

Professor. Muoma John Vincent Omondi



Associate Professor

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Objective Research, Teaching and Training with a key objective of improving plant quality and development of new products through genetic engineering.

Research Work

My research work is focused on using modern biology tools to develop new crop management systems to conserve and improve crop production. As a Genetic Engineer working on molecular platform, am using high throughput molecular biology systems, to map genes, important in improving plant tolerance to adverse condition. As routine lab work, I have developed transformation protocols for selected germplasms tolerant to the arid regions. My other work has involved:

- i) *Agrobacterium tumefaciens* mediated introgression of drought tolerant gene into selected Kenyan maize lines
- ii) Gene identification, characterization and mapping within populations
- iii) Development of regeneration protocols for important crops
- iv) Regeneration of clean planting material through tissue culture
- v) Molecular characterization/ profiling of rhizobium species found in western Kenya
- vi) Determination of molecular identity of cowpeas found in the ECA region
- vii) Improvement of cropping system in maize and bean farms in western Kenya by improving soil quality and pest management
- viii) Sustainable use of organic waste from lake victoria to improve the livelihood of the community around lake victoria basin (LVB).
- ix) Mapping of mosaic virus in western Kenya

Teaching Courses

Courses/ Area of teaching

1. Genetic Engineering
2. Advances in Plant Biotechnology
3. Biotechnology and crop improvement
4. Molecular Biology

Education	<p>June/2016-2019</p> <p>June 2019</p>	<p>TWAS- UNESCO Post Doc Research-Associateship between Center of Genomics Sciences, Mexico- Dept. of Biological sciences, MMUST,</p> <p>Research Objectives: Study of Transcription factors responsible for Rhizobium in common beans (<i>Phaseolus Vulgaris</i>)</p>
	<p>March/12-Nov/12</p>	<p>Fulbright Scholar on Post doc training at Waksman Institute of Microbiology, The University of New Jersey, Rutgers, Busch Campus, Piscataway, 08854, US</p> <p>Research objective: Development of a Platform for transformation of Duck weed and transformation of maize to introduce rheological properties in maize flour</p> <p>§ Mentor; Prof Jo Messing</p>
	<p>Aug/02 – June/09</p>	<p>Ph.D. biotechnology, Kenyatta University, Kenya in collaboration with Iowa State University, Ames Iowa, US funded by the Rockefeller foundation.</p> <p>Thesis; <i>Agrobacterium tumefaciens</i> mediated introgression of <i>Nicotiana</i> protein kinase (NPK1) in selected Kenyan Maize genotypes to enhance drought tolerance</p> <p>§ Mentor; Prof Jesse Machuka</p> <p>§ Mentor; Prof Geoffrey Muluvi</p>
	<p>Sept/95- Jan/98</p>	<p>MS in Biotechnology, University of Mysore, India.</p> <p>Project entitled Biotechnological approach in reduction of antinutrient (phytate) in oil seed meals at central Food Technological Research Institute (C.F.T.R.I.)-Mysore India.</p> <p>§ Mentor; Dr Richard Joseph</p>
	<p>Aug/91 – June/05</p>	<p>B.Sc., Botany, Zoology and Biochemistry, Dr Ambedkar Marathwada University, Aurangabad, India.</p> <p>§ Honor Student</p>
	<p>Jan/88 – Dec/89</p>	<p>Kenya Advanced Certificate Education, Aga Khan Academy, Nairobi,</p> <p>2Principals & 1 Sub.</p>
	<p>Feb/84 – No/87</p>	<p>Kenya Certificate of Education, Moi Forced Academy, Nairobi,</p> <p>2nd Division.</p>
	<p>Jan/77 – Nov/83</p>	<p>Certificate of Primary Education, Khalsa South C Primary.</p> <p>36 Points</p>

- Experience**
- 04/13 to Present **Department of Biological Science,**
Masinde Muliro University of Science and Technology, Kakamega, Kenya
Position: Senior Lecturer
Responsibility; Teaching/ Research
- 04/11 – 03/13 **Department of Biological Science,**
Masinde Muliro University of Science and Technology, Kakamega, Kenya
Position: Lecturer
Responsibility; Teaching/ Research
- 08/06 – 03/11 **Department of Biochemistry and Biotechnology**
Kenyatta University, Nairobi, Thika Rd, Kenya
Position: Lecturer
Responsibility; Teaching/ Research
- 08/99 – 08/06 **Department of Biochemistry and Biotechnology**
Kenyatta University, Nairobi, Thika Rd, Kenya
Position: Tutorial Fellow
Responsibility; Teaching/ Research
Molecular Genetics Dept,
- 08/98 – 08/99 **National Museum of Kenya (NMK), Museum Hill, Nairobi, Kenya**
Position: Assistant Scientist
Responsibility; Development of a diagnostic Kit against Hydatid disease
- Vacation**
- Classes** Nakalira School, Kimilili, Kenya
Position; Biology & Chemistry Teacher
- Post- Doc**
- 07/2016-19 Center of Genomics Sciences, Mexico- Dept of Biological sciences, MMUST, TWAS- UNESCO Associateship- Study of Transcription factors responsible for Rhizobium in common beans (*Phaseolus Vulgaris*)
- 03/12-10/12 Waksman Institute of Microbiology, The University of New Jersey, Rutgers, Busch Campus, Piscataway, 08854, US
Development of Platform for transformation of Duckweed and transformation of maize to introduce rheological properties in maize flour

