

1.1 Personal Profile

1.1.1 Personal Details

Name: Catherine W. Muui
Title/Qualification: Doctor (PhD)
Department: Agriculture Science and Technology
Designation/Position: Senior Lecturer
Email: muui.catherine@ku.ac.ke
Contact Address: P.O. Box 43844-00100, Nairobi
ORCID iD: <https://orcid.org/0000-0001-6782-0626>
Scopus ID: 26030012000
Google scholar:
<https://scholar.google.com/citations?hl>
Research gate:
<https://www.researchgate.net/profile/Catherine-Muui-2>
Area of Specialization:
- Agronomy, Seed Science and Systems
Research Interests:
- Seed quality improvement & Development of climate-smart seed systems
- Climate change resilience in farming systems for enhanced food and nutrition security



1.1.2 Academic & Professional Qualifications

- Doctor of Philosophy in Agronomy, Kenyatta University, Nairobi, Kenya (2010- 2014)
- Master of Science in Seed Science and Technology, Moi University, Eldoret, Kenya (2004-2006)
- Bachelor of Science in Horticulture (Hons) Moi University, Eldoret, Kenya (2001-2004)

1.1.3 Employment History

- Senior Lecturer, Department of Agriculture Science & Technology, Kenyatta University (2025 to date)
- Lecturer, Department of Agriculture Science & Technology, Kenyatta University (July, 2014- to 2025)
- Tutorial Fellow, Department of Agriculture Science & Technology, Kenyatta University (2010 – July, 2014)

1.1.4 Achievements

- Training on CBE- The Basics to enhance adoption of Competence Based Agricultural Curricula in HEIs East Africa
- Graduated 4 Masters Students
- Supervision of PhD and MSc students
- Mentoring both undergraduate and post graduate students
- Grant awards for research as Principal Investigator and co- investigator
- Author and co Author of many publications in peer referred journals
- Attending academic conferences
- Training on Academic Writing Skills
- Training on Advanced Statistics and Experimental Design
- Skills on Strengthening Postgraduate Supervision
- Training on Using Digital Object Identifiers to increase discoverability of African Journal Articles
- Trainers skills on Innovation Management and Inclusive Grassroots Innovation
- Training on Information Literacy
- Skills on Influence of University Rankings on African Research Visibility

- Skills on Patent Drafting for research and innovations
- Skills on Pathways Tertiary Educator Programme for teaching online courses
- Attained PhD degree in Agronomy

1.2 Publications

1.2.1 Referred Journals

1. Emmanuel R. Mwakidoshi, Majed Alotaibi , Mekhled M. Alenazi, **Catherine Muui**, Esther M. Muindi, Sagar Maitra , Nawab Ali , Harun I. Gitari and Mahmoud F. Seleiman (2026). Augmenting sustainable potato growth and mineral uptake under integrated organic and inorganic soil amendments. Journal of Crop Improvement, DOI: 10.1080/15427528.2026.2643229
2. Emmanuel R. Mwakidoshi, Mekhled M. Alenazi, **Catherine Muui**, Esther M. Muindi, Sagar Maitra, Majed Alotaibi, Nawab Ali, Harun I. Gitari and Mahmoud F. Seleiman (2026). Optimized economic returns of potato cultivated under inorganic fertilizer coupled with organic soil amendments: An Impetus for resource-Constrained Smallholder Farmers. Springer Nature, Potato Research 69 (2), 40
3. Barutwanayo, J.P., Oluyinka, I., Maazou, A.R.S., **Muui, C.W.** and Gitari, H.I. (2025). Striga Infestation Responses, Heterotic Alignment, and Genetic Diversity of Inbred Maize Lines. International Journal of Agriculture Environment and Biotechnology, 18(04): 297-312
4. Joshua Magu, Joel Masanga, **Catherine Muui** and Steven Runo (2025). Genomics of Root System Architecture Adaptation in Sorghum under Nitrogen and Phosphorus Deficiency. Journal bioRxiv, 2025.05. 07.652720
5. Bizimana, M., **Muui, C.**, Kumar, L. and Melaku, G. (2025). Evaluating Early Generation Maize Lines for Resistance to Maize Streak Virus Under Artificial Infection Using Molecular Markers. International Journal of Agriculture Environment and Biotechnology, 18(02): 103-122
6. A. M. Kimani, S. A. Henga, W. Kimani and **C. Muui** (2023) Drench effect of orthosilicic acid on drought stress tolerance on morphological and phenotypic traits of sorghum (*Sorghum bicolor* (L.) Moench) landraces. East African Agricultural and Forestry Journal 87(4), Pg. 189-203
7. Kathuli P., Kinama J M., Kitonyo O. M., Nguluu S. N., **Muui C. W.**, Muasya R M (2023) Effect of nitrogen fertilizer on water use efficiency of selected sorghum genotypes grown in semi-arid regions in Kenya. *East African Journal of Science, Technology and Innovation* 5(1).
8. Kallen Kaaria, Joseph Gweyi-Onyango and **Catherine Muui** (2023): Silicon amendment – influence on sorghum growth, yield, and nutrient uptake under water stress, Journal of Plant Nutrition, <https://www.tandfonline.com/eprint/JNFXGBJJXQQWU7Z53FB3/full?target=10.1080/01904167.2023.2222132>
9. Phoebe Mudaki, Lydia N. Wamalwa, **Catherine W. Muui**, Felister Nzuve, Reuben M. Muasya, Simon Nguluu and Wilson Kimani (2023). Genetic Diversity and Population Structure of Sorghum (*Sorghum bicolor* (L.) Moench) Landraces Using DArTseq-Derived Single-Nucleotide Polymorphism (SNP) Markers. Journal of molecular evolution. <https://doi.org/10.1007/s00239-023-10108-1>
10. Tegei, E. M., Githendu, M., and **Muui, C. W.** (2023). Effect of A Deltamethrin Incorporated Polypropylene Storage Bags on Germination Percentage of Dressed Maize Seed Under Storage in Trans Nzoia County, Kenya. European Journal of Applied Sciences, Vol - 11(2). 690-697. DOI:10.14738/aivp.112.14268.
11. Kathuli P., Kinama J. M., Kitonyo O. M., Nguluu S. N., **Muui C. W.** and Muasya R. M. 2023. Effect of nitrogen fertilizer on nitrogen use efficiency and yield of selected sorghum genotypes in semi-arid regions of Kenya. *East African Journal of Science, Technology and Innovation*, *Technology and Innovation* 4(2). <http://doi.org/10.3329/bjar.v4i2i3.34505>

