will provide solutions to African farmers if the European and local authorities together see the enormous potential impact of availability of quality vaccines and veterinary products as a basis to start poverty alleviation, but ultimately as a basis of the commercialization of African production.

SURVEY OF MAJOR LIVESTOCK DISEASES IN PASTORAL AND AGRO-PASTORAL COMMUNITIES OF BORANA ZONE, SOUTHERN ETHIOPIA

Bedane Adane[†], Berecha Bayissa¹, and Abebe Olkeba¹

¹Yabello Pastoral and Dry land Agriculture Research Center, Oromia Agricultural Research Institute, P.O.Box = 85, Yabello, Ethiopia

ABSTRACT

Major livestock diseases survey was conducted on five districts of Borana zone during August, 2004 to November, 2008 to identify and prioritize major livestock diseases in Borana zone and assess veterinary service delivery in the area. Multi-stage sampling was employed and the data was analyzed using matrix triangulation and descriptive statistics. A total of 29 PAs were thus addressed. Key informants comprising 104 individuals of which 87 were males and 17 were females were interviewed and PRA was conducted. Thus based on the feedback obtained: top ten major cattle, sheep, goats, equines, camels and few diseases of poultry were prioritized and the ranks were set, newly emerging diseases within the vicinity and along Ethio-kenyan border were described with factors affecting distribution of them in these livestock species like season of occurrence and age of animals and percentage coverage of standardized clinics per PAs of the zone were documented.

Keywords: *Livestock; Diseases; Veterinary; Service; Borana*

[†] Corresponding Author: bedaneadane@yahoo.com

QUALITATIVE RISK ASSESSMENTS (RELEASE AND EXPOSURE ASSESSMENTS) FOR THE RISK OF INTRODUCTION OF HIGHLY PATHOGENIC AVIAN INFLUENZA (H5N1) VIRUS INTO ETHIOPIA VIA WILD BIRDS TRADE TRANSITING IN THE COUNTRY

Bewket Siraw¹, Hassen Chaka², Bernard Bett³, Raphaëlle Métras⁴, Solenne Costard^{3,4}, Dirk Pfeiffer⁴

¹Gafat Endowment, Amhara Region, Ethiopia

²National Animal Health Diagnostic and Investigation Centre, Sebeta, Ethiopia

³International Livestock Research Institute, Nairobi, Kenya

⁴Royal Veterinary College, London, UK

ABSTRACT

A qualitative risk assessment was conducted to assess the risk of introduction of highly pathogenic avian influenza (HPAI) virus into Ethiopia via wild bird trade transiting in the country. The assessment followed the OIE risk analysis framework. Risk questions, pathways, data needs and sources were identified through stakeholder workshops. The analysis utilized data obtained from key informant interviews involving relevant stakeholders and institutions, secondary data and published information. Conclusions drawn from the assessment were that the probability of release of HPAI into Ethiopia through transiting wild birds is very low (medium uncertainty) and the risk of domestic poultry in Ethiopia becoming infected by H5N1 HPAIV after the release of the virus by an infected wild bird on trade transit is medium with high uncertainty. The study also identified critical control points where intervention measures could be applied as well as areas that require further research.

Keywords: *Highly pathogenic avian influenza; qualitative risk analysis; Ethiopia; wild birds*

TRYPANOSOMOSIS IN FOUR INDIGENOUS CATTLE BREEDS IN AN ETHIOPIAN FIELD STUDY

J. Stein^{1, 2}, W. Ayalew², W. Mulatu², T. Dessie², J. E. O. Rege³, B. Malmfors¹, H. Lemecha⁴, J. Philipsson¹

¹ Dept of Animal Breeding and Genetics, Swedish University of Agricultural Sciences, P.O. Box 7023, Uppsala, Sweden

² International Livestock Research Institute, P.O. Box 5689, Addis Ababa, Ethiopia

³ International Livestock Research Institute, P.O. Box 30709, Nairobi, Kenya

⁴ National Animal Health Research Center, P.O. Box 04, Sebeta, Ethiopia

ABSTRACT

Trypanosomosis is a major cattle disease in south-western Ethiopia. Previous research on farmers' perceptions on trypanosomosis indicated that the Sheko breed might show signs of trypanotolerance. The aim of this study was to document livestock keepers' knowledge about trypanosomosis and sample blood of their cattle for objective measures of parasitaemia and Packed Red Cell Volume (PCV). Four indigenous breeds from tsetse infested areas of south-western Ethiopia from different breed groups were investigated - Abigar, Gurage, Horro and Sheko. The bleeding of cattle was conducted at the peak challenge period of trypanosomosis in each area. Results showed that the Sheko cattle had lowest level of parasitaemia, fewest number of trypanocidal treatments per year, high average body condition score and, together with Horro, the highest PCV. Out of the four breeds investigated Sheko cattle have the best trypanotolerant attributes. Better use of trypanotolerant animals, such as Sheko cattle, can improve household welfare in tsetse infested areas.

Keywords: *Trypanosomosis; trypanotolerance; cattle; Ethiopia*

**RISK FACTORS ASSOCIATED TO PORCINE CYSTICERCOSIS
PREVALENCE IN SMALLHOLDER PIG PRODUCTION SYSTEMS IN MBEYA
REGION, SOUTHERN HIGHLAND OF TANZANIA**

E.C. Kimbi[†], S.M. Thamsborg², F.P. Lekule³, J. Mlangwa⁴,

¹ Livestock Research Centre (LRC) – Uyole, P.O. Box, 6191, Mbeya, Tanzania.

² Danish Centre for Experimental Parasitology, the Faculty of Life Sciences, University of Copenhagen, Dyrølægevej 100 - DK-1870 Frederiksberg C, Denmark.

³ Department of Animal Science and Production, Sokoine University of Agriculture, P.O. Box 3004, Morogoro, Tanzania.

⁴ Department of Veterinary Medicine and Public Health, Sokoine University of Agriculture, P.O. Box 3021, Morogoro, Tanzania.

ABSTRACT

The study was conducted to identify risk factors for porcine cysticercosis (PC) prevalence in smallholders pig production systems in Mbeya region, Tanzania. A cross sectional survey design was employed whereby a random sample of 300 pig keepers from 30 villages of Mbozi and Mbeya-rural districts of Mbeya region were used to evaluate pig production systems and practices. Concurrently, 600 pigs from sampled farmers were examined for PC infection using enzyme-linked immunosorbent assay (Ag-ELISA). Households PC prevalence varied between 10 and 90% with mean of 45.3%. Significant risk factors for PC prevalence were; free roaming of pigs ($P < 0.01$, OR=2.1), poor pig shelter ($P < 0.05$, OR = 8.4), and sourcing of water from rivers ($P < 0.001$, OR=3.1) and ponds ($P < 0.05$, OR = 5.0). Integrated approaches are suggested for effective control of both PC and taeniosis in PC endemic countries, Tanzania in particular

Keywords: *Risk factors; porcine cysticercosis; Tanzania*

[†] Corresponding Author: cekimbi@yahoo.com

SOME SERUM BIOCHEMICAL AND HEMATOLOGICAL PARAMETERS OF ARSI BALE SHEEP NATURALLY INFECTED WITH *fasciola sp.*

Sandip Banerjee, Kefelew, B and Sintayehu, Y

Department of Animal and Range Science
Hawassa University

ABSTRACT

The study pertains to Arsi Bale sheep slaughtered at abattoirs at Hawassa town. The studies revealed the presence of *Fasciola sp.*, in the liver of 20% of the yearling sheep of both the sexes. Blood was collected from the animals and was analyzed for serum total protein (TP), serum alkaline phosphatase (ALKP), serum aspartate aminotransferase (AST), serum aniline amino transferase, cholesterol, creatinine (CREA), total protein (TP) and triglycerides (TRI). The hematological parameters assessed were, white blood corpuscles (WBC), red blood corpuscles (RBC), lymphocytes (LYM), total cell count (MID) Granulocytes, (GRAN) hemoglobin (Hb), *hematocrit (HCT)*, mean corpuscular volume (MCV), mean corpuscular hemoglobin (*MCH*) and mean corpuscular hemoglobin concentration (*MCHC*). The descriptive statistics results for each of the biochemical and hematological traits were computed for both the sexes and compared with the animals of non infected groups. The results indicated that there was $P < 0.05$ variation in ALKP and CH levels between the infected and non infected groups but no difference was observed between the sexes of the respective groups. The results further indicated that there was a $P < 0.5$ variation in levels of ALT, AST, CREA, TP, TRI, WBC, LYM, MID, GRAN, Hb, HCT, MCV, MCH, MCHC.

Keywords: *Arsi Bale sheep; serum biochemical traits; hematological traits; Fasciola sp*

THE EFFECTS OF PARASITIC PLANT (*VISCUM VERROCOSUM*) ON LIVE WEIGHT GAIN AND FAECAL EGG COUNT IN FEMALE TSWANA GOATS

O. R. Madibela[†], S. Ramabu and J. Machete

Department of Animal Science and Production
Botswana College of Agriculture
P/Bag 0027, Gaborone, Botswana

ABSTRACT

Feeding goats diets containing a parasitic plant, *V. verrocosum*, on live weight (LW) and faecal egg count (FEC) was investigated. Fifteen naturally infected yearly goats and balanced for LW and FEC (mean \pm SD) were equally divided into three groups. Diets; low protein diet (LP; 65.5 g/kg CP), high protein diet (HP; 114.1 g/kg CP) and *V. verrocosum* containing diet (VV; 114.7 g/kg CP) were formulated, and groups were randomly allocated into these treatments (LP; 1731.1 \pm 3.95 epg; HP, 1645.0 \pm 3.46 epg; VV, 1151.0 \pm 6.81epg). There was a significant ($P < 0.01$) treatment x time interaction on FEC. FEC of VV was lower ($P < 0.05$) than that of HP on day 17, 45, 52 and 59. The upper limits of FEC for VV-fed goats after day 24 were less than that of LP and HP goats. Animals fed *V. verrocosum* containing diet maintained slightly higher, but insignificant LW than LP and HP treatments. The use of plants to control internal parasites opens opportunities to exploit indigenous knowledge and reduce costs of animal health care.

[†] Corresponding Author: ricky.madibela2@lincolnuni.ac.nz

ALIGNMENT OF POULTRY SECTOR ACTORS WITH AVIAN INFLUENZA CONTROL MEASURES IN ETHIOPIA

F. Kelemework¹, B. Belay², B. Bett³, T. Randolph³

¹Canadian Physicians for Aid and Relief, Addis Ababa, Ethiopia

²Jimma University, Jimma, Ethiopia

³International Livestock Research Institute, Nairobi, Kenya

ABSTRACT

We assessed the extent to which socio-economic characteristics (capacities, incentives and practices) of poultry value chain actors are aligned with the requirements for successful implementation of avian influenza mitigation measures (biosecurity, reporting, movement control and culling and compensation) in Ethiopia. The premise is that if these socio-economic characteristics are aligned well with the requirements for effective implementation of the control measures, then we would expect the measures to be implemented well; otherwise, we would expect the measures would be implemented poorly. Likert scale questionnaires adapted for each group of respondents were used to capture opinions and perceptions on all the possible characteristics that could influence the implementation of each mitigation measure. The results show that biosecurity had the highest compliance index, followed by movement control, reporting and culling and compensation in that order. Compliance fail-points and how the results can be used to improve avian influenza control policy are discussed.

Keywords: *Ethiopia; avian influenza; mitigation; poultry value chains*

THE IMPACTS OF AVIAN INFLUENZA ON THE LIVELIHOODS OF POULTRY KEEPING COMMUNITIES IN ETHIOPIA – A QUALITATIVE ASSESSMENT

F. Kelemwork¹, K. Kelemu², N. Mango³, B. Bett⁴, T. Randolph⁴

¹Canadian Physicians for Aid and Relief, Addis Ababa, Ethiopia

²Ethiopian Institute of Agricultural Research, Addis Ababa, Ethiopia

³International Center for Tropical Agriculture, Harare, Zimbabwe

⁴International Livestock Research Institute, Nairobi, Kenya

ABSTRACT

This study was conducted to identify the potential impacts of highly pathogenic avian influenza (HPAI) on people's livelihoods, and provide qualitative information on pro-poor HPAI risk reduction strategies in Ethiopia. Eight villages were selected in 4 districts and PRA tools used to collect information on village resources, wealth ranking, livelihoods structure, role of poultry, poultry production constraints and opportunities, impacts of HPAI on livelihoods, and institutional issues for managing HPAI. As HPAI has not been reported in the country, the study assessed HPAI impacts by considering the effects of Newcastle Disease (NCD). The study revealed all household have kept poultry, which is described as offering the highest levels of liquidity and contribution to cash income. Women and children are the main household members involved in poultry keeping. NCD was identified as the major disease affecting poultry production. Chicken losses were felt in terms of income shortfalls more than food losses.

Keywords: *Ethiopia; PRA; Livelihood; HPAI*

ANIMAL FEED AND FEED MARKETS

FEED RESOURCES DEVELOPMENT: SOME LESSONS FROM BUSINESS UNUSUAL

Ranjitha Puskur[†], Anteneh Girma¹

¹International Livestock Research Institute, Addis Ababa, Ethiopia

ABSTRACT

Years of efforts to develop feed resources in smallholder crop-livestock systems, based on the assumption that feed scarcity was due to technology scarcity, resulted in limited pockets of success. This paper provides examples of alternative approaches to feed resources development from Asia and Africa, which could have wide ranging impacts for smallholder livestock keepers. Reframing the problem as one of innovation capacity scarcity, a project spanning diverse agro-ecologies and livestock systems in India and Nigeria established networks of key actors that would help translate the available fodder related knowledge into developmental outcomes. Based on selected entry points and priorities of network members, context-specific interventions including combinations of technical, organizational and institutional options were introduced and some immediate outcomes are evident. A study of Positive Deviant (PD) smallholder forage producers in Ethiopia unraveled the processes, factors and conditions underlying the observed pockets of success in forage technology adoption and use. Drawing on these studies, this paper attempts to distil lessons and principles for pro-poor development of feed resources with implications for research, development practice and policy.

Keywords: *Innovation capacity; networks; Positive Deviant; Knowledge; Learning*

[†] Corresponding Author: r.puskur@cgiar.org

FEED MARKETING SITUATIONS IN ETHIOPIA: CONSTRAINTS OF AND OPPORTUNITIES FOR LIVESTOCK DEVELOPMENT

Mesfin Dejene^{2†}, Seyoum Bediye¹, Dawit Alemu¹, Getu Kitaw¹, Aemiro Kehaliw² and Getnet Assefa²

¹Ethiopian Institute of Agricultural Research, P. O. Box. 2003, Addis Ababa, Ethiopia.

²Ethiopian Institute of Agricultural Research (EIAR), Holetta Research Center, P. O. Box. 2003, Addis Ababa, Ethiopia. E-mail: mesfindegene@yahoo.co.uk

ABSTRACT

Livestock development policy and strategy in Ethiopia should be accompanied by efficient feed marketing system. However, information concerning livestock feed marketing studies are scarce. This paper is aimed at assessing the feed marketing systems of Ethiopia to analyze and generate a qualitative understanding of the feed demand and supply situations, feed quality issues, feed marketing, feed prices and price trends. Results of rapid market appraisal indicated that, the by-products of agro-industries mainly from flour and grind mills, large and small-scale oil processing factories and breweries are directly marketed to user or through traders. Most of the exiting feed processing enterprises are operating under capacity estimated at about 20-30%. The main roughages marketed are cereal straws and baled hay. Feed prices are increasing from time to time which mainly exacerbated by the increasing trend in export market and double taxation. The status of feed supply in the country is at an alarming state. There is no any quality control and assurance mechanism, be it ingredients or mixed ration, sold either by feed processing plants or retailing shops. Precaution needs to be taken in the area of taxation in order to avoid double taxation. Implications to improve the feed marketing systems and opportunities for livestock development are drawn.

Keywords: *Agro-industries; By-products; Concentrate Mixtures; Crop Residues; Quality Control; Taxation.*

† Corresponding Author: mesfindegene@yahoo.co.uk

USING GENOTYPE AND FEEDING REGIME TO ANALYZE EXISTING SMALLHOLDER DAIRY SYSTEMS IN NORTHERN MALAWI

Mizeck G.G. Chagunda^{1†}, Victor Kasulo², Susan Chikagwa-Malunga³, David J. Roberts¹

¹Sustainable Livestock Systems Group, SAC Research, King's Buildings, West Mains Road, Edinburgh, EH9 3JG, Scotland, UK

²Department of Forestry, Mzuzu University, Private Bag 201, Luwingu, Mzuzu, Malawi

³Lunyangwa Agricultural Research Station, P.O. Box 59, Mzuzu, Malawi

ABSTRACT

The study applied a biologically-oriented approach to classify smallholder dairy systems using major drivers of dairy production, genotype and feeding regime. Genotype was divided into base genetics ($\frac{1}{2}$ indigenous x $\frac{1}{2}$ Exotic) and upgrade ($\frac{3}{4}$ Exotic to pure exotic) while feeding regime was either cut-and-carry or grazing, generating a 2x2 factorial (n = 654 cows from 284 farms). Production levels were reflected using milk yield (MY) and calving interval (CI). Base genetics cows under grazing had the highest average MY, 11.4 (sd = 6.0) kg/day while upgrade cows under cut-and-carry had the second highest MY (10.5, sd = 5.7 kg/day) indicating a genotype by environment interaction. Upgrade cows under grazing conditions had the longest CI and those under cut-and-carry had the shortest CI (18.2 vs. 15.7 months). The approach offers an opportunity to study long-term specific effects and a wide range of management strategies for smallholder dairy farming.