PhD Training	01/05-07/05	Plant Transformation Facility, Iowa State University, Ames, Iowa, 50011-51010, US: Training on Plant transformation; Introgressions of genes into Maize, Arabidopsis, Carrots and Tobacco using Agrobacterium tumefaciens. Molecular analysis of transgenic plants
Course Work	02/Feb/05-15/April/05 3/June/05-15/July/05	Course work involved a practical oriented class; ZOO 542D Spring 2005 Plant transformation using A. tumefaciens and particle gun –mediated. Attended course work which involved a practical class; ZOO 542A Summer DNA techniques include procedures, sequencing, PCR and genotyping
Technical Proficiency		Experimental: Maize, Arabidopsis, Carrot & Tobacco Tissue Culture technique. Molecular analysis of Transgens. Gene constructs Instrumental: Spectrophotometer, Helium Biolistic gene Gun, Polymer Chain Reaction Analyzer, Gel analysis

Selected Conferences

28thsept-28 th sept 19 5-9/sept/16	DAAD conference at Brandenburg University of Applied Sciences African Green revolution Forum- 2016 at United Nation Environmental P (UNEP) Gigiri-Nairobi Kenya
26-29/May/14	Africa IUCEA/vicRes-LVBC joint scientific conference Imperial Golf View Hotel, Entebee, Uganda VicRes Biennial conference 2011, Speke Munyonyo Resort, Kampala, Uganda
22- 26 Sept/08	ABSF 1st Biotechnology conference, Laico Agency Nairobi
26-29March/07	Third general meeting on Biotechnology, Breeding and Seed systems for African crops funded by the Rockefeller foundation and Instituto de Investigação Agronomica de Moçambique Biotechnology, Joaquim Chissano International Conference Centre Maputo, Mozambique
05-09/Dec/05	The 7th African Crop Science Society Conference, Imperial Resort Beach Hotel, Entebbe Uganda
02-05/Jun/05	
10-13/March05	Meristems 2005 Plant Science Institute Symposium, Scheman Building, Iowa State University, Ames Iowa, 50011-51010 US.
02-03Oct/01	47th Annual Maize Genetic Conference, Grand Geneva Resort, Lake Geneva, Wisconsin, 55008 US.
15-19March97	Sixth Biochemical Society of Kenya annual Conference meeting on Biochemistry and Biotechnology for improving Health and Food resources held at the Department of Biochemistry, P.O Box 30197, University of Nairobi, Kenya.

Biotechnology as a tool to Improve food quality held at the Centre of Food
Technology Research Institute (C.F.T.R.I) Mysore- 570013 India.

Professional/Consultancy

1. Biotechnology dossier analyst/consultant for the National Biosafety Authority
2. Peer Reviewer for Hindawi- International Journal of Genomics
3. Founder Member Agro-Ecosystem Consortium MMUST
4. TOT on HIV data management-NASCOP

Workshops

6 Sept 16	Innovation partners workshop by Kenya Innovation Association (KENIA) at Utalli Hotel-Thika Road Nairobi Kenya
16-18 May/16	7th Consortium of New South Africa Medical Schools (CONSAMS) Workshop Golf Hotel Kakamega Kenya
28 Jun-4 Jul 2014	Risk Assessment of genetically modified products 'GMO' at International Center of Genetic Engineering and Biotechnology, Trieste, Italy
2 Jun-6 Jun 2014	Proposal Development Workshop for "capacity Development for sustainable Plant Genetic Resources Utilization and Conservation in the ECA region, Imperial Resort Beach Hotel Entebbe Uganda
21 Oct-25 Oct 13	Workshop on Application of Bioinformatics in Molecular Biology, at International Center of Genetic Engineering and Biotechnology, New Delhi, India
28 July - 2 Aug 13	Agricultural Research Connections Workshops Biosciences eastern and central Africa Hub - International Livestock Research Institute (BecA-ILRI Hub), Nairobi, Kenya
12 July 12-27 July 12	Human Genetics Institute of New Jersey and Leica Microsystems Summer Course Series Life The University of New Jersey, Rutgers, Sciences Building 145 Bevier Road Piscataway, NJ 08854
19 April 10-20 April 10 4 Aug-8 Aug/08	Regional Workshop on Biosafety Policies and Guidelines, Hilton Hotel, Nairobi
24 July-25 July/08	Agro-biodiversity and Biotechnology Program Project monitoring and evaluation Workshop on drought Tolerant Maize Project at Grand Imperial hotel, Kampala, Uganda
10-14 March/08	Agro-biodiversity and Biotechnology Program Inception Workshop for the drought Tolerant Maize Project at Regency Park hotel, Dar-es-salaam, Tanzania
07-10 March/05	Agro-biodiversity and Biotechnology Program Proposal Workshop for the drought Tolerant Maize Project at Grand Imperial hotel, Kampala, Uganda http://www.as-areca.org/resources/reports/AgriForum-Issue%2001.pdf
04- 08/Oct/04	NSF Maize Transformation Workshop organized by Dr Kan Wang, Iowa State University & Heidi Kaeppler University of Wisconsin and held at University of Wisconsin, Madison WI 53706 US. http://www.agron.iastate.edu/ptf/symposiums/2005.aspx
6-12 Sept 04	Environmental Microbiology Workshop held by the Microbiology Society of Kenya at Kenyatta University. Instructor; Jerry Johnson, Dept. of Molecular Biology, Wyoming University, 82620, US
15/Oct/ -26/Oct/01	

15 March
/2005

3 June/
2005

Bioinformatics Workshop held by the Biochemical Society of Kenya at the Dept. of Biochemistry and Molecular Biology, Egerton University, P.O Box 536, Njoro, Nakuru, Kenya.

