

Proposals to Host African Climate Change Fellowships

Submitted by

**Crop Management and Research Training (CMRT)
Egerton University – Njoro, Kenya**

To

START, the Institute of Resource Assessment (IRA) -
University of Dar es Salaam
(Tanzania) and the African Academy of Sciences (AAS)
African Climate Change Fellowships to enhance indigenous

June, 2008

TABLE OF CONTENTS

Table of Contents	ii
1. The Host Institution	1
2. Proposal Leader	1
3. Collaborating Institution	2
4. Fellowship Experiences to be Offered	2
5. Administrative And Cost Issues.....	4
6. Qualifications of the Host Institution	5
Institutional Capacity:	5
Project Experience:	5
Publications	7
<i>Experience Hosting Fellows</i>	11
7. Qualifications of Collaborating Institutions	11
RUFORUM	11
<i>Institutional Capacity:</i>	11
<i>Relationship with Host Institution:</i>	11
8. Supervisors/Mentors	12

1. THE HOST INSTITUTION

Name of institution	<i>Egerton University, Crop Management Research and Training (CMRT)</i>
City and country of location:	<i>Njoro, Kenya</i>
Type of institution,	<i>Public University</i>
Primary mission of institution	<i>Training Research Outreach)</i>
Secondary missions of institution	<i>Policy Formulation Advocacy Consultancies Technology Support/Service Delivery</i>
Main thematic area(s) of work Sciences	<i>Agriculture Natural Resources Management Environment Education Social Sciences Engineering and Basic Sciences Commerce Medicine/Health</i>
Working language(s) of the institution:	<i>English</i>

2. PROPOSAL LEADER

Name	<i>Dr Washington Odongo Ochola</i>
Title	<i>Senior Lecturer</i>
Mailing Address	<i>Department of Agricultural Education and Extension Egerton University P.O. Box 536 – Egerton, Njoro KENYA</i>
Telephone Number	<i>+254-721986770</i>
E-mail:	<i>babatamara@yahoo.com</i>

3. COLLABORATING INSTITUTION

Name of institution	<i>Regional Universities Forum for Capacity Building in Agriculture (RUFORUM)</i>
City and country of location	<i>Kampala, Uganda</i>
Primary mission of the institution	<i>Capacity building for regional Universities (Eastern, Central & Southern Africa)</i> <i>Networking</i>
Secondary missions of the institution	<i>Research</i>
Main thematic areas of work (e.g. water, agriculture, development etc)	<i>Agriculture, Environment, Natural Resources, Education, Management of Higher Education Institutions</i>
Working languages of the institution	<i>English</i>
Name and title of principal contact person	<i>Prof. Adipala Ekwamu</i>
E-mail address of principal contact person	eadipala@yahoo.com OR eadipala@mak.ac.ug

4. FELLOWSHIP EXPERIENCES TO BE OFFERED

Egerton University has the vision of being “A world class University for the advancement of humanity” and the mission “To generate significant knowledge and offer exemplary education to contribute to and innovatively influence national and global development”. Its mandate of research, training and outreach provides it with the drive to host and benefit the fellows. It has a comparative advantage of having vast experience with adaptive research including climate change adaptation technologies and policies. The themes of CCA that the fellowship program will focus on include: Community based adaptation; climate change/disaster risk reduction and vulnerability assessment; Governance and policy for adaptation; Adaptation by socio-economic sectors; Methodologies and tools for understanding CC impact and vulnerability including scenario building and modeling tools; and the science and technology of CCA.

The thematic area of community based adaptation will be based on the prescint that environmental knowledge, vulnerability and resilience to climate impacts are embedded in societies and cultures. The fellows will be involved in cross – departmental teaching, research and outreach programs that focus is on empowering communities to themselves take action based on their own decision-making processes. It is noteworthy that increased resilience to climate stresses can be achieved by enabling communities to enhance their capacity to cope with climate

extremes and surprises. The university is a world leader (the originator of Participatory Rural Appraisal – PRA) and efforts will be made to adapt participatory methodologies, raise awareness of climate change and foster adaptive capacity.

Science and Technology can help to reduce the vulnerability of societies to the impacts of climate change by increasing their ability to cope, protect themselves and react effectively. Egerton University has been involved through its staff in many local, national, regional and global S&T processes with CCA as running themes. The fellows will be supervised by staff members with vast experience in climate change adaptation assessment processes including UNEP's Africa Environment Outlook; The international Assessment of Agricultural Science and Technology for Development as well as the Intergovernmental Panel on Climate Change (IPCC) and national scientific academies, communities also have to linked to such knowledge structures. The fellows will experience S&T application in CCA as encapsulated in Egerton University programs that bases actions on pooled knowledge. The proposed fellowship will offer Egerton University an opportunity to contribute to this climate change global knowledge system. The focus on research, training and outreach will include the development of scientific and technical capacity in the university and among its stakeholders including the farming communities, the targeting of climate models to improve decision-making on climate adaptation and how to establish a demand-driven approach to climate science that the university has set in its strategic plan.

The activities planned for the fellows include participation in on-going and future research, advanced studies, training, community development and adaptation projects, participation in policy and planning activities, development of communication and stakeholder engagement efforts, and development of course curricula. The on-going policy work will be carried through the universities link with The Nairobi based United nations Environment Program's Mainstreaming Environment and Sustainability in African Universities (MESA) initiative. Egerton University is a founding member of MESA and is involved in many activities including environmental outreach programs targeting understanding climate change and adaptation strategies. The university, through MESA is currently reviewing its programs for relevant to such goals and together with the Regional Forum for Capacity Building in Agriculture (RUFORUM) is development many regional postgraduate programs with significance to sustainable development including need for responsiveness to CCA. The university will support Fellows to carryout their activities by supervising and mentoring them, evaluating their performance and providing appropriate workspace.

The University is committed to strong industrial linkages in order to strengthen training, research and consultancy, the utilization of research findings, curriculum development, and support for university programmes to improve production and stimulate economic growth. This expose the fellows to CCA strategies through partnerships with the private sector and Civil societies Organization through training, research and consultancy teams and effective dissemination of research

finding to stakeholders. The CCA activities will involve the development of active partnerships with local and international organizations; organising workshops and seminars for consumers of research findings; linking fellows and their supervisors to industry for training, research and consultancy. The university is committed to empowering communities to address challenges facing them including CCA challenges.

The set of on-going research areas for which CCA has been integrated that the fellows will have exposure to include:

- ❑ Sustainable crop & livestock production
 - Adaptable technologies - water harvesting & conservation; soil quality enhancement; selection of suitable plant & animal genotypes
 - Increased plant and animal productivity & disease management
 - Value addition and marketing of agricultural products, including traditional foods
 - Impact of agricultural activities on wetland diversity and water catchment basin stability
- ❑ Agricultural Biotechnology for CCA
 - Impact of transgenic crops and animals on the genetic diversity, environmental safety and human health
 - The adaptation of biotechnology to the local crop and animal production systems
 - Food fermentation for preservation & improved nutrition
- ❑ Agricultural Policies in Response to CCA impacts
 - Household income, food security improvement and poverty alleviation
 - Agricultural policy making framework

5. ADMINISTRATIVE AND COST ISSUES

The administrative and cost issues of the proposed fellowship project are as follows.

Number of visiting Fellows to host at one time?	<ul style="list-style-type: none"> ◆ 1 Policy Fellowships ◆ 2 Post-Doctoral Fellowships ◆ 2 Teaching Fellowships
Dates on which visiting Fellows should begin their Fellowships	<i>Beginning of Academic Year - September</i>
Estimate of the cost per month that a visiting Fellow would incur for housing, meals and other incidentals?	<i>USD 1,500.00</i>
What, if any, registration fees, administrative fees or direct costs would be charged by your institution to host a visiting Fellow?	<ul style="list-style-type: none"> ◆ <i>Administrative Overheads at 15 % of the Total Fellowship Cost</i> ◆ <i>Supervision Fee: USD 500 per Supervisor per Month</i>
Are there any other requirements that a Fellow must meet to be hosted by your institution?	<i>English Speaking</i>

6. QUALIFICATIONS OF THE HOST INSTITUTION

INSTITUTIONAL CAPACITY:

Egerton University is one of the six public universities in Kenya. It was established in 1939 as College of Agriculture and later started offering a Diploma in Agriculture in 1949. The college was elevated as a constituent college of University of Nairobi in 1986. In 1987, the college was granted full university status by an act of parliament. It is regional centre of excellence in Agricultural training, research and outreach. At present Egerton University has combined staff strength of about 3000 and over 15000 students pursuing diploma, MSc and PhD degrees in various faculties and schools. It has five campus with the main campus located in Njoro, about 180 km West of Nairobi. The university has seven faculties (Agriculture, Education and Community Studies, Science, Engineering, Medicine, Arts and Social Science and Commerce). The university has strong credentials in training in agriculture and extension with specialties spread over different disciplines namely animal science; animal health; agronomy; natural resources, water resources, agricultural engineering, range management, dairy and food science and technology; horticulture; soil science and agricultural economics and agribusiness management. Steady growth in the university has seen expansion through curriculum review and a number of research projects.

The university has special projects that are, in themselves, independent entities but would contribute to the success of CCA fellowship project. These are: the Integrated Biotechnology Research Laboratory (IBRL), the Crop Management Research Training (CMRT) Centre, and the Centre for Women Studies and Gender Analysis, Tegemeo Institute of Agricultural Policy and Development (TIAPD), Agricultural Resource Centre (for hotel services) and the Chemeron Field Station - A field experimentation station in CC vulnerable ecosystem where research and demonstration on CCA have been taking place.. The university has working relation with local and international NGOs, CSO and private sector. The university collaborates extensively with Kenya Agricultural Research Institute (KARI) International Agricultural Research Centres (IARCs, and government line ministries. The university runs several similar projects such as *The Rockefeller TEEAL project*, *The CMRT Initiative* - a KARI/CIMMYT/Egerton University project started in 1991 with the objective of enhancing capacity building in crop management technology in NARS in eastern and central Africa. Regional MSc in AICM and *Collaborative MSc in Agricultural and Applied Economics*, *The African Regional Postgraduate Programme in Insect Science (ARPPIS)*. The university is one of the African Virtual University (AVU) learning centres and conducts ICT and business management ODL courses at diploma and degree levels.

PROJECT EXPERIENCE:

The University has highly trained staff involved in research. In addition postgraduate students contribute significantly to the University's research efforts. Research is also carried out in collaboration with national and international organizations. Currently, the University has established institutional partnerships with over 30 universities and research organizations around the world.

The CCA research capacity is further supported by on-going capacity building and research in the following areas:

- ◆ An Integrated Biotechnology Research Laboratory (IBRL) Central laboratory for Egerton University staff and other collaborating scientists.
- ◆ A policy framework for coordination of individual and collaborative research projects.
- ◆ Mau Watershed Research: aims at reversing the current unsustainable situation in the Mau watershed and improve the quality and quantity of water flowing to Lakes Nakuru, Bogoria and Baringo and Mitigating CC impacts
- ◆ Fingerponds Project which aims to improve the quality of life of the riparian people by increased production of fish in response to food security challenges arising from CC.
- ◆ Improving the Urban Environment in Kenya : (with ITDG-EA). To improve the urban environment through developing sustainable, community waste management services.

The major activities that demonstrate Egerton University' capabilities host the CCA fellows to include the following.

Project/Program	Objectives	Activities	Outcomes
Participatory Rural Appraisal – USAID/Now Self Financing	<ul style="list-style-type: none"> - University Outreach Programs - provide theory to support participation in community development decision-making; - promote an integrated approach to resource management; - provide skills on how to carry out PRA 	<ul style="list-style-type: none"> - Training of Development Workers in Participatory Research Approaches 	<ul style="list-style-type: none"> - Community Outreach programs - Community Development Plan - Publication of community development planning handbook
Integrated Research for Development (IR4D) – Funded by EU-EDULINK	<ul style="list-style-type: none"> - Build capacity of academic staff to carry out integrated research - To influence policies from outputs/outcomes of research and outreach activities of the universities 	<ul style="list-style-type: none"> - Integrated and collaborative research in different sustainable agriculture and rural development research 	<ul style="list-style-type: none"> - Improved relevance and visibility of the university in national and regional social & economic development <p>Science-policy dialogue enhanced</p>

Exploring linkages between land tenure, land use and food security and their implications on gender resource management in the lake Victoria Basin, Funded by - IUCEA/SIDA	<ul style="list-style-type: none"> - Land use planning - Land use change assessment - Ecosystems change scenarios 	<ul style="list-style-type: none"> - Participatory land use planning - Participatory scenario building 	<ul style="list-style-type: none"> - Knowledge of the drivers of climate-related land use changes in lake Victoria basin
--	--	--	---

PUBLICATIONS

Within the past 5 years, the staff, projects, programs and departments within Egerton University have published a number of articles, papers and books relevant to CCA research and outreach. They include, among others:

- OCHOLA, W.O.** (2008). Impacts of Agriculture on Environment: Challenges and Policy Options in the Face of Climate Change: Background Paper for UNEP Side-Event on *Agriculture, Climate Change and Environment* at the Sixteenth Session of the Commission on Sustainable Development (CSD-16), UNEP, New York.
- ODADA, E.O. SCHOLLES, R. J., NOONE, K.J., MBOW, C., **OCHOLA, W. O.**, (Editors). 2008. *A Strategy for Global Environmental Change Research in Africa: Science Plan and Implementation Strategy*, Published by IGBP Secretariat, Stockholm, Sweden.
- ODADA, E.O. **OCHOLA, W.O.**, OLAGO. D.O. (2008). Drivers of ecosystem change and their impacts on human well-being in Lake Victoria basin. *Africa Journal of Ecology*. (Accepted Forthcoming)
- ODADA, E.O. **OCHOLA, W.O.**, OLAGO. D.O. (2008). Understanding future ecosystems changes in Lake Victoria basin using participatory local scenarios. *Journal of Ecology*. (Accepted Forthcoming)
- DETLEF P. VAN VUUREN, **WASHINGTON O. OCHOLA**, SUSAN RIHA. (2008). *Outlook on Global Agricultural Change and its Drivers: Chapter 4 in the International Assessment of Agricultural Science and technology for Development - IAASTD*. The World Bank, Washington DC.
- ODADA, E.O., OLAGO, D.O., **OCHOLA, W.O.** 2006. Understanding future ecosystems changes in Lake Victoria basin using participatory local scenarios. In Yanda P.Z., Kangakawe, R.Y.M, Liwenga, E.T. *Proceedings of the International Conference on Ecosystems Change and Implications on Livelihoods of Rural communities in Africa*. Institute of Resource Assessment, University of Dar es Salaam, Dar es Salaam.
- ODADA, E.O., OLAGO, D.O., **OCHOLA, W.O.** 2006. Factors driving land use change: Effects on ecosystems services and human wellbeing in Lake Victoria basin. In Yanda P.Z., Kangakawe, R.Y.M, Liwenga, E.T. *Proceedings of the International Conference on Ecosystems Change and Implications on Livelihoods of Rural communities in Africa*. Institute of Resource Assessment, University of Dar es Salaam, Dar es Salaam.
- OCHOLA W. ET AL.** 2006. The Future Today – Environmental Scenarios for Africa. In UNEP. *Africa Environment Outlook: Our Environment, Our Wealth*. UNEP, Nairobi.