Keywords: *Genotype; Feeding, Dairy; Smallholder; G x E Interaction*

[†] Corresponding Author: mizeck.chagunda@sac.ac.uk

EFFECT OF VARYING DIETARY ENERGY TO PROTEIN RATIO LEVEL ON FEED INTAKE, DIGESTIBILITY, GROWTH RATE, FEED CONVERSION RATIO, LIVE WEIGHT AND CARCASS CHARACTERISTICS OF INDIGENOUS VENDA CHICKENS RAISED IN CLOSED CONFINEMENT FROM A DAY UP TO 13 WEEKS OLD

C.A. Mbajiorgu, J. W. Ng'ambi and D. Norris

Dept of Agricultural Economics and Animal Production, University of Limpopo, Private Bag X1106, Sovenga 0727, South Africa.

E-mail: anayochukwumbajiorgu@gmail.com

ABSTRACT

Two experiments were conducted to determine the effect of varying dietary energy to protein ratio on feed intake, growth rate, feed conversion ratio, live weight, digestibility and carcass characteristics of indigenous Venda chickens raised in closed confinement from a day up to 13 weeks old. In each experiment the diets had a similar energy value of 12.2 MJ ME/ kg DM, but with five different levels of protein concentration of 220, 190, 180, 170 and 160 g/kg DM, thus ending up with different energy to protein ratios of 55 ($E_{12.2}P_{22}$), 64 ($E_{12.2}P_{19}$), 68 ($E_{12.2}P_{18}$), 72 ($E_{12.2}P_{17}$) and 76 ($E_{12.2}P_{16}$) MJ ME/ kg protein. A complete randomized design was used in each experiment, the one to six weeks old growing period (unsexed Venda chickens) and the seven to 13 weeks old growing period (male Venda chickens) experiments. A quadratic type equation was used to determine the ratios for optimum production variable. A single dietary energy to protein ratio of 62 MJ ME/kg protein supported optimum feed intake and growth rate while a dietary energy to protein ratio of 63 MJ ME/kg protein supported optimum feed conversion ratio in Venda chickens aged between one and six weeks. A dietary energy to protein ratio of 60 MJ ME/kg protein supported optimum growth rate, feed conversion ratio, carcass weight and breast meat yield in male Venda chickens aged between seven and 13 weeks. However, a dietary energy to protein ratio of 62 MJ ME/kg protein supported optimum feed intake in male Venda chickens aged seven to 13 weeks. The results indicate that a single dietary energy to protein ratio of 62 MJ ME/kg protein optimized feed intake irrespective of differences in sex and age. However, digestibility, growth, feed conversion ratio and live weight were optimized at different energy to protein ratios. These findings have implications on ration formulation for Venda chickens.

Keywords: *Venda chickens; Energy to protein ratio; Intake; Growth.*

IMPACT OF LIVESTOCK GRAZING ON VEGETATION STRUCTURE, HERBACEOUS BIOMASS AND SOIL NUTRIENTS IN SEMI-ARID RANGELANDS OF ETHIOPIA

Z.K.Tessema^{1†}, W.F. de Boer¹, H.H.T. Prins¹, R.M.T. Baars²

¹. Resource Ecology Group, Wageningen University, Droevendaalsesteeg 3A, 6708PB, Wageningen, The Netherlands

². Van Hall Larenstein University of Applied Sciences, Wageningen University, Droevendaalsesteeg 2, 6708PB, Wageningen. The Netherlands

ABSTRACT

Understanding the response of vegetation to the impact of livestock grazing is crucial to facilitate the management of arid and semi-arid rangelands of Ethiopia for both sustainable use and biodiversity conservation. Therefore, a study was conducted in the Abernosa Cattle Breeding Ranch and the Awash National Park of Ethiopia to assess impact of light and heavy grazing on grass and woody species composition, diversity, and their abundance, herbaceous biomass, basal and bare ground cover and on soil nutrients. A total of 69 herbaceous and 27 woody species were recorded in both locations. Lightly grazed areas had higher species richness, a higher total abundance of herbaceous species, and a higher basal cover and less bare ground compared to the heavily grazed areas. Perennial grass species were more abundant than annual grasses and forbs under the light grazing, indicating the disappearance of desirable grass species in communal grazed rangeland in Ethiopia. However, heavily grazed areas had a higher density of woody species compared to light grazing, leading to bush encroachment. The lightly grazed areas had a higher soil organic carbon, total nitrogen, phosphorus and exchangeable bases, and therefore a higher pH and higher electrical conductance than heavily grazed area, mainly attributed to the higher basal cover and standing biomass at lightly grazed sites, and the export of nutrients through grazing and dung collection from the heavily grazed sites. In our study, we observed a reduction in herbaceous species diversity and their total abundance, a reduction in aboveground biomass and soil qualities as a direct impact of heavy grazing. We concluded that changes in herbaceous vegetation, standing biomass and soil composition are caused by interactions between grazing pressure, soil and vegetation composition, and these interactions determine land and vegetation degradation coupled with climate change, and thereby affect the livelihoods Ethiopian pastoral communities.

Keywords: *Annual and perennial grasses; Bush encroachment; Land and vegetation degradation; Species composition; Species diversity*

[†] Corresponding Author: tessemaz@yahoo.com

**FEED RESOURCE PRODUCTION: CURRENT PRACTICES IN
SMALLHOLDER AND AGRO PASTORAL SYSTEMS OF EAST AFRICA**

Lukuyu, B^{1,2†}, Duncan, A³, and Baltenweck, I²

¹International Livestock Research Institute, P.O Box 30709 00100, Nairobi Kenya;

²World Agroforestry Centre (ICRAF), P.O Box 30677 00 100, Nairobi, Kenya;

³International Livestock Research Institute, P.O Box 5689, Addis Ababa, Ethiopia

ABSTRACT

In the East African highlands intensification has led to rapid land use change making them susceptible to land degradation and biodiversity loss. East Africa is experiencing an expansion of cropping into grazing areas where extensive systems have experienced pressure to alter land use. Hence, feed scarcity is a major limitation in both smallholder and agro pastoral system. A total of 857 livestock keepers (286 on asked in more detail about feeds) were surveyed using a structured questionnaire conducted in 2008. The objective of the survey was to characterise cattle production and feeding systems in order to identify current feed resources available year round, where the gaps are and what is available to address these in order to develop and recommend appropriate feeding strategies. Findings showed that there is wide variation in feeding systems and across clusters within study countries. In all study sites, grazing remains the most important source of feed. On farm grown forages are an important component of the diet of dairy cattle. However, use of forage legumes and fodder trees is limited due to knowledge gaps. Supply of planting material for forages is heavily reliant on the public sector and NGOs with a very limited presence of the private sector. Concentrate feeding is fairly minimal although it is on the increase. There is potential for enhancing trading of both fodder and concentrate feed. Water is not easily accessible to most households.

Keywords: *Forage; Feed resources; Fodder; Agro pastoral systems; Crop residues*

† Corresponding Author: b.lukuyu@cgiar.org

UTILISATION OF *Acacia karroo* AS A PROTEIN SUPPLEMENT FOR BEEF CATTLE UNDER LOW-INPUT PRODUCTION SYSTEMS IN THE SEMIARID AREAS OF SOUTHERN AFRICA: REVIEW

C. Mapiye^{1†}, M. Chimonyo², K. Dzama³ and M. C. Marufu²

¹ Department of Animal Production, National University of Rwanda, P.O. Box 117, Butare, Rwanda

² Department of Livestock and Pasture Science, University of Fort Hare, P. Bag X1314, Alice 5700, RSA

³ Department of Animal Sciences, Stellenbosch University, P. Bag X1, Matieland 7602, RSA

ABSTRACT

Beef production under low-input systems is constrained by low protein content, especially during the dry season. Protein deficiency in the dry season can be rectified by supplementing with indigenous leguminous trees such as *Acacia* species. *Acacia karroo*, in particular, is the most widespread tree legume species in Southern Africa and is largely available during the early dry season. It possesses numerous positive attributes such as high crude protein, mineral and tannin content, and is adapted to the local harsh pedo-climatic conditions. However, its supplementation value for beef production in the low-input production systems is largely unknown. The current review, therefore, demonstrates the ability of *A. karroo* to reduce worm burdens, and cheaply improve growth, carcass traits, beef quality and fatty acid profiles of cattle on semiarid rangelands. Strategies for incorporating *A. karroo* into feeding regimes to commercialize beef production in the low-input production systems are also highlighted.

Keywords: *Acacia karroo*; crude protein; growth; meat quality; worm burdens

† Corresponding Author: cmapiye@yahoo.co.uk

GROWTH AND INTAKE PERFORMANCE OF BROILERS ON *Acacia angustissima* LEAF MEAL BASED DIETS.

S. Ncube[†], H. Hamudikuwanda¹ and P. T. Banda¹

¹Department of Animal Science, University of Zimbabwe, Harare, Zimbabwe

ABSTRACT

High cost of conventional feeds limited poultry production. Although legume leaf meals have been identified as alternative sources of protein for monogastrics, little work has been done on the inclusion of *Acacia angustissima* leaf meals. The study ascertained performance of broilers on leaf meal based diets. Chicks were randomly allocated to Diet 1 (control), Diet 2 (5% *Acacia angustissima* leaf meal) and Diet 3 (10% *Acacia angustissima* leaf meal). Feed intake and body weights were measured weekly for seven weeks. Birds on acacia based diets gained more during the starter period and less during the finisher period compared to those on the control diet. *Acacia angustissima* leaf meal was found to be more suitable for starter phase diets. Inclusion of acacia based leaf meals in poultry diets can reduce reliance on expensive protein sources by feed producers and resource poor poultry producers.

Keywords: *poultry; broilers; tropical forage; leguminous trees; growth rate*

[†] Corresponding Author: sncube@agric.uz.ac.zw

**YIELD AND NUTRITIVE QUALITY OF GENETICALLY DIVERSE COWPEA
ACCESSIONS FOR USE AS FOOD-FEED CROPS**

E.E. Grings^{1†}, M. Blümmel¹, O. Boukar², C. Fatokun², S.Hearne²

¹International Livestock Research Institute, Hyderabad, India, and Ibadan Nigeria

²International Institute for Tropical Agriculture, Kano and Ibadan, Nigeria

ABSTRACT

Cowpea (*Vigna unguiculata* (L.) Walp.) is a valuable dual purpose crop in Africa utilized for both grain and fodder production. To evaluate the range in potential for further development of dual purpose varieties, a genetically diverse panel of cowpea accessions (n = 168) were planted in Minjibir, Kano, Nigeria (12°08 N, 8°40 E) on July, 11 2009 and harvested when 95% of the plants reached maturity. Correlation between grain and haulm yield was 0.22 (P = 0.006), indicating that selection for forage yield will not negatively impact grain yield for cowpea. Haulm N ranged from 0.97 to 2.55 g/kg DM, and ME content ranged from 7.8 to 9.2 MJ/kg. This data can be used to further refine selection of cowpea accessions for combined food and feed use and in conjunction with genotypic information to identify those linkage group regions associated with food and feed use.

Keywords: *crop-livestock; haulm quality; food-feed crops*

† Corresponding Author: e.grings@cgiar.org

BOTANICAL DIVERSITY OF POTENTIAL FORAGE PLANTS IN RANGE AND FARMING SYSTEMS OF GILGEL GIBE CATCHMENTS/JIMMA ZONE

K.Yisehak[†], *D. Belay*¹, *T.Ayalew*¹, *T.Taye*¹, *G.P.J. Janssens*²

¹Department of Animal Sciences, Jimma University, P.O.Box 307, Jimma, Ethiopia

²Laboratory of Animal Nutrition, Ghent University, Heidestraat 19, B-9820 Merelbeke, Belgium

ABSTRACT

The study was conducted in the Gilgel Gibe catchments of southwestern Ethiopia with the objective of identifying potential forage plants for livestock production. Forage plants collected from 12 distinctive areas, clearly differing in vegetation types and altitudes, using systematically stratified purposive sampling technique were characterised, and botanically identified both at field and national herbarium. A total of 165 forage plant species comprising of 73 families were identified. *Asteraceae*, *Fabaceae* and *Poaceae* were found to be the major forage plant families of the region comprising 31% of the forage plant species. Altitude variations showed significant difference in species composition ($P < 0.05$), and the trend was highly significant for herb legumes ($P < 0.01$). In general, 87.4% of identified forage plants were perennials that would be able to produce fodder throughout the year. Species identification is a first step in evaluating potential fodder plants, but data on nutritive value, preference to herbivores and conservation strategies have to be added.

Keywords: *Forage plant; Gilgel Gibe; herbivore*

[†] Corresponding Author: Yisehak_kechero@yahoo.com

COMMERCIALISING SORGHUM AND CASSAVA ROOTS FOR LIVESTOCK FEEDS

F.P. Lekule[†] and J. Malole

Department of Animal Science and Production, Sokoine University of Agriculture
P.O.Box 3004 Morogoro, Tanzania

ABSTRACT

On-farm trials involving the use of sorghum and cassava roots for animal feed were evaluated to assess economic viability and animal production performance of these feed sources. The crops are the major energy rich foods currently being produced in Tanzania, but hardly used for feeding livestock. Cassava roots were processed into chips using manual cassava chippers and then compounded locally by farmers or by feed millers into dairy, poultry and pig feeds. Thereafter, each animal species was fed on varying levels of cassava chips and sorghum. Cows fed cassava rations produced more milk. Broilers fed on optimal cassava levels (20%) demonstrated higher gross margins, daily gain and lower feed conversion ratios. Pigs fed on optimal cassava chip levels (60%) exhibited higher growth rate, higher gross margins, and lower feed conversion ratios. It can be concluded that livestock feeds based on cassava and sorghum are likely to commercialize the crops.

Keywords: *sorghum; cassava; commercialization; livestock; feeds*

[†] Corresponding Author: lekulefp@yahoo.com

DIETARY LEVELS OF PROTEIN AND SUSTAINABLE BROILER PRODUCTION

S.A. Bolu[†], P.O. Oladele and T.O. Olonijolu

Dept of Animal Production, University of Ilorin, Nigeria

ABSTRACT

The use of NRC nutrient requirements in tropical poultry production may lead to nutrient wastage and environmental and green house gas impacts. Lower than recommended protein levels with balance of amino acids may be a better alternative. Graded levels of protein with a balanced amino acid profile were fed to broilers to compare their performance relative to a control diet formulated to NRC recommendations. Broiler chicks were fed diets containing 22.0, 22.5, 23.0, 23.5 and 24% CP, and were replicated in five units.

Data were collected on feed intake, weight gain, feed:gain, carcass characteristics, serum indices and enzyme activities. Feed intake, weight gain and mortality were not influenced ($P>0.05$) by the different levels of protein. Anthropogenic potential (AP) was lowest for broiler chicks fed 22.5% CP. However, serum indices and enzyme activities, were different ($P<0.05$) for the various treatments. Generally, broiler chicks fed 22.5% CP had the best performance; this is a departure from NRC recommendation.

[†] Corresponding Author: Bolusao2002@yahoo.co.uk

EFFECT OF INDOMIE WASTE ON THE PERFORMANCE OF BROILERS AT STARTER PHASE

F. A. Aderemi[†], O.M. Alabi and E.O. Oloruntobi

*Department of Animal Science and Fisheries Management
Bowen University Iwo, Nigeria.

ABSTRACT

A 5 week feeding trial was carried out to evaluate the use of indomie waste as a replacement for maize. One hundred and fifty Abor Abor day old broiler chicks were purchased from a reputable farm at Oyo. They were fed a commercial diet for one week to allow dietary adaptation before they were randomly distributed into groups for the experiment. 100g of indomie waste had energy 1,895 kJ (453 kcal), Carbohydrates 65 g, Dietary fiber 2.4 g, Fat 17 g, saturated fat 7.6 g, monounsaturated fat 6.5 g, Protein 9 g, Thiamine (Vit. B1) 0.7 mg (54%), Riboflavin (Vit. B2) 0.4 mg (27%), Niacin (Vit. B3) 5.4 mg (36%) Folate (Vit. B9) 147 µg (37%), Iron 4.3 mg (34%), Potassium 120 mg (3%) and Sodium 1160 mg (50%). This waste was now incorporated into diets of broilers at graded levels of 0%, 25 %, 50%, 75% and 100% such that diet I served as the control diet. Each diet was offered *ad libitum* and food intake, water intake and body weight gain were monitored. The feed intake, weight gain, gut morphology blood parameters and economics of indomie inclusion were determined. The feed intake ranged from 98g/d to 121g/d. Average body weight gain ranged from 440g to 621g. Feed conversion ratio also had same trend. Blood analysis revealed that the dietary treatment had no significant ($P>0.05$) effect on any of the haematological parameters that were observed. The haemoglobin (Hb) packed cell volume (PCV) red blood cell (RBC) and white blood cell (WBC) of broilers fed diets I to V were within the normal range. The total protein, albumin, glucose, urea, glucose and cholesterol levels were not significantly ($P>0.05$) affected by the treatments. The gut morphology results revealed that there was no significant effect of the dietary treatment on the viscera organs of the experimental birds. No mortality was recorded during this experiment. Economic analysis showed that the cost of feed was gradually reduced with the inclusion of indomie waste. Optimum inclusion rates were obtained by replacing maize with 75% indomie waste in broiler diets.