Workshop on "Entomological, Parasitological and Managerial Methods for Malaria Surveillance and Control in Africa" held at ICIPE Mbita Point Field Station (MPFS) Western Kenya.

Research tour to Pioneer Hi Breed International, Inc laboratories, 7000 NW 62nd Ave. P.O Box 1000, Johnston, Iowa 50131-1000, US

Small Scale farming in Iowa State (1120 acres) farm tour as part of Meristem 2005 Conference. Learning farming Method by Farmers in Iowa where 50% of arable land in US is found

Attracted Research Grant

1. Lake Victoria Research Initiative (VicRes) Grant no. NR-03-2010. USD 600,000 (2011-14) John Omondi Muoma Principal Investigator: Production of organic fertilizer from water hyacinth (*Eichhornia crassipes* [Mart.] Solms) for organic farming and conservation of ecosystem in Lake Victoria basin.

<http://vicres.net/index.php/menu-examples/projects-funded-in-2010>

2. Fulbright Scholarship 2011-12 USD 18,000 Development of a Platform for transformation of Duckweed and transformation of maize to introduce rheological properties in maize flour. <http://www.waksman.rutgers.edu/messaging/people/m>

3. Seeding Lab Equipment transfer Sept 2013 USD 1 Million worth of equipment to enable equip the Dept. of biological Science laboratories, MMUST with latest research equipment. www.seedinglabs.org

4. Association for Strengthening Agriculture in ECA region (ASARECA) Agro-biodiversity and Biotechnology program USD 1.3 Million (2014-18) John Omondi Muoma (Co-PI) Capacity development for conservation and utilization of plant genetic resources for agricultural productivity, resilience and sustainable livelihoods in ECA www.asareca.org

5. NACOSTI- Funding 2014

a. Molecular diversity of Tunga penetrans- MMUST Ksh 200,000/-

b. Diversity of Rice Yellow Mottle virus (RYMV)-MMUST ksh 200,000/-

6. NACOSTI -Funding 2015

a. Characterization of root nodulating rhizobium in cowpea- MMUST Ksh 200,000/-

b. Farmers attitudes toward adoption of water hyacinth (*Eichhornia crassipes* [Mart.] Solms) as an organic fertilizer- MMUST Ksh 500,000/-

7. TWAS- UNESCO Associateship- Dept. of Biological Sciences, MMUST- Center of Genomics Mexico, Mexico (2016-2018) Common Bean (*Phaseolus Vulgaris*) transcription levels relevant for rhizobium symbiosis USD 10,000

8. Kenya-SA collaborative research 2016-18. Plant viral pathogens in Kenya- US 50,000

Book Chapters

Sustainable Land Management in Dry Lands of Kenya (2015). *Improving land management through Participatory Research and Technology Transfer- Chapter 9* ISBN-978 9966 1805 5 1. http://slmkenya.org/sites/default/files/slm_book.pdf

Books Edited

Tissue culture, conservation Biotechnology, Virus indexing and seed systems of vegetative crops

<http://www.asareca.org/sites/default/files/Tissue%20culture%20conservation%20biotechnology%20and%20seed%20systems.pdf>

Professional Body Membership

-Global Outreach Member of the American Society for Microbiology

-National Biosafety Authority Expert July 2016-July 2018

-International Exchange Alumni – US

-Agricultural Biotechnology Network (ABNETA)

-African Biotechnology Stakeholder Forum (ABSF) Member

-African Bioscience group

Publications & Their Live link

1. Accessions in the NCBI database (71 different ACCESSION) equivalent to 38 different agricultural important BACTERIA's identified in Nyanza, Kakamega and Bungoma Counties in gene bank:<https://www.ncbi.nlm.nih.gov/nuccore/?term=muoma>
2. Olipher Makwaga, Maureen Adhiambo, David Hughes Mulama, **John Muoma**, Ferdinand Adungo, Humphrey Wanjiku, Asiko Ongaya, Geoffrey Mutisya Maitha, Matilu Mwau (2020) *Prevalence of human immunodeficiency virus-1 drug-resistant mutations among adults on first- and second-line antiretroviral therapy in a resource-limited health facility in Busia County, Kenya. Pan African Medical Journal. 2020;37:311. [doi: 10.11604/pamj.2020.37.311.25909]*
3. Alinda Alfred K., Okoth Patrick , Onamu Rose, David Read Genevieve Thompsons and **Muoma John** (2020) Next Generation Sequencing Platforms for Potato Virus Hunting, Surveillance and Discovery. African Journal of Bacteriology Research Vol. 12(1), pp. 1-11, DOI: 10.5897/JBR2020.0307 Article Number: 01040DC64155 ISSN 2006-987
4. Fanuel Kawaka & **John Muoma** (2020) Distribution and phenotypic characteristics of common bean (*Phaseolus vulgaris* L.) nodulating bacteria in diverse soils, Acta Agriculturae Scandinavica, Section B — Soil & Plant Science, 70:7, 564-571, DOI: [10.1080/09064710.2020.1807595](https://doi.org/10.1080/09064710.2020.1807595)
5. Read, D.A.; **Muoma, J.**; Thompson, G.D. (2020) Metaviromic analysis reveals coinfection of papaya in western Kenya with a unique strain of Moroccan watermelon mosaic virus and a novel member of the family Alphaflexiviridae. Arch. Virol. 2020, 165, 1231–1234: <https://www.researchgate.net/publication/344712744> High-Throughput Sequencing Application in the Diagnosis and Discovery of Plant-Infecting Viruses in Africa A Decade Later
6. Dennis Beesigamukama, John Baptist Tumuhairwe, **John Muoma**, John M. Maingi, Omwoyo Ombori, Dative Mukaminega, Josephine Nakanwagi, Alice Amoding (Dec 2018) *Improving Water Hyacinth-Based Compost for Crop Production*. journal of Agricultural Science and Food Technology Vol. 4 (3), pp.52-63 May, 2018 ISSN: 2465-7522 <http://pearlresearchjournals.org/journals/jasft/index.html> <https://www.researchgate.net/publication/329567396> Improving Water Hyacinth-Based Compost for Crop Production
7. Fanuel Kawaka, Huxley Makonde, Mathews Dida Peter Opala, Omwoyo Ombori, John Maingi **John Muoma** (Nov 2018) *Genetic diversity of symbiotic bacteria nodulating common bean (Phaseolus vulgaris) in western Kenya*. PLoS ONE 13(11):e0207403 DOI:10.1371/journal.pone.0207403 <https://www.researchgate.net/publication/328978290> Genetic diversity of symbiotic bacteria nodulating common bean Phaseolus vulgaris in western Kenya

