

ANNUAL REPORT 2010/2011 – DEPARTMENT OF ANIMAL PRODUCTION

Introduction

The Department of Animal Production is one of the oldest departments of the University of Nairobi. Located at Upper Kabete Campus, Faculty of Veterinary Medicine, the department is also a full member of the Faculty of Agriculture. Since its inception, the department has participated in the production of several veterinarians, agriculture graduates, food technologists, range managers, agricultural engineers in addition to several Masters of Science in Animal Nutrition, Animal Genetics and Breeding and Management of Livestock production systems as well as many Ph.D.s in specific aspects of Animal science Academic Programmes. The department offers courses in animal production to undergraduates of the faculties of Agriculture and Veterinary Medicine.

List of Academic Programme:

Certificate Programmes

- 1) Poultry Management
- 2) Dairy Management

Postgraduate Programmes

- 1) M.Sc. Livestock Production Systems
- 2) M.Sc. Animal Nutrition and Feed Science
- 3) M.Sc. Animal Genetics & Breeding
- 4) M.Sc. Poultry Science

Number of New students admitted into each academic programme:

Animal Science Major 3rd Year (2011/2012) = 9 students
Animal Science Major 4th Year (2011/2012) = 2 students
M.Sc. Animal Nutrition and Feed Science (2011/2012) = 3 students
M.Sc. Animal Genetics & Breeding (2011/2012) = 3 students
PhD Animal Nutrition and Feed Science (2011/2012) = 1

Number of students who graduated from each programme

Animal Science Major 4th Year (2011/2012) = 6 students

PhD Animal Genetics & Breeding = 1 student

External Examiners appointed in 2011/2012 Academic Year:

- (1) Prof. B.O. Bebe, Dept. of Animal Science, Egerton University.
- (2) Prof. George W. Oduho Oliech, Dept. of Animal Science, Chepkoilel University College.
- (3) Prof. Alexander K. Kahi, Dept. of Animal Science, Egerton University

Research Activities:

Dr. Joyce Maina

Research Activities:

1. Promoting a sustainable aquaculture sector using a value chain approach: Funded by National Council of science and Technology – 7 million
2. Integrated rice-fish farming at Mwea Irrigation Scheme in Kenya – validation of models (Funded by Ruforum with Dr. Kariuki of Kenyatta University as the Principal Investigator – total funding – 4 million.

Dr. J.O. Jung'a Research Activities

Antibiotic resistant Escherichia coli fecal samples of captive baboons not normally exposed to antibiotic. Dominic K. Mureithi, Jung'a J.OI, Mitema E.S.; Mapenay L.M., and Ozwara H.S.

Submitted to Journal of Microbial Resistance.

Prof. Mitaru's Funded Projects:

Sustainable Intensification of Sorghum – Legume System to Improve Livelihood and Adaptation to Climate Change in Semi Arid Areas.

Period: October 1, 2011 to December 31, 12 2012.

Funding by ASARECA – USD 153,935.00, Sub-Grant Agreement No. ASARECA/SC/011/01.

Pearl Millet Innovations for improved livelihoods in drought prone areas of East and Central Africa Sustainable Intensification of Sorghum.- Legume System to Improve Livelihood and Adaptation to Climate Change in Semi Arid Areas.

Period: September 1, 2011 to December 31, 2013.

Funding by ASARECA – USD 90,000.

BY Joel W. Ochieng, PhD, Department of Animal Production, CAVS

1. RESEARCH GRANTS: AWARDS AND NEW APPLICATIONS

| DATE | AMOUNT (USD) | AGENCY/DONOR | COLLABORATOR | STATUS | PROJECT |
|---------------|---------------------|---------------------|---|-------------------------------|--|
| October 2011 | 4.0 M (40 M KES) | WELLCOME TRUST | ECSAAG (Africa Multi-institutional grant under UoN DVC-RPE) | First round review successful | Population genetics for improved health Mgmt |
| November 2011 | 12000 (1M KES) | NCST | Sole applicant for Innovation award | Awarded Letter attached | Tilapia genetics at Lake Baringo, |
| November | 1,200,000 | NSF | University of | Application | Mitochondrial |