12. **Catherine Muui**, Reuben Muasya, Ann Kambura, Simon Nguluu (2023). Knowledge and Information Systems on Sorghum amongst Sorghum Farmers in Nyanza, Eastern and Coastal Regions, Kenya. Journal of Economics and Sustainable Development Vol.14, No.4, 2023 www.iiste.org
13. Ngugi, M.M., **Muui, C.**, Gweyi-Onyango, J.P., Maitra, S. and Gitari, H.I. (2022). Influence of Silicon on Translocation, Compartmentation and Uptake of Lead in Leafy Vegetables. International Journal of Agriculture, Environment and Biotechnology **15**(01): 33-50 (*IJAEB*: March 2022)
14. Moses M. Ngugi, Harun I. Gitari, **Catherine W. Muui** & Joseph P. Gweyi-Onyango, 2022. Growth tolerance, concentration, and uptake of heavy metals as ameliorated by silicon application in vegetables, International Journal of Phytoremediation, DOI: 10.1080/15226514.2022.2045251
15. Kallen G. Kaaria, Joseph P. Gweyi-Onyango, **Catherine W. Muui**, 2021. Influence of water regimes on growth, yield and nutrient uptake of Sorghum. African Journal of Horticultural Sciences, Vol. 18 No. 2: 1-20. June 2021 <https://journal.hakenya.net/index.php/ajhs/issue/view/19>
16. Moses Ngugi, Harun Gitari, **Catherine Muui** and Joseph Onyango Gweyi, 2021. Cadmium mobility, uptake and accumulation in spinach, kale and amaranths vegetables as influenced by Silicon fertilization. Bioremediation Journal. DOI: 10.1080/10889868.2021.1924111 <https://www.researchgate.net/publication/351108116>
17. **Catherine Muui**, Reuben Muasya, Simon Nguluu, Anne Kambura and Kallen Gacheri, 2020. Seed Borne Fungal and Bacteria Pathogens Associated with Farmer-Stored Sorghum Seeds from Eastern, Coast and Nyanza Regions in Kenya. Journal of Biology, Agriculture and Healthcare Vol.10, No.18, 2020, 53 <https://www.iiste.org/Journals/index.php/JBAH/article/view/54036>
18. **Muui, C. W.**, Muasya R M., Nguluu, S. and Kambura, A., 2020. Evaluation of seed quality attributes of sorghum germplasm accessions from eastern, coastal and nyanza regions, Kenya. Sustainable Agriculture Research; Vol. 9, No. 3; 2020 ISSN 1927-050X E-ISSN 1927-0518 Published by Canadian Center of Science and Education URL: <https://doi.org/10.5539/sar.v9n3p9>
19. **Muui, C. W.**, Muasya, R. M., Nguluu, S., Kambura, A., Kathuli, P. and Mweu, B., Odhiambo, D. O., 2019. Sorghum Landraces Production Practices in Nyanza, Coast and Eastern Regions, Kenya. Journal of Economics and Sustainable Development. www.iiste.org Vol.10, No.10 ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online) DOI: 10.7176/JESD
20. E.A. Abasi, **W.C.Muui** and M. Mwangi, 2018. Canopy Management for Sustainable Passion Fruit Production. Asian Journal of Agricultural and Horticultural Research 2(1):1-7 Article no. AJAHR 44141. ISSN: 2581-4478.
21. **Catherine W. Muui**, Reuben M. Muasya, Duncan T. Kirubi and Andrew O. Ogesa, 2017. Quality of on-farm sorghum seeds in lower eastern Kenya. Seed Technology Journal, Vol. 38 No. 1 2017.
22. Egesa, A.O., S.N. Njagi and **C.W. Muui**. 2016. Effect of facilitative interaction of sorghum-cowpea intercrop on sorghum growth rate and yields. Journal of Environmental and Agricultural Sciences. 9: 50-58.
23. Egesa Ogolla, N. Njau, P. Mwirigi, **C. Muui W.**, N. Korir Kibet and M. Mwangi, 2016. Climate change effects on rainfall patterns and its implications on sorghum and millet production in Kenya: A review. The International Journal of Science and Technology, Vol. 4(8), pp 44-52.
24. **Catherine W. Muui**, Reuben M. Muasya, Duncan T. Kirubi¹, Steven M. Runo and Arthur Karugu, 2016. Genetic variability of sorghum landraces from lower Eastern Kenya based on simple sequence repeats (SSRs) markers. African Journal of Biotechnology, Vol. 15(8), pp.264-271.