8. Dennis Beesigamukama, Alice Amoding, Katusabe, John Baptist Tumuhairwe **John Muoma**, JohnMaingi, Omwoyo Ombori, Josephine Nakanwagi, Dative Mukaminega (Sept 2017) *Agronomic effectiveness of water hyacinth-based composts*. Vol. 13(39), pp. 2055-2062 DOI: 10.5897/AJAR2018.13440 104372558701 ISSN: 1991-637X <https://www.researchgate.net/publication/328139561> Agronomic effectiveness of water hyacinth-based composts
9. Celestine N. Manyasi Dennis M.W. Ochieno, Francis N. Muyekho, **John Muoma**, Mwikali Pamela, Victoria Naluyange (2018) Soil Maize Cultivar-related Challenges on Striga hermonthica Infested Fields in Western Kenya Journal of Plant Studies; Vol. 7, No. 2; 2018 ISSN 1927-0461 E-ISSN 1927-047X Published by Canadian Center of Science and Education
10. Fanuel Kawaka, Mathews Dida, Peter Opala, Omwoyo Ombori, John Maingi, Alice Amoding & **John Muoma** (July 2018): *Effect of nitrogen sources on the yield of common bean (Phaseolus vulgaris) in western Kenya*. ISSN: 0190-4167 (Print) 1532-4087 (Online) Journal homepage: <http://www.tandfonline.com/loi/lpla2> <https://www.researchgate.net/publication/325175414> Effect of nitrogen sources on the yield of common bean Phaseolus vulgaris in western Kenya
11. Wamalwa ENI, **Muoma J**, Muyekho FN, Wekesa C and Ajanga *Genetic Diversity of Fusarium Oxysporum Races Associated with Cowpea Fields in Kakamega County*. Fungal Genom Biol, an open access journal ISSN:2165-8056 Volume 8 • Issue 2 • 1000156 DOI: 10.4172/2165-8056.1000156 : <https://www.researchgate.net/publication/330469903> Genetic Diversity of Fusarium Oxysporum Races Associated with Cowpea Fields in Kakamega County
12. Okoth Patrick, **Muoma John**, Omayio Dennis, Barasa Mustafa, Angienda Paul *Molecular Footprint of Kenya's Gene Bank Repositories Based on the cp -Genome Signature* American Journal of Molecular Biology, 2018,8, 215-244 <http://www.scirp.org/journal/ajmb> ISSN Online: 2161-6663 ISSN Print:2161-6620 DOI:10.4236/ajmb.2018.84019 Oct. 30,2018 215 <https://www.researchgate.net/publication/328584437> Molecular Footprint of Kenya's Gene Bank Repositories Based on the cp -Genome Signatures
13. Adegbo AK, Were HK, **Muoma J**, Mukoye B Hebrard E, PinelGalzi A, Poulicard N (2017) Current Status of Rice yellow mottle disease in western Kenya. Research Journal of Africa, Vol. 4 | No. 9 November | 2017
14. Clabe Wekesa, **John Muoma**, Omwoyo Ombori, John Maingi, Daniel Okun Kelvin Juma Patrick Okoth, Emily Wamalwa, Mario Kollenberg, Eliakim Mauti (2017) Genetic Characterization of Rhizosphere Bacteria that Inhabit Common Bean Nodules in Western Kenya Soil Appli Micro Open Access 3:1 DOI: 10.4172/2471-9315.1000128

