

CURRICULUM VITAE



Career Summary

I am a Cropping Systems Agronomist, Eco-physiologist and Tutorial Fellow in the Department of Plant Science and Crop protection, University of Nairobi. I hold a PhD in Agronomy (University of Adelaide, Australia), an MSc in Agronomy and BSc in Agriculture from the University of Nairobi, Kenya. My PhD investigated the mechanisms that contribute to crop yield in no-till and stubble retention systems. Research was conducted in two contrasting systems: wheat in the Mediterranean-type climate of southern Australia and maize in a sub-humid environment in Kenya. Results emphasized the importance of interpreting crop responses to no-till and stubble retention systems on the basis of physiological principles. The International Maize and Wheat Improvement Center (CIMMYT) mentored me to a Cropping Systems Specialist. I have vast experience in conducting feasibility studies and the design of agricultural development plans for irrigation projects.

Personal data

Name	KITONYO Onesmus Musembi
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Education

2014-2018 Thesis	Doctor of Philosophy (Agronomy), University of Adelaide, Australia Mechanisms contributing to wheat and maize yield under no-till, stubble retention and nitrogen fertilization in contrasting environments
2008-2010 Thesis	Master of Science (Agronomy), University of Nairobi, Kenya Performance of farmer-preferred maize varieties intercropped with beans in the semi-arid regions of Kenya
2002-2006	Bachelor of Science in Agriculture, University of Nairobi, Kenya
1997-2000	Kenya Certificate of Secondary Education, Mbooni Boys' High School
1989-1996	Kenya Certificate of Primary Education, Kathyaka Primary School

Work Experience

From October 2013 to date
Employer University of Nairobi, Department of Plant Science & Crop Protection
Position Tutorial Fellow
Teaching I teach in ACS 106/AEB 109: Principles of Crop Production; ACS 202: Principles of Plant Propagation; ACS 301: Field Crops; ACA 603: Crop and Forage Production Systems; ACA 605: Plant Nutrition and Soil Fertility; AFN 505: Food Production Systems

From July 2011 to October 2013
Employer International Maize and Wheat Improvement Centre (CIMMYT)
Position Research Assistant (Agronomist)
Project ***Sustainable Intensification of Maize-Legume Cropping Systems for Food Security in Eastern and Southern Africa (SIMLESA) (Ethiopia, Kenya, Malawi, Mozambique and Tanzania)***

Some key responsibilities included:

- Evaluation of maize-legume cropping systems under conservation agriculture practices; designing site specific conservation agriculture practices
- Evaluation of commercial varieties and breeding materials for intercrop compatibility with legumes
- Trials planting, management, data collection and analysis as well as reporting and drafting scientific papers

Project ***Enhancing Total Farm Productivity in Smallholder Conservation Agriculture Based Systems in Eastern Africa (Ethiopia and Kenya)***

Some key responsibilities included:

- Characterized crop-livestock interactions in Eastern Kenya; to understand the status, constraints and opportunities
- Evaluated different amounts of crop residue retention practices on crop productivity and soil moisture availability in different climatic conditions
- Evaluated maize varieties for adaptation to conservation agriculture cropping systems
- Evaluated the performance of different fodder species in conservation agriculture based systems

From March 2010 to July 2011
Employer GIBB Africa Ltd
Position Graduate Agronomist
Project ***Lower Kuja Irrigation Development Project, Kenya: Conducted a feasibility study for the development of a 8,000 hectare irrigation scheme in the Lower Kuja Basin***

Some key responsibilities:

- Conducted baseline studies to understand the agricultural and socio-economic conditions of the project area
- Developed an Agricultural Development Plan for the project; detailing crop selection, crop water requirements, cropping calendars and cropping patterns, and agronomic practices for different crops
- Extension and training services to farmers and other stakeholders

Project ***Kenya Natural Resource Management Project; Mwea Irrigation Scheme, Kenya. Formulation and implementation of interventions to improve water management in the Mwea Irrigation Scheme and Outgrower Sections***