25. **CW Muui**, RM Muasya, DT Kirubi, 2013. Participatory identification and evaluation of sorghum (*Sorghum bicolor* (L.) Moench landraces from lower eastern Kenya. *International Research Journal of Agricultural Science and Soil Science* Vol 3 (8): 283- 290.
26. **CW Muui**, RM Muasya, DT Kirubi, 2013. Baseline survey on factors affecting sorghum production and use in eastern Kenya. *African Journal of Food, Agriculture, Nutrition and Development* Vol 13(1):7339-7353.
27. RM Muasya, JN Simiyu, **CW Muui**, NK Rao, ME Dulloo, LS Gohole, 2009. Overcoming seed dormancy in *Cleome gynandra* L. to improve germination. *Seed Technology*, 134-143.
28. R.M. Muasya, W.J.M. Lommen, **C.W. Muui**, P.C. Struik. **2008**. How weather during development of common bean (*Phaseolus vulgaris* L.) affects the crop's maximum attainable seed quality. *NJAS – Wageningen Journal of Life Sciences* 56(1/2): 85-100.
29. **Muui, C.W.**, Muasya, R.M., Rao, N.K. and Anjichi, V.E. **2007**. Geneflow in Maize: Pollen longevity in ecologically different zones of western Kenya. *African Crop Science Journal* Vol.15, No. 1, pp.43-49.
30. R. M. Muasya, J. N. Simiyu, **C. W. Muui**, N. K. Rao, M. E. Dulloo and L. S. Gohole, **2008**. Overcoming Seed Dormancy in *Cleome gynandra* L. to improve germination. *Seed Technology Journal* pp.134-143.

1.2.2 Conference/Workshops/Seminar Papers

1.2.2.1 Conference Papers

1. Emmanuel R. Mwakidoshi, Harun Gitari, **Catherine Muui** and Esther Muindi, 2025. Growth and Yield Response of Potato (*Solanum tuberosum* L.) to Assorted Soil Amendments under Acidic Soil Conditions in the Kenyan Highlands. *Advancing agriculture: Innovative solutions for food and nutrition security*. Faculty of agriculture upper Kabete campus Agro2025 Biennial conference, University of Nairobi, 23rd -24th October, 2025
2. Peter Kathuli, Josiah M. Kinama, Onesimus M. Kitonyo, Simon N. Nguluu, **Catherine W. Muui**, Reuben M. Muasya 2025. Effect of climate variability, planting population and nitrogen application on sorghum genotypes in semi-arid lands. *Advancing agriculture: Innovative solutions for food and nutrition security*. Faculty of agriculture upper Kabete campus Agro2025 Biennial conference, University of Nairobi, 23rd -24th October, 2025
3. **Catherine Muui**, Reuben Muasya, Simon Nguluu, Ann Kabura, Kallen Kaaria 2024. Seed multiplication system and farmer-industry network of low soil fertility and drought tolerant genotypes of sorghum in marginalised zones, Kenya. 3rd Multi-Sectoral Conference on Science, Technology and Innovation (STI), Safari Park Hotel, Nairobi 7-10th May 2024
4. Kallen G. Kaaria, Joseph P. Gweyi-Onyango, **Catherine W. Muui**, 2022. Role of arbuscular mycorrhiza fungi for sustainable sorghum production in arid and semi-arid regions. 22nd (2022) Workshop on Sustainable Horticultural Production in the Tropics, 28th November – 2nd December 2022, Jomo Kenyatta University of Agriculture and Technology, Kenya, pp 31
5. Kathuli, P., J.M. Kinama, S.N. Nguluu, O.M. Kitonyo, **Catherine Muui**, 2022. Effect of nitrogen fertilizer on water use efficiency of 11 selected sorghum genotypes grown in semi arid regions in Kenya. *Science and partnership for agriculture Conference, Biennial Africa Climate Smart Agriculture Stakeholders Conference*, Accra, Ghana 14 – 16th September 2022, Pp 95
6. Moses M. Ngugi, **Catherine W. Muui** and Joseph P. Gweyi-Onyango 2021. Silicon Utilization in Heavy Metal Polluted Soils and Waste Water Irrigation for Leafy Vegetable Production in Kiambu County, Kenya. *Horticultural Association of Kenya 21st Workshop, On Sustainable Horticultural Production in the Tropics*, November 29th - December 3rd 2021, Karatina University, Kenya, pp 9-10
7. Kallen G. Kaaria, Joseph P. Gweyi-Onyango, **Catherine W. Muui** 2021. Arbuscular Mycorrhiza and Silicon Application for Better Growth of Sorghum under Limiting water stress in Machakos County,

Kenya. Horticultural Association of Kenya 21st Workshop, On Sustainable Horticultural Production in the Tropics, November 29th - December 3rd 2021, Karatina University, Kenya, pp 11

8. **C. W. Muui**, F. Kilonzo and M. W. Barasa 2019. Influence of Urban and peri urban agricultural systems on crop production in selected areas Kenya. Kenyatta University biennial research and innovation conference 23rd – 25th October 2019 Nairobi Kenya

9. M. John, S. Nguluu, **C.W. Muui**, R. M. Muasya and J. Matata, 2019. Effect of different micro nutrients (Zn, Fe, Cu and Mn) on sorghum yields in the semi arid areas of Kenya. Kenyatta university biennial research and innovation conference 23rd – 25th October 2019 Nairobi Kenya

10. **Muui, C.W.**, Muasya, R.M., Nguluu, S., Kambura, A., Barasa, M. and Gacheri, K., 2019. Seed borne fungal pathogens associated with farmers saved sorghum (*sorghum bicolor* L.) seeds in Kenya, 2019. Kenyatta university biennial research and innovation conference 23rd – 25th October 2019 Nairobi Kenya

11. **Muui CW**, Odhiambo DO , Muasya RM , Nguluu S, Kambura A, Kathuli P and Mweu B 2018. Production Systems for Sorghum Landraces in Eastern, Nyanza and Coastal Regions. International conference on science, technology and innovation for sustainable development in dryland environments, SEKU AND UMMA Universities 19 - 23rd November, 2018

12. Kiarie L. W, Egesa A. O, **Muui W. C**, 2018. Silicon Fertilization Enhances Root and Shoot Development in Sorghum Hybrids Under Moderate Water stress. HAK conference, Taita Taveta University Voi 26-30th Nov 2018

13. Egesa A. O., Mwakidosh E., and **Muui W. C.**, 2018. Root adjustments in conferring water stress tolerance in Kenyan-bred sorghum varieties. Knowledge and innovation for social and economic development, 12th international conference and innovation week Egerton university, Njoro, Kenya 27th – 29th March. Book of Abstracts Pp 14

14. Egesa A.O., Mwirigi P., **Muui W.C.** and Kirubi D.T. 2016. Morphological and biochemical traits of sorghum fostering abiotic stress tolerance superiority among cereals: A review. Enhancing sustainable agricultural production and marketing systems, second biennial international conference, Kenyatta University, Nairobi, Kenya. November 29 – December 02, 2016. Page 24.