| | | | | | |
|---------------|----------------------------|---------------------------------|--|--------------------------|---|
| 2011 | (120 M KES) 18 M to UoN | | Melbourne (Australia) Aururn University (US), University of Zagreb (Croatia) | under review | Genetics and Enhanced Metabolic Traits in Swine |
| November 2011 | 100,000 (10 M KES) | Bill & Melinda Gates Foundation | Sole applicant | Application under review | LAMP Technique for diagnosis in animal health |
| December 2011 | 1,250,000 (125 M KES) | NIH | Baylor College of Medicine, Columbia Medical School | Application under review | Population genomics for improved health Mgmt |

Dr. J.O. Jung'a

Genetic viability analyses of the Lambwe valley depauperately fragmented roan antelope populations.

Prof. Badamana's Research Entitled: DNA Based Interbreeding Resource Databases for Goats in ASAL Regions – Grants by National Council of Science and Technology.

Publications by members of the Department of Animal Production

Socio-economic characteristics and perceptions of cattle keeper and constraints of cattle production in Western Kenya.

J.O. Amimo, S. Thumbi, B.O. Inyangala, J.O. Jung'a and R.O. Mosi

Livestock Research for Rural Development 23 (6) 2011.

J.O. Amimo, S. Thumbi, **B.O. Inyangala**, J.O. Jung'a and R.O. Mosi. Socio-economic characteristics and perceptions of cattle keepers and constraints to cattle production in Western Kenya. Livestock Research for Rural Development. 23 (6) 2011.

J. Oluka¹, E. Ssewanyanna¹ and A. Nakiganda¹ Amimo JO², S. Thumbi³, B.O Inyangala², J.O Jung'a² and R.O Mosi² ¹National Livestock Resources Research Institute (NaLIRRI), P. O. Box 96, Tororo, Uganda ² Department of Animal Production University of Nairobi International Livestock Research Institute (ILRI). Socio-economic characteristics and perceptions of cattle keepers and constraints to cattle production in Central Uganda and Western Kenya. Asareca Publication. 2011

Socio-economic characteristics and perceptions of cattle keepers and constraints to cattle production in Western Kenya.

J.O. Amimo, S.M. Thumbi, B.O. Inyangala, J.O. Jung'a and R.O. Mosi.

Journal: Livestock Research for Rural Development (LRRD) 23(6) 2011

Muia J M K, Kariuki J N, Mbugua P N, **Gachuiri C K**, Lukibisi L B, Ayako W O and Ngunjiri W V 2011: Smallholder dairy production in high altitude Nyandarua milk-shed in Kenya: Status, challenges and opportunities. *Livestock Research for Rural Development*. Volume 23, Article #108. <http://www.lrrd.org/lrrd23/5/muia23108.htm>

Katiku P N, **Gachuiri C K** and Mbugua P N 2011 *Characterization of dairy cattle farming in Mbeere District of Eastern Kenya*. *Livestock Research for Rural Development*. Volume 23, Article #236. <http://www.lrrd.org/lrrd23/11/kati23236.htm>

M.I. Lengarite, P.N. Mbugua², **C.K. Gachuiri** and L.W. Kabuage. 2011. Mineral Status of Sheep and Goats Grazing in the Arid Rangelands of Northern Kenya. Paper accepted. *Pakistan Journal of Nutrition*.

Antibiotic resistant *Escherichia coli* faecal samples of captive baboons not normally exposed to antibiotic. Dominic K. Mureithi, **Jung'a J.O**, Mitema E.S.; Mapenay L.M., and Ozwara H.S.

Climate variability and dry season ruminant livestock feeding strategies in South Eastern Kenya Aphasard J.N. Ndathi, Moses M. Nyangito, Nason K.R. Musimba and **Barnabas N. Mitaru**.

Livestock Research for Rural Development 23(9) 2011.

Published 1, September 2011.