Some key responsibilities included:

- Analyzed the scheme's cropping calendars and cropping practices for the development of sustainable water management options
- Analyzed the viability of emerging rice cropping systems (such as the upland rice – *NERICA* and the System of Rice Intensification - SRI) for sustainable use of the scheme's water resources
- Recommended crop diversification strategies to improve productivity and sustainability of the scheme

2010-2013 Consultancy in irrigation projects. Worked with Agricom Consultants on Lower Sio project, small-holder irrigation projects in the slopes of Mt. Kenya, including Ena

From November 2009 – March 2010
Employer University of Nairobi, Department of Plant Science and Crop Protection
Position Research Assistant (short-term consultancy)
Project ***Enhancing competitiveness of canning navy bean in international, regional and domestic markets***

Some key objectives accomplished included:

- Characterized canning navy bean markets and market chains in Kenya:
 - ✓ Identified potential markets, market chains and market chain actors;
 - ✓ Identified gaps and opportunities for actors/stakeholders in the canning

navy bean product value chain

- Developed strategies for improving competitiveness of the canning navy bean subsector (paper published – see journal list)
- Developed stakeholder action plans for market participation

From October 2008-December 2009; Graduate student, University of Nairobi

From August 2007 to September 2008

Employer Barclays Bank of Kenya

Position Customer Advisor

From April 2007 to July 2007

Employer ASARECA/KARI-Dairy Meat Products Project

Position Research Assistant-Enumerator

From January 2007 to April 2007

Employer Cooper Kenya Ltd

Position Sales Agronomist

Journal Articles

Kitonyo, O. M., Zhou, Y., Coventry, D. R. Denton, M. D. 2018. Canopy development and grain yield of dryland wheat is modified by strategic nitrogen supply and stubble management. *European Journal of Agronomy*. 99, 199-205

Kitonyo, O. M., Sadras, V.O., Zhou, Y., Denton, M.D., 2018. Nitrogen supply and sink demand modulate the patterns of leaf senescence in maize. *Field Crops Research*. 225, 92-103

Kitonyo, O. M., Sadras, V.O., Zhou, Y., Denton, M.D., 2018. Nitrogen fertilization modifies maize response to tillage and stubble in a sub-humid tropical environment. *Field Crops Research*. 223, 113-124

Kitonyo, O. M., Sadras, V. O., Zhou, Y., Denton, M. D. 2017. Evaluation of historic Australian wheat varieties reveals increased grain yield and changes in senescence patterns but limited adaptation to tillage systems. *Field Crops Research*. 206, 65-73.

Micheni, A. N., Kanampiu, F. K., **Kitonyo, O. M.**, Mburu, D. M., Mugai, E. N., Makumbi, D., Kassie, M. 2016. On-farm experimentation on conservation agriculture in maize-legume based cropping systems in Kenya: water use efficiency and economic impacts. *Experimental Agriculture*. 52, 51-68.

Micheni, A. N., Njeru, M. J., Kanampiu, F. K., Mburu, D. M., Mugai, E. N., **Kitonyo, O. M.** 2016. Response of soil microfauna to tillage methods and cropping systems in humic nitosols of Eastern Kenya. *African Journal of Horticultural Science*. 10, 21-33.

Chemining'wa, G.N., **Kitonyo, O.M.**, Nderitu, J. H. 2014. Status, challenges and marketing opportunities for canning navy bean in Kenya. *African Journal of Food, Agriculture, Nutrition and Development*. 14, 2072-2087.

Kitonyo, O.M., Chemining'wa, G.N., Muthomi, J.W. 2013. Productivity of farmer-preferred maize varieties intercropped with beans in semi-arid Kenya. *International Journal of Agronomy and Agricultural Research*. 3, 6-16.