15. Odhiambo MA, **Muui CW** and Githendu M, 2016. "Effects of Organic and Inorganic Fertilizers on Seed Quality of Upland Nerica Rice Varieties in Siaya County, Kenya". Society for the Advancement of Science in Africa, 2016 Fourth International Annual Conference "Advancing Africa's Sustainable Development through Science, Technology and Innovation" Kenyatta University, Nairobi, Kenya, August 22 – 26, 2016 page 54-55.

16. P.G. Kabui, **C.W. Muui** and W.M. Thagana, 2014. Efficacy of a local and commercial rooting powder on roses. Bridging the gap between society, science and industry. International conference on building a new generation of agricultural scientists. KU/AGRA/HAK/DAAD, Kenyatta university, Nairobi, Kenya, 1st- 5th December, 2014. Book of abstract pp 115-116.

17. Gohole, L.S., Muasya, R.M. and **Muui, C.W.** 2006. Varietal preferences and production of cowpea vegetable in western kenya, Paper presented at Moi University 2nd international conference, Eldoret, Kenya

1.2.3 Student Co-authored Publications

1. Emmanuel R. Mwakidoshi, Majed Alotaibi , Mekhled M. Alenazi, **Catherine Muui**, Esther M. Muindi, Sagar Maitra , Nawab Ali , Harun I. Gitari and Mahmoud F. Seleiman (2026). Augmenting sustainable potato growth and mineral uptake under integrated organic and inorganic soil amendments, Journal of Crop Improvement, DOI: 10.1080/15427528.2026.2643229

2. Emmanuel R. Mwakidoshi, Mekhled M. Alenazi, **Catherine Muui**, Esther M. Muindi, Sagar Maitra, Majed Alotaibi, Nawab Ali, Harun I. Gitari and Mahmoud F. Seleiman (2026). Optimized economic returns of potato cultivated under inorganic fertilizer coupled with organic soil amendments: An Impetus for resource-Constrained Smallholder Farmers. Springer Nature, Potato Research 69 (2), 40

3. Barutwanayo, J.P., Oluyinka, I., Maazou, A.R.S., **Muui, C.W.** and Gitari, H.I. (2025). Striga Infestation Responses, Heterotic Alignment, and Genetic Diversity of Inbred Maize Lines. *International Journal of Agriculture Environment and Biotechnology*, 18(04): 297-312
4. Joshua Magu, Joel Masanga, **Catherine Muui** and Steven Runo (2025). Genomics of Root System Architecture Adaptation in Sorghum under Nitrogen and Phosphorus Deficiency. *Journal bioRxiv*, 2025.05. 07.652720
5. Bizimana, M., **Muui, C.**, Kumar, L. and Melaku, G. (2025). Evaluating Early Generation Maize Lines for Resistance to Maize Streak Virus Under Artificial Infection Using Molecular Markers. *International Journal of Agriculture Environment and Biotechnology*, 18(02): 103-122
6. Bizimana, M., **Muui, C.**, Kumar, L. and Melaku, G. (2025). Evaluating Early Generation Maize Lines for Resistance to Maize Streak Virus Under Artificial Infection Using Molecular Markers. *International Journal of Agriculture Environment and Biotechnology*, 18(02): 103-122
7. A. M. Kimani, S. A. Henga, W. Kimani and **C. Muui** (2023) Drench effect of orthosilicic acid on drought stress tolerance on morphological and phenotypic traits of sorghum (*Sorghum bicolor* (L.) Moench) landraces. *East African Agricultural and Forestry Journal* 87(4), Pg. 189-203
8. Kathuli P., Kinama J M., Kitonyo O. M., Nguluu S. N., **Muui C. W.**, Muasya R M (2023) Effect of nitrogen fertilizer on water use efficiency of selected sorghum genotypes grown in semi-arid regions in Kenya. *East African Journal of Science, Technology and Innovation* 5(1).
9. Kallen Kaaria, Joseph Gweyi-Onyango and **Catherine Muui** (2023): Silicon amendment – influence on sorghum growth, yield, and nutrient uptake under water stress, *Journal of Plant Nutrition*, <https://www.tandfonline.com/eprint/JNFXGBJJXQQWU7Z53FB3/full?target=10.1080/01904167.2023.2222132>
10. Phoebe Mudaki, Lydia N. Wamalwa, **Catherine W. Muui**, Felister Nzuve, Reuben M. Muasya, Simon Nguluu and Wilson Kimani (2023). Genetic Diversity and Population Structure of Sorghum (*Sorghum bicolor* (L.) Moench) Landraces Using DArTseq-Derived Single-Nucleotide Polymorphism (SNP) Markers. *Journal of molecular evolution*. <https://doi.org/10.1007/s00239-023-10108-1>
11. Tegei, E. M., Githendu, M., and **Muui, C. W.** (2023). Effect of A Deltamethrin Incorporated Polypropylene Storage Bags on Germination Percentage of Dressed Maize Seed Under Storage in Trans Nzoia County, Kenya. *European Journal of Applied Sciences*, Vol - 11(2). 690-697. DOI:10.14738/aivp.112.14268.
12. Kathuli P., Kinama J. M., Kitonyo O. M., Nguluu S. N., **Muui C. W.** and Muasya R. M. 2023. Effect of nitrogen fertilizer on nitrogen use efficiency and yield of selected sorghum genotypes in semi-arid regions of Kenya. *East African Journal of Science, Technology and Innovation*, *Technology and Innovation* 4(2). <http://doi.org/10.3329/bjar.v4i2i3.34505>
13. Ngugi, M.M., **Muui, C.**, Gweyi-Onyango, J.P., Maitra, S. and Gitari, H.I. (2022). Influence of Silicon on Translocation, Compartmentation and Uptake of Lead in Leafy Vegetables. *International Journal of Agriculture, Environment and Biotechnology* 15(01): 33-50 (*IJAEB*: March 2022)
14. Moses M. Ngugi, Harun I. Gitari, **Catherine W. Muui** and Joseph P. Gweyi-Onyango, 2022. Growth tolerance, concentration, and uptake of heavy metals as ameliorated by silicon application in vegetables, *International Journal of Phytoremediation*, DOI: 10.1080/15226514.2022.2045251 <https://www.tandfonline.com/eprint/WNGKC2HC2CHEVIUIIGGV/full?target=10.1080/15226514.2022.2045251>
15. Kallen G. Kaaria, Joseph P. Gweyi-Onyango, **Catherine W. Muui**, 2021. Influence of water regimes on growth, yield and nutrient uptake of Sorghum. *African Journal of Horticultural Sciences*, Vol. 18 No. 2: 1-20. June 2021