- ODADA, E.O. OLAGO, D.O., **OCHOLA, W.O.** (Eds). 2006. *Environment for Development: An Ecosystems Assessment of Lake Victoria Basin Environmental and Socio-Economic Status, Trends and Human Vulnerability*. UNEP/PASS, Nairobi.
- UNEP, 2006. *Lake Victoria Basin Environment Outlook: Environment for Development*. UNEP, Nairobi.
- OCHOLA W.O.** 2006. Land cover, land use and related issues in the Lake Victoria basin: States, drivers, future trends and impacts on environment and human livelihoods. In Odada, E.O. Olago, D.O., Ochola, W.O. (Eds). *Environment for Development: An Ecosystems Assessment of Lake Victoria Basin Environmental and Socio-Economic Status, Trends and Human Vulnerability*. Pp: 43 – 60. UNEP/PASS, Nairobi.
- ODADA, E.O., OLAGO, D.O., **OCHOLA, W.O.**, NTIBA, M., WANDIGA, S., GICHUKI, N. OYIEKE, H. 2005. Proceedings of the 11th World Lakes Conference (WLC):, Vol I: Ministry of Water and Irrigation/International Lake Environment Committee (ILEC) (October 2005) Nairobi.
- ODADA, E.O., OLAGO, D.O., **OCHOLA, W.O.**, NTIBA, M., WANDIGA, S., GICHUKI, N. OYIEKE, H. 2005. Proceedings of the 11th World Lakes Conference (WLC):, Vol II: Ministry of Water and Irrigation/International Lake Environment Committee (ILEC) (October 2005) Nairobi.
- OCHOLA, W.O.**, KERKIDES, P., 2004. An integrated indicator-based decision support system for land quality assessment in Kenya. *Computers and Electronics in Agriculture* 45: 3-26.
- OCHOLA, W.O.** KERKIDES, P. AYIEKO, J.O. 2004. Assessing wetland conditions in the Lake Victoria Basin of Kenya using integrated land-use and water resources integrity indicators. In Proceedings of European Water Resources Association (EWRA) conference, Izmir Turkey, 2 – 4, October 2004.
- OCHOLA, W.O.**, KERKIDES, P., ARGYROKASTRITIS, I, KOLLIAS, V., 2004. Water resources hazard management system: Spatial extension for the assessment of sustainable water use practices in Kenya. *Irrigation and Drainage*. **53**: 225-236..
- OCHOLA, W.O.**, KERKIDES, P. 2003. A markov chain simulation model for predicting the critical wet and dry spells in Kenya: analyzing rainfall events in Kano plains, *Irrigation and Drainage* 52 (4), 315-527.
- OCHOLA, W.O.**, KERKIDES, P., 2003. A Spatial Decision Support System for Water Resources Hazard Assessment: Local Level Water Resources Management with GIS in Kenya. *Journal of Geographic Information and Decision Analysis*. Vol. 7, No.1, pp 14-28.
- OCHOLA, W.O.**, KERKIDES, P., 2003. An integrated indicator-based decision support system for land quality assessment in Kenya. In K.O. Sindir, Proceedings of the International Congress on Information Technology in Agriculture, Food and Environment (ITAFE) of October 7 – 10, 2003, Ege University Press, Izmir, Turkey, pp 45-54.
- OCHOLA, W.O.**, KERKIDES, P., ARGYROKASTRITIS, I., 2003. Water Resources Hazard Management System: Spatial extension for sustainable water use practices assessment. In K.O. Sindir, Proceedings of the International Congress on Information Technology in Agriculture, Food and Environment (ITAFE) of October 7 – 10, 2003, Ege University Press, Izmir, Turkey, pp 502-511.

- OCHOLA, W.O., KERKIDES, P., ARGYROKASTRITIS, I., 2002a.** Water quality: an indicator for sustainable land management? In Tsakiris, G. (Ed.). *Water Resources Management in the Era of Transition*. Proceedings of the 5th International Conference of European Water Resources Association (EWRA), pp 54-64.
- 2008: Menjo D. K., **Bebe B.O.**, Okeyo A.M., J.M.K. Ojango. Analysis of early survival of Hosletin-Friesian heifers of diverse sire origins on commercial dairy farms in Kenya. *Tropical Animal Health and Production*. DOI 10.1007/S11250-008-9172-z.
- 2008: **Bebe B O.** Dairy heifer rearing under increasing intensification of smallholder dairy systems in the Kenya highlands. *Livestock Research for Rural Development* 20 (02) 2008 Article # 22.
- 2008: **Bebe B O.**, Udo H M J., Thorpe W. Characteristics of feeding and breeding practices for intensification of smallholder dairy systems in the Kenya highlands. [Livestock Research for Rural Development 20 \(02\) 2008](#) Article # 23
- 2008: **Bebe B O.** Assessing potential for producing dairy replacements under increasing intensification of smallholder dairy systems in the Kenya highlands. *Livestock Research for Rural Development* 20 (02) 2008 Article # 24.
- 2007: Udo H.M.J., **Bebe B.O.**, Samdup T., Sutresniwati I.G.S., Budiastira, Asgedom A.H., Phong L.T. Livestock Intensification or extension: benefits and trade-offs. In: A.J. van der Zijpp, J.A.J. Verreth, Le Quang Tri, M.E.F. van Mensvoort, R.H. Bosma and M.C.M. Beveridge (eds). ISBN-10:90-8686-013-3, Wageningen Academic publishers, The Netherlands. pp 271-280. *Book chapter contributions*
- 2007: Bett, R.C., Kosgey, I.S., Bebe, B.O. and Kahi, A.K. Genetic improvement of the Kenya Dual Purpose goat: Influence of economic values and prospects for a practical breeding programme. *Tropical Science*. DOI:10.1002/TS.204
- 2007: Bett, R.C., Kosgey, I.S., **Bebe, B.O.** and Kahi, A.K. Breeding goals for the Kenya Dual Purpose Goat. II. Estimation of economic values for production and functional traits. *Tropical Animal Health and Production*. 39:467-475.
- 2007: Bett, R.C., Kosgey, I.S., **Bebe, B.O.** and Kahi, A.K. Breeding goals for the Kenya Dual Purpose Goat. I. Model development and application to smallholder systems. *Tropical Animal Health and Production*. 39:477-492.
- 2007: Gicheha, G. M., Kosgey, I. S., **Bebe, B. O.**, Kahi, A. K. Efficiency of alternative schemes breeding for resistance to gastrointestinal helminths in meat sheep. *Small Ruminant Research*.69:167-179
- 2007: Guliye A.Y., Noor I. M., **Bebe, B. O.**, Kosgey I. S. The role of camels (*Camelus dromedarius*) in the traditional lifestyle of the Somali pastoralists in northern Kenya. *Outlook on Agriculture*, 36: 29-34.
- 2006: Gicheha, G. M., Kosgey, I. S., **Bebe, B. O.**, Kahi, A. K. Evaluation of the efficiency of alternative two-tier nucleus breeding systems designed to improve meat sheep in Kenya. *Journal of Animal Breeding and Genetics*, 123: 247-257.
- 2005: Gicheha, .G. M., Kosgey, I. S., **Bebe, B. O.**, Kahi, A. K. Economic values for resistance to gastrointestinal helminths in meat sheep in Kenya, *Journal of Animal Breeding and Genetics*, 122: 165-171.
- 2004: **Bebe, B. O.** Effects of feeding systems and breed of cattle on reproductive performance and milk production on smallholder farms. *Ugandan Journal of Agricultural Sciences* 9:558-563.

- 2003: **Bebe, B. O.**, Udo, H. M. J, Rowlands, G. J., Thorpe, W. Smallholder dairy systems in the Kenya highlands: cattle population dynamics under increasing intensification. *Livestock Production Science* 82:211-221.
- 2003: **Bebe, B. O.**, Udo, H. M. J, Rowlands, G. J., Thorpe, W. Smallholder dairy systems in the Kenya highlands: breed preferences and breeding practices. *Livestock Production Science* 82:117-127.
- Wandahwa, P. and Kinyali, S. M., 1993. The effect of lowland rice cropping intensity on the workability of a Vertisol. *E. Afr. Agr. For. J.*, **59(1): 19 -25**.
- Wandahwa, P. and Van Ranst, E., 1996. Qualitative land suitability assessment for pyrethrum cultivation in West Kenya based upon computer captured expert knowledge and GIS. *Agric. Ecosyst. Environ.* **56: 187-202**.
- Wandahwa, P., Van Ranst, E. and Van Damme, P., 1996. Pyrethrum (*Chrysanthemum cinerariaefolium* Vis.) cultivation in West Kenya: origin, ecological conditions and management. *Industrial Crops and Products*, **5: 307-322**.
- Wandahwa, P. and Van Ranst, E., 1999. Modeling environmental impact on yields and fertilizer requirements for a target yield of pyrethrum at two study sites in Kenya. *Pyrethrum Post* **20 (2): 68 – 81**.
- Rota, J.A., Wandahwa, P. and Sigunga, D.O., 2006. Land evaluation for soybean (*Glycine max L. Merrill*) production based on kriging soil and climate parameters for the Kakamega District, Kenya. *Journal of Agronomy* **5(1) 142-150**.
- Wandahwa, P., Tabu, I.M., Kendagor, M.K. and Rota, J.A., 2006. Effect of intercropping and fertilizer type on growth and yield of soybean (*Glycine max L. Merrill*). *Journal of Agronomy* **5(1) 69-73**.
- Felix K. Ngetich, Philip Wandahwa and Isaiah I.C. Wakindiki. Effects of Tillage on Soil Physical Properties and Water Movement in a Stratified Vitric Andosol. *Journal of Tropical Agriculture (In press)*
- Musalia, L.M.**, S.M.M. Wangia, R.S. Shivairo, P. Okutu and V. Vugutsa. Dairy production within the smallholder dairy farmers in Western Kenya: availability of dairy production inputs. (Preparation)
- Musalia, L.M.**, S.M.M. Wangia, R.S. Shivairo, P. Okutu and V. Vugutsa. Dairy production support services within the smallholder dairy farmers in Western Kenya: effects of policy change. *Tropical Animal Health and Production*. (Preparation)
- Musalia, L.M.**, S.M.M. Wangia, R.S. Shivairo, P. Okutu and V. Vugutsa, **2007**. Dairy production practices among smallholder dairy farmers in Butere/Mumias and Kakamega districts in Western Kenya. *Tropical Animal Health and Production*. **39: 199-205**
- Anandan, S. L. M. **Musalia, V. R. B Sastry, and D. K. Agrawal. 2003**. Carcass characteristics of goats fed ammoniated neem (*Azadirachta indica*) seed kernel cake *Asian-Australasian Journal of Animal Sciences* **16: 1451-1454**

EXPERIENCE HOSTING FELLOWS

Fellow Category	Number in The Past 5 Years
Post-doctoral fellows	10
Doctoral fellows	15
Policy fellows	2
Teaching fellows	4
Other types of fellows	12 (Research Fellows)

7. QUALIFICATIONS OF COLLABORATING INSTITUTIONS**RUFORUM****INSTITUTIONAL CAPACITY:**

The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) is a member-based organization of 12 universities in East and Southern Africa whose goal is to strengthen graduate student training and agricultural related research in the member universities. This is done by providing resources, mission and peer support, to generate knowledge, research products and human resources to support agricultural development in support of the Comprehensive African Agricultural Development Programme (CAADP). The support is provided via competitive grant system (CGS), where university staffs in Faculties of Agriculture and related disciplines develop research proposals targeting improving livelihoods of smallholder farmers. The research proposals must of necessity include training of at least two students at MSc/MPhil level, and beginning 2008 at PhD levels. To date, the Programme has trained over 450 Masters and 12 PhD students, and currently, 112 MSc students are being trained at the 12 universities. RUFORUM will involve the fellows in its research for development activities and leverage their capacity for climate change adaptation proposal development.