15. **Muoma John(2016)** Production of Organic Compost from Water Haycinth (*Eichhornia crassipes* [Mart.] Solms in the Lake Victoria Basin: A Lake Victoria Research Initiative (VicRes) Research & Reviews: Journal of Agricultural and Allied Sciences e-ISSN:2347-226X p-ISSN:2319-9857
16. Emily Wamalwa, **John Muoma**, and Clabe Wekesa **(2016)** Genetic Diversity of Cowpea (*Vigna unguiculata* (L.) Walp.) Accession in Kenya Gene Bank Based on Simple Sequence Repeat Markers. *Accepted in Hindawi Journal of Genomics*
17. Okoth Patrick, **Muoma John**, E Mulaya, Clabe Wekesa, Omayio O. Dennis, Angienda O. Paul **(2016)**. The Potential of DNA Barcode-Based Delineation Using Seven Putative Candidate Loci of the Plastid Region in Inferring Molecular Diversity of Cowpea at Sub-Species Level American Journal of Molecular Biology, 2016, 6, *-* ISSN Online: 2161-6663 ISSN Print: 2161-6620 <http://www.scirp.org/journal/ajmb>
18. Clabe Simiyu Wekesa, Daniel Okun, Kelvin Juma, Dalmas Shitabule, Patric Okoth, Peter Nyongesa, Athanas Katoo, Samuel Mulamu, Emily Wamalwa, Clarice Mahalo, Moses Kyoto, Aron Rotich, Fanuel Kawaka, **John Muoma (2016)** Abundance and Symbiotic Potential of Common Bean (*Phaseolus vulgaris*) Nodule Associated Bacteria in Western Kenya Soil vol 1:2016 <http://www.mayfeb.com/OJS/index.php/AGR/article/view/69>
19. Victoria Naluyange, Dennis M. W. Ochieno, Philip Wandahwa, Martins Oendo, John M. Maingi, Alice Amoding, Omwoyo Ombori, Dative Mukaminega, **John Muoma (2016)** Below-ground Influence of Rhizobium Inoculant and Water Hyacinth Composts on Yellow Bean Infested by *Aphis fabae* and *Colletotrichum lindemuthianum* under Field Conditions Journal of Plant Studies ISSN 1927-0461 DOI: <http://dx.doi.org/10.5539/jps.v5n2p32>
20. Muna Grace, **John Muoma**, Mwanzia Benson, Dorington Agoyi **(2015)** African Journal of Biotechnology Antioxidant Properties of Cultivated Edible Mushroom (*Agaricus bisporus*) in Kenya. African journal of Biotechnology 53 14(16):1401 - 1408 DOI: 10.5897/AJB2015.14436
21. Fanuel Kawaka, Mathews M. Dida, Peter A. Opala, Omwoyo Ombori, John Maingi, Newton Osoro, Morris Muthini, Alice Amoding, Dative Mukaminega, and **John Muoma (2014)** Symbiotic Efficiency of Native Rhizobia Nodulating Common Bean (*Phaseolus vulgaris* L.) in Soils of Western Kenya.

22. Fanuel Kawaka*, John Kimenju, Sheila A. Okoth, George Ayodo, Shelmith Mwaniki, **John Muoma** and George Orinda (2014) Effects of Soil Chemical Characteristics on the Occurrence of Entomopathogenic Nematodes. *British Journal of Applied Science & Technology* 4(16): 2333-2343 <http://www.sciencedomain.org/abstract.php?iid=492&id=5&aid=4281#.U1wAYDmXJdg>

23. A.K Osogo, **J. Muoma**, P. Nyamwamu, C.N. Omuse H. K. Were (2014) Occurrence and Distribution of Cassava Brown Streak Viruses in Western Kenya. *Journal of Agri-Food and Applied Sciences (JAAS)*, Volume 2, Issue 7. <http://www.abstract.xlibx.com/a-biology/102384-1-occurrence-and-distribution-cassava-brown-streak-viruses-wester.php>

24. **John Vincent Omondi Muoma**^{1*}, Omwoyo Ombori² Agrobacterium-Media mediated Transformation of Selected Kenyan Maize (*Zea mays* L.) Genotypes by Introgression of Nicotiana Protein Kinase (npk1) to Enhance Drought Tolerance (2014) *American Journal of Plant Sciences*, 2014, 5, 863-883 <http://www.scirp.org/journal/ajps> <http://dx.doi.org/10.4236/ajps.2014.56100>

25. Victoria Naluyange, Dennis M.W. Ochieno, John M. Maingi, Omwoyo Ombori, Dative Mukaminega, Alice Amoding, Martins Odendo, Sheila A. Okoth, William A. Shivoga, **John V.O. Muoma** (2014) Compatibility of Rhizobium inoculant and water hyacinth compost formulations in Rosecoco bean and consequences on *Aphis fabae* and *Colletotrichum lindemuthianum* infestations. *Applied Soil Ecology*, 76 (2014) 68-77 <http://www.sciencedirect.com/science/article/pii/S0929139313003132>