Keyword: *Indomie waste; maize and broiler*

[†] Corresponding Author: faaderemi@yahoo.co.uk

EFFECT OF *Lucaena leucocephala* HAY ON INTAKE, DIGESTIBILITY AND PERFORMANCE OF SAANEN GOATS FED A TOTAL MIXED RATION

K. Leketa, A. Hassen[†], E.F. Donkin.

Department of Animal and Wildlife Sciences, University of Pretoria, Pretoria, South Africa.

ABSTRACT

The objective of this study was to replace a portion of oilcake meals with *Lucaena leucocephala* in the total mixed ration fed to Saanen goats. Sixteen Saanen male goats were allocated to be fed one of the two total mixed rations (TMR) without or with *L. leucocephala* hay included at 25% of the DM. The TMR were formulated to be iso-nitrogenous, iso-caloric and iso-NDF while using two different sources of crude protein (CP): (1) *L. leucocephala* hay, and (2) oilseed cake (OSC) from sunflower and cottonseed. The digestibility and intake of the diets and the growth and carcass quality of the goats were recorded. No significant differences ($P>0.05$) were revealed in average daily gain, carcass quality of the goats or of feed intake and digestibility of the TMR due to partial replacement of oilseed cake by *Lucaena* hay. In contrast, the voluntary intake per unit metabolic body weight of dry matter (DM), organic matter (OM), crude protein (CP), neutral detergent fibre (NDF) and acid detergent fibre (ADF) was highest for goats on the TMR including *Lucaena*, when compared to those fed the control diet. It was concluded that replacing a portion of oilseed cake meal with *Lucaena* hay in TMR for Saanen male goats did not negatively influence their feed intake, digestibility, growth performance and carcass quality.

Keywords: *carcass quality; fodder tree; growth performance; oilseed cake; protein concentrate; total mixed ration*

[†] Corresponding Author: Abubeker.hassen@up.ac.za

EFFECT OF PROTEIN SOURCE ON THE CARCASS QUALITY AND GROSS MARGIN FROM MEAT GOATS FED GUINEA GRASS HAY

Kato H. W¹ F. Kabi² and ²Mutetikka D.

¹Ngetta Zonal Agricultural Research and Development Institute, Lira Uganda

²Department of Animal Science Makerere University Kampala Uganda.

ABSTRACT

The study aimed at assessing the effect of different protein sources on meat quality and profitability of indigenous meat goats. Mubende yearling goats were fed guinea grass hay together with 200 g of maize bran/mineral mixture plus one of four protein supplements: lablab hay (LBLB), sweet potato vines (SPV), cassava leaf meal (CLM) and sunflower meal (SFM). Thereafter, all goats were slaughtered in the city abattoir. All costs associated with the treatments were recorded.

No significant differences were observed among carcass characteristics of goats on the treatments. Consequently, the highest ($P<0.05$) gross margin was observed among goats on the CLM treatment (Shs. 18,065.71) and the lowest ($P<0.05$) was observed among goats on the LBLB treatment (Shs. 5,604.16). These results indicate that protein sources for indigenous meat goats have no negative impact on the quality of meat from goats. This implies that cheaper protein sources can be used to improve the gross margins from fattening indigenous goats.

Keywords: *Carcass characteristics; gross margin*

EFFECT OF PROTEIN SOURCE ON THE PERFORMANCE OF MEAT GOATS FED GUINEA GRASS HAY

Kato H. W¹, F. Kabi² and D. Mutetikka²

¹Ngetta Zonal Agricultural Research and Development Institute, Lira Uganda

²Department of Animal Science Makerere University Kampala Uganda

ABSTRACT

The study aimed at improving meat goat performance through protein supplementation. Mubende yearling meat goats were fed guinea grass hay together with 200 g of maize bran/mineral mixture plus one of four protein supplements: lablab hay (LBLB), sweet potato vines (SPV), cassava leaf meal (CLM) and sunflower meal (SFM). Thereafter, all male goats were transferred to metabolic cages for a nitrogen balance trial. Goats on CLM and SPV showed higher total DM intake. CLM gave the highest NB, ADG and the most favourable FCR. Therefore cassava leaf meal is a superior protein supplement for meat goats fed low quality roughages with an energy concentrate like maize bran. It is possible to fatten yearling indigenous goats under the feedlot system using cassava leaf meal and a maize bran/mineral mixture.

Keywords: *average daily gain; feed conversion ratio; dry matter intake; nitrogen balance.*

EFFECT OF REPLACEMENT OF RICE OFFAL WITH GRADED LEVELS OF MELON SEED (*CITRULLUS VULGARIS*) OFFAL ON LIVE PERFORMANCE OF GROWING RABBITS

*S. Attah*¹ *D.D Ortserga*³ and *F.O.Ianugwa*²

¹.Department of animal Production University of Agriculture, Makurdi

².Department of Animal Nutrition, University of Agriculture, Makurdi

³.Akperan – Orshi College of Agriculture, Yandev-Gboko

ABSTRACT

The feeding value of melon seed (*Citrullus vulgaris*) offal (MSO) was determined in a 12-week feeding trial using 25 six weeks old male rabbits with an average initial weight of 485g. The animals were fed diets containing 0, 7.5, 15, 22.5 and 30% MSO. The diets which contained approximately 18% CP were compounded using the MSO to replace rice offal. A digestibility trail was carried out at the end of the experiment. Results obtained showed no significant treatment effects ($P>0.05$) on daily weight gain, daily feed intake and feed conversion ratio (FCR). The cost of feeding diets 1 and 2 was significantly higher than for diet 4 and 5 ($P<0.05$). The cost generally decreased with increase in the level of MSO in diets. The digestibilities of dry matter (DM), crude protein (CP) and ether extract (EE) were significantly affected ($P<0.05$) by increase in the levels of MSO in diets. DM and CP digestibilities were significantly higher ($P<0.05$) at 15 and 30% MSO levels when compared with the control and other MSO levels. MSO inclusion in the diets significantly improved ($P<0.05$) EE digestibility above that of the control diet but EE digestibility did not differ significantly ($P> 0.05$) among diets containing MSO. Crude fibre (CF) and Nitrogen free extract (NFE) digestibilities were similar ($P>0.05$) for all the diets.

Keywords: *rice offal; melon seed offal; live performance; growing rabbits*

EFFECTS OF DIFFERENT DIETARY INCLUSION LEVELS OF ENSILED POTATO HASH ON NUTRIENT DIGESTIBILITY IN PIGS

R.S. Thomas^{2†}, A.T. Kanengoni¹, D.O. Umesiobi² and B.D. Nkosi¹

¹ARC-LBD: Animal Production Institute, Irene, South Africa

²School of Agriculture and Environmental Sciences, Central University of Technology, Free State, South Africa

ABSTRACT

The study evaluated the digestibility of potato hash silage (PHS) using thirty crossbred sows (\pm 30 kg live weight) that were housed individually. Nine diets containing 20, 40 and 60% PHS (untreated PHS, lalsil fresh LB PHS and bonsilage forte PHS) were formulated and fed *ad libitum* in a cross-over design (3 sows per diet per period). A commercial diet (0% silage) was used as a control. The experimental period lasted eleven days (seven days adaptation and four days faecal collection). Intake of organic matter (OM), crude protein (CP), ether extract (EE), fibre and gross energy (GE) were improved ($P < 0.05$) compared with the control. Digestibility of dry matter (DM), EE, and GE was not affected by treatment irrespective of inclusion level. However, 60% PHS reduced ($P < 0.05$) the digestibility of fibre compared to other inclusion levels. It was concluded that 60% PHS did not improve digestibility in sows.

Keywords: *Silage; Potato hash; grower pigs; digestibility*

[†] Corresponding Author: Ronaldt@arc.agric.za

ENHANCING MEAT SUPPLY THROUGH COMMERCIALIZING SMALL SCALE SHEEP PRODUCTION USING LOCAL FEED RESOURCES IN ETHIOPIA

G. Haileselassie^{1†}, T. Yayneshet², H. Aklilu¹

¹. Aksum University, Department of Animal Production and Technology, Aksum, Ethiopia

². Mekelle University, Department of Animal Science, Mekelle, Ethiopia

ABSTRACT

There is culturally high preference and growing demand for sheep meat in Ethiopia. In response to this, supply of sheep needs to be increased. This is an opportunity for poor producers to improve their livelihoods. Commercial sheep fattening by farmers is a key strategy. However, feed is a major constraint since farmers cannot afford industrial nutrient sources. This study aimed to evaluate the impact of three browses namely *C.monoica*, *C.uncinulata*, and *D.cinerea* on production and economic performance of sheep fattening. The control diet was barley straw and noug cake. Varying inclusion levels of the browses were tested in feeding trials. The browses significantly increased DMI, digestibility of DM and CP, body weight and dressing percentages. Cost-benefit analysis showed that supplementation with browses was profitable. If browse production, processing and use is supported technically and institutionally, there is a potential for enhancing sustainable market oriented small holder sheep farming.

Keywords: *Browses; Ethiopia; market; sheep*

[†] Corresponding Author: freedomruh@yahoo.com

EFFECT OF ENZYME SUPPLEMENTATION ON PERFORMANCE OF BROILERS FED DRIED RUMEN DIGESTA MEAL

¹Esonu, B.O; ¹Osegbue, A.I; ¹Udedibie, A.B.I, ¹Emenalom, O.O ;¹Azubuike, J.C; ²Ayo-Enwerem, C.M and ¹Etuk, E. B.

¹Department of Animal Science and Technology, Federal University of Technology Owerri, PMB 1526 Owerri, Nigeria

²Department of Animal Production, Imo State Polytechnic, Umuagwo, Imo State, Nigeria

ABSTRACT

High feed cost affects poultry production and animal protein intake of Nigerians. Dried rumen digesta is alternative feedstuff collected from the rumen of slaughtered ruminant animals. Two experiments were conducted. In the first experiment five broiler starter diets were formulated to contain dried rumen digesta at 0%, 2.5%, 5.0%, 7.5% and 10.0% (with 0.20% enzyme supplementation) respectively. Each diet was fed to 30, 2-week old broiler chicks for 21 days. In the second experiment four experimental broiler finisher diets were formulated incorporating dried rumen digesta at 0%, 10%, 20% and 30% (with 0.20% enzyme supplementation) respectively. Each diet was fed to 36, 5-week old broiler finisher birds for 21 days. The results of these trials suggest that 0.20% enzyme supplementation of diets containing dried rumen digesta could improve the performance of broilers at inclusion levels of 10% in broiler starter diets and 30% in broiler finisher diets respectively.

Keywords: *Broilers; rumen digesta; enzyme supplementation; cost-benefit*

FODDER MARKETING IN ETHIOPIA: A SYNTHESIS OF CASE STUDIES IN OROMIYA AND TIGRAI REGIONS

Duncan A.J.^{1†}, Ergano, K.¹, Hailesellassie, A.², Hagos, T.², Assefa T.³, Muleta, M.³, & Yehlaeshet T.⁴

¹International Livestock Research Institute, P.O Box 5689, Addis Ababa, Ethiopia;

²Tigray Agricultural Research Institute;

³Oromia Agricultural Research Institute;

⁴ Tigray Bureau of Agriculture and Rural Development

ABSTRACT

Livestock feed resources in Ethiopia are coming under increasing pressure, mainly due to population increases which have led to encroachment of arable production into previous grazing lands. Despite the predominantly subsistence nature of livestock production in Ethiopia there are pockets of more market oriented production where more and better feeds are required. As feed resources come under pressure and as systems intensify we would expect the emergence of a commercial feed trade. To test this expectation we conducted a rapid market appraisal of fodder marketing in case study sites and associated market channels in Mieso and Ada'a woredas in Oromiya Region and in Alamata and Atsbi woredas in Tigray Region. The amount of fodder being marketed was relatively minor in both regions in relation to the amount kept on-farm and fed directly to livestock. However, we found evidence that fodder trade is increasing: in Atsbi, sale of grass from area closures is emerging while in Mieso sale of sorghum stover direct from fields is relatively common practice. Most fodder marketing was relatively local involving farmer exchange although some transport of fodder to market towns was evident. The price of fodder has risen sharply in recent years suggesting that demand for purchased fodder is increasing. We also found that agro-industrial byproducts such as milling products are a relatively under-utilized resource with considerable potential for increased trade.

Keywords: *Forage; Feed resources; Fodder; Agro pastoral systems; Crop residues*

† Corresponding Author: a.duncan@cgiar.org

IMPACT OF 'FADAMA' ON FEED, FOOD AND POVERTY IN IMO STATE NIGERIA

C.T. Ezeokeke[†], N.J. Anyanwu and V.M. Okoro

Department of Animal Science and Technology,
Federal University of Technology, Owerri, Nigeria

ABSTRACT

'Fadama' is a World Bank assisted program at the grassroots in Nigeria with the university as one of the collaborators. The bulk of the fund came from the World Bank while Federal government secured the loan and the State paid a counterpart fund and local government paid a token for their benefiting community. The community accessed the loan through cooperatives. Money invested is expected to bring return on investment after a certain period. Disbursement was in stages tied to payment of a counterpart fund, physical structures constructed and an audited account of the previous amount extended.

Irrigation ensured pasture and farming all year round which provided food (man), feed (animals) and raw materials (industries). The program created employment and reduced poverty. Storage facilities (silos) and cold rooms were constructed by communities. The projects were owned and managed by the participating communities giving room for sustainability.

New and modern farming techniques passed down were accepted. In the past this failed because the farmer was not involved from onset. The farmer due to lack of capital and reluctance to accept new ideas for enhanced production had remained on subsistence.

Keywords: *Fund; food; poverty and empowerment*

[†] Corresponding Author: chycorn@yahoo.com

INFLUENCE OF COMMERCIAL FEEDS MARKETS ON COMMERCIAL LAYERS EGG PRODUCTION PERFORMANCE MBARARA DISTRICT UGANDA

Bahame¹, J.Oloya²

¹Umutara Polytechnic, Department of Livestock Production Technology and Development, P.O Box 57, Nyagatare, Rwanda

² 235B.Paul D. Coverdell Center University of Georgia Athens, GA 30602

ABSTRACT

Poultry keeping is one of the ways farmers earn livelihood. A study was carried out in Mbarara District of Uganda. The major objective was to establish the influence of commercial feeds on market and compare with breeders standards on commercial layers productivity performance. Cause of low poultry performance is feed quality and marketing problems in mbarara often lies in lack of proper infrastructure which is an essential ingredient for efficient marketable finished goods and services. A lot still needed to be done to improve marketing of poultry production commodities. Policy research needs to be carried out to address feed market constraints.

The study was conducted in two phases based on a retrospective study for the first phase of 48 weeks and a prospective study for the subsequent weeks of production. All experimental birds were provided with uniform standardised facilities and conditions in all housing units for the control of inter-house variations. This arrangement was maintained in all phases of production for the three units through the entire production period. Production records were examined and analysed from the three randomly selected units for feeds A, B and C respectively. Production curves were employed against breeders' standards to correct all reported measures of maturity and egg production at 50% production. Egg output and growth rates were found to be dependant upon a curvilinear function of feed conversion. Better egg production was found for; birds fed on feed B (84.7%, n=26089) than feed A (74.5%, n=24418) and C (62.0%, n=20179) despite other parameters variations. Inputs such as commercial feeds, feed raw materials and seasonal variation in commercial feed quality and their ingredients caused marked differences in egg production output. If the poultry industry is to meet the challenges of the current situation and achieve its full potential, there must be an improved alliance between research, private service providers and farmers.

Keywords: *influence, feeds; market; breeders' standards; layers performance*

INTEGRATION OF FOOD AND IMPROVED FORAGE CROPS FOR SUSTAINABLE CROP/LIVESTOCK PRODUCTION UNDER SMALLHOLDER CONDITIONS IN ETHIOPIA: A REVIEW

Z.K. Tessema

Department of Animal Sciences, College of Agriculture, Haramaya University,
P.O. Box 138, Dire Dawa, Ethiopia
Email: tessemaz@yahoo.com

ABSTRACT

Subsistence smallholder farming is the main mode of production in Ethiopia, and there is no specialization effort to grow feed for farm animals. Usually smallholder farmers do not readily adopt the cultivation of forages when there is a critical feed shortage during dry season in the country as they devote both land and labour to crop production. However, one of the best alternatives for smallholder farmer is to use their land efficiently through the integration of food and improved forage crops in the farming systems without reducing crop production and improving the quantity and quality of feeds. Improved forage crops can only be adopted if they are introduced into the farming system through under-sowing, intercropping, relay-cropping, multiple cropping, alley cropping and other possible strategies that could be acceptable by smallholder farmers. These are systems where food and forage crops are simultaneously grown on the same field, and are useful practices in areas where both crop and livestock farming are simultaneously practiced. Therefore, in this paper the advantages and types of food and improved forage crop integrations, past research achievements and future directions will be discussed under smallholder crop/livestock conditions in Ethiopia.

Keywords: *Alley cropping; Feed shortage; Food crops; Forage legumes; Under-sowing*

NUTRITIONAL STATUS OF CATTLE AROUND THE GILGEL GIBE DAM IN ETHIOPIA: THE SEARCH FOR EASY-TO-ESTABLISH INDICATORS.