Gina Davis, Anthony Ananga, Stoyanka Krastanova, Safira Sutton, **Joel W. Ochieng**, Stephen Leong, and Violetka Tsolova (2012) *Elevated gene expression at chalcone synthase (CHS) enzyme suggests an increased production of flavonoids in skin and synchronized red cell cultures of North American native grape berries*. *DNA and Cell Biology*, In press (DOI: 10.1089/dna.2011.1589)

Anthony Ananga, Ernst Cebert, **Joel W. Ochieng**, Suresh Kumar, Devaiah Kambiranda, Hemanth Vasanthaiah, Violetka Tsolova, Zachary Senwo, Koffi Konan and Felicia N. Anike (2011). *Prospects for Transgenic and Molecular Breeding for Cold Tolerance in Canola (Brassica napus)* *Biotechnology* (3) Ed. Agbo, E.C. Intech, ISBN 979-953-307-671-3. In press

Ochieng, Joel W. (2011) *Gene mapping in plant species complexes*. In: *Biotechnology* (2) Ed. Agbo, E.C. Intech, ISBN 979-953-307-671-2. In press

Ouma C, Roca AL, Were T, Raballah EO, Oguge NO, Jura WZO, **Ochieng JW**, Hanotte O, Georgiadis N (2011) *Genetic structure of hartebeest populations Straddling a transition zone between Morphotypes*. *J. Basic & Applied Science Research*, 1(3) 131-149.

Workshop/Conferences/Symposium attended by Members of Dept. of Animal Production:

PROF. P.N. MBUGUA

Attended KARI Seminar on Arid lands.

1. Presented paper on mineral nutrition in Northern rangelands of Kenya.
2. Faculty Biennial conference (28th September, 2011) presented 3 papers:
 - (a) Climate change on animal production in Kenya – review.
 - (b) Role of poultry in smallholder livelihood.
 - (c) Mineral Nutrition in sheep and goats.
3. Assessment of climate in Kajiado District.

DR. L.W. KABUAGE

Papers presented at aGRO 2011 Biennial Conference – 28th September, 2011.

1. Evaluation of smallholder poultry production and its contribution to household income and nutrition in Kiambu West District, Kenya.
2. Effects of substituting maize with rice milling by products in commercial layer chicken diets by Njuguna, W; Kabuage, L.W. and Maina, J.G.
3. Mineral status of sheep and goats grazing in the rangelands of Northern Kenya.

Workshops attended:

1. Kenya Agricultural Productivity and Agribusiness Project (KAPAP).
2. KAPAP CGS Collaborative Research Projects Launch workshop, 24th – 26th August 2011 at KARI Headquarters.

B.O. INYANGALA

ASARECA end of the year project meeting in Kigali, Rwanda 21-25th March 2011.

Dr. J.O. Jung'a

1. Writers workshop for B.Sc. (Agricultural Education and Extension).
Held at Kenya School of Law – Karen 12 – 16 September 2011.

Prof. Gachuri attended:

Conference attended: aGRO 2011 – Inaugural Biennial Conference: September 26-28, 2011.

Prof. C.K. Gachuri

1. (a) Papers presented: Mineral status of sheep and goats grazing in the rangelands of Northern Kenya.
Longarite M.I.^a, P.M. Mbugua^b, C.K. Gachuri^b, and L.W. Kabuage^b

(b) Response of sweet potato dual purpose varieties to harvesting regime.

Manoa Lonita¹, Charles Gachuri¹, Ben Lukuyu², Jane Wamatu¹, Sammy Agili³, Joyce Maina¹