27. Morris Muthini¹, John M. Maingi², **John O. Muoma**³, Alice Amoding⁴, Dative Mukaminega⁵, Newton Osoro², Allan Mgtutu¹ and Omwoyo Ombori² (2014) Morphological Assessment and Effectiveness of Indigenous Rhizobia Isolates that Nodulate *P. vulgaris* in Water Hyacinth Compost Testing Field in Lake Victoria Basin. *British Journal of Applied Science & Technology* 4(5): 718-738 http://www.sciencedomain.org/abstract.php?iid=361&id=5&aid=2648#.U1v_GDmXJdg
28. Charles K. Kigen, Dennis, M. W. Ochieno, **John. O. Muoma**, William A. Shivoga, Martha Konje, Zedekiah Onyando, Benard C. Soi, Stanley M. Makindi, Philip M. Kisoyan and John M. Mironga (2014) Spatial Modeling of Sorghum (*Sorghum bicolor*) growing areas in Kenyan Arid and Semi-Arid Lands. *Remote Sensing* 66 (2014) 20674-20678
29. Newton Osoro¹, **John O. Muoma**², Alice Amoding³, Dative Mukaminega⁴, Morris Muthini⁵, Omwoyo Ombori¹ and John M. Maingi¹ (2014) Effects of Water Hyacinth (*Eichhornia crassipes* [mart.] solms) Compost on Growth and Yield Parameters of Maize (*Zea mays*). *British Journal of Applied Science & Technology* 4(4): 617-633 http://www.sciencedomain.org/abstract.php?iid=319&id=5&aid=2534#.U1v_izmXJdg
30. Omwoyo Ombori, **John Vincent Omondi Muoma** Jesse Machuka (2014) Agrobacterium-mediated genetic transformation of selected tropical inbred and hybrid maize (*Zea mays* L.) lines. *Plant Cell, Tissue & Organ Culture, Plant Cell, Tissue Organ Culture*, 113 (1)11-23 <http://link.springer.com/article/10.1007/s11240-012-0247-1>
31. Omwoyo Ombori, **John O. Muoma** and Jesse Machuka (2014) Effect of the medium used in the growth of Agrobacterium strain on subsequent *gus* expression of the infected immature zygotic embryos of the tropical maize line. *Maize Genetics Cooperation Newsletter* vol 87 2013 <http://www.agron.missouri.edu/mnl/87/pdf/14Ombori.pdf>
32. Omwoyo Ombori, **John O. Muoma** and Jesse Machuka Agrobacterium mediated transformation of leaf derived callus of tropical maize (*Zea mays* L.) inbred lines *Maize Genetics Cooperation Newsletter* vol 87 2014 <http://www.agron.missouri.edu/mnl/87/pdf/15Ombori.pdf>
33. **John O. Muoma**, Dennis M.W. Ochieno and Amos E. Alakonya Farmers in Sub-Saharan Africa cry for tightly closed ear drooping maize phenotypes *Maize Genetics Cooperation Newsletter* vol 86 2012 www.agron.missouri.edu/mnl/86/html/16muoma.htm

34. J.F. Kawaka, G. O. Orinda, G. Ayodo, **J.O. Muoma**, S. W. Mwaniki, S.O. Okoth, J.W. Kimenju (2011). Impact of land use on the distribution and diversity of entomopathogenic nematodes (EPNs) in Embu and Taita districts, Kenya. *Journal of tropical and sub-tropical Agro-ecosystem* 13(2011):59-63 <http://redalyc.uaemex.mx/src/inicio/ArtPdfRed.jsp?iCve=93916247008>

35. **John Muoma**, Omwoyo Ombori, Jesse Machuka Improvement in Inheritance of somatic embryogenesis and plantlet regeneration in tropical Maize lines from friable Callus Maize. *Genetics Cooperation Newsletter vol 85 2011* www.agron.missouri.edu/mnl/85/HTML/32muoma.htm

36. Ombori, O., Gitonga N.M., **Muoma**, O. Kiogora, D. and Ngugi, M. (2010). Cost effective approaches for in vitro mass production of banana (*Musa sapientum* L.) plantlets in Kenya. Proceedings of the 1st East African regional scientific conference of Pure and Applied Sciences held at Kenyatta University, Nairobi, Kenya

37. **Muoma John**, Muluvi Geoffrey, Machuka Jesse (2010). Review of the current status of molecular approaches for the management of drought stress in Sub-Saharan Africa. *Biotechnology* 9(4): 469-476 <http://docsdrive.com/pdfs/ansinet/biotech/0000/21597-21597.pdf>

38. **Muoma John**, Muluvi Geoffrey, Machuka Jesse (2008). *In-vitro* regeneration of selected maize genotypes by organogenesis using shoot apices. *Biotechnology* 7(4): 732-738 <http://docsdrive.com/pdfs/ansinet/biotech/2008/732-738.pdf>

39. **John Muoma**, Mumah S.C. J. W Mwaniki (2003) Applications of biotechnology in fostering health and well-being: directions for health and medical research in developing countries <https://www.researchgate.net/publication/309765166> Applications of biotechnology in fostering health and well-being directions for health and medical research in developing countries