V. Dermauw^{1†}, D. Belay², K. Yisehak², D. Solomon², B. Seleshi², G. P. J. Janssens¹

¹Ghent University, Faculty of Veterinary Medicine, Merelbeke, Belgium

²Jimma University College of Agriculture and Veterinary Medicine, Jimma, Ethiopia

ABSTRACT

Little information is available about the nutritional status of cattle in this area around the Gilgel Gibe Dam in Ethiopia. In the literature and more specifically in wildlife studies and studies about free ranging cattle, authors suggest the use of faecal nitrogen as well as analysis of minerals in blood to gain an indication of nutritional status. (Leslie and Starkey, 1987; Abdelrahman *et al.*, 1998). The main goal of this study was to investigate the nutritional status of the cattle around the Gilgel Gibe dam and to find suitable indicators to evaluate this status.

Body condition scores (BCS) for animals of different herds in three sub regions were assessed; faeces were analyzed for the following indicators: crude ash and fractions, nitrogen and fractions and the minerals Zn, Cu, Fe, Mn and S. Plasma samples were analyzed for the same minerals. Cu deficiency is widely spread in the region. BCS was positively correlated with Cu levels in plasma. Faecal nitrogen (OMB) differed between regions, as did vegetal nitrogen (OMB). Herd effects were significant for Cu, Zn, Fe, S and BCS. This study points to the possible use of faecal nitrogen and fractions to evaluate the nutritional status of cattle. The Cu deficiency is severe and should be treated in the near future. This information is useful for future research in this field as well as for farmers' organisations to evaluate their cattle correctly and supply mineral supplements when needed.

Keywords: *nutritional status; cattle; minerals*

[†] Corresponding Author: veronique.dermauw@ugent.be

ON-FARM POULTRY FEED FORMULATION: A SOURCE OF FEED COST REDUCTION IN POULTRY PRODUCTION IN NIGERIA.

A.A. Hassan*[†], M. G. Maiangwa,* S. Isiaku**, ***A. Mohammed

*Department of Agricultural Economics and Rural Sociology, Ahmadu Bello University, Zaria-Nigeria.

**National Agricultural Extension Research and Liaison Services (NAERLS), Ahmadu Bello University, Zaria-Nigeria.

*** Division of Agricultural Colleges, Ahmadu Bello University, Zaria-Nigeria

ABSTRACT

Studies in Nigeria show that poultry feed cost accounts for between 60 to 75% of the cost of production in poultry enterprises. This no doubt is a major area of concern to poultry producers and the authorities. A high feed cost has led to the collapse of many farms in Nigeria. The question is how profitable is poultry production (broiler) using home-made feed? Sixty poultry farms in Nigeria were purposively selected. Thirty farmers compounded their own feed while the remaining thirty relied on purchased feed. Data were analyzed using Gross Margin Analysis. The study revealed that farmers that compound own feed had lower feed cost N18, 400/100 broilers i.e., 45.43% of the total cost of production and a profit of N49, 000/100 broilers than those that purchased finished feed from the market (N29, 600, 55.56% and N34, 200/100 respectively). Poultry farmers gained from on-farm feed formulation with direct livelihood benefits.

Keywords: *Feed ingredients; Feed mill; Finished Feed; Compounded feed; Poultry*

[†] Corresponding Author: abubakarh39@gmail.com

PERFORMANCE OF GRAZING AND SUPPLEMENTED MUBENDE GOATS AND THEIR CROSSBREDS WITH BOER

D. Asizua^{1†}, *D. Mpairwe*¹, *F. Kabi*¹, *D. Mutetikka*¹, *H. Kamatara*¹, *T. Hvelplund*², *M. R. Weisbjerg*², and *J. Madsen*³

¹Department of Animal Science, Faculty of Agriculture, Makerere University, Kampala, Uganda

²Department of Animal Health, Welfare and Nutrition, Faculty of Agricultural Sciences, Aarhus University, Denmark

³Department of Large Animal Sciences, Faculty of Life Sciences, University of Copenhagen, Denmark

ABSTRACT

Productivity of goats raised under extensive production systems in the tropics is limited by breed characteristics and seasonal fluctuations in quantity and quality of feeds. Performance of 48 animals of each purebred Mubende (MDE) and Mubende X Boer crossbred (MXB) goats was evaluated under grazing alone (GZ); grazing supplemented with concentrate containing molasses (MCM) and concentrate without molasses (MCC) in a 2 X 3 factorial design. Growth rates were significantly ($p < 0.001$) improved by supplementation in both genotypes but there was no general significant difference between the supplemented groups although, including molasses in the supplement significantly improved feed efficiency (FE) for the purebred goats while the FE of crossbreds was negatively affected. Higher slaughter weight ($p < 0.01$), carcass weight and dressing percentage ($p < 0.001$) were obtained in the supplemented than the solely grazing irrespective of genotype. Therefore, supplementation offers a considerable opportunity for faster growth and meat yield of grazing goats in Uganda.

Keywords: *Grazing goats; supplementation; growth; meat*

† Corresponding Author: asizua@agric.mak.ac.ug

PHYSICAL CHARACTERISTICS OF COMMERCIAL POULTRY FEEDS PRODUCED IN NIGERIA

I. C. Okoli[†], A. A. Omede, M. C. Uchegbu, O. O. Emenalom and U. E. Ogundu

Tropical Animal Health and Production Research Laboratory, Department of Animal Science and Technology, Federal University of Technology Owerri, PMB 1526 Owerri, Imo State, Nigeria

ABSTRACT

Physical characteristics such as bulk density (BD), water-holding capacity (WHC) and specific gravity (SG) of four commercial poultry feed brands produced in Nigeria were measured. There were significant variations in the BD, WHC and SG of the commercial feeds across the brands coded LF, VF, GF and TF, indicating that there are no specified and enforced standards for these parameters. The BD, WHC and SG of the commercial feeds ranged from 0.29 to 0.46 (g/m³), 0.62 to 1.22 (g/g) and 0.29 and 0.46 respectively. For example, VF recorded significantly higher ($p < 0.05$) BD values in broiler starter as well as the lowest BD and highest WHC in broiler finisher diets ($p < 0.05$). Since there are no standards for the country, it is difficult to suggest the optimal values for these physical characteristics and the best brands. Farmers may be receiving much less quality, for the money spent on some of these products.

Keywords: *Poultry; feed quality; physical characteristics*

[†] Corresponding Author: dr_charleso@yahoo.com

POTENTIAL FOR USING MULTINUTRIENT BLOCK FOR SUPPLEMENTING FEEDING OF GROWING GOATS

Tendonkeng F[†], Boukila B², Pamo T. E¹. and Mboko A. V².

¹ University of Dschang, FASA, Department of Animal Sciences, Laboratory of Animal Nutrition, PO Box: 222, Dschang, Cameroon.

² Institut National Supérieur d'Agronomie et de Biotechnologie (INSAB) Université des Sciences Techniques de Masuku. B.P. 941 Masuku, Gabon.

ABSTRACT

The study of the potential for using multinutrient block for supplementing feeding of growing West African dwarf goats were carried out from August 2003 to January 2004 in the Experimental Farm of the University of Dschang. Eighteen young West African dwarf goats were divided in two groups of nine animals each 6-7 month old and averagely weighing 9.07 ± 1.17 kg were used. The animals of the supplemented group (group 2) received 100 g of multinutrient block per animal per day whereas those of the control group (group 1) did not receive any supplement. The animals were weight every 14 days for the evaluation of growth. The body condition score (BCS) was take at the beginning and at the end of the study. A sample of 100 g of multinutrient block was taken for the chemical composition analysis. From the results of this study, it appears that the multinutrient block had a high percentage of crude proteins (37.43%DM) and ash (29.03%DM). The organic matter (OM) content, the cells wall constituent (NDF), hemicellulose and cellulose were 70.97; 25.03; 12.40 and 5.70 %DM respectively. At the end of the study, the average BCS (3.9 ± 0.10) and average weight of the supplemented goats (16.90 ± 2.94 kg) was significantly higher ($p < 0.05$) than that of the control group (2.50 ± 0.12 ; 12.42 ± 2.50 kg). The total weight gain was 3.30 kg and 7.89 kg corresponding to a daily average weight gain of 23.57 g/d and 56.35 g/d respectively for the animals of group 1 and group 2. The multinutrient block significantly improves the growth of the young West African dwarf goats under climate change.

Keywords: *multinutrient block; West African dwarf goats; supplement; growth*

[†] Corresponding Author: ftendonkeng@yahoo.fr

PREDICTION OF URINARY NITROGEN FROM DAIRY CATTLE FED MAIZE SILAGE BASED TOTAL RATIONS

M E Phoko^{1†}, MC Muya¹, D M Motiang¹, J Olivier²

¹ Agricultural Research Council, P/Bag x 02, Irene, 0062, South Africa

² University of South Africa, P/Bag x 18 Pretoria, 0001, South Africa

ABSTRACT

Thirty multiparous and sixteen primiparous Holstein cows were selected according to previous milk production and body weight to evaluate milk production, milk urea nitrogen and predict urinary nitrogen. They were fed a total mixed ration and randomly allocated to one of two treatments: 1) Lucerne based diet (control) and 2) Maize silage based diet (40%). The ANOVA results showed no interaction between the diet and parity, but silage based diets significantly reduced urinary nitrogen ($p < 0.01$), while primiparous cows had significantly ($p < 0, 05$) lower nitrogen excretion than multiparous cows in both groups. Silage based diets reduced milk urea significantly ($p < 0, 01$) but there was no significant difference in terms of parity. Results showed an effect of parity on milk yield ($p < 0, 05$) as compared to the two diets. However, it can be concluded that the use of silage as a substitute for lucerne in total mixed diets for dairy cows could have a positive environmental impact without compromising milk quality.

Keywords: *Urinary nitrogen; Milk urea nitrogen; Milk production; Lucerne; Silage*

[†] Corresponding Author: phokom@arc.agric.za

**RESPONSE IN MILK PRODUCTION BY CROSSBRED COWS IN ETHIOPIA
FED ADDITIONAL CONCENTRATES**

J. Madsen[†] and T. N. Beshu

Department of Large Animal Sciences, Faculty of Life Sciences, University of Copenhagen,
Denmark

ABSTRACT

In this study 20 cows were supplemented with 3 kg/cow/day of a mixture containing 60% wheat bran, 39% noug cake and 1% salt to see the effect of additional concentrate on milk yield at the farmers' production level. Twenty other cows acted as unsupplemented controls. The average milk yields of the supplemented cows increased from a mean of 8.3 liters/d before the start of supplement feeding to 10.1 liters/d in the period of four weeks supplementation. The milk yield increased relatively fast with an extra production of 1.3, 1.9, 2.0 and 2.0 liters per cow and day in week 1 to 4 respectively. With the present prices of the supplements and milk it was profitable even without pricing the extra weight gain and the expected better reproduction of the supplemented cows.

Keywords: *Income; Dairy; Smallholder*

[†] Corresponding Author: jom@life.ku.dk

SOCIO-ECONOMIC FEASIBILITY OF USING SELECTED INDIGENOUS BROWSES AS PROTEIN SUPPLEMENTS TO GOATS IN KONGWA AND MPWAPWA DISTRICTS, TANZANIA

Daniel M. Komwihangilo

National Livestock Research Institute

P.O. Box 202

Mpwapwa, Tanzania

Email: dkomwihangilo2001@yahoo.com

ABSTRACT

A cross-sectional study was conducted in four villages of Kongwa and Mpwapwa districts in order to determine the factors influencing the use of native and exotic tree species for goat feeding in mixed production systems of semi arid central Tanzania. A total of 141 households (farms) were visited in June 2007. Individual questionnaire interviews were conducted with household heads. Results indicated that common indigenous browses that include *Acacia tortilis*, *Ecchorium* spp, *Grewia* spp, *Ficus* spp, *Tamarindus indica* and *Leucaena leucocephala* were fed to goats. The importance of using trees and shrubs was ranked differently among farmers and it was significantly different ($P < 0.01$) between districts. Palatability as an important factor in determining frequent use or disuse of the trees and shrubs was indicated by 29% of the respondents ($n = 123$). Other factors for frequent uses were associated with improved animal conditions / health (28%) and milk yields of dairy goats (18%). Unfortunately, many farmers did not establish the browse species either because they thought that they were abundant in the wild (31.6%, $n = 38$) or did not realize the need or importance of establishing these feeds (42%). More work is still needed in determining the influence of native browses on milk yields and growth rates. Similarly, extension efforts are required to enable the farmers to establish and care for the already identified exogenous species and to sustainably use the abundant multipurpose indigenous trees and shrubs.

Keywords: *browses; indigenous; goats; central Tanzania*

THE EFFECTS OF ENERGY DENSITY ON THE GROWTH PERFORMANE OF GROWER PIGS RAISED IN TWO REARING SYSTEMS

O.G. Makgothi^{1,2}, A.T. Kanengoni^{2†} and D.O. Umesiobi¹

¹School of Agriculture and Environmental Sciences, Central University of Technology, Free State, Bloemfontein, South Africa

²ARC-API: Animal Production Institute, Irene, South Africa

ABSTRACT

Raising pigs outdoors can benefit resource-poor farmers by cutting on infrastructural costs but this may have implications on growth performance related to high energy demands. A study aimed at improving the performance of outdoor pigs was conducted using 48 Large White X Landrace pigs weighing 27 ± 4.6 kg reared indoors and outdoors, in winter in the Highveld region of South Africa. Twelve pigs from each rearing system were fed diets containing either normal (14.0 MJ DE/kg) or high energy concentrations (16.1 MJ DE/kg) for about two months. Energy density did not affect gain, intake or feed efficiency ($P > 0.05$). Rearing system did not affect daily gains ($P = 0.22$) but outdoor pigs had higher feed intake ($P = 0.016$) while feed conversion efficiency tended to be favourable for indoor pigs ($P=0.06$). It was concluded that pigs may be raised successfully outdoors without additional costs of increasing the energy density

Keywords: *outdoor pigs; energy density; growth performance*

[†] Corresponding Author: arnoldk@arc.agric.za

THE INFLUENCE OF WET DISTILLERS GRAINS WITH SOLUBLE ON THE QUALITY OF MAIZE SILAGE

R.M. Moyo, W.A. van Niekerk, Abubeker Hassen[†] and R.J. Coertze

Department of Animal and Wildlife Sciences, University of Pretoria, South Africa

ABSTRACT

The influence of different levels of wet distillers grains with solubles (WDGS) (0%, 20%, 30%, and 40%) on fermentation characteristics and nutritive value of maize silage was investigated. Each treatment was ensiled in 15 bottles, and fermentation was monitored at day 0, 7, 21, 42 and 120 post-ensiling. There was a steady decrease in dry matter and pH with increasing levels of WDGS. The lowest ($P < 0.05$) and highest final silage pH was recorded for the 40% (pH 3.62) and 10% WDGS treatment (pH 3.79), respectively. Lactic acid was higher ($P < 0.05$) at day 120 for the control than for the blended treatments. Acetic acid was higher for WDGS silage than the control. Ammonia nitrogen concentration was lowest for the control and 40% WDGS treatment at day 120. The NDF concentration increased with increasing level of WDGS inclusion but remained constant throughout the ensiling period.

Keywords: *ethanol by-product; fermentation characteristics; preservation; silage*

[†] Corresponding Author: Abubeker.hassen@up.ac.za

UTILIZATION OF LOW COST AGRO BY PRODUCTS IN TURKEY DIETS

E. B. Etuk[†], C. Umeobi, L. N. Azodo, I. U. Obasi and O. O. Emenalom

Department of Animal Science and Technology, Federal University of Technology, Owerri, Nigeria

ABSTRACT

Maize which is a staple food for humans typically provides the basis for poultry diets in Nigeria. This results in high and often unsustainable cost of feed and poultry products. Exploitation of cheaper and readily available agricultural by products to replace maize will therefore relieve the food – feed competition. This study evaluated combinations of palm kernel cake (PKC), yam peels (YP) and plantain peels (PP) as replacements for maize in turkey diets. PKC, YP and PP combined in different ratios were used to replace 50% of maize in turkey diets and fed to turkeys at different growth stages. Results obtained indicated up to 20% reduction in feed cost, comparable and at older age, better growth rates of turkeys. Turkey and other poultry producers could therefore find an alternative and cheaper energy source in combinations of palm kernel cake, yam peels and plantain peels.

Keywords: *Turkey; palm kernel cake; yam peels; plantain peels; feed cost*

[†] Corresponding Author: edeheetuk@yahoo.com

VELVET BEAN (*Mucuna pruriens*): A POTENTIAL FEED INGREDIENT IN POULTRY AND PIG DIETS

O.O. Emenalom[†], E.B. Etuk, B.O. Esonu, A.B.I Udedibie and I.C.Okoli

Department of Animal Science and Technology, Federal University of Technology, Owerri.
P.M.B. 1526

ABSTRACT

Velvet bean (*Mucuna pruriens*), is a leguminous cover crop that produces a lot of seeds with an average yield of 2.5 t/ha in Nigeria. The beans (VB) are high in protein (25 – 30%) and energy (2370 kcal/kg) but contain some anti-nutritional factors (trypsin inhibitors, phenols, tannin, L. Dopa etc.) which affect their inclusion in animal diets. Inclusion of 10% raw VB significantly affected the gains of poultry and pigs. Several processing methods (heat, soaking in water, fractionating and alkaline treatments) have been used to eliminate the toxic effects and improved the nutritive value of VB. Evaluation of the processing methods using poultry and pigs indicated that 10 – 40% dietary inclusion levels of differently processed VB increased performance, depending on the type of animals (10 -30% for broilers, 10 – 20% for laying hens and 40% for pigs). The challenge for the future will be to capture this potential of VB as feedstuff and encourage its cultivation, processing, marketing or use by livestock farmers and feed millers.