RELATIONSHIP WITH HOST INSTITUTION:

Egerton University is one of the 12 founding members of RUFORUM. The current member universities of RUFORUM include: *Kenya*-Egerton University, Jomo Kenyatta University of Agriculture and Technology, Kenyatta University, Moi University and University of Nairobi; *Malawi*-University of Malawi; *Mozambique*-Eduardo Mondlane University; *Tanzania*-Sokoine University of Agriculture; *Uganda*-Makerere University; *Zambia*-University of Zambia; and *Zimbabwe*-Africa University and University of Zimbabwe. Because of the already visible impact of RUFORUM at country levels, and its strong regional leadership, the Common Market for Eastern and Southern Africa (COMESA) in April 2008 mandated RUFORUM to coordinate postgraduate training in the 19 COMESA countries. RUFORUM is serviced by a Regional Secretariat based at Makerere University in Kampala, Uganda. Together with Egerton University and other partner universities, RUFORUM is involved in: (1) Masters and doctoral programmes that are responsive to stakeholder needs and national/regional development goals; (2) Shared research and training facilities and capacities that enhance economies of scope and scale; (3) Mainstreaming operational capacity and approaches for innovative, quality and

impact oriented Agricultural Research for Development and management in Universities; and (4) Policy advocacy, lobbying, coordination and resource mobilization for improved training, research and outreach by Universities. Current projects jointly carried out with Egerton University include:

- ◆ Regional MSc program in Agricultural Information and Communication Management (AICM);
- ◆ Regional MSc Program in Agricultural Economics;
- ◆ PhD program in Agricultural and Rural Innovations - ARIS (with thematic focus also in Climate Change Adaptation Innovations by Rural Communities);
- ◆ University Quality Assurance and Credit Transfer

8. SUPERVISORS/MENTORS

The following staff members will be available for supervising the fellows

Name	<i>Dr Washington Odongo Ochola</i>
Title and institutional affiliation	<i>Senior Lecturer/Egerton University</i>
Highest degree, discipline of degree, and name of conferring institution	<i>PhD – Sustainable Agriculture and Rural Development, Agricultural University of Athens – Greece</i>
Areas of expertise	<ul style="list-style-type: none"> ◆ <i>Scenario/Future Studies</i> ◆ <i>Integrated Environmental Assessment</i> ◆ <i>Participatory Technology Development</i> ◆ <i>Modeling and Rural Innovations</i> ◆ <i>Global Environmental Change</i>
Number and types of fellows supervised in past 5 years	2

Name	<i>Bocklene Omedo Bebe</i>
Title and institutional affiliation	<i>Senior Lecturer/Egerton University</i>
Highest degree, discipline of degree, and name of conferring institution	<i>PhD Animal Science, Wageningen University, The Netherlands</i>
Areas of expertise	<i>Dairy Animal Science: Design, analysis and modelling of livestock production systems</i>
Number and types of fellows supervised in past 5 years	2

Name	<i>Levi Mugalavai Musalia</i>
Title and institutional affiliation	<i>PhD Animal Science</i>
Highest degree, discipline of degree, and name of conferring institution	
Areas of expertise	<i>Dairy Animal production systems Livestock production in changing ecosystems</i>
Number and types of fellows supervised in past 5 years	<i>1</i>

Name	<i>Prof. Dr. Philip Wandahwa</i>
Title and institutional affiliation	<i>Associate Prof, Egerton University</i>
Highest degree, discipline of degree, and name of conferring institution	<i>PSc. University of Gent</i>
Areas of expertise	<i>Soil Science (Soil Genesis and Classification, Soil Survey and Land Evaluation, Soil Physics); Land Use Planning; Modeling Agricultural Systems; Geographic Information Systems; Organic/sustainable agriculture.</i>
Number and types of fellows supervised in past 5 years	

9. INTEREST IN APPLICANT REVIEW

The university will be interested in participating in the review of proposals from those applicants who will express interest in basing their Fellowship experience at Egerton University.

CURRICULUM VITAE

Bockline Omedo BEBE

Senior Lecturer, Department of Animal Sciences,
Egerton University, P.O. Box 536 -20107 Njoro, Kenya
Office: +254 51 2217850: Fax: +254 51 2217942: Cell phone +254 721 853 999:
Email: obebeb@yahoo.com

Bebe is Animal Scientist with strong background in the design, analysis and modelling of livestock production systems. He has working experience in the livestock development and university teaching and research in the area of livestock. He has authored or co-authored widely peer-reviewed scientific articles and technical papers in conference proceedings, with emphasis on sustainable livestock management interventions and improvement. He is currently a senior lecturer in the department of Animal Sciences at Egerton University and also a Faculty Senate Representative in the Faculty of Agriculture. Prior to joining Egerton University, he was a senior technical officer with Ministry of Livestock Development where he implemented Sheep and Goat multiplication breeding programme in Baringo (1986-1989). He has research experience working with smallholder farmers at ILRI Nairobi (1998 - 2003), Wageningen University (1997 - 2003) and at Egerton University (1989 to date).

BIODATA

Birth: 21st November 1963 in Kisumu rural, Kenya
Nationality: Kenyan
Marital status: Married with three children
Languages: English, Kiswahili and Luo well written and spoken

PROFESSIONAL TRAINING

1999 - 2003: **PhD Animal Science**, Wageningen University, The Netherlands.
Thesis title: Herd dynamics of smallholder dairy in the Kenya highlands. Research conducted within Smallholder Dairy (R&D) Project of International Livestock Research Institute, Kenya Agricultural Research Institute, and Ministry of Livestock and Fisheries Development, Kenya

1996 - 1997: **MSc Animal Science**, Wageningen University, The Netherlands.
Thesis title: Consequences of reducing reproductive wastage in intensive smallholder dairying systems in Kiambu district, Kenya

1990 - 1994: **BSc Animal Production**, Upper 2nd Class Honours, Egerton University, Kenya. *Project title: A comparison of reproductive and production*

performance of dairy heifers of local and imported sires in commercial dairy farms in Kenya

1983 - 1986: **Diploma** Animal Husbandry with Distinction, Egerton University, Kenya. *Project title: Assessing the performance of finishing broilers fed on four different diets.*

PROFESSIONAL EXPERIENCE

Professional Appointments

2005 May - : Senior Lecturer, Department of Animal Sciences, Egerton University with responsibilities for developing curriculum for, teaching, examining, and supervising diploma, undergraduate and postgraduate courses in animal production and research projects. Postgraduate courses include: Scientific Reporting and Writing; Livestock Systems Analysis and Modelling. BSc and Diploma courses include: Production science of Dairy, Beef, Goats, Sheep, Camels and Rabbits; Animal Science Research Methodologies; Statistical Epidemiology, Agrobiodiversity, Organic Animal Production.

2003 - 2005: Lecturer, Animal Sciences, Egerton University, responsible for developing curriculum for, teaching, examining, and supervising diploma, undergraduate and postgraduate courses in animal production and research projects.

1998 - 2003: Assistant Lecturer, Animal Sciences, Egerton University

1989 - 1998: Senior Technician in Livestock Management, Egerton University.

1986 - 1989: Animal Production Officer, Sheep and Goat Multiplication Centre, Kimose in Baringo district, Ministry of Livestock and Fisheries Development, responsible for implementing breeding programme for supplying farmers with improved goats for breeding

Administrative experience in elective positions

- **2008 April -:** A member of the national beef value chain steering committee
- **2007 April to date :** Faculty Senate Representative, Faculty of Agriculture, Egerton University with responsibilities for faculty staff welfare and deputising for dean on administrative and academic leadership.
- **2003 - 2005:** National Secretary, Animal Production Society of Kenya, responsible for secretariat administration, society policy formulation, editing scientific publications, organising scientific conferences and farmers' field days, membership database preparation

Administrative experience in acting positions

Since 2003 to date at various times, I have acted as:

- Dean faculty of agriculture,
- Chairman Animal Sciences Department,
- Steering Management of University Intellectual Property Rights

ACADEMIC LEADERSHIP

Supervision of postgraduate training presently ongoing

1. Associations between nutritional metabolites and hormonal profiles with reproductive performance of lactating cows. *PhD Animal Science Research project of Identie Douglas, in collaboration with KARI and IAE funding*
2. Development of a multi-objective feed formulation program for lactating dairy cows. *PhD Animal Science Research project of Mutua Stanley Mutuku*
3. An evaluation of feeding strategies to support Isiolo peri-urban camel milk systems of Northern Kenya. *PhD Animal Science Research project of Noor Issack Mohamed*
4. Economic efficiency of milk production under smallholder dairy systems in medium and high potential agro-ecozones of Kenya. *MSc Agricultural Economics Research project of Mung'ayo Peter Oduor*
5. Evaluation of breeding programmes for the Kenya-Alpine Goats in the central highlands of Kenya. *MSc Animal Science project of Gachora Judy*
6. A comparative analysis of production losses in pastoral and peri-urban camel production systems of northern Kenya. *MSc Agricultural Economics Research project of A Mumina*

Supervision of postgraduate training completed

1. 2007: Evaluation of functional traits of Holstein-Friesian cattle on large-scale farms in Kenya. *MSc Animal Science Research project of Menjo Dominic successfully defended in December 2007.*
2. 2007: Evaluating influence of farmer field school extension approach on smallholders' knowledge and skills in dairy management technologies in Molo division, Kenya. *MSc Agricultural Extension project of Makori John Abuga successfully defended in August 2007.*
3. 2007: Developing breeding goals for the Kenya Dual Purpose Goats (KDPG). *MSc Animal Science project of Bett Lawrence Cheruiyot successfully defended in August 2007.*
4. 2006: Optimizing breeding systems incorporating resistance to gastrointestinal helminths in meat sheep in Kenya: *MSc Animal Science project of Gicheha Mathews Gitau.*

Publications

- 2008: Menjo D. K., **Bebe B.O.**, Okeyo A.M., J.M.K. Ojango. Analysis of early survival of Hosletin-Friesian heifers of diverse sire origins on commercial dairy farms in Kenya. *Tropical Animal Health and Production*. DOI 10.1007/S11250-008-9172-z.
- 2008: **Bebe B O.** Dairy heifer rearing under increasing intensification of smallholder dairy systems in the Kenya highlands. *Livestock Research for Rural Development* 20 (02) 2008 Article # 22.
- 2008: **Bebe B O.**, Udo H M J., Thorpe W. Characteristics of feeding and breeding practices for intensification of smallholder dairy systems in the Kenya highlands. *Livestock Research for Rural Development* 20 (02) 2008 Article # 23
- 2008: **Bebe B O.** Assessing potential for producing dairy replacements under increasing intensification of smallholder dairy systems in the Kenya highlands. *Livestock Research for Rural Development* 20 (02) 2008 Article # 24.
- 2007: Udo H.M.J., **Bebe B.O.**, Samdup T., Sutresniwati I.G.S., Budiastira, Asgedom A.H., Phong L.T. Livestock Intensification or extension: benefits and trade-offs. In: A.J. van der Zijpp, J.A.J. Verreth, Le Quang Tri, M.E.F. van Mensvoort, R.H. Bosma and M.C.M. Beveridge (eds). ISBN-10:90-8686-013-3, Wageningen Academic publishers, The Netherlands. pp 271-280. *Book chapter contributions*
- 2007: Bett, R.C., Kosgey, I.S., Bebe, B.O. and Kahi, A.K. Genetic improvement of the Kenya Dual Purpose goat: Influence of economic values and prospects for a practical breeding programme. *Tropical Science*. DOI:10.1002/TS.204
- 2007: Bett, R.C., Kosgey, I.S., **Bebe, B.O.** and Kahi, A.K. Breeding goals for the Kenya Dual Purpose Goat. II. Estimation of economic values for production and functional traits. *Tropical Animal Health and Production*. 39:467-475.
- 2007: Bett, R.C., Kosgey, I.S., **Bebe, B.O.** and Kahi, A.K. Breeding goals for the Kenya Dual Purpose Goat. I. Model development and application to smallholder systems. *Tropical Animal Health and Production*. 39:477-492.
- 2007: Gicheha, G. M., Kosgey, I. S., **Bebe, B. O.**, Kahi, A. K. Efficiency of alternative schemes breeding for resistance to gastrointestinal helminths in meat sheep. *Small Ruminant Research*.69:167-179
- 2007: Guliye A.Y., Noor I. M., **Bebe, B. O.**, Kosgey I. S. The role of camels (*Camelus dromedarius*) in the traditional lifestyle of the Somali pastoralists in northern Kenya. *Outlook on Agriculture*, 36: 29-34.
- 2006: Gicheha, G. M., Kosgey, I. S., **Bebe, B. O.**, Kahi, A. K. Evaluation of the efficiency of alternative two-tier nucleus breeding systems designed to improve meat sheep in Kenya. *Journal of Animal Breeding and Genetics*, 123: 247-257.
- 2005: Gicheha, .G. M., Kosgey, I. S., **Bebe, B. O.**, Kahi, A. K. Economic values for resistance to gastrointestinal helminths in meat sheep in Kenya, *Journal of Animal Breeding and Genetics*, 122: 165-171.

- 2004: **Bebe, B. O.** Effects of feeding systems and breed of cattle on reproductive performance and milk production on smallholder farms. *Ugandan Journal of Agricultural Sciences* 9:558-563.
- 2003: **Bebe, B. O.**, Udo, H. M. J, Rowlands, G. J., Thorpe, W. Smallholder dairy systems in the Kenya highlands: cattle population dynamics under increasing intensification. *Livestock Production Science* 82:211-221.
- 2003: **Bebe, B. O.**, Udo, H. M. J, Rowlands, G. J., Thorpe, W. Smallholder dairy systems in the Kenya highlands: breed preferences and breeding practices. *Livestock Production Science* 82:117-127.
2002. **Bebe, B. O.**, Udo, H. M. J, Thorpe, W. Development of smallholder dairy systems in the Kenya highlands. *Outlook on Agriculture* 31:113-120.
- 2001: **Bebe, B. O.**, Abdulrazak, S. A., Ogore, P. O., Ondiek, J. O., Fujihara, T. A note on risk factors for calf mortality in large-scale dairy farms in the tropics: A case study on Rift Valley area of Kenya. *Asia-Australian Journal of Animal Science*, 14: 855-857
- 2001: Matofari, J.W., **Bebe, B. O.**, Ondiek, J. O., Ogore, P. B. Evaluation of California Mastitis Test as a Field-test for Detection of Bacterial Infection in Sub-Clinical Mastitis in Smallholder Dairy Herd. *Egerton Journal, Science and Technology*, 3 (2): 32-38.