Papers in non-referee journal Presentation & Posters

1. 6th Annual Biosafety Conference Presentation- Development of a Duckweed Trans-formation Platform for Mass Production of Food and Feed at the **School of Monetary Studies 2nd-6th September 2017**
2. *7th Consortium of New South Africa Medical School- Genetics and Medicine at Golf Hotel Kakamega -Kenya 16th- 18 May 2016*
3. *Seeding lab Award to Masinde Muliro University of Science and Technology at 50 Milk St, Boston, MA 02109, US 23rd-24 July 2015*
4. *Developemtent of a regeneration and transformation protocol for Duckweed Jo Messing Lab, Waksman Institute of Microbiology, NJ, US 11th oct 2012*
5. *End of year 1 project report to the VicRes and Visac committee at Serena Hotel, Kigali Rwanda 16th-17June 2011*
6. *Team building workshop on the Water hyacinth project at Kichukuru Sisters Hostel, Kigali Rwanda 16th - 21st Feb 2012*
7. *Lake Victoria Research Initiative First VicRes Biennial conference commonwealth speke Munyonyo resort Kampala Uganda from 9- 12 October 2011*
8. *Presentation on the importance of sorghum as a future major food crop for the ECA region. Hope Project by Africa Harvest international Laico Agency hotel from 2nd to 4th July2011*
9. *Participate in the RABESA-II Regional Workshop on Draft Biosafety Policies and Guidelines, 19-20 April 2010, Hilton Hotel, Nairobi, Kenya.*
10. *1st All Africa Congress on Biotechnology held in Nairobi, Kenya at the Laico Agency hotel from 22nd to 26th September 2008.*
11. *Transformation of Tropical maize for drought tolerance at Plant transformation laboratory at Kenyatta university at ASERECA Workshop at Imperial Hotel Kampala, Uganda 10th -14th March 2008*
12. *Agrobacterium Tumefaciens mediated introgression of Nicotiana Protein Kinase (NPK1) in selected Kenyan lines to enhance drought stress tolerance. 3rd Biotechnology, Breeding and Seed System for African Crop conference, Maputo, Mozambique 26th- 29th March 2007*
13. *Direct and indirect organogenesis using shoot meristem from mature seeds as an explant. 7th African Crop Science Conference, Entebbe Uganda 5th- 12th December 2005*
14. *Up regulation of β - carotene in elite Kenyan inbred line to improve bioavailability of vitamin A levels. Madison Workshop, US March 2005*
15. *β - Carotene levels in Kenyan maize in relation to the daily requirement of Vitamin A per meal. Kenyatta University, Thika Rd, NBI, Kenya July 2004*
16. *Improvement of animal nutritional feed value by addition of extacellular phytase in monogastric animal feed formulation. Kenya Industrial Research Development Institute. K.I.R.D.I, Dunga Rd, NBI, Kenya, March 2004*
17. *Improvement of Malaria management by glutamine supplementation to the available antimalarial regime. Mbita Point Workshop, I.C.I.P.E Mbita, Kenya Oct 2001*

Completed Supervision

PhD Graduates

1. Kawaka Fanuel (M.Sc.) PG/PHD/0008/2012 The potential impact of water hyacinth compost and *Rhizobium* inoculum on maize and common bean production in the Lake Victoria Basin. VicRES funding PhD Maseno University, **2016**
2. Okoth Patrick (MSc) PG/PHD/142/2011 Molecular typing and phylogenetic clustering of cowpea [*vigna unguiculata (l.) walp.*] germplasm accessions within the varied Eastern Africa Agro-Ecological regions ASARECA funding PhD Maseno University **2017**
3. Emily Wamalwa(Msc) SCP/PHD/002/2014 Genetic and phenotypic Characterization of Cowpea (*Vigna Ungalatus*) and their response to fusarium wilt pathogen in Western Kenya PhD Masinde Muliro University of Science and Technology. **2018**

MSc Graduates

1. Wandera Ernest Apondi (BSc.) I56/12261/09 Prevalence and Molecular Characteristics of Rotavirus Strains Detected in Children Admitted to Health Facilities in Kiambu District, Kenya Msc Kenyatta University, **2012**
2. Gichemi Grace Njoki (Bsc) I56/10924/ 2008. A comparative study of *erythrocyte binding like-1* gene sequences among *plasmodium falciparum* isolates from two malaria endemic sites in Kenya Msc Kenyatta University, **2012**
3. Grace Adoyo Muna (B.ED,Sc). I56/12924/2009 Antioxidant properties of cultivated edible mushroom in Kenya. Msc Kenyatta University, **2012**
4. Dennis Omayio Too (Bsc) SCP/G/05/11 Resistance of napier grass *Pennisetum purpureum* accessions to head smut pathogen *Ustilago kamerunensis* Msc, Masinde Muliro University of Science and Technology **2013**
5. Nyongesa Claris Omuse (Bsc) SCP/G/6/10 Incidence, distribution and virulence of *begomoviruses* infecting Cassava in Western Kenya MSc Masinde Muliro University of Science and Technology, **2013**
6. Aggrey Keya Osogo (BSc) SCP/G/02/10 Occurrence, distribution and virulence of cassava brown streak virus in western Kenya Msc Masinde Muliro University of Science and Technology, **2014**
7. Victoria Naluyange (Bsc Agric) SCP/G/06/11 Effects of beans resistance to pathogens on rhizobium root colonization as influenced by hyacinth based manure in Kakamega. Msc Masinde Muliro University of Science and Technology, **2014**
8. Clabe Wekesa, (Bsc) I56/CE/21457/2012 Abundance and diversity of Rhizobium Nodulation *Phaseolus Vulgaris L.* in two Kenyan Soils with contrasting PH in western Kenya Kenyatta University Kenya **2016**

On going Supervision

PhD Students

1. Lily Simasi (MSC) SBB/PHD/001/2014 Bio-Economy Of Secondary Metabolites Released By Characterised And Identified Alkalithermophiles From The Hot Springs Of Lake Bogoria, Kenya- Phd Masinde Muliro University
2. Ketra Amaya (MED) E83/PU/2104/13 Effect of education level on farmers attitudes toward adoption of water hyacinth (*Eichhornia crassipes* [mart.] solms) as an organic fertilizer at Lake Victoria Basin Kenya. Pwani University, Kenya
3. Jacinta Karambu (Msc) PHD/PG/003/14 Acid soil tolerant soy bean (*Glycine max* (L) Merrill) germplasm and soybean *Rhizobium* from intensely soil cropped soils in Kenya. PhD Moi University