Keywords: *velvet bean; toxic; processing; poultry; pig; performance*

Corresponding Author: emenalom2000@yahoo.com

**MAKING LIVESTOCK SERVICES ACCESSIBLE
TO LIVESTOCK KEEPERS**

**MAKING INNOVATION PLATFORMS WORK: ALTERNATIVE
INSTITUTIONAL ARRANGEMENTS FOR INNOVATION – BASED ON CASE
STUDIES IN EASTERN AND SOUTHERN AFRICA**

Jürgen Hagmann, Edward Chuma, Hlami Ngwenya, Joe Ramaru

All authors are members of the Institute for People, Innovation and Change in Organisations (PICO), Postnet Suite 341, P / Bag X 10, Elarduspark 0047, Pretoria, South Africa.

ABSTRACT

In the last decade many authors have written about innovation systems as the adequate perspective to analyse and design interventions. Initially it was a rather theoretical concept which many initiatives have struggled to implement in a way which brought about the desired results.

This paper describes an approach to operationalise innovation platforms in a rigorous, integrated and institutionally embedded form. It is based on experiences and institutional experiments over 10 years in South Africa, Ethiopia, Malawi and Tanzania on a range of agricultural development issues (incl. livestock). The lessons in terms of how to best implement such approaches to innovation were systematised and conceptualised. The approach consists of two key elements: a) the innovation platforms themselves with their modalities and b) the broader institutional arrangements which provide the space for innovation and innovators to operate.

Building on the lessons learnt from South Africa and Ethiopia, in Malawi and Tanzania a higher level ‘innovation coalition’ was formed to drive new approaches and provide space for a more entrepreneurial approach in the platforms. The platforms consisted in all cases of the actors required to deal with a certain innovation challenge. It is very clear who is in the platform for what reason and function, and who is required to support it. We call this more performance focused way of getting the right actors to do the right things ‘managing inclusiveness’.

In some of the cases, a full institutional arrangement was developed – not as new institutions, but as task based, flexible arrangements to deliver. The flow of financial resources was directed to the platforms directly rather than through institutions. This enabled to fund performance rather than institutions. Checks and balances for financial management were developed and a separate fund manager ensured the correct spending of the resources.

The results of the case studies is very encouraging: they have shown an alternative way to generate and fund innovation outside the conventional (mostly public sector) institutions – which we all know have great challenges to deliver large scale innovation. However, these institutions were not excluded, but were part of the platforms – although not in the driving seat.

One of the most critical factors for success in all cases has been the quality of facilitation and leadership of the platforms. The paper will describe these qualities and ways to implement them successfully.

TOWARDS AGRICULTURAL EDUCATION FOR INNOVATION DRIVEN DEVELOPMENT: CHALLENGES AND CONSTRAINTS OF THE AFRICAN UNIVERSITIES

Paul Kibwika

PICO-Uganda

paul.kibwika@picoteam.org; pkibwika@agric.mak.ac.ug

The pace of agricultural and rural development paradigms has surpassed the adaptive capacity of Higher Agricultural Education to produce the human resource capable of championing rural transformation. The response of African universities to the changing needs in the agricultural sector has been through development of new academic programmes which are still founded on the old thinking that universities have the monopoly of knowledge for development. This notion has been challenged by new development approaches based in participation, social learning and partnerships with a wide range of stakeholders leading to innovations for a sustainable world. Confronted complexities of the 21st century, universities must therefore not only rediscover, build on and share indigenous ways of knowing and acting, but generate and or adapt new concepts and practices that will contribute to creating a world that is more sustainable. It is not that the African universities is completely blind to these challenges, there are efforts and initiatives to make them shift from focusing on learning for knowing towards learning for doing and learning for being but such efforts are often frustrated by systemic and operational challenges that tend to pull the universities back to the status quo. This paper discusses the mindsets that frame the concept of a university and its purpose; challenges of developing dynamic and responsive curricula; competences of the academic staff to deliver graduates with qualities demanded by the market; institutional and physical support systems and infrastructure for transformative learning in an African university. The university being the epitome of higher education and main source of skilled human resource for agricultural development must demonstrate its own ability to learn and adapt to the changing environment in a manner that it is seen as a champion of a sustainable world. It will have to constantly question and reform deeply entrenched unsustainable routines, structures and practices and engage in collaborative endeavour in continuously seeking to be relevant to development. The university of the future lives and learns by example. Failing to do so will widen the gap between rhetoric and reality and further undermine the university's credibility.

RENEWING RURAL EXTENSION SERVICES: LESSONS FROM AN APPROACH DEVELOPED IN AFRICA, ASIA AND LATIN AMERICA

Edward Chuma, Jürgen Hagmann, Hlami Ngwenya, Joe Ramaru

All authors are members of the Institute for People, Innovation and Change in Organisations (PICO), Postnet Suite 341, P / Bag X 10, Elarduspark 0047, Pretoria, South Africa.

ABSTRACT

The last major large scale effort to strengthen extension across the developing world was the 'Training and Visit' approach which the world bank promoted and financed until the late 1990's. As it did not achieve the promised results, it was silently dismissed. Since then, some efforts have continued (particularly farmer field schools etc), but at the same time extension services were neglected and the focus moved towards research and market driven development etc. It is only now, that increasingly practitioners and policy makers are bringing extension back into the debate (e.g the recent formation of GFRAS, the global forum for rural advisory services). The paper will present a different perspective to rural extension services, based on functions rather than extension 'systems'. It differentiates two fundamentally different ways of extension: the 'commodity based innovation system' in which extension is more of technical advisory services, and the 'problem solving based innovation system' where extension is basically about mobilising farmers / rural people and supporting them in developing their own organisational capacity for innovation. We call this 'social extension' as it is a cross cutting capacity development process in rural communities to manage their affairs and change in a well-organised and adaptive way. This capacity for self-organisation is the fundamental ability for rural communities to utilise effectively the benefits of economies of scale in input and output marketing, in accessing services and in articulating demand and negotiating with providers and governments.

Extension as a set of functions provides a more differentiated perspective and allows to identify the best actors who can deliver on these functions (e.g. Knowledge/technical advise, information, facilitation, funding etc.). A framework which was developed with more than 30 extension initiatives will be described. The paper will describe how such approaches can be implemented and will use cases from Zimbabwe, South Africa, Ghana, Tanzania, Dominican Republic and Cambodia over the last 2 decades as examples. It concludes that a rather radical shift in perspective is required if extension is supposed to deliver what is expected. Ultimately, if we really want to utilise the potential of rural people, we need to move towards far more farmer-based extension services, which link empowerment and self-organisation to provision of basic services.

ANALYSIS OF HOUSEHOLD SPECIFIC TRANSACTION COST FACTORS IN LIVESTOCK INPUT MARKETS IN ETHIOPIA

Berhanu Gebremedhin[†], Moti Jaleta, Samson Jemaneh and Aklilu Bogale

IPMS, International Livestock research Institute

ABSTRACT

Livestock in Ethiopia perform important functions in the livelihoods of farmers, pastoralists and agro-pastoralists. However, livestock productivity in the country is low, due to low input intensity and diseases. The sector remains predominantly subsistence oriented. Recent indications show that smallholder market oriented livestock enterprises are emerging. Efficient input markets are essential to promote market oriented livestock enterprises. This paper is aimed at analyzing the institutional characteristics of livestock input markets in Ethiopia, based on a survey data of 1192 households in 10 districts of Ethiopia, using analysis of descriptive information and econometric estimations. Not all farmers have access to input markets. About 86% of sample farmers reported availability of fodder markets (green and dry forage and straw). Similarly, about 19%, 48% and 57% reported availability of concentrate, oil cakes, and bran markets, respectively. While 30% of households participate in fodder markets as buyers, 6%, 18% and 24% participate in concentrate, oil cakes and bran markets, respectively. About 80% of farmers purchase veterinary services and drugs. Fodder is purchased primarily at farm gate mainly from farmers, while concentrates, oil cakes and bran are purchased either at local markets or district markets mainly from traders. Farmers get veterinary services at farm gate, local market and district markets, but drugs are purchased mainly at local and district markets. Major supplier of veterinary services is the district Office of Agriculture and Rural Development (OoARD) and drugs are purchased from the OoARDs and traders. The OoARD is almost the exclusive source of AI services, while farmers are the major suppliers of bull services. Those farmers who reported availability of feed markets seem to be generally content with the timeliness, adequacy and quality of the supply. Buyers of feed seem to trust farmer suppliers more than traders or the OoARD. In the feed market, buyers think that they have moderate bargaining power when they buy from farmers or traders, but low bargaining power when they buy from OoARD and cooperatives. However, buyers appear to perceive that they have low bargaining power in the veterinary service, drug, AI and bull service markets, irrespective of whether they buy from traders, OoARD, or cooperatives. Analysis of econometric estimations show the determinants of institutional characteristics of livestock input markets (timeliness, adequacy and quality of supply; information asymmetry, bargaining position of buyers, and contract enforcement). Implications for enhancing the development and efficiency of the livestock input markets are drawn.

Keywords: *livestock; input market; institutions; smallholders; Ethiopia.*

[†] Corresponding Author: b.gbremedhin@cgiar.org

**PRODUCERS' WILLINGNESS TO PAY FOR DAIRY ADVISORY SERVICES
IN DEBREZEIT MILKSHED: IMPLICATION FOR PLURALISTIC
SERVICE DELIVERY FOR THE COMMERCIALIZATION OF LIVESTOCK
AGRICULTURE IN ETHIOPIA**

Anteneh Girma[†], Mohamadou Fadiga, and Ranjitha Puskur

International Livestock Research Institute, Addis Ababa, Ethiopia

ABSTRACT

This article reports the results of a study on dairy service delivery systems in Debrezeit milkshed of central Ethiopia where dairy is transitioning towards a free market orientation, with increasing private sector investment and emerging multiple service providers. Private sector participation in service delivery depends on the demand for services, the profitability of and the enabling environment for sector development. The study applied a double-bounded Contingent Valuation Method (CVM) to elicit what producers are willing to pay for dairy advisory service. The data used in the study were collected from 150 smallholder households. The results indicate that 71.3 % of the producers would be willing to pay for dairy advisory service if their income from dairy increased. Moreover, 80.6% showed a preference to pay for the services through cooperative societies. The mean WTP for dairy advisory service was estimated at ETB 14.45 (US \$1.07) per visit. Lastly, the study found that developing a functional and effective pluralistic service delivery system to support the commercialization of smallholder dairy production rest on three pillars: an effective demand for service delivery, an availability of competent multiple service providers, and an environment that facilitates the interaction between suppliers and consumers of advisory services.

[†] Corresponding Author: antegirma@yahoo.com

THE IMPACT OF ACCESSIBILITY OF LIVESTOCK SERVICES ON DEVELOPING BEEF FARMERS

L.T. Raphahlelo[†], L.A. Mogashoa, D. Nembilwi, M.E. Phoko, S. Nini and N.J. Mulaudzi

Agricultural Research Council, Livestock Institute, South Africa

ABSTRACT

Accessibility of livestock services by developing beef farmers leads to drastic improvement of their cattle management. Developing beef farmers hardly identify animals, keep records, keep gross margins, provide correct bull to cow ratio and low market take off. South Africa offers twelve services to livestock farmers of which eight are offered by ARC livestock institutes. Developing farmers were exposed to six ARC livestock services and indicators of improved herd management were collected over a period of five years in partnerships with provincial government sector and private sector. The study found that 70 % (average 0.44%) farmers identify their animals uniquely, 40% had a correct bull to cow ratio, 50% (average 3.2%) had gross margin information, 60% had market off take of 14% (average 5%), 80% (average 0.80%) farmers record weights of animals and 40% (average 0.58%) are using veterinary services. Accessibility to services therefore plays a role in change of practices.

Keywords: *impact; accessibility; livestock services; developing; beef farmers*

[†] Corresponding Author: Raphahlelo@arc.agric.za

ELEMENTS TO CONSIDER FOR PROPER SUPPORT OF LOW-INCOME BEEF FARMERS TO ACHIEVE HERD PRODUCTIVITY AND PROFIT IMPROVEMENT

Nengovhela NB^{1,2†}; Motiang MD²; Beeton RJS¹; Clark R A^{1,3}

¹University of Queensland, School of Natural & Rural Systems Management, Gatton Australia

²Agricultural Research Council-Animal Production Institute, Irene, South Africa

³Queensland Department of Primary Industries & Fisheries, Brisbane, Australia

ABSTRACT

This study focused on identifying barriers and promoters of individual change that are essential for improving the wellbeing of the individual participants in the low-income beef sector in South Africa. The methodology for this work is Grounded Theory which looks for emerging themes from qualitative data. Focus groups and in-depth interviews were used, supported by field records. The study informants were the four types of farmers in Limpopo provinces and the professionals of the Agricultural Research Council (ARC) and the Limpopo Department of Agriculture (LDA). The data analysis revealed themes and sub-themes that impact on the efficacy of the support system for the low-income beef sector and the barrier to change by individual farmers. The most important were the historic legacy of the ARC and LDA, the technology dependent culture, cultural stereotyping and disconnection with low-income farmers. The farmer data revealed the need for building human, social, financial and psychological capital in the low-income sector. Of these the most important was psychological capital which emerged as the key leverage point.

Keywords: *Individual change; Psychological capital; low income; beef sector; coaching; leverage points*

† Corresponding Author: Baldwin@arc.agric.za

A PIG-OUT-GROWER STORY STILL-BIRTHED BY AN ECONOMIC CRISIS

Charles S Moyo¹, Innocent J Sigwadi¹ & Bethule Nyamambi[†]

¹Khula Sizwe Trust, P.O. Box 2260, Bulawayo, Zimbabwe

ABSTRACT

The Dzumbunu pig out-grower project, Zimbabwe, started in 2007 in response to the income generation needs of resource poor small-scale farmers and the observed low capacity utilisation of a major commercial pig marketing concern in Zimbabwe, aimed at integrating a group of 38 farmers into successful commercial pig production value-chain of a major pig producer in Zimbabwe. The Dzumbunu households, in close proximity to the registered pig production and processing plant, fattened pigs from weaning to marketing. The business partner provided pig production training and processing and KhulaSizwe Trust provided input support, business training and extension services.

Despite the challenging economic environment and a lack of feed in Zimbabwe, the market linkage enabled the Dzumbunu farmers to gain experience in pig production, producing 941 pigs into commercial value chain in 2009 alone. However a further increase in production scale became non-viable. The partnership ended in December 2009 with an agreement to give the farmers pigs and feed to start breeding and fattening pigs independently. With the experience gained, the farmers have raised money to buy 3 tonnes feed; send 4 group-members on a farrowing course; and convert old pens into farrowing pens. Although the group has since identified two market options for their pigs, a consistent marketing option would need to be secured. There is potential in a recovering Zimbabwe to build the capacity of small holders to participate in the market economy and strengthen local commercial business.

[†] Corresponding Author: Bethulezw@yahoo.com

DAIRY BUSINESS DEVELOPMENT SERVICES AFTER THE POST ELECTION CRISIS IN UASIN GISHU DISTRICT, KENYA

M.K. Korir^{1†}, J. Kibet², M.J. Kipsat,³ M. Rirei⁴ and P.M. Nyangweso¹

¹Moi University, Department of Economics and Agric. Resource Mgt., Eldoret, Kenya

²Agric. Chains Development Company Ltd., Eldoret, Kenya

³Moi University, School of Business and Economics, Eldoret, Kenya

⁴Anglican Church of Kenya, Christian Community Services, Eldoret, Kenya

ABSTRACT

The dairy sub-sector is important to Kenya's economy contributing to 5% of the GDP. The study focused on the analysis of the status of veterinary and market development services in Uasin Gishu, a district that bore the brunt of post election crisis. Although the study area was purposively confined to four crisis areas, a systematic sampling procedure was used to pick 194 dairy farmers. Structured questionnaires were then used to collect data that were statistically analyzed. Results show that only 7% of the farmers used Kenya Government veterinary services; that only 20% of the farmers sold their milk through cooperatives; that most farmers (52%) sold their milk through informal market channels and that milk prices received by farmers across marketing channels are similar. It is recommended that any development agency should emphasize low cost milk production systems if farmers are to gain from dairy farming.