Book Chapters

Chemining'wa, G.N., **Kitonyo, M.O.** 2018. Neglected and underutilized cereals and pseudocereals. In: Kasolo W., Chemining'wa, G.N., Temu, A. (Eds.), *Neglected and Underutilized Species (NUS) for Improved Food Security and Resilience to Climate Change: A Contextualized Learning Manual for African Colleges and Universities*. The African Network for Agriculture, Agroforestry and Natural Resources Education (ANAFE), United Nations Avenue, Gigiri, Nairobi, Kenya, pp. 64-88.

Conference Articles

Kitonyo O.M., Chemining'wa, G.N. 2018. Enhancing climate resilience of cropping systems: A synopsis of research activities by crop scientists at the University of Nairobi. RUFORUM Biennial Conference, 22-26 October, 2018, Nairobi, Kenya.

Kabutbei, J, **Kitonyo O.M.**, Chemining'wa, G.N., Kimani P.M., Mburu, M.W., Nderitu, J.H. 2018. Drought tolerant lines of Andean beans (*Phaseolus vulgaris L.*) out-yield commercial varieties and have superior farmer-preferred traits. RUFORUM Biennial Conference, 22-26 October, 2018, Nairobi, Kenya.

Kitonyo O.M. Sadras, V.O., Zhou, Y., Denton, M.D., 2018. Improving wheat yields in no-till systems of southern Australia. Grains Research and Development Corporation (GRDC) Updates. 20-21 February, Adelaide Convention Centre, Adelaide, South Australia.

Kitonyo, O. M., Zhou, Y., Sadras, V. O., Denton, M. D. 2017. Within-plot and within-plant variability and senescence patterns of maize under contrasting tillage systems, stubble and fertilizer nitrogen. American Society of Agronomy. *Managing Global Resources for a Secure Future*. 2017 Annual Meeting. 22-25 October, Tampa, Florida, USA.

Kitonyo, O. M., Zhou, Y., Sadras, V. O., Denton, M. D. 2015. Evaluating the effects of tillage, stubble retention and nitrogen timing on dryland wheat. 9th International Wheat Conference. 20-25 September. Four Seasons Hotel. Sydney, Australia.

Micheni, A., Kanampiu, F., **Kitonyo, O.**, Ouma, J., Mulugetta M., Mburathi, G., Ngoroi, E. 2012. Up-scaling and Out-scaling Conservation Agriculture Technologies: The Case of a Local Innovation Platform in Eastern Kenya. 3rd International Agronomy Congress, 26-30 November, New Delhi, India.

Micheni A., Kanampiu F. and **Kitonyo O.**, Ouma J., Ngoroi E., Mutinda C. 2012. Experiences in establishing local innovation platform to disseminate conservation agriculture techniques in Eastern Kenya. 13th KARI Biennial Scientific Conference. 22-26 October, KARI headquarters, Nairobi.

Micheni A., Kanampiu F., **Kitonyo O.** 2012. Intensification of maize-legume cropping systems under conservation agriculture in Eastern Kenya. 13th KARI Biennial Scientific Conference. 22-26 October, KARI headquarters, Nairobi.

Kitonyo, O. M., Chemining'wa G. N., Muthomi. J. W. 2011. Performance of farmer-preferred maize varieties intercropped with beans in semi-arid Kenya. Agro 2011 1st Biennial Conference of the Faculty of Agriculture. 26-28 September, College of Agriculture and Veterinary Sciences, University of Nairobi, Nairobi.

Chemining'wa, G.N., **Kitonyo O. M.**, Nderitu J. H. 2011. Status, constraints and marketing opportunities for canning navy bean in Kenya. Agro 2011 1st Biennial Conference of the Faculty of Agriculture. 26-28 September, College of Agriculture and Veterinary Sciences, University of Nairobi, Nairobi.