Selected International Conference Papers

- 2006: Gicheha M.G., Kosgey, I.S., **Bebe, B.O.** and Kahi, A.K. Breeding for resistance to gastrointestinal helminths: Evaluation of alternative schemes. In: *Proceedings of the Eighth World Congress on Genetics Applied to Livestock Production, Belo Horizonte, 13-18 August, 2006, Brazil, communication 30: 128-162*
- 2005: Gicheha M. G, Kosgey, I.S., **Bebe, B.O.** and Kahi, A.K. Economic efficiency of two-tier nucleus breeding systems for meat sheep. Integrating Livestock-Crop Systems to Meet the Challenges of Globalisation. In: *Proceedings of AHAT BSAS International Conference, held at TROFREC on 14th -18th November, 2005, Faculty of Agriculture, Khon Kaen University, Khon Kaen, Thailand, volume 2: P80.*
- 2004: Bett, R.C., Kosgey, I.S., **Bebe, B.O.** and Kahi, A.K. Economic analysis of smallholder systems utilising the Kenya Dual Purpose Goat. In: *a Regional Conference on Good Practices in Livestock Production for Improvement of Livelihood. Tanzania Society of Animal Production (TSAP). Moshi, Tanzania, 4th-6th October 2004*
- 2003: **Bebe, B. O.** Dynamics of smallholder dairying in the Kenya highlands, *International Agricultural Centre, Wageningen, 23rd January 2003.*
- 2002: **Bebe, B. O.** Udo, J. H. M., Thorpe, W. Rationale for dairy breeding decisions by smallholder dairy farmers. In: *53rd European Association for Animal Production, 1-4 September, 2002, Cairo, Egypt. pp 154.*
- 2000: **Bebe, B.O.** Udo, J. H. M., Thorpe, W. Disposal and replacement policies in Kenya's smallholder dairy herds. In: *3rd All Africa Conference on Animal*

Agriculture and 11th Conference of the Egyptian Society of Animal Production, 6-9 November, 2000, Alexandria, Egypt. pp 683-688.

Selected Local Conference Papers

- 2007:** **B.O. Bebe**, Guliye A.Y., Noor I. M., Muliro, P., Evolution of Isiolo peri-urban marketed camel milk system. In: Kenya camel Forum, Marsabit, May, 2007.
- 2007:** J. A. Makori, W. O. Ochola, **B. O. Bebe**. Farmer Field Schools Enhances Farmers' Knowledge and Skills on Use and Application of Silage Making and Artificial Insemination Technologies. In: *Annual Scientific Symposium, Animal Production Society of Kenya, 14th- 19th March 2007, Mtwapa KARI, Mombasa, Kenya.*
- 2006:** R.C. Bett, I. S. Kosgey, **B. O. Bebe**, A. K. Kahi. Influence of economic values and prospects for a practical breeding programme for the Kenya Dual Purpose goat. In: *the 10th KARI Biennial Scientific Conference and Agricultural Forum, 13-17 November 2006.*
- 2006:** Bett, C.R., Gicheha, M.G., Kosgey, I.S., **Bebe, B.O.** and Kahi, A.K. Effective strategies for genetic improvement of small ruminants in Kenya. In: *Annual Scientific Symposium 9th -10th March 2006, Bomen Hotel, Isiolo, Kenya. Animal Production Society of Kenya.*
- 2006:** Gicheha M.G., Kosgey, I.S., **Bebe, B.O.** and Kahi, A.K. Breeding sheep for meat production in Kenya: Evaluation of alternative two-tier nucleus breeding systems. In: *Responding to Challenges and Opportunities Through the Development and Dissemination of Innovative Agricultural Technologies, Knowledge and Approaches, 10th KARI Scientific Conference and Agricultural Research Forum, 12-17 November, 2006.*
- 2006:** Gicheha M.G., Kosgey, I.S., **Bebe, B.O.** and Kahi, A.K. Breeding for resistance to gastrointestinal helminths: Evaluation of alternative schemes. In: *Annual Scientific Symposium 9th -10th March 2006, Bomen Hotel, Isiolo, Kenya. Animal Production Society of Kenya.*
- 2005:** Bett, C.R., Kosgey, I.S., **Bebe, B.O.** and Kahi, A.K. Derivation of economic values for production and functional traits in the Kenya Dual Purpose Goat. In: *Annual Scientific Symposium "Livestock Production and Marketing Strategies for Sustainable Livelihood, Animal Production Society of Kenya, 9th- 11th March 2005, ARC Egerton University, Kenya.*
- 2004:** Bett, C.R., **Bebe, B.O.** and Kahi, A.K. The Kenya Dual Purpose Goat (KDPG): Previous and current status and options for improved use. In *Regional Conference on Livestock Revolution: Challenges and Opportunities for Livestock Industry in East Africa. Animal Production Society of Kenya. 15th- 18th March 2004 KARI, Nairobi, Kenya*

- 2004:** Bett, R.C., Kosgey, I.S., Siamba, D.N., **Bebe, B.O.** and Kahi, A.K. Economic evaluation of smallholder production system utilising the Kenya Dual Purpose Goat (KDPG) in medium potential areas of Kenya. In: *the 9th KARI Scientific Conference and Agricultural Research Forum, 8-12 November 2004.*
- 2004a:** Kosgey, I. S; **Bebe, B. O.**; Kahi. A. K., Small ruminants improvement strategies for resource-poor farmers. In: *5th Biennial Regional Conference on Goat Development Network (EAGODEN), June 7-9th 2004, Kenya Methodist University, Meru, Kenya.*
- 2004b:** Gicheha, M. G.; **Bebe, B. O.**; Kahi, A. K., Estimation of economic value for resistance to Helminths in meat sheep in Kenya. In: *Animal Production Society of Kenya Symposium held at KARI HQs, Kenya, 15 to 18th March, 2004.*
- 2004c:** Bett, R. C.; **Bebe, B. O.**; Kahi, A. K. The Kenya dual-purpose goat (KDPG): previous and current status and options for improved use. In: *Animal Production Society of Kenya Symposium held at KARI HQs, Kenya, 15 to 18th March, 2004.*
- 2003:** **Bebe, B. O.**; Udo, J. H. M.; Zijp, A. vander; Thorpe, W. Producing dairy replacements under increasing intensification of smallholder dairy systems in the Kenya highlands. In: *Animal Production Society of Kenya Symposium held at Naivasha, Kenya, 6 to 9th March, 2003.*
- 2000:** **Bebe, B. O.**; Mulinge, W.; Thorpe, W.; Udo; H. M. J. Breed preferences and breeding practices in smallholder dairy systems of central highlands of Kenya. In: *7th KARI Biennial Scientific Conference, 13-17 November 2000, KARI Headquarters, Nairobi, Kenya.*
- 1999:** **Bebe, B.O.**; Thorpe, W.; Owango, M.; Muruiki, H. G., Replacement heifer generation in smallholder dairy herds in the central highlands of Kenya. In: *Animal Production Society of Kenya Symposium held at Naivasha, Kenya, 11th to 12 March, 1999. pp 3-9.*
- 1998a:** **Bebe, B.O.**; Udo, H. M. J.; Jalvingh, A.W. Is it beneficial to inseminate cows early after calving in smallholder dairy herds? In: *6th KARI Biennial Scientific Conference, 9-13 November, 1998, KARI Headquarters, Nairobi, Kenya. pp 158-162.*
- 1998b:** **Bebe, B.O.**; Koskey, I. S.; Udo, J. H. M. Nutrient balances of zero-grazing systems in the central highlands of Kenya. In: *6th KARI Biennial Scientific Conference, 9-13 November, 1998, KARI Headquarters, Nairobi, Kenya. pp 622-625.*
- 1998c:** Kosgey, I. S.; Kahi, A. K.; Van Arendonk J. A. M.; **Bebe B. O.** Geneflow and cumulative discounted revenues of dairy cattle crossbreeding schemes. In: *6th KARI Scientific Conference held on 9 – 13 November 1998. pp 532-539.*
- 1989:** Angwenyi G. N.; **Bebe B. O.** Factors affecting pre-weaning mortality in Goats at Kimose-Baringo District. In: *Small Ruminant. CRSP and Kenya Veterinary Association Workshop Proceedings, ILRAD Kabete - Nairobi, pp 117-123.*

Technical and extension articles

- 2005.** Breeding services and the future of smallholder dairy systems in Kenya, policy brief paper. *International Livestock Research Institute, Smallholder Dairy Project, Kenya Dairy Development Programme and WOTRO of Netherlands.* 2004
- 2001: Bebe, B. O.,** Important decisions to obtaining quality heifer replacements in smallholder farms. In: Breeding elite sires for higher productivity to alleviate poverty. *Central Artificial Insemination Service Magazine.* pp. 31-32.
- 2000: Bebe, B. O.** Dairy breeding practices in smallholder herds. In: Elite sires for the year 2000 and beyond. *Central Artificial Insemination Service Magazine.* pp. 26-27.
- 2000: Bebe, B. O.** Dairy herd structures and rearing of replacement heifers on smallholder farms in the Kenya highlands. *Kilimo News, A quarterly Newsletter of the Ministry of Agriculture and Rural Development, Kenya. January - March, 2000.* pp 22-23.
- 1999: Bebe, B. O.** Herd dynamics of smallholder dairy in Kiambu District: Assessing implications for the supply of heifer replacements. *Smallholder Dairy (R&D) Project. MoA/KARI/ILRI Collaborative Research Report, ILRI, Nairobi, Kenya.* pp. 20.
- 1986:** Bada, P. M.; **Bebe B. O.**; Eng'alwa, D. A; Mutinda, S. N; Nyangau, J. B.; Guliye, A. Y.; Wasike, G. A. Assessing the performance of finishing broilers fed on four different diets. *Egerton University College Research paper series No. 6.*

Competitive research grants won

- 2007:** Maximising benefits from Indigenous chicken products in rural and urban markets of Migori and Homabay districts. Research Grant of KES 400,000 from Egerton University Internal Research Fund. Collaborating with G. Owour of AGECE/AGBM department.
- 2006:** Enhancing Camel productivity for food security and wealth creation for the peri-urban camel producers in Isiolo, Northern Kenya. Research Grant of KES 3,000,000 from Kenya Commission for Higher Education. Collaborating with Dr. Guliye and M. Noor of Animal Sciences department, Dr. Muliro of Dairy and Food sciences and technology department
- 2006:** Feeding intervention options in peri-urban camel production systems of Isiolo town in Northern Kenya. Research Grant of KES 150,000 from Egerton University Internal Research Fund. Collaborating with Dr. Guliye and M. Noor of Animal Sciences department,
- 2005:** Capacity Development Grant of Euro 4,100 from Netherlands Foundation for the Advancement of Tropical Research (WOTRO) to undertake advanced training in modelling agricultural systems and Multivariate Analytical Techniques at Wageningen University

2003: Capacity Development Grant of Euro 7500 from Netherlands Foundation for the Advancement of Tropical Research (WOTRO) for the Dissemination of results from a study of herd dynamics of smallholder dairying in the Kenya highlands

1999: Capacity Development Grant of Dutch guilders 87,000 towards a PhD research programme on the Dynamics of smallholder dairy in the Kenya highlands from The Netherlands Foundation for the Advancement of Tropical Research (WOTRO)

1999: PhD Graduate Fellow of the International Livestock Research Institute.

Academic committees within the University

- Research Committee in the responsible for implementing and managing internal research grant fund, organising annual scientific and research week
- Organic Model Farm Project, which is promoting and demonstrating adoption of organic farming within the university and its environs
- Agrobiodiversity Team; that is building awareness and capacity in training and research in agrobiodiversity
- Animal Sciences Curriculum Review, developed new MSc and PhD postgraduate programmes
- Planning and re-organisation of activities of Crop Management Research and Training
- An examiner of postgraduate theses: I have examined as senate representative 1 PhD in the Faculty of Engineering, 1 PhD in the Faculty of Sciences, 7 MScs in the in the Faculty of Agriculture, 1 MSc in the Faculty of Education and 1 MSc in the Faculty of Natural Resources

Professional advisory and leadership participation

2007 to date: A member of the Senior Common Room Club Interim Committee with the task of reviving senior common room club functions including drafting constitution and organising elections

2006: Data analysis and report writing for Internal Impact Assessment of the National Agriculture and Livestock Extension Programme Phase 1 with the Ministries of Agriculture, Livestock and Fisheries Development.