<https://journal.hakenya.net/index.php/ajhs/issue/view/19>

16. Moses Ngugi, Harun Gitari, **Catherine Muui** and Joseph Onyango Gweyi, 2021. Cadmium mobility, uptake and accumulation in spinach, kale and amaranths vegetables as influenced by Silicon fertilization. Bioremediation Journal. DOI: 10.1080/10889868.2021.1924111
<https://www.researchgate.net/publication/351108116>

17. E.A. Abasi, **W.C.Muui** and M. Mwangi, 2018. Canopy Management for Sustainable Passion Fruit Production. Asian Journal of Agricultural and Horticultural Research 2(1):1-7 Article no. AJAHR 44141. ISSN: 2581-4478.

1.2.4 Other Publications

1. **Catherine W. Muui**, 2014. Identification and characterization of Sorghum (*Sorghum bicolor* (L.) Moench landraces and improvement of on- farm seed production in eastern Kenya. PhD Thesis, Department of Agricultural Science and Technology, Kenyatta University.

2. **C. W. Muui**, 2006. Genetic change in maize (*Zea mays*) biodiversity in Kenya: Effects of exposure time to ambient temperature and relative humidity on pollen Viability. MSc. Thesis, Department of Seed, Crop and Horticultural Sciences, Moi University.

1.3 Research

1. Evaluation of seed and malting quality of barley under various management strategies in central highlands, Eritrea
2. Farmer perception on Agroforestry Parklands and its Influence on production Green Grams (*Vigna radiata*) in Kilifi County, Kenya
3. Genotype x Environment Interaction and Stability Analysis for Root Yield in Sweet Potato [*Ipomoea Batatas* (L.) Lam] using Slips Technology in Taita Taveta, Kenya
4. Evaluation of soil amendments on potato (*Solanum tuberosum*), productivity, nutrient use efficiency and exchangeable acidity in Nakuru, county Kenya
5. Development of *striga* and bird resistant sorghum breeding lines through marker-assisted selection and genome editing
6. Propagation of *Ocimum kilimandscharicum*, determination of efficacy against *Anopheles gambiae* ss and formulation of *O. kilimandscharicum* essential oils into jelly and bathing soap mosquito repellent
7. Development of seed multiplication system and industry network of low soil fertility and drought tolerant genotypes of sorghum as a strategy to combat food insecurity, poverty and climate change in marginalized zones, Kenya.
8. Evaluation of the potential for an Eco- friendly Urban and Peri-Urban Agriculture (UPA) System
9. Identification and characterization of Sorghum (*Sorghum bicolor* (L.) Moench landraces and improvement of on- farm seed production in eastern Kenya
10. Cowpea morphological characterization and farmers' preference selection in western Kenya
11. Modeling gene flow to assess risk to biodiversity in traditional cropping systems of maize in western Kenya
12. Chickpea (*Cicer arietinum*) selection for adaptation to the environmental conditions of Kenya's highland
13. Determining the effects of seed type, seed treatment and Rhizobium inoculation on emergence, growth, yield and seed size of Chickpea (*Cicer arietinum*)
14. Crop physiological analysis of seed quality variation in common bean (*Phaseolus vulgaris* L.)

1.4 Funded Projects

1. Co-investigator, NRF grant Ksh. 18,919,600. Propagation of *Ocimum kilimandscharicum*, determination of efficacy against *Anopheles gambiae* ss and formulation of *O. kilimandscharicum* essential oils into jelly and bathing soap mosquito repellent
2. Principal Investigator, NRF grant Ksh. 19,783,966. Development of seed multiplication system and industry network of low soil fertility and drought tolerant genotypes of sorghum as a strategy to combat food insecurity, poverty and climate change in marginalized zones, Kenya
3. Co-investigator, VC grant Kenyatta University Ksh. 2,000,000. Evaluation of the potential for an Eco- friendly Urban and Peri-Urban Agriculture (UPA) System
4. Principal Investigator, NACOSTI Ksh 1,200,000. Identification and characterization of Sorghum (*Sorghum bicolor* (L.) Moench landraces and improvement of on- farm seed production in eastern Kenya