WORKSHOPS HELD BY PROF. R.G. WAHOME

| Dates | Activity | Presentation |
|----------------------|--|--|
| 6-9 July 2011 | Deriving higher value from donor funds. Enhancing efficiency in research grants management workshop | |
| 13-15 July 2011 | Training in supervision workshop | 1..Introduction to PREPARE PhD Project 2.Negotiating student/contracts 3.Developing PhD study plan 4.Judging quality of theses |
| 8-10 August 2011 | Proposal writing workshop | Introduction to proposal writing Research problems analysis and statement Developing research questions Converting questions to hypotheses Defining and refining research objectives Explaining the theoretical and conceptual frame work; milestones, expected results amount. Work plan and PhD plan Explaining the key budget items (budget notes). Writing project summary Follow-up on proposal writing; concluding EAAPP proposals applications |
| 11-13 August 2011 | Computer and statistics applications in research workshop | 1.Introduction to data analysis and presentation. 2.Concluding the workshop and way forward. |
| 27-29 September 2011 | aGRO 2011-Biennial Scientific conference, Faculty of Agriculture | 1.Addressing factors that affect efficiency of training at PhD level: a study on achievements of initiatives targeting PhD level training. 2 Nutritional evaluation of the suitability of proposals pods for livestock feed in Kenya. 3. Assessment of the effect of feeding proposes pod flour based rations to layer chickens on laying and egg quality. |

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| | Workshop to develop a PhD Programme for Wangari Maathai Institute for Peace and Environmental Studies | Facilitator |
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| Activity | Date and Title | Mode of participation |
|---------------------------|---|--|
| Conferences and workshops | Development of MSc. Programmes for WMI. Workshop held at the GBM Centre, Karen, Nairobi 2 nd -3 rd December, 2011. | Resource person |
| | Regional Dissemination Workshop held on 28-30 November, 2011 at the Olasit Gardens, Arusha, Tanzania. | Workshop organizer and presenter of three presentations. |
| | The Agricultural Alternative for Africa, Conference held at the UNEP Headquarters, Gigiri, Nairobi, Kenya on 15-16 November 2011. | ProGrov team leader and participant |
| | Joint Stakeholders Conference of the ACP-EU Edulink and Science and Technology programmes October 26-28, 2011, held at the ACP House, Brussels, Belgium. | Invited paper on "Improving efficiency of PhD training in the East African Region. |
| Grants Application | DRYLAND MILK PRODUCTION: GENERATING INFORMATION AND BUILDING CAPACITY FOR ANCHORING CAMELS IN THE MILK VALUE CHAINS IN KENYA (proCaMilk). Project proposal presented to the EAAP Secretariat. | Principal Investigator |
| | Potential for producing green energy using water Hyacinth. Proposal presented to the Danish FFU, December 14, 2011 | Collaborator |

PROF. M.S. BADAMANA ATTENDED:

Regional Dissemination Workshop held on 28-30 November, 2011 at the Olasit Gardens, Arusha, Tanzania.

DR. JOYCE MAINA

1. Innovation teaching and learning approaches that promote the development of sustainable agricultural value chains.
Maina, J.G., Ambuko, J.L., Lopokoityit M. and Chemining'wa G.N. (2011)
Proceedings of aGRO-2011 conference, Faculty of Agriculture, University of Nairobi (26-28th September 2011).
1. A paradigm shift in curriculum development processes in public universities – towards a responsive and participatory multi-stakeholder approach..
Ambuko, J., Maina, J.G., Chemining'wa, G.N., and Lopokoityit M., (1011).
Proceedings of aGRO-2011 Biennial Conference, Faculty of Agriculture, University of Nairobi, Kenya (26th -28th September, 2011).
2. Strengthening capacity of local universities to promote and teach rural innovation processes.
Chemining'wa, G.N., Ambuko, J., Maina, J.G., Muiru, M.W. and Magomere, T. (2011).
Proceedings of aGRO-2011 Biennial Conference, Faculty of Agriculture, University of Nairobi, Kenya (26th -28th September, 2011).
3. Application of enzyme technology to improve the nutritive value of high-fibre feedstuffs for non-ruminants.
Waititu, S.M., Nyachoti, Maina, J.G., Slominski, B.A. and Ochada, J.O. (2011).
Proceedings of aGRO-2011 Biennial Conference, Faculty of Agriculture, University of Nairobi, Kenya (26th -28th September, 2011).
4. Effects of substituting maize with rice-milling by-products in commercial layer chickens.
Njuguna, K., Kabuage, L.W., and Maina, J.G. (2011).
Proceedings of aGRO-2011 Biennial Conference, Faculty of Agriculture, University of Nairobi, Kenya (26th -28th September, 2011).
5. Effects of enzymes and probiotics on growth performance and gastro-intestinal morphology in broiler chicken.
Karimi, H.N., Wahome, R., Maina, J, and Kuria P. (2011).
Proceedings of aGRO-2011 Biennial Conference, Faculty of Agriculture, University of Nairobi, Kenya (26th -28th September, 2011).
6. Response of sweetpotato dual purpose varieties to harvesting regimes.
Manoa, L., Gachuri, C. Lukuyu, B., Wamatu, J., Agili, S. and Maina, J.G.
Proceedings of aGRO-2011 Biennial Conference, Faculty of Agriculture, University of Nairobi, Kenya (26th -28th September, 2011).