2005 to date: External examiner, Animal production and quantitative methods, Bukura Agricultural College

2005 -2006: Teaching, examining and supervising undergraduate course Animal Biosystems Management, Department of Animal Science, Moi University

- 2003 -2005:** Teaching, examining and supervising postgraduate course Livestock Production Systems, Department of Animal Production, University of Nairobi
- 1989 to date:** Livestock judging, Nakuru National ASK Annual Shows
- 2003 to date:** Professional advice on dairy, small ruminant and poultry research priorities and development with Kenya Agricultural Research Institute
- 2005:** Commercialisation of smallholder dairy, Land O lakes Inc, NGO
- 1998:** Herd dynamics of smallholder dairy and its implications for the supply of dairy heifer replacements in Kiambu District, International Livestock Research Institute, Smallholder Dairy Project

Referees

1. Prof. Alexander K. Kahi.

Chairman, Department of Animal Sciences, Egerton University

2. Prof. Shaukat Ali Abdulrazak

Executive Secretary,

National Science and Technology Council. sabdulrazak@yahoo.com

9. **Musalia, L. M.**, S. Anandan, V. R. B. Sastry, R. C. Katiyar, and D. K. Agrawal, **2002**. Effect of replacement of groundnut cake with urea-treated neem (*Azadirachta indica* A. juss) seed kernel cake on nutrients utilization in lambs. **Asian–Australasian Journal of Animal Sciences**. **15:1273-1277**.
10. **Musalia L. M.** and P. Aggett, **2001**. Zinc turn over in rats infected with *Nippostrongylus brasiliensis*. **Egerton Journal (Science & Technology Series)**. **3(2):21-31**.
11. **Musalia L. M.** and P. Aggett. **2001**. Effect of Helminthiasis on Zinc Metabolism. **Asian–Australasian Journal of Animal Sciences**, **14:276-279**.
12. **Musalia, L. M.**, S. Anandan, V. R. B. Sastry and D. K. Agrawal, **2000**. Urea-treated neem (*Azadirachta indica* A. juss) seed kernel cake as a protein supplement for lambs. **Small Ruminant Research**, **35: 107-116**.
13. Anandan, S., V. R. B. Sastry, **L. M. Musalia**, and D. K. Agrawal, **1996**. Growth rate and nutrient efficiency of growing goats fed urea ammoniated neem (*Azadirachta indica*) seed kernel meal as a protein supplement. **Small Ruminant Research**, **22: 205-212**.
14. Semenyee, P. P., **L. M. Musalia** and K. Otieno, **1993**. Interaction of dual-purpose goats with subsistence crops and weeds. In: A. O. Ayieni & H. G. Bosman (Editors), **Goat Production Systems in the Humid Tropics**. Pudoc Scientific Publishers, Wageningen, pp 167-171
15. **Musalia, L. M.**, P. P. Semenyee and H. A. Fitzhugh, **1989**. Mineral status of dual-purpose goats and forage in Western Kenya. **Small Ruminant Research**, **2: 1 - 9**.

Consultancy Reports

16. **Musalia, L. M.** 2005. Distribution and characteristics of Dairy Input Stockists and Smallholder Farmers in Western Kenya. A survey report prepared for Agricultural Market Development Trust, Kenya (AGMARK) an NGO affiliated to Citizens Network for Foreign Affairs (CNFA) a Washington DC based private voluntary organization.

Workshop Proceedings

17. **Musalia, L.M.**, Wangia, S.M.M., Shivairo, R.S., Okutu, P. and Vugutsa. Dairy production within the smallholder dairy farmers in Western Kenya: availability of dairy production inputs. In, Annual workshop of the Animal Production Society of Kenya, Mtwapa, Kenya, 14th to 15th, March, 2007
18. **Musalia, L.M.**, Wangia, S.M.M., Shivairo, R.S., Okutu, P. and Vugutsa. Dairy production support services within the smallholder dairy farmers in Western Kenya: effects of policy change. Tanzania Society of Animal Production 32nd Annual Conference at Kilimanjaro Crane Hotel, Moshi, Tanzania, 22nd to 24th October, 2006
19. **Musalia, L.M.**, Wangia, S.M.M., Shivairo, R.S., Okutu, P. and Vugutsa, V., 2006. Dairy production on smallholder dairy farms in Butere/Mumias and Kakamega districts in Western Kenya. In, proceedings of the Animal Production Society of Kenya, Isiolo, Kenya., 2006.
20. **Musalia, L. M.** 2005. Dairy Production Status in Butere-Mumias and Kakamega Districts. In, Workshop of Agricultural Market Development Trust, Kenya (AGMARK) held at KARI-Kakamega, Kenya, on 30th August, 2005.

21. **Musalia, L.M** and Younun, 2001. Hygienic Aspects of Camel Milk Production. Egerton Camel Seminar at Egerton University, Kenya. 21st February 2001.
22. **Musalia, L.M.** and D. K. Agrawal, 2001. Urea-treated neem (*Azadirachta indica*) seed kernel cake as an alternative protein supplement. In the proceedings of the Animal production society of Kenya workshop at Egerton University, Kenya, 2001.
23. Semenye, P. P., **L. M. Musalia**, S. M Khainga, and H. A. Fitzhugh, 1986. Small Ruminants Nutrition in Small Farms in Kenya. Proceedings of the Workshop on the Improvement of Small Ruminants in Eastern and Southern Africa, Nairobi. pp. 127 – 133.
24. Semenye, P. P. and **L. M. Musalia**, 1987. Improving reproduction in sheep and goats. In, proceedings of the Animal Production Society of Kenya workshop at ILRAD, Nairobi, Kenya
25. Semenye, P. P., S. M Khainga, **L. M. Musalia** and H. A. Fitzhugh, 1986. Preference ranking of forages by goats. In, proceedings of the fifth, Small Ruminant CRSP workshop, Nairobi, Kenya. pp. 62 - 66.
26. **L. M. Musalia**, P. P. Semenye, and H. A. Fitzhugh, 1986. Mineral status of dual-purpose goats and forages in Western Kenya. In the proceedings of the fifth Small Ruminant - CRSP workshop at ILRAD, Kenya; 1986
27. Semenye, P. P., **L. M. Musalia** and H. A. Fitzhugh, 1986. Performance of kids and does under different milking and creep feeding systems. In, proceedings of the fifth, Small Ruminant CRSP workshop, Nairobi, Kenya. pp. 48 - 53.

EMPLOYMENT AND WORK EXPERIENCE
EGERTON UNIVERSITY (1988 – PRESENT)

I was employed as a Lecturer in 1988 and promoted to Senior lecturer in July 2001. Over this period I have been involved in the following activities:-

a. Teaching:

I have taught the following courses to diploma, undergraduate and post graduate students: Basic Animal Nutrition, Feeds and Feeding, Beef Production, Dairy Production, Sheep and Goat Production, Ruminant Nutrition, Animal By-Products, Environmental Physiology of Farm Animals, Digestive Physiology and Reproductive Physiology and Obstetrical disorders

b. Supervision of PhD. students.

1. Indentie D. , 2006. Influence of Nutritional Metabolites and Hormones on Reproductive Performance in Lactating Cattle. Department of Animal Sciences, Egerton University, Njoro, Kenya (In Progress)

c. Supervision of Msc. students.

1. Koech S., 2005. Socio-Economic Analysis of Fodder Legumes: The Case of Calliandra and Desmodium in Smallholder Dairy Farms of Embu District, Kenya. Department of Agricultural Economics, Egerton University, Njoro, Kenya
2. Kitilit, J. K., 2003. Evaluation of *Acacia seyal* and *Balanites aegyptiaca* as a source of nutrients for ruminants. Department of Animal Science, Egerton University, Njoro, Kenya

d. Internal Examiner for the following MSc. thesis: -

1. Mathenge M. W., 2005. Physico-Chemical and Microbiological Properties of Meat Preserved by Deep-Fat Frying (Samburu Nyirinyiri). Department of Dairy and Food Technology, Egerton University, Njoro, Kenya.
2. Wanyama B. K., 2005. Feeding value of indigenous browse species for goats in Kenya. Department of Animal Science, Egerton University, Njoro, Kenya
3. Othira J. O. 2000. Dough characteristics and baking quality of selected composite wheat flour: A comparative study, Department of Biochemistry, Egerton University, Njoro, Kenya

e. Internal moderation of examination results for :-

1. BSc. and Diploma courses in the Department of Animal Science
2. BSc. and Diploma courses in the Department of Animal Health, 1999

MINISTRY OF LIVESTOCK DEVELOPMENT (1981 - 1988)

a. Maseno Veterinary Research Station (1983 – 1988)

Worked as a Veterinary Research Officer attached to the Small Ruminant Collaborative Research Program (SR-CRSP). The main objective of the project was to improve the nutritional and economic status of the community by introducing & evaluating the potential of dual-purpose (Dairy and Meat) goats in Western Kenya.

b. Veterinary Research Laboratories, Kabete (1981 – 1983)

Worked as a Veterinary research Officer in the Department of Epidemiology and Economics. I was involved in the surveillance and monitoring of disease outbreak. My work included disease data storage and analysis using microcomputer data processing equipment and investigation of disease outbreak in the field. I also participated in the evaluation and assessment of disease control programmes to come out with control priorities and more efficient control programmes

EXTERNAL EXAMINER

1. Thesis

- a. Kinuthia, M. N. 2007. Dual-purpose goat production: Nutritive Value of Protein-rich Forage (FRFs) as Supplementary Feed. PhD Thesis, Department of Animal Production, Faculty of Veterinary Medicine, College of Agriculture and Veterinary Sciences, University of Nairobi, Kabete, Kenya.
- b. Situma, A. G. 2005. Effects of Sugar Cane Molasses and Cassava tuber meal on the quality of Napier grass silage. Msc Thesis, Department of Animal Production, Faculty of Veterinary Medicine, College of Agriculture and Veterinary Sciences, University of Nairobi, Kabete, Kenya.

2. Examinations

- a. 2005/2006 and 2006/2007 University Examinations, Department of Animal Production, College of Agriculture and Veterinary Sciences, University of Nairobi, Kabete, Kenya
- b. 2005/2006 and 2006/2007 College Examinations, Bukura Agricultural College, Kenya

RESEARCH AWARDS

1. Increasing production of oilseed crops in Kenya through participatory breeding, efficient on farm processing and value addition. (Developed and forwarded Full Proposal)
2. Enhancing smallholder goat farmers' access to input and output markets. (Asareca-AARNET, EU, € 85084). This is a collaborative regional project under Asareca Animal Agriculture Research Network. The contract forms have been signed and funds will be released soon
3. Establishment of a Feed Resources Database for East and Central African Countries (2005 to 2008) (Asareca-AARNET, EU, € 72625). This is a collaborative regional project under Asareca Animal Agriculture Research Network, which is in progress.
4. Small ruminants production constraints amongst smallholder pastoralists in Baringo district (1999 – 2000) (R. S. Shivairo & L. M. Musalia, Small Ruminant Network, ILRI, US\$, 11,000)

RESEARCH EXPERIENCE

- a) Establishment of a feed resources database for East and Central African Countries (2005 to 2008). A collaborative regional project under Asareca Animal Agriculture Research Network funded by EU
- b) Socio-Economic Analysis of Fodder Legumes: The Case of Calliandra and Desmodium in Smallholder Dairy Farms of Embu District, Kenya. Msc. research project by S. Koech, in the Department of Agricultural Economics, Egerton University under my supervision
- c) Evaluation of *Acacia seyal* and *Balanites aegyptiaca* as a source of nutrients for ruminants. Msc. research project by J. K. Kitilit, in the Department of Animal Science, Egerton University under my supervision
- d) Evaluation of oilseed cakes from the ram press machine as a feed for livestock (1996 - present). This research was supported by IDRC
- e) Small ruminants production constraints amongst small holder pastoralists in Baringo district (1999 – 2000). Sponsored by Small Ruminant Network, ILRI.
- f) Evaluation of neem seed kernel cake as a livestock feed (1992-1994). This was a research project at the Indian Veterinary Research Institute (IVRI) under which I carried out my Ph.D. research project.
- g) Small Ruminant Collaborative Research Programme (SR-CRSP) in Western Kenya (1983 – 1988). Sponsored by USAID.

CONSULTANCY

1. Baseline survey on the current status of dairy industry in Butere/Mumias and Kakamega districts in Western Kenya by Citizens Network for Foreign Affairs, USA (CNFA)/Agricultural Markets Development Trust, Kenya (AGMARK) with support from Business Services Market Development Program (BSMDP), 4th July to 15th August 2005.

PROFESSIONAL COURSES AND WORKSHOPS

1. Ruminants: Meat production & management 15th December 2003– 8th January 2004 at Rehvot, Israel.
Sponsored by Israel Government
2. Farming Systems Development: (1990)
3. Participatory rural appraisal (PRA) for natural resources management sponsored by National Environmental Secretariat and Egerton University in co-operation with Clark University and the World Resources (1990)
4. Epidemiology and Economics for Animal Health and Disease Control Programmes sponsored by ILCA & VEERU - Reading University at ILCA Headquarters, Addis Ababa 1983.

UNIVERSITY COMMITTEES

1. VC's Committee on the Revitalization of University Farms
2. DVC (AA)'s Committee on the Teaching in the Faculty of Health Sciences
3. MOU between Egerton University and Makerere University and Institutions of higher learning in Uganda
4. MOU between Egerton University and Nanjing Agricultural University

MEMBERSHIP OF PROFESSIONAL ORGANISATIONS

1. Animal Production Society of Kenya
2. Animal Nutrition Club, India

LEADERSHIP POSITIONS

1. Chairman Department of Animal Science: Egerton University from 26th August 1997 to August 2001.
2. Officer in charge: Maseno Veterinary Research Station from 2/8/1987 to 2/5/1988.
3. Chairman, Building & Development Committee: Sbabab Friends Church, Nakuru (2002 to 2005)
4. General Secretary, Vaseretse Self Help Action Group

OTHER NATIONAL ACTIVITIES

1. Initiator and Donor for the construction of Friends Church Library Kegondi, Vihiga District (Under construction)
2. Member of B. O. G. Chandumba Secondary School, Vihiga District
3. Member of the Steering and Technical Committees for establishing Friends University Kaimosi
4. Patron, Kegondi Primary School, Vihiga District

EDUCATION

1991 - 1994

Post graduate studies at the Deemed University of Indian Veterinary Research Institute, Izatnagar, India for the award of Doctor of Philosophy in Animal Nutrition. Title of thesis; Performance of growing lambs fed urea ammoniated neem (*Azadirachta indica A. Juss*) seed kernel cake.

1984 - 1985

Post graduate course in Animal Nutrition leading to the award of Master of Science at the University of Aberdeen (Britain). Title of thesis "The effect of Helminthiasis on zinc Metabolism".

1977 - 1981

Undergraduate studies at the University of Nairobi for the award of Bachelor of Veterinary Medicine

1975 - 1976

High School Education at Homa Bay High School and passed the East African Advanced School Certificate Examination with three principals and one subsidiary.

1971 - 1974

Secondary School Education at Musingu High School and passed the East African School Certificate Examination in Division One with 14 points.