1.5 Conferences/Workshops/Seminars Attended

1.5.1 Conferences Attended

1. Advancing agriculture: Innovative solutions for food and nutrition security. Faculty of agriculture upper Kabete campus Agro2025 Biennial conference, University of Nairobi, Kenya 23rd – 24th October 2025
2. Climate Change Resilience, Adaptation, and Its Impacts on Food Systems and Health, by the American Institutes for Research (AIR) and Kenyatta University, Main Campus Kenyatta University 24th October 2024
3. Science, technology and innovation as the game changer for national security and sustainable prosperity, 3rd Multi-Sectoral Conference on Science, Technology and Innovation (STI), Safari Park Hotel, Nairobi 7-10th May 2024
4. Horticultural Association of Kenya 21st Workshop, On Sustainable Horticultural Production in the Tropics Karatina University, Kenya November 29th - December 3rd 2021
5. Kenyatta University biennial research and innovation conference Nairobi Kenya 23rd – 25th October 2019
6. International conference on science, technology and innovation for sustainable development in dry land environments, SEKU AND UMMA Universities 19 - 23rd November, 2018
7. Knowledge and innovation for social and economic development, 12th international conference and innovation week Egerton university, Njoro, Kenya 27th – 29th March
8. Enhancing sustainable agricultural production and marketing systems, second biennial international conference, Kenyatta University, Nairobi, Kenya. November 29 – December 02, 2016.

1.5.2 Workshops Attended

1. Benchmarking Visit within the Erasmus+ Capacity Building project UPLIFT-Ag on Universities Promoting Linkages For Impactful Training, Innovation and Technology Transfer in Agriculture, Hochschule Neu-Ulm University of Applied Sciences (HNU), Germany 18th to 22nd November 2024
2. 2nd National Agricultural Extension Symposium, “Delivering Pluralistic Extension to the Last Mile for Improved Agri-food Systems” Agriculture Information Resource Center, Westlands, Nairobi 17th October 2024
3. Forum for Agriculture Advisory Services –Kenya (KeFAAS Effective Integration of Nutrition to Extension and Advisory Services and Mainstreaming Nutrition into Agriculture. Implementing Dietary Guidelines: A case of Murang’a and Turkana counties 16th April 2024
4. Building a Resilient Food Supply Chain in Kenya workshop by Kenyatta University and the University of Nebraska, Kenyatta University 15-16th May 2023

5. Forum for Agriculture Advisory Services –Kenya (KeFAAS), National Agriculture Extension Symposium. “Revitalizing agriculture extension and advisory services as a vehicle for agricultural transformation in a bottom up economy” held at National Agricultural Information Centre Nairobi Kenya 18th April 2023
6. Feed the future striga smart sorghum for Africa project, Kenyatta University, Kenyatta University 21st December 2022
7. AAU/PLOS/TCC Africa/ BUE- Workshop: Advocacy in Open Access (OA) and Open Science (OS) to top management HEIs staff, Egypt, 26-27 October, 2022
8. Funding Opportunities: Strategies for Writing a Winning Grant Proposal, Kenyatta University 28th September, 2022
9. Technology Transfer and Commercialization Of University Intellectual Property, Kenyatta University, 21st September 2022
10. Training farmers workshop on informal sorghum seed multiplication practices and knowledge management systems Taita Taveta 5th-6th April 2022
11. Training farmers workshop on informal sorghum seed multiplication practices and knowledge management systems Kiboko Makueni 15th -16 March 2022
12. Training farmers workshop on informal sorghum seed multiplication practices and knowledge management systems Siaya 27th – 28th January 2022
13. Integrating Nutrition into Extension using Global Capacity Needs Assessment Framework in Kenya, by FAO, African Forum for Agricultural Advisory service (AFAAS) and Forum for Agricultural Advisory Services Kenya (KeFAAS), 30th September 2021
14. Train the Trainers’ Workshop on Innovation Management and Inclusive Grassroots Innovation, African Higher Education Leadership in Advancing Inclusive Innovation for Development / AHEAD 585919-EPP-1-2017-1-RO-EPPKA2-CBHE-JP, Co funded by the Erasmus programme of the European Union, Kenyatta University 23rd September 2021
15. Measuring Food Insecurity in the Sustainable Development Goals Era, RUFORUM, Capacity building in agriculture and FAO United Nations, 15th September 2021
16. Information Literacy Training, Kenyatta University 8th September 2021
17. Global Research Ethics: Workshop for University-based Researchers in Africa, 2021
18. Patent Drafting, by KIPi - KU, Held at Chandaria Innovation Centre Building, Kenyatta University, Nairobi, Kenya, 22nd – 24th March 2021
19. Pathways Tertiary Educator Programme: take your teaching online course offered by Open University in collaboration with ACDE, TESSA, IET July – August 2020
20. Publisher education workshop at graduate school Kenyatta University 30th September 2015
21. Teaching methodology, Held at Kenyatta University, Nairobi, Kenya 28th May – 14th November 2013
22. EU- ACP Scientific Communication, Held at Kenyatta University Conference centre, Nairobi, Kenya 2nd – 6th July 2012

1.5.3 Seminars Attended

1. Scientific Publishing, Peer Review, and Editing Ethics in Academic Research, Kenyatta University 26th September 2024
2. New research management system (KENRIS) and science, technology and innovation (STI) mainstreaming, Kenyatta University 19th May 2022
3. Sensitization workshop on grant administration and management, Kenyatta University 16th March 2022
4. Research dissemination on radio and television, Kenyatta University, 22nd September 2021
5. Influence of University Rankings on African Research Visibility, Training Centre in Communication (TCC) Africa & Knowledge 14th September 2021

6. Staff mentors seminar organized by Kenyatta University mentoring programme, at Kenyatta University 26th January 2018
7. Gender mainstreaming in the curriculum held at BSSC, Kenyatta University 10th July 2018
8. Awareness training on ISO 27001, Information security management systems (ISMS), BSSC, Kenyatta University 8th June 2018
9. Promoting Integrity and value based leadership at Amphitheatre, Kenyatta University 9th – 10th June 2016
10. Research management cycle at graduate school Kenyatta University 30th September 2015