Outreach and Community Services:

1. P.N. Mbugua and C.K. Gachuri – Outreach Programme in Makuyu
2. Prof. Gachuri - Outreach: Training of dairy farmers group in Punda Milia Location of Makuyu Division, Maragwa District. 30th September 2011.
3. Guest of honor at Forest view academy on the occasion of meeting parents and students of Form 3 on 17th November, 2011.

Doctor of Philosophy thesis published:

Title and Author

Computer-Based Techniques for Efficient Milk Production by Optimizing Mate Allocation Strategies in Dairy Populations in Kenya by David Macharia Njubi

Exhibitions the department participated in:

- (1) The ACK Nairobi International Trade Fair 2011

Awards the Department won:

- (1) 1st Prize for Rabbit (Adult Doe – New Zealand White)
- (2) 2nd prize Rabbit (Doe and Litter)
- (3) 2nd prize Rabbit (Adult Buck, New Zealand)
- (4) 3rd prize Hen eggs (six matched brown eggs)

List of Members Staff members

| Name | Qualifications | Title |
|---------------------|-----------------------|---------------------|
| Prof. M.S. Badamana | BVM, M.Sc., PhD | Associate Professor |
| Prof. B.N. Mitaru | B.Sc. M.Sc., PhD | Professor |
| Prof. P.N. Mbugua | B.Sc. M.Sc., PhD | Associate Professor |
| Prof. M.M. Wanyoike | B.Sc. M.Sc., PhD | Associate Professor |
| Prof. R.G. Wahome | BVM, M.Sc., PhD | Associate Professor |
| Prof. C.K. Gachuri | BVM, M.Sc., PhD | Associate Professor |
| Dr. Okeyo Mwai | B.Sc. M.Sc., PhD | Senior Lecturer |
| Dr. J.O. Jung'a | B.Sc. M.Sc., PhD | Senior Lecturer |
| Dr. J.W. Ochieng | B.Sc. M.Sc., PhD | Lecturer |
| Dr. J. G. Maina | B.Sc. M.Sc., PhD | Lecturer |

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| Mr. B. O. Inyangala | B.Sc. M.Sc. | Lecturer |
| Dr. J.O.Amimo | BVM, MSc | Tutorial Fellow |
| Anne Njuguna | Dip, HND, DBM, BBM, MBA | Chief Technologist |
| Sebastian A. Itenya | SLT, B.Sc. | Senior Technologist DEF |
| John M. Kanyi | Dip, HND | Senior Technologist DEF |
| Anne Kimende | Dip, HND | Senior Technologist DEF |
| Elizabeth Wainaina | Diploma | Computer Technologist ABC |
| Catherine T. Muhandick | Diploma | Secretary Grade B |
| Benjamin K. Mbondo | Diploma | Technologist ABC |
| Pauline M. Makenzi | Dip, HND | Technologist ABC |
| Desmond Ambale | JLT | Lab Assistant Grade IV |
| Leonard Mbugua | KCE | Lab Assistant Grade II |
| Mercy Niiri | Certificate | Lab Assistant Grade II |
| Wilson M. Mwaura | KCSE | Lab Assistant Grade II |
| Charles K. Ndungu | KCE | Lab. Assistant Grade I |
| Eric J.O. Odhiambo | KCSE | Lab. Assistant Grade I |