1964 - 1970

Primary School Education at Kegondi Primary School

REFEREES

1. Prof. E. Njoka, Egerton University, P.O. Box 536, Njoro, Kenya
2. Dr. Isaac Kosgey, Egerton University, P.O. 536, Njoro, Kenya
3. Dr. P. Semenye, Sumawa, Egerton University, P. O. Box 244, Egerton, Kenya. Email semenye@sumawa.or.ke Mobile 0722413360

CURRICULUM VITAE

PERSONAL INFORMATION

Name: Levi Mugalavai Musalia

Address:

1. **Work:** Department of Animal Science, Egerton University, P.O. Box 536, Egerton, Kenya, Tel: +254-51-61282. Fax: +254-51-61442/61527
2. **Permanent:** P.O. Box 16334, Nakuru, Tel. +254-51-2210083; +254722273792
3. E-mail: mugalavai@mail.com

Date Of Birth: 30/4/1957

Nationality: Kenyan

Marital Status: Married

PUBLICATIONS

Articles In Refereed Journals / Books

1. **Musalia, L.M.**, S.M.M. Wangia, R.S. Shivairo, P. Okutu and V. Vugutsa. Dairy production within the smallholder dairy farmers in Western Kenya: availability of dairy production inputs. (Preparation)
2. **Musalia, L.M.**, S.M.M. Wangia, R.S. Shivairo, P. Okutu and V. Vugutsa. Dairy production support services within the smallholder dairy farmers in Western Kenya: effects of policy change. *Tropical Animal Health and Production*. (Preparation)
3. **Musalia, L.M.**, S.M.M. Wangia, R.S. Shivairo, P. Okutu and V. Vugutsa, **2007**. Dairy production practices among smallholder dairy farmers in Butere/Mumias and Kakamega districts in Western Kenya. ***Tropical Animal Health and Production*. 39: 199-205**
4. Anandan, S. **L. M. Musalia**, V. R. B Sastry, and D. K. Agrawal. **2003**. Carcass characteristics of goats fed ammoniated neem (*Azadirachta indica*) seed kernel cake ***Asian–Australasian Journal of Animal Sciences* 16: 1451-1454**
5. Kitilit J. K., J. K. Tuitoek and **L. M. Musalia**, **2002**. Nutrient composition of white thorn (*Acacia seyal*) and desert date (*Balanites aegyptiaca*). ***Bull. Anim. Hlth Prod. Afr.* 50: 130-132**
6. Shivairo, R. S. and **L. M. Musalia**, **2002**. The significance of strongyloids in small ruminants in pastoral systems: The case of Baringo district. ***Bull. Anim. Hlth Prod. Afr.* 50: 126-129**
7. Shivairo, R. S. and **L. M. Musalia**, **2002**. Coping with production constraints among smallholder pastoralists in Baringo District, Kenya. ***Bull. Anim. Hlth Prod. Afr.* 50: 116-118**
8. Anandan, S., **L. M Musalia**, V. R. B. Sastry and D. K. Agrawal, **2002**. Gross and histopathological changes in goats fed urea-ammoniated neem (*Azadirachta indica* A. juss) kernel cake. ***Indian Journal of Animal Sciences*. 72: 823-824**

Dr Washington Odongo Ochola (Ph.D)

5/3/2008

Curriculum Vitae



Department of Agricultural Education and Extension, Egerton University, P.O. Box 536 Egerton - KENYA

Tel: +254-721-986-770

E-mail: babatamara@yahoo.com

URL: <http://www.egerton.ac.ke>

OBJECTIVES

To be a world class scientist, scholar, researcher, consultant and trainer in integrated and sustainable agriculture and rural development and natural resource management through specializing in sustainable livelihoods, participatory technology development, agricultural information systems, socio-cultural dimensions of development, future studies, project management, agricultural extension/natural resources management decision support systems and gender and development

MISSION

To carry out research and technology advancement in sustainable agriculture, natural resource management and rural development, sustainable livelihoods, sustainable agricultural and rural development with special focus on agro-biodiversity, environment and sustainable development, agricultural information and communication management, integrated environmental modeling, environmental information management, integration of socio-economics in sustainable development including gender, integrated environmental assessment and reporting, ICT application in development and environmental management; specialized research in GIS for NRM and policy, Future studies (scenario development) for environmental and developmental policy.

STRATEGY

- ◆ Carry out research in various aspects of sustainable agriculture/natural resources management and rural development such as food security, land and water resources management, socio-cultural perspectives in rural development, gender and development
- ◆ Teaching at the university to prepare graduates with strong emphasis on capacity enhancement for sustainable development
- ◆ Offering consultancy services to a wide spectrum of local, national, regional and international agencies, governments and organizations on, among others, the following areas:
 - Monitoring and Evaluation
 - Project Management
 - Sustainable livelihoods
 - Participatory technology development and transfer
 - Community mobilization and communication strategies

- Gender and agricultural development
 - Feasibility studies for food security and poverty assessments
 - Agricultural and livestock extension needs assessment
 - Agricultural information systems management and development
 - Participatory Monitoring and Evaluation
 - Integrated environmental assessment and reporting
 - Land and water resources
 - Scenarios and policy analysis
-
- ◆ Training and capacity building for individuals and organizations in various aspects of sustainable development and rural livelihoods.
 - ◆ Advancement of effective training and participatory technology development and dissemination skills and tools.
 - ◆ Extensive publication through writing of peer reviewed scientific papers, conference papers, books, contribution of book chapters, book reviews, development and extension manuals and on-line materials in the areas of rural development. Sustainable land and water resources management, gender in development and agricultural information systems management.
 - ◆ Development and distribution of appropriate agricultural extension and rural development communication decision support systems.

SPECIAL ACHIEVEMENTS AND AWARDS

- ◆ 2008 DECREE of EXCELLENCE in education, research and consultancy by International Biographical Centre (IBC) – Cambridge, UK
- ◆ Biographed in the 2008 Marqui's WHO is WHO in the World of science and Engineering
- ◆ Biographed in the 2008 CAMBRIDGE TOP 2000 INTELLECTUALS OF THE WORLD in recognition of contribution to research, development and academia.
- ◆ Biographed in the 2007 Edition of Marqui's WHO IS WHO IN THE WORLD for contribution to academia and humanity through research, consultancies, publications and professional achievements
- ◆ 1994 SCAU Outstanding MSc Thesis Award., Best Overall MSc Student Award.
- ◆ 1990 Agricultural Development Cooperation (ADC) Best Bachelors, (Agriculture) Student Award.
- ◆ 1984 – 1985 Best Student Awards in Biology, Geography, Mathematics and Overall Science Subjects.

EDUCATION

Agricultural University of Athens, Athens - Greece

2000 – 2003

PhD (Sustainable Land and Water Resources Management)

South China Agricultural University, Guangzhou - P.R. China

1992 - 1994

MSc (Agricultural Systems Management)

Egerton University, Njoro - Kenya

1987 - 1990

BSc (First Class Honors), Agricultural Education and Extension. GPA - 3.67 out of 4.00

Njiiri School, Murang'a District - Kenya.

1984 - 1985

Kenya Advanced Certificate of Education (KACE) - 17 points

Onjiko Secondary School, Kisumu District - Kenya

1980 - 1983

Kenya Certificate of Education (KCE)

Songhor Primary School, Kisumu District - Kenya.

1979

Certificate of Primary Education (CPE)

EXPERIENCE

Senior Lecturer, Department of Agricultural Education and Extension, Egerton University

2005 - Present

Key Responsibilities:

- ◆ Teaching undergraduate programmes and courses
 - Extension Education
 - Statistical and Research Methods
 - Technical Report Writing
- ◆ Teaching postgraduate programmes and course
 - Statistical Methods
 - Research Methods
 - Natural Resource Management
 - Management of Agricultural Organizations
 - Developing Community Leadership
 - Extension Programme Planning
 - Monitoring and Evaluation
- ◆ Supervising Masters and PhD students. The core specialization areas of supervision include:
 - Adoption biotechnologies
 - Agro-informatics

- Project Management
- Environmental Information Systems
- Agricultural Information and Communication Management
- Adoption studies
- Sustainable agriculture and rural development
- Sustainable livelihoods
- Natural Resources Mapping
- Socio-economics of Sustainable Development
- Gender studies
- Education and rural development
- Participatory monitoring and evaluation
- Extension approaches including adoptive research, farmer field schools (FFS)
- Technical development and dissemination
- Agricultural extension policy
- ◆ Research and training and capacity building in the following:
 - Proposal writing
 - Scientific writing
 - Resource Mobilization
 - Research/project management
 - Sustainable agriculture and rural development
 - Sustainable rural livelihoods
 - Agricultural knowledge, science and technology (AKST)
 - Agricultural information and communication management
 - Agricultural science and technology for development

**Lecturer, Department of Agricultural Education and Extension, Egerton University
1997 - 2005**

Key Responsibilities:

- ◆ Teaching undergraduate programmes and courses
- ◆ Research and training and capacity building
- ◆ University outreach programmes

**Assistant Lecturer, Department of Agricultural Education and Extension, Egerton
University**

1994 - 1997

Key Responsibilities:

- ◆ Teaching undergraduate programmes and courses
- ◆ Research and training and capacity building
- ◆ University outreach programmes

**Teaching Assistant, Department of Agricultural Education and Extension, Egerton
University**

1990 - 1994

Key Responsibilities:

- ◆ Teaching undergraduate programmes and courses
- ◆ Research and training and capacity building
- ◆ University outreach programmes

PUBLICATIONS

Technical/Scientific Publications

- OCHOLA, W.O.** (2008). Impacts of Agriculture on Environment: Challenges and Policy Options in the Face of Climate Change: Background Paper for UNEP Side-Event on *Agriculture, Climate Change and Environment* at the Sixteenth Session of the Commission on Sustainable Development (CSD-16), UNEP, New York.
- ODADA, E.O. **OCHOLA, W.O.**, OLAGO, D.O. (2008). Drivers of ecosystem change and their impacts on human well-being in Lake Victoria basin. *Africa Journal of Ecology*. (Accepted Forthcoming)
- ODADA, E.O. **OCHOLA, W.O.**, OLAGO, D.O. (2008). Understanding future ecosystems changes in Lake Victoria basin using participatory local scenarios. *Journal of Ecology*. (Accepted Forthcoming)
- DETLEF P. VAN VUUREN, **WASHINGTON O. OCHOLA**, SUSAN RIHA. (2008). *Outlook on Global Agricultural Change and its Drivers: Chapter 4 in the International Assessment of Agricultural Science and technology for Development – IAASTD*. The World Bank, Washington DC.
- ODADA, E.O., WANDIGA, S.O., OLAGO, D.O., **OCHOLA, W.O.**, 2007. *AfricanNESS: Global Environmental Change Research in Africa (Science Plan and Implementation Strategy)*. AfricanNESS, Nairobi.
- ODADA, E.O., OLAGO, D.O., **OCHOLA, W.O.** 2006. Understanding future ecosystems changes in Lake Victoria basin using participatory local scenarios. In Yanda P.Z., Kangakawe, R.Y.M, Liwenga, E.T. *Proceedings of the International Conference on Ecosystems Change and Implications on Livelihoods of Rural communities in Africa*. Institute of Resource Assessment, University of Dar es Salaam, Dar es Salaam.
- ODADA, E.O., OLAGO, D.O., **OCHOLA, W.O.** 2006. Factors driving land use change: Effects on ecosystems services and human wellbeing in Lake Victoria basin. In Yanda P.Z., Kangakawe, R.Y.M, Liwenga, E.T. *Proceedings of the International Conference on Ecosystems Change and Implications on Livelihoods of Rural communities in Africa*. Institute of Resource Assessment, University of Dar es Salaam, Dar es Salaam.
- OCHOLA W. ET AL.** 2006. The Future Today – Environmental Scenarios for Africa. In UNEP. *Africa Environment Outlook: Our Environment, Our Wealth*. UNEP, Nairobi.
- ODADA, E.O. OLAGO, D.O., **OCHOLA, W.O.** (Eds). 2006. *Environment for Development: An Ecosystems Assessment of Lake Victoria Basin Environmental and Socio-Economic Status, Trends and Human Vulnerability*. UNEP/PASS, Nairobi.

UNEP, 2006. *Lake Victoria Basin Environment Outlook: Environment for Development*. UNEP, Nairobi.