1.6 Supervision of Postgraduate Students

1.6.1 PhD (ongoing)

1. Abundance and repellency effect of Camphor basil (*Ocimum kilimandscharicum*) on developmental stages of *Anopheles* mosquitoes in selected Counties, Kenya (Judith Adhiambo Onyiego A99/20062/2020)
2. Development of *striga* and bird resistant sorghum breeding lines through marker-assisted selection and genome editing (Shinda Adhiambo Cecilia A99/21268/2021)
3. Effect of nitrogen, water use efficiency and climate variability on sorghum genotypes productivity in semi arid lands, Kenya (Peter Kathuli A80/59824/2022)
4. Organic and inorganic soil amendments effects on potato (*Solanum tuberosum*), productivity, nutrient use efficiency and exchangeable acidity in Nakuru, county Kenya (Emmanuel R Mwakidoshi A99/21009/2023)

1.6.2 Masters

1.6.2.1 Completed

1. Genetic dissection of terminal drought tolerance by association analysis in sorghum (*Sorghum bicolor*) (Phoebe Rahadiah Mudaki A56/34802/2019)
2. Effectiveness of deltamethrin incorporated polypropylene storage bag against stored insect pests on maize seed in Kitale, Trans Nzoia county Kenya (Eric Maghas Tegei A146/OL/KKA/26285/2015)
3. Evaluation of arbuscular mycorrhizal fungi and silicon on nutrient uptake, growth and yield of sorghum under water stress in Machakos county, Kenya (Kallen Kaaria G. A144/OL/CTY/26953/2018).
4. Role of silicon on lead and cadmium mobility, uptake, yield and quality of selected leafy vegetables in Kiambu county, Kenya (Moses Mwangi Ngugi A144/25561/2018)
5. Effect of plant and vine density management on performance of sweet yellow passion fruit in Embu County, Kenya (Edna Abasi A144/28218/2015)
6. Effects of organic and inorganic fertilizers on seed quality of upland NERICA rice varieties in Siaya County, Kenya (Martha Akello Odhiambo A144/OL/20299/2012)

1.6.2.2 On going

1. Seed and malting quality of barley under various management strategies in central highlands, Eritrea (Amanuel Tekle Fessehayle A146F/21382/2023)
2. Agroforestry Parkland Influence on Growth and Yield of Green Grams (*Vigna radiata*) and Farmer Perceptions' in Kilifi County, Kenya (Gerald Mutisya Muinde A144/OL/CTY/21924/2022)
3. Genotype by Environment Interaction and Stability Analysis for Root Yield in Sweet Potato [*Ipomoea Batatas* (L.) Lam] using Slips Technology in Taita Taveta, Kenya (Brian Wachira A143/21199/2021)
4. Forage Sorghum Growth, Yield and Nutrient Content Under Seed Priming and Harvesting Stages in Laikipia County, Kenya (Hussein Ahmed A149/OL/CTY/20855/2020)
5. French beans production under reduced irrigation frequencies through Biostimulant application in Kiambu County, Kenya (Rahab Njeri Kariuki A144/21054/2022)

6. Genetic characterization and ex vitro propagation of selected cultivars of pyrethrum (*Tanacetum cinerariaefolium*) in Kiambu county, Kenya (Rachel Waithira Muiruri A143/OL/CTY/21809/2021)
7. Efficacy of *Ocimum kilimandscharicum* (Libiatea) forms on storage pests of *sorghum bicolor* in Kisumu county, Kenya (Clinton Shikali A145/OL/CTY/26095/2018)
8. Phenotyping maize lines for resistance to maize streak virus and genotyping with MSV and maize lethal necrosis molecular markers in Ibadan, Nigeria (Bizimana Moïse A145EA/20984/2020)
9. Heterotic alignment of *striga* resistant maize lines using markers and characterisation of responses to *striga* infestation in greenhouse in Nigeria (Jean Paul Barutwanayo A143EA/20981/2020)
10. Phenotypes associated with root architecture under low phosphorous and nitrogen in the sorghum reference set (Joshua M. Gichuhi 156/39108/2017)
11. Genotypic response to silicon mediated water stress using morphological and molecular markers in selected sorghum landraces in Kitui county, Kenya (Matingi Adrian Kimani A143/26094/2018).
12. Seed pre-sowing treatments, yield, physiological and biochemical attributes of camphor basil from Kakamega and Busia counties, Kenya. (Josephine Mwongeli Kyaa A146/26122/2019)
13. Evaluation of different nitrogen forms and levels on the yield and seed quality in coriander in Bungoma County Kenya (Dickson Nasilomwa Marani A144/OL/KKA/26410/15)
14. Effects of leaf harvest initiation time and frequency on grain yield in dual purpose cowpea crop in Tharaka south, Tharaka-Nithi county. (Mahinda Timothy Muchiri A144/CE/24935/2012).

1.7 Professional/Consultancy (Editor/Peer review in journals, Networks/Collaborations, External Examiner, Patents)

1.7.1 Consultancy

1. Eastern and Southern Africa region World Agro forestry center Nairobi, August, 2014. Crop husbandry practices in an agroforestry system based on gaddam sorghum, green grams, melia volkensii combination at Kenya coast, analyzing economic returns of growing Melia in Kilifi for timber in an agroforestry design incorporating agriculture crops (gaddam, greengrams) providing an economic assessment of farmer growing short rotation crops providing economic model assessment.