MSc Student

1. Dalmus Shitabule (Bsc) SBB/G/002/14 Aluminium soil tolerant soy bean (*Glycine max* (L) Merrill) germplasm and soybean *Rhizobium* from intensely soil cropped soils in Kenya. MSc Masinde Muliro University
2. Aaron Rotich (Bsc) SBB/G/04/14 Molecular diversity of Tunga penetrans species western Kenya using 18srDNA marker- Masinde Muliro University-Ongoing NRF funding
3. Samuel Mulama (BSc) SBB/G/07/14 Molecular Characterization Of Endophytic Root Nodulating Rhizobia Colonising Cowpea Varieties (*Vigna Anguiculata*) In Soils Of Western Kenya Ongoing NRF funding
4. Antony Kigaru Adegu (BSC) SBB/G/06/14 Distribution and Diversity of Rice Yellow Mottle virus (RYMV) in Kenya- Ongoing NRF Funding

Thesis examination

External Examination

1. Veronica Knight **Kenyatta University 2017**. Msc in Biochemistry thesis entitled Iron deficiency anemia and malaria infection in children in malaria holoendemic area of western Kenya.
2. Hilda Kithinji **Kenyatta University 2017**. Msc in Biotechnology thesis entitled Strigalactone profile of selected wild and cultivated sorghum accession.
3. Samule Ngure **Egerton University 2016**. Msc in Biochemistry thesis entitled Determination of zinc, iron, phytic acid, resistant starch and effects of bread baking properties for selected Kenyan wheat varieties.
4. Syombua Easter, **Kenyatta University 2016**. Msc in Biotechnology thesis entitled Optimization of Regeneration and Agrobacterium-mediated transformation protocols of selected Kenyan Cassava (*Manihot esculenta* Crantz) genotypes'.
5. Mwashighadi Laban Mwadime **Kenyatta University 2016** Msc in Biotechnology entitled Genotype-Independent regeneration of hybrid maize adapted to the coastal ecosystem of Kenya
6. Oduor Joseph Ochieng **Kenyatta University 2016** Msc in Immunology thesis entitled Evaluation of safety and therapeutic potential of lytic Bacteriophage against multi drug resistant *Staphylococcus aureus* (MDRSA) IN BALB/c MICE'.

Thesis examination

Internal Examination

1. Elisha Muchunga Mugo **Kenyatta University 2011** Msc in Biotechnology thesis entitled Analysis of Deletion of function of a Mid gut proteolytic gene in Tsetse fly (*Glossina pallidipes*) BY RNA interference.
2. Eric Kuria **Kenyatta University 2011** Msc in Biotechnology thesis entitled Bioengineering Maize with C-Repeat binding factor1 (CBF1) as a strategy towards drought tolerance
3. Benard Mukoye **Masinde Muliro University of Science and Technology 2014** Msc in Crop Protection thesis entitled Occurrence and biological Characterization of cowpea mild mottle virus (CPMMV) in western Kenya
4. Bonphace Collins Mangeni **Masinde Muliro University of Science and Technology 2014** Msc in Crop Protection thesis entitled Distribution and pathogenic characterization of Bean common mosaic virus (BCMV) and Bean common mosaic necrosis virus (BCMNV) in western Kenya”

Leadership & Awards

ADMINISTRATIVE RESPONSIBILITY

1. Director Science Park Innovation and Incubation Centre
2. Chairman DIAL Board 15th Nov 2016- to date
3. Member Steering Committee to Spearhead the Application of a Loan from French Development Agency 23rd June 2016- to date
4. Ad-hoc Committee on Students Field Trips Policy 15th April 2016- 10th July 2016
5. Member STIPL Board 2014-2015
6. Member VC committee on the Nairobi and Mombasa Campuses Task Force 2nd April 2014-to Sept 2015
7. Faculty of Science, DIAL board representative, 2013-2015
8. State Alumni and a Fulbright Scholar. Awarded in April 2012
9. Dept. of Biochemistry and Biotechnology Graduate School representative 2009-2011
10. Dept. of Biochemistry and Biotechnology Timetable in-charge 2006-2009
11. Member Proposal for the establishment of Genomic Center Kenyatta University 2008
12. Member Preparation of degree course in Forensic Science in Kenyatta university July 2008
13. SPAS, Representative Dept. of Biochemistry & Biotechnology, Kenyatta University community outreach and extension program (KUCOEP) Kenyatta University, June 2000-to 2011
14. Member of Kenya Student Association, Iowa State University, Ames, Iowa, 50011-50100, US. Jan2005 –June2005
15. Chairman Dept. of Biochemistry & Biotechnology Welfare committee, Kenyatta University, June 2000-June 2003
16. Member Association of Kenya Acarologists (**AKA**). National Museum of Kenya, Museum Hill, Nairobi, Kenya 2000 to date.
17. Member of the Kenya African Student Association, University of Mysore, Mysore, 50013, India.
18. Organization Committee Violet Emali Tournament, Kenya African Student Association, University of Mysore, India 1996
19. Vice Chairman, Kenya African Student Association, University of Mysore, 50013,India, Jan1995-Jan 96

Services

COMMUNITY SERVICE

1. Facilitator at the Annual stakeholder field day at the Agricultural Training Center in Busia County on 30th June 2016
2. USAID-NASCOP trained facilitator (TOT) for Medical technicians on how to use HIV Data for Decision Making- March- Nov2009
3. Member National Aids Council- Kakamega County Board 2015 to date
4. Life member REDCROSS Kenya
5. PERI URBAN farmer
6. *Tunga Penetrans* (Jigger) management in rural communities in Vihiga County

Languages

English, Kiswahili, – Fluent

French, —

Fair

Referee

Available on request.

Emails: jmuoma@gmail.com & jmuoma@mmust.ac.ke