- OCHOLA W.O.** 2006. Land cover, land use and related issues in the Lake Victoria basin: States, drivers, future trends and impacts on environment and human livelihoods. In Odada, E.O. Olago, D.O., Ochola, W.O. (Eds). *Environment for Development: An Ecosystems Assessment of Lake Victoria Basin Environmental and Socio-Economic Status, Trends and Human Vulnerability*. Pp: 43 – 60. UNEP/PASS, Nairobi.
- ODADA, E.O., OLAGO, D.O., **OCHOLA, W.O.**, NTIBA, M., WANDIGA, S., GICHUKI, N. OYIEKE, H. 2005. Proceedings of the 11th World Lakes Conference (WLC);, Vol I: Ministry of Water and Irrigation/International Lake Environment Committee (ILEC) (October 2005) Nairobi.
- ODADA, E.O., OLAGO, D.O., **OCHOLA, W.O.**, NTIBA, M., WANDIGA, S., GICHUKI, N. OYIEKE, H. 2005. Proceedings of the 11th World Lakes Conference (WLC);, Vol II: Ministry of Water and Irrigation/International Lake Environment Committee (ILEC) (October 2005) Nairobi.
- OCHOLA, W.O.**, KERKIDES, P., 2004. An integrated indicator-based decision support system for land quality assessment in Kenya. *Computers and Electronics in Agriculture* 45: 3-26.
- OCHOLA, W.O.** KERKIDES, P. AYIEKO, J.O. 2004. Assessing wetland conditions in the Lake Victoria Basin of Kenya using integrated land-use and water resources integrity indicators. In Proceedings of European Water Resources Association (EWRA) conference, Izmir Turkey, 2 – 4, October 2004.
- OCHOLA, W.O.**, KERKIDES, P., ARGYROKASTRITIS, I, KOLLIAS, V., 2004. Water resources hazard management system: Spatial extension for the assessment of sustainable water use practices in Kenya. *Irrigation and Drainage*. **53**: 225-236..
- OCHOLA, W.O.**, KERKIDES, P. 2003. A markov chain simulation model for predicting the critical wet and dry spells in Kenya: analyzing rainfall events in Kano plains, *Irrigation and Drainage* 52 (4), 315-527.
- OCHOLA, W.O.**, KERKIDES, P., 2003. A Spatial Decision Support System for Water Resources Hazard Assessment: Local Level Water Resources Management with GIS in Kenya. *Journal of Geographic Information and Decision Analysis*. Vol. 7, No.1, pp 14-28.
- OCHOLA, W.O.**, KERKIDES, P., 2003. An integrated indicator-based decision support system for land quality assessment in Kenya. In K.O. Sindir, Proceedings of the International Congress on Information Technology in Agriculture, Food and Environment (ITAFE) of October 7 – 10, 2003, Ege University Press, Izmir, Turkey, pp 45-54.
- OCHOLA, W.O.**, KERKIDES, P., ARGYROKASTRITIS, I., 2003. Water Resources Hazard Management System: Spatial extension for sustainable water use practices assessment. In K.O. Sindir, Proceedings of the International Congress on Information Technology in Agriculture, Food and Environment (ITAFE) of October 7 – 10, 2003, Ege University Press, Izmir, Turkey, pp 502-511.
- OCHOLA, W.O.**, KERKIDES, P., ARGYROKASTRITIS, I., 2002a. Water quality: an indicator for sustainable land management? In Tsakiris, G. (Ed.). *Water Resources Management in the Era of Transition*. Proceedings of the 5th International Conference of European Water Resources Association (EWRA), pp 54-64.

OCHOLA, W.O., KERKIDES, P., ARGYROKASTRITIS, I., 2002b. Water resources hazard management system: Assessing sustainable practices at farm and catchment levels. In Tsakiris, G. (Ed.). *Water Resources Management in the Era of Transition*. Proceedings of the 5th International Conference of European Water Resources Association (EWRA), pp 143-156.

OCHOLA, W.O., KERKIDES, P., ARGYROKASTRITIS, I., 2002c. Water resources hazard management system: Assessing sustainable practices at farm and catchment levels. *Irrigation and Drainage* 51 (3), 243-256.

Manuals, Workshop Reports and Proceedings

OCHOLA, W.O., MITOKO, G. 2005. Report on Gender Training of Trainers Workshop held in Mwingi (1st – 5th August 2005). AfDB- ASAL Based Livestock and Rural Livelihoods Support Programme. Ministry of Livestock and Fisheries development/ African Development Bank (AfDB). Nairobi.

OCHOLA, W.O., MITOKO, G. 2005. Gender Sensitization and Training Guide. AfDB- ASAL Based Livestock and Rural Livelihoods Support Programme. Ministry of Livestock and Fisheries development/ African Development Bank (AfDB). Nairobi.

OCHOLA, W.O., MITOKO, G. 2005. Report of Gender Sensitization Workshop held in Naivasha (27th – 29th July 2005). AfDB- ASAL Based Livestock and Rural Livelihoods Support Programme. Ministry of Livestock and Fisheries development/ African Development Bank (AfDB). Nairobi.

OCHOLA, W.O., CHEGE, P. 2005. Teaching Practice Management and Mentorship: Consultancy Report of Workshops Held in Amoud University, Borama – Somaliland (29th January – 3rd February 2005). Centre for British Teachers (CfBT), Nairobi.

OCHOLA, W.O., MWARASOMBA, L.I., Mutoko, G. 2002. Gender Analysis and Integration for Improved Agricultural and Livestock Extension: Proceedings of Training Workshops in Kisumu, Nakuru and Embu, National Agriculture and Livestock Extension Programme (NALEP), Ministry of Agriculture and Rural Development, Nairobi – Kenya.

OCHOLA, W.O. 2002. Gender Integration in Agricultural Extension: A Training Guidebook. Eds. L.I. Mwarasomba & G. Mutoko. National Agriculture and Livestock Extension Programme (NALEP), Ministry of Agriculture and Rural Development, Nairobi – Kenya.

OCHOLA, W.O., MUHIA, R.N., MWARASOMBA, L.I. 2000. Participatory Monitoring and Evaluation for Natural Resources Management: Workshop Proceedings, National Soil and Water Conservation Programme (NSWCP), Ministry of Agriculture and Rural Development, Nairobi – Kenya.

OCHOLA, W.O. 2000. Gender Integration in Agricultural Extension: A Training Handbook. Eds. Lotter Nycander & L.I. Mwarasomba. National Agriculture and Livestock extension Programme (NALEP), Ministry of Agriculture and Rural Development, Nairobi – Kenya.

OCHOLA, W.O., MWARASOMBA, L.I. 2000. Guidelines for Agricultural Extension: Working with Luo Communities in Lake Victoria Basin in Kenya, National Soil and Water Conservation Programme (NSWCP), Ministry of Agriculture and Rural Development, Nairobi – Kenya.

OCHOLA, W.O. 2000. Community Sensitization for Improved Rural Livelihoods: A Consultancy Report for Yei County, Southern Sudan. CONCERN Worldwide, Nairobi. PRA PROGRAMME, EGERTON UNIVERSITY, 1999. Egerton PRA Field Handbook for Participatory Rural Appraisal Practitioners. Egerton University, Njoro – Kenya.

Research Reports

OCHOLA W.O., WAMUKURU, D.K. 2006. Indicators of Local Level Transformational Development: Baseline Survey Report of Laisamis Area Development Programme. World Vision – Kenya, Mount Kenya Zone.

OCHOLA W.O., WAMUKURU, D.K. 2006. Indicators of Local Level Transformational Development: Mid-Term Evaluation Report for Area Development Programme. World Vision – Kenya, Lake Zone - Kisumu.

OCHOLA W.O., WAMUKURU, D.K. 2006. Indicators of Local Level Transformational Development: Baseline Survey Report of Karemo Area Development Programme. World Vision – Kenya, Kisumu.

OCHOLA, W.O., MUHIA, R.N. & MWARASOMBA, L.I. 2000. *Culture, Traditions and Society: The Challenges to Natural Resource Management and Development*. A Report of a Socio-cultural Study of the Lake Victoria Region, Kenya. National Soil and Water Conservation Program, MoARD, Nairobi.

CONSULTANCIES

Regional Forum for Capacity Building of African Universities in Agricultural (RUFORUM)

Kampala, Uganda

December 2007

Facilitator Workshop to strengthen proposal writing and scientific and communication skills of academic staff of universities in East and Central Africa – Kampala, Uganda

February 2008

Facilitator Workshop to strengthen proposal writing and scientific and communication skills of academic staff of universities in Southern Africa – Lusaka, Zambia

Regional Agricultural Information Network (RAIN)

ASARECA, Entebbe, Uganda

2008

Facilitator – Agrobiodiversity and biotechnology proposal development for drought tolerant maize and sweet potato germplasm conservation and utilization in Eastern and Central Africa (ECA) sub-region, Kampala - Uganda

2008

Facilitator – Mega proposal for biotechnology use in sustainable cassava production and utilization in Eastern and Central Africa (ECA) sub-region, Kampala – Uganda. Facilitated proposal development workshop and compiled the draft proposal.

2006 - 2007

Facilitator and member of the Technical Working Groups I&II (TWGI&II) for developing regional postgraduate programme in Agricultural Information and Communications Management (AICM) for the East and Central African Region

World Vision Kenya (WVK)

2006 - 2008

- ◆ Lead consultant for various programme management consultancies:
 - Baseline Survey – Karemo Area Development Programme
 - Baseline Survey – Laisamis Area Development Programme
 - Programme Evaluation – Lambwe Valley Area Development Programme
 - Food Security feasibility Study – Kainuk Area Development Programme
 - Programme Evaluation Survey – Lokori Area Development Programme

Directorate of Water Development (DWD)

Ministry of Water, Land and Environment
Kampala, Uganda

December, 2006

Institutionalization of Participatory Monitoring and Evaluation (PM&E) for the rural water and sanitation sector. Consultant and facilitator of DWD Managers sensitization workshop. Wrote a consultancy and workshop report for the task.

April, 2006

Participatory Monitoring and Evaluation (PM&E) for the rural water and sanitation sector. Consultant and facilitator of workshop and field work held in Mbarara district, Uganda. Workshop involved training and capacity building of senior staff on principles and practices of PM&E, community mobilisation, stakeholder analysis, participatory indicator development (PID) and preliminary PM&E integration

September

Training of Trainers in WATSAN project design, Monitoring and Evaluation. Mid-Term Evaluation of Sida Funded Rural Water and Sanitation Projects in Mbarara County. Trained local and county level enumerators including members of WATSAN umbrella organizations. Wrote MTE report for programme review and redesign

The World Bank

International Assessment of Agricultural Science and technology for development (IAASTD)

October 2005 – Present

- Collaborating Lead Author: IAASTD Global Chapter 4: Drivers of Global Food Systems

- Lead Author: Sub-Saharan Africa Report – Chapter 4: The Evolution of SSA Food Systems Towards 2050.

United Nations Environment Programme (UNEP)

Division of Environmental Policy Implementation (DEPI)

2008

- Short-term Consultancy to draft Background Paper for UNEP Side-event on Climate Change, Environment and Agriculture presented at the Sixteenth UN Commission on Sustainable Development (CSD-16) – New York. Also Developing Side-event Agenda and Constituting and Facilitating High Level Panelists for Discussion (May 2008)

Division of Early Warning and Assessment (DEWA)

December 2008

- Resource person and trainer Botswana national Integrated Environmental Assessment and Reporting (IEAR) Scenario module held in Gaborone April 7th – 14th 2008

December 2007

- Resource person and trainer Southern Africa Integrated Environmental Assessment and Reporting (IEAR) Scenario module held in Harare 11 – 14th December 2007

December 2004 –2007

- Facilitator and lead author in the fourth global environment outlook (GEO -4), plausible futures chapter 9. Contributing Author to Chapter 6. Report published and Launched October 2007
- Consultant, collaborating lead author for scenarios chapter and member of the second Africa Environment Outlook (AEO-2) reporting process. Contributing to the land theme and scenario chapter as a member of the Scenario Working Group and Pan African Threshold 21 development expert. The AEO-2 report profiled Africa's environmental resources as an asset for the continent's development and highlighted the opportunities presented by the region's natural resource base to support the development agenda of NEPAD and the cost of its misuse. It also profiled movements towards Millennium Development Goals (MDGs) on environmental issues related to poverty, food security, gender and environment and sustainable livelihoods and development. The report was presented to African Ministerial Conference on Environment (AMCEN) in May 2006.

September 2004 – March 2005

Under the Pan African START Secretariat (PASS), University of Nairobi steered and completed the Lake Victoria Basin Environment Outlook Process involving stakeholders workshop in Kisumu, writing of thematic chapters. Contributed the land theme for the state of the environment chapter and was a member of the core editorial team that produced the report for publication. Co-author of the UNEP funded Lake Victoria Environment Outlook report.

ADB ASAL Based Livestock Improvement and Rural Livelihoods Support Project

Ministry of Livestock and Fisheries Development

September - November 2007

- Gender screening survey of ASAL livestock and rural livelihoods. Production of a gender training and awareness Video

June - July 2005

- Gender sensitization workshop of senior project staff held Gilgil. Workshop focused on concepts and perspectives of Gender issues and concerns in project management and sustainable development and livelihoods in ASAL regions of Kenya.
- Gender ToT training of provincial and district livestock staff of the ADB project in Mwingi.
- A manual for gender integration and training was developed as part of the consultancy

National Agriculture and Livestock Extension Programme (NALEP)

May 2005

Trained Nakuru District Agriculture and Livestock extension staff on Participatory Monitoring and Evaluation (PM&E). The workshop was aimed at building capacity of NALEP implementers in the district to plan and facilitate local monitoring of focal area agricultural and livestock extension and development projects. The rationale, principles, tools and facilitation in PM&E were covered in the workshop.

April 2002

Facilitated three national workshops on Gender Analysis and Gender Sensitive technology for Improved Agricultural and Livestock Extension. Workshops held in Kisumu, Nakuru and Embu. Workshops covered gender concepts, gender sensitization, gender analysis, gender mainstreaming.

2002

Produced a Training Guidebook: "*Gender Integration in Agricultural and Livestock extension*". Book edited by G. Mitoko and L.I. Mwarasomba of NALEP head office. The guidebook is a compilation of gender concepts, issues and concerns in agriculture and livestock extension, the principles and practices of planning, implementation and evaluation of a gender training workshop.

National Soil and Water Conservation Programme (NSWCP)

Ministry of Agriculture and Rural Development

October 1999

Participatory monitoring and evaluation (PM&E) training of trainers' and facilitators' (ToT/ToF) workshop. The objective of the workshop was to build a core capacity for PM&E within the programme.

May and October 1998

Facilitation of separate national workshops on participatory rural appraisal (PRA) for trainers. The workshops were conducted in Embu (for high potential districts) and Wajir (for Arid and Semi-arid Lands - ASAL) were aimed at enhancing the practice of PRAs in catchment level needs assessment and soil and water conservation project planning.

Other workshops Facilitated for the NSWCP

- Collaboration workshop in Isiolo (1999)
- Local level initiative workshop in Chuka

June – July, 1999

Principle Consultant/Researcher, Socio cultural study of Lake Victoria basin, Kenya. The study was commissioned by the Sida Funded NSWCP to provide a better understanding of underlying socio-cultural issues in Lake Victoria region of Kenya that influence sustainable natural resources management and rural development among the Luo. The report of the study, *Culture, traditions and Society: Challenges to Natural Resources Management and Development*, was published and circulated widely for development planning in the basin.