Research Students Supervision

Student name	Program	Research title	Role
Moi Peter Elia A56/7825/2017	MSc, Agronomy	Effect of intercropping sorghum with cowpea and fertilizer application on growth and yield of sorghum (<i>Sorghum bicolor</i> L.)	Co-supervisor
Nasimiyu Gloria Werunga A56/7268/2017	MSc, Agronomy	Effect of rate and timing of nitrogen application on growth and yield of seedcane crop (<i>Saccharum spp.</i> Hybrid) in western Kenya	Co-supervisor
Kamau Joseph A56/6963/2017	MSc, Agronomy	Effect of tillage, residue retention and nitrogen fertilizer on growth and yield of snap bean (<i>Phaseolus vulgaris</i> L.)	Co-supervisor
Memba Kenneth Indiatsi A56/6573/2017	MSc, Crop Protection	Effect of no-till, furrow-ridge and cow manure on root knot nematode infestation on green grams in contrasting environments	Co-supervisor
Robert Okumu Hakim James A56/7827/2017	MSc, Agronomy	Effect of tillage practices and mulching on growth, nodulation and yield of green grams and moisture retention in semi-arid environments	Co-supervisor
Rotich Stephen A56/5798/2017	MSc, Plant Breeding and Biotechnology	Flower induction of eucalyptus grandis and controlled pollination of eucalyptus species as the first step to enhance eucalyptus breeding programs in Kenya	Co-supervisor
Uzamushaka Seraphine	MSc, Agronomy	A comparative analysis of maize-legume cropping systems under conservation and conventional tillage practices in western Kenya	Co-supervisor

Training, Short Courses and Professional Workshops

May 29, 2018: The Future of Food Fortification Workshop. College of Agriculture and Veterinary Sciences, University of Nairobi, Kenya.

March 2015: Research and Grant Proposal Writing, University of Nairobi Enterprises and Services Limited, University of Nairobi, Kenya

February 2013: Integrated Soil Fertility Management Training Workshop (Application of Nutrient Expert Decision Support Tool), Harare, Zimbabwe.

September 2012: APSIM Training Workshop, CIMMYT, Harare, Zimbabwe.

May 2012: Conservation Agriculture and Innovation Platforms Formation and Operationalization: Ethiopian Institute of Agricultural Research, Melkassa, Ethiopia.

November 2012: CIMMYT FieldBook Training Workshop, KARI, Embu, Kenya.

Awards

2018 Dean's commendation for doctoral thesis excellence, Faculty of Sciences, University of Adelaide, 2018

2017 K.P. Barley Prize for outstanding academic achievement in PhD studies in agricultural sciences, Faculty of Sciences, University of Adelaide, 2017

2015 Australia Awards; AUD 10,000 funding for PhD research project in Kenya

2014 Australia Awards; 4 year full PhD scholarship at the University of Adelaide, South Australia

Community Responsibilities

2018 to date: Deputy Examinations Officer department of Plant Science and Crop Protection, University of Nairobi.

2018 to date: Chairman, Students Attachment Committee, department of Plant Science and Crop Protection, University of Nairobi.

2018 to date: Coordinator for MSC in Agricultural Resource Management program, department of Plant Science and Crop Protection, University of Nairobi.

2018 to date: Member, Faculty Strategic Plan, Faculty of Agriculture, University of Nairobi.

Reviewer for peer reviewed journals: Field Crops Research, Crop & Pasture Science, RUFORUM Biennial Conference, 22-26 October, 2018, Nairobi, Kenya

Referees

- Prof G. N. Chemining'wa: Associate Professor, University of Nairobi: Department of Plant Science and Crop Protection. P.O Box 29053 – 00625, Kangemi, Nairobi. Phone: +254 (0) 721 723 806. Email: umchemin@hotmail.com
- Prof L. S. M. Akundabweni: Associate Professor, University of Nairobi: Department of Plant Science and Crop Protection. P.O Box 29053 – 00625, Kangemi, Nairobi. Phone: +254 (0) 722 716 517. Email: proflevimudogo@yahoo.com
- Prof V. O. Sadras: Associate Professor, South Australian Research and Development Institute (SARDI), Waite Campus, Urrbrae, 5064, South Australia. Email: victor.sadras@sa.gov.au
- Prof. M.D. Denton: Associate Professor, University of Adelaide, Waite Campus, Urrbrae, 5064, South Australia. Email: matthew.denton@adelaide.edu.au