Keywords: *Dairy; Business Services; Post Election Crisis; Uasin Gishu; Kenya*

[†] Corresponding author: cheplong2000@yahoo.com

INTEGRATING BUSINESS KNOWLEDGE WITH PRODUCTION PRACTICES TO IMPROVE SMALL-HOLDER CATTLE PRODUCERS IN THE NORTH WEST AND NORTHERN CAPE PROVINCES OF SOUTH AFRICA

L.A Mogashoa[†], N B Nengovhela¹ D M Motiang¹, N J Mulaudzi¹

¹ARC- Animal Production Institute Private bag X 2, Irene 0062, South Africa

ABSTRACT

Small-holder cattle production systems are often characterised by limited business skills, which restrict their participation in trade and markets. In South Africa, it is well known that a lack of business skills render small-holder farmers vulnerable to poor market prices, which reduces the profitability of their enterprises. In this study, sales and market prices were analysed for participants of a farmer development project in the North West and Northern Cape Provinces, to assess the effect of imparting business skills to participants on the performance of their enterprises. The result showed that farmers increased cattle sales and improved the price of their animals from the market between 2002 and 2009 indicating the cumulative effect of business skills acquired over that period. It is concluded that the integration of business skills with typical production practices could improve the productivity of small-holder cattle producers. Extension should therefore introduce business skills in its programmes. _

Keywords: *Business skills; small-holder farmers; marketing; sales*

[†] Corresponding Author: andronicam@arc.agric.za

SUSTAINABLE COMMERCIALIZATION OF DEVELOPING BEEF CATTLE FARMERS THROUGH IMPROVEMENT OF PRODUCTION PARAMETERS

N. J. Mulaudzi^{1†} and J. van Niekerk²

¹ARC-Animal production Institute, Private Bag x 2, Irene, 0062

²University of Free State, Faculty of Natural and Agricultural Sciences

ABSTRACT

Strategic technology transfer can effect herds performance improvement in the developing beef sector to enhance profitability. According to a recent statistic, resource poor cattle farmers in South Africa make up to 40% cattle farmers, yet only 5% of their production contribute to the main marketing chains of the industry. It is based on this fact that necessary intervention on the part of production, marketing and pricing information is inevitable if their potential is to be realized. The use of Profit-Focusing-Framework adopted from Continuous Improvement and Innovation technique entails a packaged set of technology transfer models to can successfully aid in exposing out and eliminates inconsistencies to see them comply with specifications as the industry warrants. Use of selection techniques has enhanced herd fertility by 29% calving rate and weights performance improved by 10 and 20% yearling and 18months respectively. As well, profit took a leap improvement of 60% in three years period.

Keywords: *Sustainable ; Commercialization ; technologies ; production ; improvement*

[†] Corresponding Author: nyadzani@arc.agric.za

**INFORMATION AND KNOWLEDGE
MANAGEMENT**

A CONTENT EVALUATION OF THE PROCEEDINGS OF THE 4TH ALL AFRICA CONFERENCE ON ANIMAL AGRICULTURE: AN UNSUPERVISED **leximancer**TM ANALYSIS

Madzivhandila T.P. ^{1,2†} and Griffith G.R. ²

¹ Agricultural Research Council, Irene, 0062, South Africa

² University of New England, Armidale, 2350, Australia

ABSTRACT

Conferences allow researchers to further develop and showcase their work. However, after the conference is over, very little is known about lessons learned at the aggregate level. One of the problems is that available information management and knowledge generation technologies are not used in this context. In this paper, the Proceedings from the 4th All Africa Conference on Animal Agriculture (AACAA) were analysed to identify those recurring issues raised to address the conference theme: *The role of biotechnology in animal agriculture to address poverty in Africa: Opportunities and challenges*. The question we explored was: what messages emerged to address the conference theme? Further, we tested the potential of using LeximancerTM when analyzing large textual data in an unsupervised manner. The results showed that the material in the proceedings focused on animals and milk as major themes. Ranked concepts, in frequency prominence order, were: animal(s) (100%), livestock (74%), production (66%), research (59%), countries (47%), biotechnology (45%), development (45%), milk (44%), and genetics (43%). We concluded that content analysis using LeximancerTM was useful, providing the opportunity to deal with large amounts of data without bias. We suggest that wider use this new style of computer aided qualitative data analysis by researchers might encourage industry competitiveness through tighter linkages between the theme areas that are being researched and written about and externally specified research and policy outcomes.

Keywords: AACAA; LeximancerTM; Proceedings Content Analysis; Themes; Concepts

† Corresponding Author: percy@arc.agric.za

ETHIOPIAN LIVESTOCK MARKET INFORMATION SYSTEM: EXPERIENCE FROM A PILOT PHASE

Z. Yilma[†], M. Hunegnaw, M. Girma, F. Tadesse, D. Geleti, A. Haile and T. Dessie

Ethiopian Society of Animal Production (ESAP), P. O. Box: 80019, Addis Ababa, Ethiopia

ABSTRACT

The Ethiopian Society of Animal Production (ESAP) in collaboration with the Ethiopian Meat and Dairy Technology Institute (EMDTI) of the MoARD and with the financial support of USAID/SPS-LMM project planned to develop livestock market information system. The principal objective of the information system is providing comprehensive, accurate and timely information on prices and number of livestock marketed in Ethiopia, regional and international markets to livestock producers, fatteners, abattoirs, traders, exporters, consumers, researchers, development workers and concerned policy makers. The joint venture project envisaged a six months pilot phase where a total of 12 major live animal markets selected from seven regions and four livestock species (camel, cattle, sheep and goats) were considered. During the pilot phase, special emphasis was given to the involvement of concerned stakeholders from early stage for its sustainability; suitability of the data collection formats; manpower requirement for data collection; development and testing of the livestock market database and build up user friendly output generation system. The total number of cattle supplied and sold in the 12 selected markets under consideration during the first 19 weeks of the pilot phase was 188543 and 120141, respectively. This means that about 63% of the total number supplied is sold. The corresponding figures for sheep were 177037 and 114973 (~66%), goats 118671 and 77135 (~66%), and camel 15009 and 8298 (~56%), respectively. Among the 12 markets considered, the volume of cattle supplied ranged from the highest 38352 for Guder to the lowest 5722 for Bati market. The highest volume of cattle sold was also recorded for Adama (28713) followed by Guder, Bahir Dar and Mekelle markets in decreasing order with the least being reported for Bati market (1308). However, the highest proportion of cattle sold from the total number supplied was recorded for Haro Beke (~95%, 9193 of 9695 supplied) and the corresponding lowest figure was reported for Bati market (~23%, 1308 of 5722 supplied). The highest and lowest mean prices for castrated, mature and fat camel were 8977 and 4656 birr recorded for Haro Beke and

[†] Corresponding Author: esap@ethionet.et

Aysaita markets, respectively. The mean price for castrated, mature and fat cattle was highest in Addis Ababa Kera market (9199 birr) and lowest in Bati market (2786 birr). For castrated, mature and fat goat, there was about a 65% price difference between the highest in the Addis Ababa Kera market (1304 birr) and the lowest in Bati market (455 birr). The corresponding highest and lowest prices for castrated, mature and fat sheep were recorded in Wolaita Soddo and Bati markets, respectively. Other related major activities accomplished related to the details and modalities of live animal market price and related data collection, the effective manpower required in the weekly data collection, and dissemination of the collected information are also briefly presented. In addition, market facilities, the Beta version of the database, and the way forward are briefly discussed.

Keywords: *Livestock market information; database; price; volume; Ethiopia*

INNOVATION PLATFORMS TO IMPROVE SMALL-SCALE FARMERS' ACCESS TO LIVESTOCK SERVICES IN SOUTHERN AFRICA

A. F. van Rooyen¹ and S. Homann-Kee Tui[†]

¹ International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Matopos Research Station, PO Box 776, Bulawayo, Zimbabwe, Tel.: ++263 383 3117; Fax.: ++263 383 307,

ABSTRACT

Access to a reliable and relevant supply of inputs and technologies has long been a problem for livestock keepers in southern Africa. This paper attempts to answer the question of whether better developed markets will lead to greater technology adoption using results from a three-year project in Mozambique, Namibia, and Zimbabwe. Innovation platforms, consisting of key actors in a livestock value chain, were established in the three countries to collectively identify bottlenecks and define location-specific technologies and partnerships to address production and marketing issues. This process places technologies promoted by R&D in an appropriate context and creates an incentive for adoption as well as an environment for more informed decision making by the livestock keeper. The use of appropriate technologies to improve production will ultimately translate into more and better quality products sold for better prices, thus securing livelihood and food security gains for poor livestock keepers in southern Africa.

Keywords: *Livestock markets; livestock services; production technologies; innovation systems; southern Africa*

[†] Corresponding Author: s.homann@cgiar.org

SUPPORT TO CAPACITY BUILDING TO PROMOTE TRADE OF LIVESTOCK AND LIVESTOCK PRODUCTS FROM THE HORN OF AFRICA

Emmanuelle GuerneBleich[†], Susan Minae and Ameha Sebsibe

Food and Agriculture Organization, Sub-regional office for Eastern Africa, Addis Abeba, Ethiopia

ABSTRACT

The Horn countries have the largest concentration of pastoral populations and livestock in Africa. Moreover, these countries are located geographical closer to the lucrative Middle East and Egypt markets. The importers have also adapted to the taste of our meat animals. However, these countries have in the last few years lost some of their share of the livestock trade due to failure in meeting the quality and health standards required for export market. Some of the major constraints to retain competitiveness in the markets include gaps in the skills of producers and traders in the implementation of acceptable standards in the production, traceability and handling of live animals and meat.

A regional project, therefore, has been requested by IGAD for FAO assistance and is being implemented in the six IGAD member countries (Djibouti, Ethiopia, Somalia, Kenya, Uganda and Sudan) with the objectives of technical capacity building of the livestock commodity chain actors (pastoralist and traders associations, the Chambers of Commerce and public service providers such as the Ministry of Agriculture and Livestock Development/ trade departments). The project is believed to contribute in improving the export performance of the Horn countries through upgrading the technical and marketing skills of the actors and their capacity to adjust the operations in line with the market requirements. The project has three outputs: developing and making available of technical training packages on livestock/livestock product quality and certification procedures, entrepreneurship and agribusiness strengthening training materials and support the establishment of livestock market information regional forum. The project conducted the inception workshop in Djibouti in the presence of national project coordinators from the beneficiary countries and relevant development partners. The activities conducted under the three outputs, the achievements and the progress of the project in the six countries are also highlighted.

Keywords: *Trade; Livestock; certification; quality; pastoralists; Horn countries; Middle East countries*

[†] Corresponding Author: Emmanuelle.GuerneBleich@fao.org

NAPIER: PLANNING FOR AND MONITORING OUTCOMES IN ACTION-RESEARCH PROJECTS

J Nyangaga[†], Janice Proud¹, Margaret Mulaa², Jolly Kabirizi³ and Beatrice Pallangyo⁴

¹International Livestock Research Institute (ILRI), P O Box 30709-00100, Nairobi, Kenya

²Kenya Agricultural Research Institute (KARI), PO Box 450- 30200, Kitale, Kenya

³National Livestock Resources Research Institute (NaLIRRI), P.O. Box 96, Tororo, Uganda

⁴National Biological Control Program (NBCP), PO Box 30031, Kibaha, Tanzania

ABSTRACT

Outcome Mapping (OM) was implemented for a Napier grass diseases project as an Monitoring and Evaluation process for sites in Kenya, Tanzania and Uganda. This action-research project was based on the hypothesis that resistance to smut and stunt disease exists and can be exploited. This submission centres on outcomes as a performance objective. Outcome mapping focuses on at social changes an initiative intends to bring about. Challenges are faced when planning for, achieving and capturing these outcomes. This study shows how this impacted on observations, with lessons drawn for OM future applications. Differences observed were based on envisioned goal, choice of partners and progress indicators and progress documentation. A key lesson is the importance of visualization, clearly defining outcomes, supporting interventions and information collection. The study is a useful guideline to project leadership and management and the involvement of stakeholders in targeted transformation and information flows.

Keywords: *Napier grass; outcome mapping; action research*

[†] Corresponding Author: j.nyangaga@cgiar.org

RAISING LIVESTOCK AND POULTRY TO IMPROVE LIVELIHOODS OF RESOURCE POOR FARMERS IN BANGLADESH

M. Saadullah, Department of Animal Science, Bangladesh Agricultural University

Mymensingh 2202, Banglades; E-mail: saadullah1941@hotmail.com_

ABSTRACT

This paper discussed the use of available local resources and knowledge for sustainable livestock and poultry production to improve livelihoods of landless and resource poor farmers in Bangladesh. Bangladesh. The farmer posses a rich of local knowledge, much of which is being lost during modernization of Agriculture. Unfortunately little attention was paid to the value of local indigenous knowledge, whereas this knowledge can be the only basis for sustainable production to improve livelihoods of resource poor farmer specially women. Traditionally small farmers are bulk producers of milk, eggs and meat. Women constitute more than half of the total population in the country. Given the crucial role, women play and will increasingly play in agriculture especially goat and poultry rearing to improve their livelihoods. Poverty alleviation must address the needs of women as producers and income earners than merely as consumer of social services In fact the farmers posses a large amount of information that can help to increase the productivity without resorting to new technologies and advice from technical expert who have little understanding of local condition. On the other hand these systems of animal production using vary widely in accordance with climate, soil and socio economic opportunities of each developing country. The native animals are well adapted to the local environmental, low quality feed resources, housing facilities and scavenging systems and the most important aspect is that their performance is also good in terms of feed efficiency. The feed resource base for these animals is scavenging and consists of crop residues, household waste, tree fodder, roots and tuber, grain by-products and anything edible found in the immediate environment The backyard goat, chicken and duck farming specially by women has of being less capital-intensive than larger enterprises and can often be financed by dormant rural savings. Feed resource base for chicken and ducks is mostly scavenging in the small farm and consists of household waste, fruits by-products, roots and tubers and small amount of grains, grain by-products and anything edible found in the immediate environment. Goat and poultry rising is very effective means for poverty alleviation and with 7-8 goats and 15-20 poultry given to a poverty stricken farm family, under traditional feeding systems could easily alleviate poverty. The development of livestock and poultry in Bangladesh is constrained by feed scarcity, inefficient and poorly coordinated support services and lack of information on which to base to make decision. These systems of production are in contrast with simple single-product farming like large, small ruminants and poultry for draught meat, milk and eggs respectively. Besides, milk and meat livestock is valued for one or several of the following traits: capital, credit, traction, hides and skins, fuel and fertilizer.

Keyword: *Smallholder farms; farming systems; scavenging; local knowledge; livestock; poultry*

AN INFORMATION AND KNOWLEDGE MANAGEMENT TECHNOLOGY FOR PERFORMANCE OF COMMERCIAL DAIRY UNIT OF CHHATTISGARH STATE IN INDIA: A CASE STUDY

Vijay K. Choudhary & K.K.Choudhary

Department of Agricultural Economics

Indira Gandhi Agricultural University, Raipur (Chhattisgarh) India 492 006

ABSTRACT

At present, India is the highest milk producer at 81 million tones per annum, with annual growth rate of 5.5 per cent. The per capita consumption of milk grew from 98 gms per day in 1975 to 216 gms per day in 2000, mainly due to the success of operation flood program. It has been projected that the country will have to produce 135 million tones by 2010 A.D. to meet the economic and the nutritional demand of the country. Chhattisgarh (C.G.) State is also rich for livestock resource having about 82 lakh cows and 18.43 lakh buffaloes. But production of milk is only 820 thousand metric tones with per capita availability of 60.60 ml milk, which is very low than recommended quantity (220 gms) of milk by Indian Council of Medical Research (C.G. at a glance, 2000-2001). An study has been conducted in Raipur district of C.G. State to work out the economics of milk production of dairy unit, to examine the inter-temporal performance of progressive dairy unit in terms of capital formation and investment, constraints in production and marketing system faced by the dairy unit and to suggest the policy measures to enhance the dairy enterprises in C.G. The present study was conducted in Raipur district of C.G. State in India. For the case study Naseeb dairy has been selected purposively which is located near Darbha village of Arang block under Raipur district. Performance of the dairy farm for overall period was found positive and significant growth in investment on building, machinery and dairy equipments, value of milch cattle, price and quantity of milk. This was mainly due to increasing productivity of milch cattle and price of milk. The net income per milch cattle per annum was estimated Rs.13995.71, which was observed more in cow (Rs.16171.46) than buffalo (Rs.13235.49). Among the cows highest net income was noticed under Holstein-Friesian (Rs.26205.73) and lowest under Sahiwal. This indicates that higher profit was obtained incase of Holstein-Friesian due to high yield potential of these cow. Overall contribution of different inputs to milk output of buffaloes was less than cows. The major constraints in production and marketing of milk were higher prices of improved milch cattle, high cost of inputs and high transportation cost. The study suggests that high yielding exotic breeds like

holstein friesian and jersey should be reared. To get the more net income, market integration practice should be adopted to reduce the channel of marketing; Thus producer's share in consumer's rupee will be increased and dairy herds should be preferably established far from urban areas to ensure a healthy environment for the milch cattle.

OTHER POSTERS

ASSESSMENT OF PERCEPTIONS AND LIVESTOCK MANAGEMENT PRACTICES ON MESQUITES INVADED (*P. juliflora*)(Sw.) GRAZING LANDS IN AMIBARA DISTRICT OF AFAR REGIONAL STATE, NORTHERN ETHIOPIA

Dawit Terefe[†], Solomon Melaku² and Habtemariam Kassa³

¹Graduate student, Haramaya University; ²lecturer at Haramaya University, and ³lecturer at Haramaya University

ABSTRACT

The study assessed the impacts of differential levels of *Prosopis* invasion on livestock management practices and on livelihood strategies of pastoralists in the Amibara district of Afar NRS. Three Kebeles representing little to none, moderate, and high levels of invasion were selected. Changes in livestock mobility and grazing patterns, in mix of species, watering points and levels of injury were observed. The three kebeles did not significantly differ in their livestock holding per household ten years ago but now they vary significantly ($P < 0.05$) in the primary livelihood option of pastoralists. Unlike the views of experts, pastoralists do not see the current *Prosopis* control measures as effective. All opted for its complete removal despite income from charcoal. The findings suggest rethinking of *Prosopis* control measures with active participation of pastoralists and further study on the effects of *Prosopis* invasion on the production and marketing of livestock from areas under similar threat.