Centre for British Teachers (CfBT)

January – February, 2005

Consultant/trainer for the Strengthening of Teacher Education in the Public Sector of Somalia (STEPS) project by DANIDA and the European Union and implemented by CfBT. The assignment involved facilitating two workshops at Amoud University, Borama, Borama, Somaliland.

April, 2005

An external examiner for Amoud University TP exercise. Consulted for CfBT as leader of TP assessment team working with two local assessors from Somaliland on teaching practice through lesson observation, evaluation of TP programme records and the mentoring programme in secondary schools.

Concern International

April 2000

Consultant for Concern International Nairobi. Facilitated community planning workshops through mobilization and participatory needs assessment and agricultural and livelihood planning for farming communities in Yei County, Southern Sudan.

African Education Trust (AET) – Nairobi

2007

Medium Term Consultant – Development and Review of Secondary School Agriculture Curriculum for Puntland, Somalia

MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS

- ◆ Member International Forum for Assessment of Sustainable Agriculture (INFASA) of the International Institute of Sustainable Development (IISD) – Canada
- ◆ Member the International Association of Agricultural Education and Extension (IAAEE)
- ◆ Member Africa Environmental Information Network (EIN)
- ◆ Member, International Association of Agricultural Information Experts
- ◆ Member, Scientific Steering Committee (SSC) of the African Network of Earth Sciences

(AfricanNESS)

SKILLS

- ◆ Proposal writing
- ◆ Advance computer skills (programming, data analysis and biostatistical packages, Geographical Information Systems, Agricultural Expert Systems, Decision Support Systems)
- ◆ Advanced working knowledge of word processing, spreadsheets, databases, presentation with MS Office suite
- ◆ Advanced knowledge of statistical analysis with several computer packages including SPSS, SAS, GENSTAT, MINITAB, STATGRAPH and MSTAT
- ◆ Computer Programming with Object Oriented Languages and MS Visual Basic Application (VBA)
- ◆ Advanced knowledge of Geographical Information Systems with ESRI packages (ArcGIS complete package - ArcView, ArcMap, ArcInfo, ArcIMS) and Remote Sensing
- ◆ Internet Use and Web design and maintenance.
- ◆ Computer hardware and network (LAN) assembly and maintenance.

LANGUAGE PROFICIENCY

- ◆ Excellent in Written and spoken English and Swahili
- ◆ Average in Spoken and Written Greek and Chinese
- ◆ Currently learning French and Spanish

CURRICULUM VITAE

Prof. Dr. Philip Wandahwa

Date of birth: 24th Nov.1961

Place of birth and Address: Kakamega, Kenya.

Present address: Egerton University, Dept. of Crops, Horticulture and Soils, P. O. BOX 536, Njoro, Kenya.

Marital status: Married, with 4 children.

Nationality: Kenyan.

AREA OF SPECIALIZATION:

Soil Science (Soil Genesis and Classification, Soil Survey and Land Evaluation, Soil Physics); Land Use Planning; Modeling Agricultural Systems; Geographic Information Systems; Organic/sustainable agriculture.

ACADEMIC QUALIFICATION

1) Schools

Lonza Primary School:Jan. 1969 - Dec. 1975 - Certificate of Primary Education (CPE).

Kakamega High School:Jan. 1976 - Dec. 1979 - East African Certificate of Education (EACE).

Kakamega High School:May 1980 - Dec. 1981 - Kenya Advanced Certificate of Education (KACE).

2) University Education

University of Nairobi: October 1983 - July 1986 - Bachelor of Science in Agriculture Upper Second Class Honors (B.Sc. Agric).

University of Nairobi: October 1986 - July 1988 - Master of Science in Soil Science (MSc. Soil Science).

University of Gent: October 1991 - July 1992 - Advanced Studies in Soil Science (Diploma with distinction).

University of Gent: October 1992 to September 1996 - Doctor of Science in Earth Science (D.Sc. Earth Science, orientation: Land Evaluation, with greatest distinction).

PROFESSIONAL QUALIFICATIONS AND RESPONSIBILITIES

1) Employment and Duties

May 1982 to Sept. 1983: Student teacher Butere High School, Kenya

- Taught physics, mathematics, biology and chemistry to form 1 to 4 students.

August 1986 to Sept. 1986: Extension officer, Kenya

- Agricultural Extension Officer II with the Ministry of Agriculture and Livestock Development,

August 1988 - August 1989: Assistant Lecturer, Egerton University, Kenya

-Taught soil physics, general soil management, soil genesis and classification to Diploma and under-graduate students.

August 1989 - September 1991: Lecturer, Egerton University

-Taught general soil management, soil genesis and classification to Diploma and undergraduate students.

Oct. 1992 to Sept. 1996: Research/Ph.D. University of Gent, Belgium

- Research on: Elaboration of land evaluation models for pyrethrum cultivation;

- Offered courses and demonstrations in Land Evaluation to students, scholars and researchers from China, German and UK.

Oct. 1996 to Oct. 1997: Lecturer, Egerton University

-Taught soil genesis and classification; soil survey and land evaluation to diploma, undergraduates and postgraduate students.

Oct. 1997 to April 2008: Senior Lecturer, Egerton University

- Teaching soil genesis and classification, Soil survey and land evaluation, Soil physics and Soil chemistry.
- Supervisor and co-supervisor of a number of Kenyan and foreign M.Sc. students' theses.
- Part-time lecturer in soil genesis and classification, Moi University, Kenya.
- External examiner in Soil Science for University of Nairobi, Kenya.
- Member of the Faculty of Agriculture Research, Linkages and Outreach (RLO) Committee.
- Faculty of Agriculture representative to the Board of Institute of Women, Gender and Development Studies.
- Member of the Faculty of Agriculture Marketing Committee.
- Member of the University Organic Research and Extension Committee.
- Reviewer of internal research projects for funding by the University.
- Reviewer of Egerton University Journal manuscripts
- Acting Chairman, Department of Soil Science February to April 2005.

May 2008 to date: Associate Professor, Masinde Muliro University of Science and Technology

- Teaching soil science
- Supervising undergraduate and post graduate students projects

2) Courses, Workshops and Conferences Attended

September 1991 - December 1991, University of Gent, Belgium

- Digital Satellite Image Processing with Applications to Soil Science (Certificate)

Jan. 25th 1995 University of Leuven, Belgium.

- Belgian Soil Science Society Seminar

April 3rd 1997 at the Pyrethrum Board of Kenya boardroom, Nakuru, Kenya

- Pyrethrum Improvement Program

February 27th – March 1st 2000, Makerere University, Uganda

- Egerton- Boku University (Austria) collaboration workshop on Research

August 2nd –August 8th 2000, Makerere University, Uganda

- Workshop on INCO-DEV Project Proposal Preparation

July 23rd – 27th 2001, Egerton University, Kenya

- Workshop on University Academic Advising and Teaching Methodology

August 10th – Aug. 14th 2001, Makerere University, Uganda

- Workshop on INCO-DEV Project Proposal Preparation

Sept. 17th – 19th 2001, Egerton University, Kenya

- Second International Conference of the Kenya Chapter of the Association of Third World Studies (ATWS)

Jan. 21st – 24th 2002, Egerton University, Kenya

- Dry-land Farming Workshop

Aug. 12th – 17th 2002, University of Ghana, Ghana

- Workshop on Agricultural Systems Analysis and Modeling

Sept. 18th – 20th 2002, Daystar University, Nairobi Kenya

- Third International Conference of the Kenya Chapter of the Association of Third World Studies (ATWS)

Dec. 15 – 16th, 2002, Kampala, Uganda

- CODESRIA – IFS Sustainable Agriculture Initiative Workshop I, Kampala, Uganda

May 18th – 20th 2005, Ngurdoto Mountain Lodge, Arusha Tanzania

- VICRES Annual Forum Conference

May. 8th – 11th, 2006, Kunduchi Beach Hotel, Dar es Salaam, Tanzania

- NSF Workshop on Integrating the Social and Natural Sciences in Research
Sept. 3rd – 9th, 2006, Ghent University, Belgium
- Workshop for Alumni of M. Sc. Programmes in Soil Science, Eremology and Physical Land Resources
May 22nd – 26th, 2007, Jinja Nile Resort, Uganda
- VICRES Annual Forum Conference

MEMBERSHIP OF PROFESSIONAL SOCIETIES

- Soil Science Society of East Africa.
- The New York Academy of Sciences 1997-98.
- Kenya Soybean Association, 1997 -98
- Association of Third World Studies (ATWS), 2001 to date

UNPUBLISHED THESIS

- Wandahwa, P., 1988. Comparison of single and double cropping of rice on the physical properties of a Vertisol. M. S. Thesis, University of Nairobi.
- Wandahwa, P., 1996. Elaboration of land evaluation models for pyrethrum (*Chrysanthemum cinerariaefolium* Vis.) in West Kenya. Ph.D. Thesis, University of Gent, 265 pp.

PUBLICATIONS

JOURNALS

- Wandahwa, P. and Kinyali, S. M., 1993. The effect of lowland rice cropping intensity on the workability of a Vertisol. **E. Afr. Agr. For. J., 59(1): 19 -25.**
- Wandahwa, P. and Van Ranst, E., 1996. Qualitative land suitability assessment for pyrethrum cultivation in West Kenya based upon computer captured expert knowledge and GIS. **Agric. Ecosyst. Environ. 56: 187-202.**
- Wandahwa, P., Van Ranst, E. and Van Damme, P., 1996. Pyrethrum (*Chrysanthemum cinerariaefolium* Vis.) cultivation in West Kenya: origin, ecological conditions and management. **Industrial Crops and Products, 5: 307-322.**
- Wandahwa, P. and Van Ranst, E., 1999. Modeling environmental impact on yields and fertilizer requirements for a target yield of pyrethrum at two study sites in Kenya. **Pyrethrum Post 20 (2): 68 – 81.**
- Rota, J.A., Wandahwa, P. and Sigunga, D.O., 2006. Land evaluation for soybean (*Glycine max L. Merrill*) production based on kriging soil and climate parameters for the Kakamega District, Kenya. **Journal of Agronomy 5(1) 142-150.**
- Wandahwa, P., Tabu, I.M., Kendagor, M.K. and Rota, J.A., 2006. Effect of intercropping and fertilizer type on growth and yield of soybean (*Glycine max L. Merrill*). **Journal of Agronomy 5(1) 69-73.**
- Felix K. Ngetich, Philip Wandahwa and Isaiah I.C. Wakindiki. Effects of Tillage on Soil Physical Properties and Water Movement in a Stratified Vitric Andosol. **Journal of Tropical Agriculture (In press)**

ABSTRACTS AND CONFERENCE PAPERS

- Wandahwa P. and Van Ranst E., 1995. Use of computer captured expert knowledge and GIS in qualitative land suitability assessment for pyrethrum cultivation. Paper presented on 25/1/1995 at the Belgian Soil Science Society Meeting in Leuven, Belgium.
- Wandahwa, P. and Van Ranst, E., 1997. Agriculture ecosystem and environment. Paper presented during a seminar on Pyrethrum Improvement Programme on 3/4/97 at the

Pyrethrum Board of Kenya boardroom, Nakuru.

- Ulrike, Z. Wandahwa, P. and Freyer, B., 2002. Impact of organic farming courses for small-holder farmers at Baraka Farmers' Training Center on their agricultural and socio-economic development in Lake Nakuru Catchment area, Kenya. Deutscher Tropentag, 9th – 11th October 2002, Witzhausen.
- Rota, J. A., Wandahwa, P. and Sigunga, D. O., 2002. Evaluation of land resources for soybean production in Kakamega District, Kenya. Paper presented at the Third International Conference of the Kenya Chapter of the Association of Third World Studies (ATWS) held at Panafric Hotel, Nairobi on 18th –20th September 2002
- Wandahwa, P. Kisaka W., 2002. Agricultural sustainability in Africa: The way forward. CODESRIA – IFS Sustainable Agriculture Initiative Workshop I, Kampala, Uganda, December 15 – 16, 2002.
http://www.codesria.org/Links/Conferences/ifs/Wandahwa_Wafula.
- Wandahwa, P., Rota, J.A. and Sigunga, D.O., 2006. Using geographic information systems and global positioning system to map soil characteristics for land evaluation. Proceedings of the Workshop for Alumni of M.Sc. programmes in Soil Science, Eremology and Physical Land Resources. Ghent University, Belgium, p 184-193.

LECTURE MANUALS

- Wandahwa, P., 1997. Soil genesis and classification: Provisional notes for diploma and undergraduate students. Dept of Agronomy, Egerton University, 83 pp.
- Wandahwa, P., 1998. Soil genesis and classification: Provisional notes for post-graduate students. Dept. of Soil Science, Egerton University, 236 pp.

RESEARCH PROJECTS

- 2006 – 2009, Empowering local communities for sustainable agricultural production: case studies from Nakuru and Kakamega Districts. Financially supported by the Kenya Commission For Higher Education (**CHE**)
- 2004 – 2008, Exploring linkages between land tenure, land use and food security and their implications on gender resource management in the Lake Victoria Basin – VICRES Project. Financially supported by **IUCEA/SIDA**.
- 2001-2003, Increasing soybean yields through soil fertility improvements and land use management in Kakamega district, Kenya. Financially supported by **The Rockefeller Foundation** ACA Program.
- 2001- 2003, Effect of organic and inorganic fertilizers and mode of application on selected soil properties and maize (*Zea mays*) performance. Financially supported by The **International Foundation for Science** (IFS) Stockholm.
- 1992 – 1996, Assessment of the suitability of West Kenya for pyrethrum cultivation. Financially supported by the **Belgian Administration for Development Cooperation** (BADC).
- 1987 – 1988, Assessment of the workability of Vertisols in the Kano Plains for double cropping of rice. Financially supported by **University of Nairobi**.

Dated May 2008