Keywords: *Perception; Prosopis invasion; livestock holding; Afar*

[†] Corresponding Author: dawiterefe@gmail.com

BEEF PRODUCTION IN SOUTHERN AFRICA: CHALLENGES AND OPPORTUNITIES

M. M. Scholtz^{1†} and A.M. Okeyo²

¹ARC-Animal Production Institute, Private Bag X2 Irene 0062, South Africa

²International Livestock Research Institute (ILRI), P.O. Box 30709, 00100, Nairobi, Kenya

ABSTRACT

The cattle sector in southern African countries is highly dualistic with communal, small scale farmers and large commercial farmers all co-existing. Whereas the off-take from the commercial sector is high, the off-take from the other sectors is still low as a result of low fertility, high mortality, etc. Only Botswana and Namibia are net exporters of beef, despite the huge and untapped potential of exceptionally good indigenous beef cattle breeds in all countries. Challenges facing beef production in southern African countries include variable and low production levels, the effect of climate change, enteric methane production and low levels of animal recording. Increasing population, urbanization and economic development, especially in developing countries are expected to lead to a significant rise in demand for livestock products. Several new technologies offer opportunities for beef production in the next few years. These include, genomic evaluation methods, together with computational and geographical information system techniques.

[†] Corresponding Author: Gscholtz@arc.agric.za

BUTTER MAKING FROM CAMEL MILK

Yohannes Mehari^{††}, Zeleke Mekuriaw², and Getachew Gebru³

1. Ethiopian Dairy Development Project (EDDP) Land O'Lakes Ethiopia Inc, Addis Ababa, Ethiopia. Private P.O.Box 62824, Addis Ababa, Ethiopia.
2. Bahir Dar University, P.O.Box 1867, Bahir Dar, Ethiopia.
3. TAES (Texas Agricultural Experiment Station), SPS-LMM Program, Addis Ababa, Ethiopia. Private box 90112;

Abstract

Butter from camel milk is not well-known in many camel rearing societies. This desk study was carried out to document experiences elsewhere related to butter making from camel milk. The composition of camel milk is similar to that of the goat but it contains more lactose and ash than cow's milk and more ash than buffalo milk. The fat contents of camel milk varies greatly from 1.10 to 5.50 percent depending on the breed and feeding conditions, the average being the same as for cow's milk. Sufficient evidence and experiences exists on making butter from camel milk. These experiences can be extended to pastoralists and other camel milk producers, thus paving a way to the future of camel dairying.

Keywords: *Camel butter; Camel butter fat*

[†] Corresponding Author: yohanmehari@yahoo.com

CARCASS CHARACTERISTICS AND MEAT QUALITY OF THREE ETHIOPIAN GOATS REARED UNDER EXTENSIVE SYSTEM

Ameha Sebsibe^{1†}, N.H. Casey², W.A. Van Niekerk² and Azage Tegegne³

¹ Food and Agriculture Organization, Sub-regional office for Eastern Africa, Addis Abeba, Ethiopia

² Department of Animal & Wildlife Sciences, University of Pretoria, Pretoria, South Africa

³ International Livestock Research Institute, Addis Abeba, Ethiopia

Abstract

Ethiopia is exporting chilled carcasses of goat mainly reared in the extensive lowland parts of the country. However, there is limited information on various carcass traits. Carcass characteristics and meat quality of the Afar, Central Highland goats (CHG) and Long-eared Somali (LES), reared under extensive system were evaluated. At an average slaughter weight of 13.8 kg, the genotypes had a mean hot carcass weight of 5.9 kg. The total edible proportion was between 61.6 to 62.3 %. Genotype significantly affected the chilling loss and the CHG had greater loss. CHG had also the lowest physical and chemical fat content. Cooking loss differed between genotypes. The composition of most muscle fatty acids was also affected by genotype and the LES presented a beneficial ratio of n-6/n-3 poly unsaturated fatty acid. However, to improve the carcass yield and quality and offer regular supply for the market grazing goats should be supplemented or stall-fed with locally available feeds.

Keywords: *Extensive system; carcass characteristics; meat composition; fatty acid; Ethiopian goats.*

[†] Corresponding Author: Ameha.Sebsibe@foa.org

CONSTRAINTS AND OPPORTUNITIES OF DAIRY PRODUCTION IN CENTRAL ZONE OF TIGRAY, NORTHERN ETHIOPIA

Gebrekidan Tesfay Weldeslasse†, Zeleke Mekuriaw Zeleke** and Aklilu Hailemichael****

, **Aksum University, Axum, Ethiopia

****Bahir Dar University, Bahir Dar, Ethiopia

ABSTRACT

The purpose of this study was to explore the constraints and opportunities of dairy cattle. A total of 160 dairy holding households were selected by systematic random sampling technique for the study. Both feed shortage and inadequate land were ranked first and second constraints in urban and peri-urban areas, respectively. Disease followed by waste disposal rated third constraint in urban areas whereas lack of exotic breed ranked third in the peri-urban areas. Increased demands of dairy products, increased farmers' awareness about dairying and access to credit services were some of the opportunities to increase dairy production in the area. The problem of feed and land were significant both in urban and peri-urban areas and it has to be addressed both in terms of utilization and management.

Keywords: *Urban; peri-urban; dairy cattle; constraints and opportunities*

† Corresponding Author: gebrekidan_tes@yahoo.com

ECONOMETRIC ANALYSIS OF PRODUCTION FACTORS OF SMALL-SCALE POULTRY PRODUCTION IN KENYA

By Ngeno Vincent[†], Langat B.K, Korir M.K, Ngeno E.K & Kipsat M.J

Department of Agricultural Economics and Resource Management,
Moi University, P.O. Box 1125 - 30100, Eldoret, Kenya.

ABSTRACT

Poultry production is one of the most important economic activities to the small-holder farmers in Kenya. However, constraints are evident which have resulted in low production of poultry and poultry products to meet population demand. The objective of the study was to determine the factors that influence the production of poultry and poultry products by small-scale poultry farmers in Kenya. Primary data were obtained using a set of structured questionnaires from 200 farmers drawn from the study area using a multi-stage sampling procedure. Data were analyzed by the use of multiple regression and simple correlation analysis. The results showed that the positive and significant relationship between expenses on the feed, vaccine and poultry equipment indicates that if more feeds, medicine, vaccines and poultry equipment are given to the small-scale poultry farmer, there will be more than proportionate increase in the poultry output which will eventually lead to more household income.

Keywords: *Production factors; Poultry; Kenya*

[†] Corresponding Author: ngenota@yahoo.com

EFFECT OF ANIMAL AGE AND CARCASS SUSPENSION ON TOUGHNESS OF *longissimus dorsi* FROM ANKOLE BULLS

C.A. Eskildsen^{1†}, D. Mpairwe², K. Kamatara², D. Mushi³, A.E. Kimambo³, J. Madsen⁴, and M. Christensen⁴

¹Department of Food Science, Faculty of Life Sciences, University of Copenhagen, Denmark

²Department of Animal Science, Makerere University, Uganda

³Department of Animal Science and Production, Sokoine University of Agriculture, Tanzania

⁴Department of Large Animal Sciences, Faculty of Life Sciences, University of Copenhagen, Denmark

ABSTRACT

Toughness is an important eating quality characteristic in beef. A number of pre- and post-mortem factors induces changes in toughness. This study was conducted to investigate the effect of age at slaughter, pre-rigor carcass suspension and their interaction on toughness of *longissimus dorsi* from Ankole bulls.

Ankole bulls (45) were evenly distributed into three groups according to age at slaughter (2, 3 or 5 years). Immediately after slaughter, carcasses were halved and sides were either suspended in the Achilles tendon or pelvic bone until 48h post-mortem. Maximum force required to shear through samples were determined using Warner-Bratzler shear device. In Achilles hung carcasses, toughness increased with increasing age at slaughter. However, pelvic suspension reduced toughness markedly for all three age groups. Our study indicates that pelvic suspension is beneficial in tenderizing *longissimus dorsi* from Ankole bulls and more importantly it reduces the age-induced increase in toughness normally found.

Keywords: *Toughness; Cattle; Ankole; Pelvic suspension; Warner-Bratzler shear force*

[†] Corresponding Author: mec@life.ku.dk

EFFECTS AND INTERACTIONS OF SHEEP BREED AND LENGTH OF FEEDING PERIODS ON CARCASS pH AND COLOR OF HIGHLAND (ARSI-BALE) AND LOWLAND (BLACK HEAD OGADEN) MALE SHEEP OF ETHIOPIA

Chala Merera^{a†}, Girma Abebe^b, Ameha Sebsibe^c, and A. L. Goetsch^d

^aAmbo University, P. O. Box. 19, Ambo, Ethiopia,

^bEthiopia Sheep and Goat Productivity Improvement Program, P. O. Box 15566, Addis Ababa, Ethiopia

^cEthiopian Meat and Dairy Technology Institute, Debre Zeit, Ethiopia

^dE (Kika) de la Garza American Institute for Goat Research, Langston University, P. O. Box 730, Langston, OK, 73050, USA

ABSTRACT

Yearling sheep from highland (Arsi-Bale) and lowland (Black Head Ogaden) areas of Ethiopia were used to determine effects and interactions of breed and length of feeding period on carcass pH and color. Sheep were purchased, transported, and handled in accordance with normal practices of abattoirs in Modjo Modern Export Abattoir. 18-20 sheep of each origin were subjected to feeding periods 2, 4, and 6 weeks in length, during which time grass hay was consumed *ad libitum* and a concentrate supplement was provided at approximately 200 g/day per animal (DM basis). Carcass pH and color measurements were made at 45 min (day 0) and 1, 2, and 3 days post-slaughter, with storage at 4°C. The data were analyzed using the GLM of SA. Average carcass pH of Arsi-Bale sheep was similar to Black head Ogaden sheep on the same day of post slaughters. Both linear and quadratic length of feeding period had significant influence in carcass pH on day 0, 1, 2, and 3 post slaughters ($P < 0.05$). Length of feeding periods had greater effect to reduce carcass pH. For both sheep breeds, carcass pH values were lowest among feeding period lengths for 6 weeks. Carcass pH decreased as post slaughter days increased, but considerably decreased between day 0 and 1 and then after slightly decreased as post slaughter days increased. The average carcass lightness (L^*) was greater ($P < 0.05$) for Black head Ogaden sheep ($L^*=29.50, 39.68, 40.91$ and 42.73) than Arsi-Bale sheep ($L^*=27.89, 35.81, 36.67$ and 38.04) on the same day of 0, 1, 2, and 3 day post slaughter, respectively. Average carcass redness was greater ($P < 0.05$) for Arsi-Bale sheep ($a^*=14.21, 17.04, 17.15$ and 16.82) than Black head Ogaden sheep ($13.51, 15.63, 15.25$ and 14.69) on the same day of 0, 1, 2 and 3 days post slaughter, respectively. Carcass a^* (as an index of redness) changed with increasing day post-slaughter. In conclusion, there was no evidence of short shelf life or early darkening of the sheep carcasses in this experiment from comparisons of carcass pH and color measures with values in the literatures.

Keywords: *Sheep; carcass; pH; color; length of feeding period*

† Corresponding Author: chmerera@yahoo.com

EFFECTS OF BODY WEIGHT AND BODY CONDITION CHANGES AFTER PARTURITION ON REPRODUCTIVE PERFORMANCE OF SAHIWAL AND FRIESIAN CATTLE

D. Indetie^{1†}, L. Musalia², B. Bebe², E. Wathuta², A. Indetie¹, J. Kinywa¹, and F. Lukibisi¹

¹Kenya Agricultural Research Institute, P.O. Box 3840, Nakuru, Kenya;

²Egerton University, P.O. Box 536, Njoro, Kenya

ABSTRACT

The objective of this Study was designed to assess weight and body condition changes after parturition and their influence on reproductive performance of Sahiwal and Friesian lactating cattle. Forty in-calf cows comprising 20 Friesians and Sahiwals were selected and upon calving were randomly assigned to five dietary groups consisting of concentrate supplementation at the rates of zero to four kg fed twice daily after grazing on pasture for 24 weeks postpartum. Each group consisted of four Friesians and four Sahiwals. Parameters recorded included weekly live weight and body condition scores for six months postpartum while reproductive attributes recorded included days to commencement of luteal activity, and insemination data was analyzed using GLM of SAS. There were significant differences in weight of experimental cows at the start of the experiment with Friesians being heavier than Sahiwals at commencement of the experiment. It was observed that Friesians lost 26 Kg from calving to commencement of luteal activity after 68 days and improved from this loss to register a deficit of only 8 kg at insemination which occurred 98 days after calving. The Sahiwals lost a mean of 27 kg after 42 days *postpartum* at commencement of luteal activity and a further 7 kg to insemination occurring 73 days after calving. The mean body weight loss for Friesians from calving to commencement of luteal activity is 0.38 kg per day while that of the Sahiwals was 0.64 kg per day. This weight loss as a proportion of weight at calving is 0.06 and 0.07 for Friesians and Sahiwals respectively. The mean loss in body condition for the two breeds shows that Sahiwals lost greater body condition at the two points than the Friesians. However, they got into reproduction earlier than the Friesians which had better recovery rates from weight and body condition depression *postpartum*. It could be argued that Sahiwals when supplemented tend to add condition rather than channel these feeds in to milk production and therefore impacting negatively on fertility. This is an indication that breeds react differently to body weight changes in relation to resumption of reproductive function.

† Corresponding Author: douglasindetie@yahoo.com

TABLE EGG SORTING IN SMALLHOLDER FARMS: A VERITABLE AND EFFICIENT ECONOMIC AND WASTAGE REDUCTION STRATEGY

O.T.F. Abanikannda[†], A.O. Leigh and A.O. Giwa

Department of Zoology, Lagos State University, Ojo – Lagos, Nigeria

ABSTRACT

The major challenges facing livestock product sale is appropriate pricing, preservation and storage. The usual practice in small-holder poultry farms is selling eggs unsorted, with its attendant loss of income, decreased marketability and increased wastages. This study aims at making a comparative study of the profitability of eggs' sorting and its implications on the farmer's revenue.

A total of 100 trays of unsorted eggs with 20 trays each derived from layers at five ordinal age groups were tagged, weighed and measured, with a total of 2,951 eggs eventually studied. The eggs were then reclassified by weight using the American classification system into Peewee, Small, Medium, Large, Extra Large and Jumbo.

The study revealed about 15 percent increase in revenue after re-classification, with a drastic reduction in wastage. It is recommended that sorting eggs would ensure appropriate pricing of eggs, reduce wastage and ultimately increase the accruable income to the farmer.

Keywords: *Table egg; egg sorting; effective pricing; wastage reduction*

[†] Corresponding Author: otfabanikannda@hotmail.com

GROWTH PERFORMANCE AND THE ECONOMY OF PRODUCING QUALITY BEEF IN TANZANIA

A.J. Muilawa¹, A.E. Kimambo¹, L.A. Mtenga¹, G.H. Laswai¹, J. Madsen³ T. Hvelplund², M. Weisbjerg², M. Christensen³, and D.M. Mgheni¹

¹SOKOINE University of Agriculture, Animal Science and Production, P. O. Box 3004, CHUO KIKUU, MOROGORO, Tanzania

²AARHUS UNIVERSITY, Faculty of Agricultural Sciences, Foulum Research Centre, DK-8830, Tjele, Denmark,

³UNIVERSITY OF COPENHAGEN, Faculty of Life Sciences, DK-1958, Frederiksberg C, Denmark,

ABSTRACT

The effect of breed and diet on growth performance and economics of production of indigenous cattle (Boran and Tanzania shorthorn zebu (TSHZ)) was studied. A total of 36 animals from each breed were randomly allocated to diets. Diet 1, grazing (control), Diet 2, control + 50 % *adlibitum* concentrate and Diet 3, *adlibitum* hay + *adlibitum* concentrate. The animals were fattened for 90 days, growth performance and economics were evaluated. Sensitivity test was employed by varying cost price of feed by 20%, break even point and net gross margin were calculated. Growth rate (g/d) was highest in animals fed Diet 3 (735) followed by Diet 2 (377). Boran showed better ($P < 0.05$) FCR than TSHZ (11.5 vs. 12.1 feed/gain). With better price (USD 5.3 /kg carcass) significant net gross margin for diets 2 and 3 were realized (259 and 346 USD/ carcass). It is concluded that quantity of meat from Boran and TSHZ could be improved by finishing on high concentrate, however for supplementation to be profitable it is necessary that there is a market willing to pay extra for tender quality beef..

Keywords: *concentrates; feedlot; growth performance; net gross margin (GM)*

INFLUENCE OF HEN'S AGE ON SHELL THICKNESS OF TABLE EGGS IN LAGOS STATE, NIGERIA

O.T.F. Abanikannda, A.O. Leigh and A.O. Giwa

Department of Zoology, Lagos State University, Ojo – Lagos, Nigeria

ABSTRACT

Most poultry farms are located away from city centres where their products are mostly consumed. The major challenge is transportation, which is aggravated by low quality egg shell, resulting in more cracks and breakages. This study aims at investigating the effects of hen's age on egg shell thickness.

A total of 300 eggs comprising sixty eggs from each of five ordinal groups of hens at various ages were tagged and measured for weight, length, width, shape index, shell weight and shell thickness.

The study revealed that with the exception of egg width, all other variables were significant ($P < 0.05$) predictors of shell thickness, and influence of hen's age was highly significant ($P < 0.01$) on shell thickness. Eggs from hens aged between 33-43 weeks and 44-54 weeks had significantly ($P < 0.01$) thicker shells than the other three groups. Thus, eggs from very young and very old layers should be more carefully handled during transportation.

Keywords: *Shell thickness; Hen's age; Table egg; Egg transportation*

† Corresponding Author: otfabanikannda@hotmail.com

INNOVATIVE MANAGEMENT TO INCREASE REPRODUCTIVE PERFORMANCE IN BEEF CATTLE

S. M. Grobler¹, M. M. Scholtz^{2,3}

¹ ARC – Animal Production Institute, Private Bag X05, Lynn East, 0039, South Africa

² ARC – Animal Production Institute, Private Bag X2, Irene 0062, South Africa

³ Post Graduate School in Animal Breeding, University of the Free State, P.O. Box 339, Bloemfontein 9301, South Africa

ABSTRACT

Fertility is the main component influencing total herd efficiency in beef cattle. Research is currently being undertaken in South Africa to evaluate the effect of oestrus synchronisation followed by natural mating on calving percentage and distribution of actual calving. The preliminary results show that a practical way to decrease the length of the breeding season and increase conception rates is by oestrus synchronisation followed by natural mating. Cows calved earlier in the calving season and cows in anoestrus started cycling again. If long calving seasons are shortened and calving percentage increase, more and heavier calves of uniform age can be weaned. Cows calving earlier in the season have a longer “recovery period” and the opportunity to calve in a better body condition the next season, than cows calving late in the season. Cows that calve early also have a better chance of falling pregnant again in the next breeding season.

Keywords: *oestrus synchronisation; calving percentage; calving distribution*

MEASURING WELFARE OF DAIRY CATTLE IN MALAWI – CHALLENGES, CONSTRAINTS AND OPPORTUNITIES

J.M. Gibbons^{††}, B. Kawonga², T.N. Gondwe², M.G.G. Chagunda¹ and D.J. Roberts¹

¹Sustainable Livestock Systems Group, SAC Research, King's Buildings, West Mains Road, Edinburgh, EH9 3JG, Scotland, UK

²Department of Animal Science, Bunda College of Agriculture, University of Malawi, P.O. Box 219, Lilongwe, Malawi

ABSTRACT

In 2008, there were 5,200 exotic dairy cows in Malawi. These exotic cattle are generally not adapted to the tropical environment and hence their welfare is a cause for concern. The aim was to identify the challenges, constraints and opportunities in assessing the welfare of dairy cattle in rural central Malawi, using direct observations of health (body condition score, cleanliness, claw length) and audit of the khola (size, presence of shade and lying areas). It was evident that there is a high standard of health, management input and housing facilities for exotic dairy cattle. Within this management system, disease is not a huge challenge but the provision of sufficient quantities of food to the animals is problematic. There is need for training on feed preservation and storage. Promotion of animal welfare by linking it to dairy productivity would be beneficial to the dairy industry in Malawi.

Keywords: *dairy cattle; welfare; health; behaviour; housing conditions*

[†] Corresponding Author: jenny.gibbons@sac.ac.uk

OPPORTUNITIES FOR PRODUCTION OF TENDER HIGH QUALITY BEEF IN TANZANIA

J. Madsen^{1†}, A. E. Kimambo², G. H. Laswai², T. Hvelplund³, and M. R. Weisbjerg³

¹Department of Large Animal Sciences, Faculty of Life Sciences, University of Copenhagen, Denmark

²Department of Animal Science and Production, Sokoine University of Agriculture, Tanzania

³Department of Animal Health and Bioscience, Faculty of Agricultural Sciences, Aarhus University, Denmark

ABSTRACT

Research in relation to the value chain in beef production from pastoralists to consumer has been ongoing. It has been found that: 1) Pastoralists are willing to sell their cattle, 2) resources such as cattle, feeds and slaughter houses for producing quality beef are available in Tanzania, 3) Boran and Tanzanian Shorthorn Zebu finished under feedlot conditions using locally available feed resources can produce tender quality beef, 4) producing quality beef under feedlot condition has an extra cost of production when compared with grazing alone, implying that there is a need for a market that can pay higher price for such meat and 5) the weak link is marketing of the tender quality beef. This marketing problem has to be solved before some benefits could be obtained by the individual cattle owners and Tanzania as a whole.

Keywords: *Feedlot; Cattle; Zebu; By-products; Feed utilization; Market*

[†] Corresponding Author: jom@life.ku.dk

PERFORMANCE OF CATTLE FATTENING ENTERPRISES IN MWANZA REGION, TANZANIA

F.G. Mawona, A.E Kimambo[†], G.H. Laswai, L.A. Mtenga and D.M. Mgheni

Department of Animal Science and Production, Sokoine University of Agriculture P.O.Box 3004 Morogoro, Tanzania

ABSTRACT

A performance study of cattle fattening enterprises in Mwanza was carried out. Structured questionnaires were administered to 58 respondents and 240 cattle fed different diets were monitored for 56 days. The herd size of fattening units ranged from 50 to 150 cattle fattened for 90 days. Majority (93% of respondents) of cattle fattened was Tanzania Short Horn Zebu, largely mature males (65%) and emaciated animals (25%). Diets used for fattening included grazing with either cotton seed hulls (CSH), mixture of CSH and Cotton seed cake (CSC), brewers mash or rice polishing. An average daily gain of 1kg and profit margin (Tanzanian shillings per animal) of 190,000 was derived from respondent's information. The monitoring study observed a gain ranging from 0.44 to 0.78 kg and profit margin ranging from 52, 833 to 70,833. It is concluded that fattening of cattle is a viable enterprise in Mwanza

Keywords: *Cattle; fattening; weight gain; gross margins*

[†] Corresponding Author: kimambo@suanet.ac.tz

PUBLIC-PRIVATE PARTNERSHIPS FOR UNLOCKING THE POTENTIAL OF DAIRY CATTLE PRODUCTIVITY IN UGANDA FOR IMPROVED LIVELIHOODS

F. Kabi[†], F. B. Bareeba¹, M. Kwizera¹, P. Walekhwa¹, V.D.S.R. Prasad², D.V.N, Raju², J. Rubaramira³ and A. Sekitoleko⁴

¹ Makerere University, P. O. Box 7062, Kampala, Uganda

² Kakira Sugar works (1985) Ltd., P.O.BOX 6361 Jinja, Uganda

³ Kakira Out growers Rural Development Fund (KORD), P.O. BOX 121, Jinja, Uganda

⁴ Dairy Development Authority (DDA), P.O.BOX 34006, Kampala, Uganda

ABSTRACT

Synergies from public-private partnerships were used to assess effects of industrial molasses and urea supplementation (MUS) on dairy cattle productivity. One hundred Friesian cows were used to evaluate effects of graded levels of MUS on milk productivity using four treatments: 1) Control, representing farmers' dairy management practice without intervention, 2) control + 0.5 kg/animal/day MUS 3) control + 1 kg/animal/day MUS 4) control + 2 kg/animal/day MUS. Data was analysed using polynomial contrasts with linear and quadratic functions. Milk yield increased linearly ($P < 0.01$) with a quadratic trend ($P < 0.01$). Increasing response in milk production at a decreasing rate suggests that MUS was optimum at 1 kg/animal/day. Adoptability analysis indicated variations in milk yield across different farms even with similar treatments. Deliberate effort is needed to engage public-private partnerships to translate science into tangible commercial products needed to unlock the potential of dairy animal productivity for enhanced income and household nutrition.

Keywords; *Commercial products; Dairy cattle; Household income and nutrition; Milk productivity; Molasses urea supplementation; Public-private partnerships*

[†] Corresponding Author: fredkabi@agric.mak.ac.ug

SERVICING RESOURCE POOR FARMERS WITH ADVANCED TECHNOLOGIES

S. Nini[†], N.B Nengovhela, T.L Nedambale, B. Greyling, D Nembilwi, M. Mphaphati and P. Malusi

Agricultural Research Council, Private Bag x 2, Irene- 0062

ABSTRACT

Receptiveness of resource poor farmers to high-end technology is unknown in South Africa. Two case studies were used to assess the receptiveness to Embryo Transfer Technology (Case 1), aimed at transferring superior gene of Nguni cattle on selected animals, and LidCat (DNA ‘fingerprints’) (Case 2) by communal farmers of Limpopo and Eastern Cape provinces. Participant observation methods on farms were used to record the receptiveness under a voluntary environment. (Case1) involved 19 farmers in a communal area and two emerging farmers. 3196 animals from high stock theft areas were attracted for (Case 2). Willingness to participate, curiosity, production constraints, disputes and stock theft, confirmed willingness in both case studies respectively. The study concludes that, although resource poor farmers lack basic information about advanced technologies, they respond positively when these services are provided.

Keywords: *receptiveness; resource poor farmers; advanced technologies*

[†] Corresponding Author: Ninis@arc.agric.za

SHEEP AND GOAT PRODUCTION IN SHIFTING AND PERMANENT FARMING SYSTEMS IN WESTERN ETHIOPIA

T. Yilma [†], H. Aklilu ², T. Yayneshet ³

¹ Ethiopian Institute of Agricultural Research, Livestock Research Process, Assosa, Ethiopia

²Aksum University, Department of Animal Production and Technology, Aksum, Ethiopia

³ Mekelle University, Department of Animal Science, Mekelle, Ethiopia

ABSTRACT

Growing population, urbanization and income have increased demand for meat in Ethiopia. Shifting farming system (SFS) and permanent farming system (PFS) are important suppliers of sheep and goats particularly in western Ethiopia. SFS and PFS differ in cropping patterns, land use management and production potentials, and consequently feed resources for livestock. This study explored sheep and goat production in SFS and PFS. A cross-sectional random survey of 180 households (90 from each farming system (FS)) and focus group discussions were used. Sales followed by home consumption were main production motives especially in PFS. Feed resources especially woody species was more abundant in SFS. Purchased feed was more common in PFS. The re(productive) performances were generally lower in SFS. SFS is still widely practiced but neglected FS in Africa. For SFS to contribute to improvement of livelihoods of producers and increase meat supply, technical and institutional support needs to be provided.

Keywords: *Shifting farming; permanent farming; feed resources; extension service; Ethiopia*

[†] Corresponding Author: yiltadesse@yahoo.com

TRADITIONAL SHEEP PRODUCTION SYSTEMS IN SOUTH GONDER ZONE OF AMHARA REGION, ETHIOPIA

Shigdaf Mekuriaw, Asresu Yitayew, Mengistie Taye†, Hailu Mazengia and Tewodros Bimerow

Andassa Livestock Research Center, P.O.Box 27, Bahir Dar, Ethiopia

ABSTRACT

A study on the traditional sheep production system was undertaken in south Gonder zone, Amhara region, Ethiopia. The study aimed at understanding of the existing husbandry practices, identify and prioritize constraints and suggest possible solutions of sheep production in the study area. A total 107 households from four peasant associations (PAs) were randomly selected and interviewed using a semi-structured questionnaire about the management practices, composition of livestock, flock structure and ownership patterns, production constraints and reproduction characteristics of sheep in the area. Secondary data was collected on field observations, informal interviews with farmers, key informants and districts experts and the reports of districts Agriculture and Rural Development Office. The average family size was 5.82 people. Sheep were the most common species of animals kept in the study areas (60%). The sheep production objective of the households was income generation (index- 0.47) followed by household consumption (index-0.38). Farmers select replacement stock using selection criteria like good conformation, growth and tail position, color and pedigree for males; and good conformation, fast growth, early maturing, short lambing interval and pedigree for females were traits considered. The main feed resources to livestock in the districts were natural pasture (communal and private grazing land), crop residue, improved forage, and crop aftermath. Pasteurellosis, fascioliasis, lungworms, and sheep pox were the most important diseases of sheep in the area. The major problems encountered in sheep production in the study areas were feed shortage (index-0.44), disease problem (index-0.28), shortage of improved breed, market problem in order of importance. The reproductive performances of sheep in the study area was; age at sexual maturity was 10.7 months for male and 8.43 months for female sheep; age at first lambing was 15.8 months; lambing interval was 7.33 months and average litter size was 1.07 lambs per ewe per lambing. Integrated efforts combining improved nutrition, health and participatory community based breeding would help the smallholder farmers to benefit from sheep production.

Keywords: *Farta sheep; south Gonder zone; traditional sheep production; survey*

† Corresponding Author: mengistietaye@yahoo.com

TRENDS IN LIVESTOCK PRODUCTION SYSTEMS, CONSTRAINTS AND COPING MECHANISMS IN L. VICTORIA BASIN

F. B. Bareeba^{1†}, M. Mbaabu², J. Bwire³ and K. Ngetich⁴

¹Makerere University P.O. Box 7062, Kampala

²University of Nairobi P. O. Box 3019700100Nairobi, Kenya

³National Livestock Research Institute, Mpwapwa P.O. Box 202, Mpwapwa, Tanzania.

⁴Egerton University, P. O. Box 536, Njoro, Kenya

ABSTRACT

The study investigated and documented the trends in livestock production systems, constraints and coping mechanisms in three study sites selected in Uganda, Kenya and Tanzania. Methodology involved literature review, baseline survey and PRA. The results indicate that, livestock numbers have been increasing over the last five years in all the sites. Livestock production systems included extensive, semi-intensive and intensive systems. Constraints in the livestock production systems included: inadequate feed/ grazing areas; low livestock genetic potential, inadequate knowledge on animal husbandry, shortages of water and feeds and inadequate extension services among others. The coping strategies included use of crop residues, shifting animals to areas with abundant water and pastures, reducing herd size and use of herbs to treat animal diseases. The intensification and expansion of livestock production systems in the region is putting pressure on the environmental resource base and more trade-offs in the use of natural resources are needed.

Keywords: *Livestock production systems; Trends, constraints; coping mechanisms*

[†] Corresponding Author: fbareeba@agric.mak.ac.ug

WOMEN GROUP- BASED PULLET SUPPLY BUSINESS DEVELOPMENT IN SELECTED KEBELES OF DALE PLW

Ketema Yilma † , Azage Tegegene, Lemlem Aregu, Dirk Hoektra, Tesfaye Lema and Mulugeta Yigzaw

IPMS, ILRI

ABSTRACT

Market-oriented small-scale poultry development in Dale Woreda is a viable option that can support the livelihoods of urban and peri-urban poor. Pullet and feed supply, drug/vaccine, diseases control, and marketing were the main challenges identified through rapid diagnostic survey for small-scale commercial poultry production. Subsequently, intervention was designed on the basis of a district level participatory value chain development planning approach involving the key stakeholder. Women group-based pullet rearing and supply as an input for commercial small-scale poultry was initiated in 2006 by IPMS and its partners to ameliorate the supply shortfall and create profitable business for participating women. Multitude of methods and approaches were employed to monitor and document the intervention processes and outcomes such as PRA, stakeholder workshops, community level focus group discussions, household survey, etc. The empirical results show: i) group approach helped to improve linkages, communication, and accesses to knowledge, technology, finance, inputs (day-old chicks and feed), veterinary service, and market by the women groups; ii) the groups were able to successfully produce and supply pullets with minimum external support; iii) the business has been found profitable, and participating women generated additional income. Thus, women group-based village level pullet supply system is a practically feasible and economically viable option to alleviating the supply shortfall. There are challenges, however, in implementing participatory value chain development such as ensuring wider adoption of the approach and its effective implementation by public partners, the tradition of subsidies and handouts discouraging the development of private input supply as a viable business, availability of appropriate chickens breed/type, and appropriate loan arrangements, particularly for informal group.

Keywords: *Dale, pullet production; women groups; value chain; cluster vaccination*

† Corresponding author: k.yilma@cgiar.org

Farmers Artificial Insemination Technicians

Hizikias Ketema

FAO-Crop Diversification and Marketing Development Project

hizikiasketema@yahoo.com

ABSTRACT

To provide sustainable artificial insemination service and to make the service closer to the farmer, it is necessary to increase the number of artificial inseminator technicians in the woredas where the FAO-Crop Diversification and Marketing Development Project is implementing the dairy development activities. For this purpose, it was necessary to train Farmers' as Artificial Insemination Technicians (FAITs) for one month. A total of 45 candidates all male were nominated and further selection was made by interviewing each candidate jointly with the project and Livestock Development, Health and Marketing Office (LDHMO). Finally, 15 candidates were selected for the training. The training was conducted in Adama University in Asella Model Agriculture. The training took a total of 177 hours, out of which 58 hours (32.8 %) theoretical, 10 hours (5.6%) group discussions session among the trainees and their instructors and the rest 109 hours (61.6 %) practical.

To make the inseminators fully operational the project bought for each inseminator one 35 liter and one 2 liters capacity liquid nitrogen containers and other accessories. The inseminators began their work at the beginning of October 2009. All the 15 inseminators have performed 1,554 inseminations until June, 2010. Out of which 1,446 inseminations are the first inseminations, 100 and 8 inseminations are the second and the third, respectively. Out of the total inseminated 245 cows about 15 % were checked for pregnancy and 171 were pregnant. Based on this the average number of service per conception is 1.6 and the rate of pregnancy is 69.8 %. The result reveals that, it is possible to train artificial insemination technicians within one month time. If the necessary supplies and support is provided to the technicians it is possible that the efficiency of the inseminators will improve and also possible to reach areas which were not accessible to artificial insemination service. Finally the approach will play a crucial role in the genetic improvement endeavour of the country.