1.7.2 Peer review in Journals

1. BP International, September 2024
2. International Journal of Plant & Soil Science, September 2024
3. Academic Journals, June 2023
4. Journal of Experimental Agriculture International May 2022
5. International Journal of Environment and Climate change June 2020
6. International Knowledge Press, Plant Cell Biotechnology and Molecular Biology May 2020
7. School of Agriculture and Enterprise Development Conference, Abstracts review, book of abstracts development, full papers review and full papers January 2016

1.7.3 Networks/Collaborations

1. Collaboration with Karatina University in multidisciplinary project titled "Propagation of *Ocimum kilimandscharicum*, determination of efficacy against *Anopheles gambiae* ss and formulation of *O. kilimandscharicum* essential oils into jelly and bathing soap mosquito repellent" 2020 to date
2. Collaboration with COMET Health Care Limited Kenya in multidisciplinary project titled "Propagation of *Ocimum kilimandscharicum*, determination of efficacy against *Anopheles gambiae* ss and formulation of *O. kilimandscharicum* essential oils into jelly and bathing soap mosquito repellent" 2020 to date
3. Collaboration with South Eastern Kenya University in multidisciplinary project titled "Development of seed multiplication system and industry network of low soil fertility and drought tolerant genotypes of sorghum as a strategy to combat food insecurity, poverty and climate change in marginalized zones, Kenya" 2018 to date

4. Collaboration with Taita Taveta University in multidisciplinary project titled “Development of seed multiplication system and industry network of low soil fertility and drought tolerant genotypes of sorghum as a strategy to combat food insecurity, poverty and climate change in marginalized zones, Kenya” 2018 to date
5. Kenya Agricultural and Livestock Research Organization, Katumani Machakos and Kiboko 2018 to date

1.7.4 Examiner for Theses

1. Chia Production, Protein Content, Selected Soil Properties, and Economic Returns under Farmyard Manure and Inorganic Fertilizer in Rwanda February 2026
2. Phosphorus Use Efficiency, Growth and Yield of Upland Rice as Influenced by Various Levels of Phosphorus, Kirinyaga County, Kenya September 2025
3. Effects of coffee production on food security of small-scale farmers in Kisii county, Kenya June 2024
4. Evaluation of inorganic and organic fertilizers on productivity and quality of *Bixa Orellana* in Kwale county Kenya November 2023
5. Soil chemical properties, sunflower (*helianthus annuus.*) yield and profitability under intercropping with sunn hemp and mineral fertilizer application in Dodoma, Tanzania, August 2023
6. Optimizing soybean yield, phosphorus use efficiency and economic returns using phosphatic fertilizer and inoculation with *Bradirhizobium* in Lira City, Uganda, August 2022
7. Modelling nitrogen budgets, use efficiencies and scenarios for improved nitrogen management in Lake Victoria Basin, East Africa. June 2022
8. Evaluation of rapid propagation schemes and spacing for optimizing of cassava pre-basic seeds production in Rwanda. June 2022
9. Management of crown gall disease in *asteraceae* flower cuttings in Nairobi city County, Kenya March 2022
10. Growth and yield responses of beans, cowpea and bambara nuts to phosphorous fertilization in Kakamega County, Kenya February 2022
11. Seasonal rainfall variability effects on Maize yields and the smallholder farmers adaptative strategies in Nyeri county, Kenya September 2021
12. Prediction of hybrid performance and genome wide association study for resistance to maize lethal necrosis in CIMMYT maize (*Zea mays*) Lines February 2021
13. Effect of UV-B radiation and selenium on metabolites, theanine, antioxidants and quality of SMK-30/52 and TRI-306 tea in Kericho county March 2020
14. Effect of gibberellic acids 4 and 7 on growth, yield and quality of sugarcane in Kakamega county Kenya March 2020
15. Assessed line by tester analysis of maize inbreds for northern leaf blight and other yield related traits February 2020
16. Assessing status of crop farming and strategies used to scale-up yields for enhanced food security in Turkana county Kenya May 2019
17. Characterization, water stress and nutrient management of yellow passion fruits in Kiambu and Embu counties Kenya September 2018
18. Influence of row spacing, plant architecture and nitrogen rates on growth, yield and plasticity of grain amaranth in Kiambu county September 2018
19. Evaluation of nutrient management for improved nitrogen use and agronomic efficiencies in rice (*Oryza L.*) in Kisumu and Kirinyaga counties Kenya August 2018
20. Fingerprinting and relating juvenile characters of rice to yield and yield components in Kiambu and Kirinyaga counties June 2018

21. Environmental effect of pesticide handling practices by farmers for sustainable agriculture in Migori county Kenya April 2018
22. Assessment of agronomic performance and haploid induction rate of tropically adapted inducer maize lines January 2018
23. Effect of organic and inorganic fertilizers on yield and quality of amaranths in Kiambu county Kenya November 2017
24. Effect of selected Bradyrhizobia on growth, biological nitrogen fixation and yield of cowpea in Kilifi and Embu counties Kenya November 2016
25. Xenia effect of resistance to maize weevil, *Sitophilus zeamais* (Coleoptera:Curculianidae) and larger grain borer *Prostephanus truncates* (Coleoptera: Brostrichidae) in Maize April 2015
26. Effects of phosphorous deficiency on secondary metabolites and African nightshade distribution in Siaya and Kisii counties Kenya March 2015

1.8 Community Service and Other Engagements

1.8.1 Research funding

1. Propagation of *Ocimum kilimandscharicum*, determination of efficacy against *Anopheles gambiae* ss and formulation of *O. kilimandscharicum* essential oils into jelly and bathing soap mosquito repellent, National Research Fund (NRF), Ksh 18,919,600, July 2020 to date
2. Development of seed multiplication system and industry network of low soil fertility and drought tolerant genotypes of sorghum as a strategy to combat food insecurity, poverty and climate change in marginalized zones, Kenya. National Research Fund (NRF) Ksh 19,783,966 January 2018 to date
3. Evaluation of the potential for an Eco- friendly Urban and Peri-Urban Agriculture (UPA) System 2015 Vice Chancellors Research Grant Ksh 2,000,000 2016 - 2017
4. Characterization and improving on farm seed production of sorghum landraces in eastern Kenya NACOSTI Ksh 1,200,000 2010-2014

1.8.2 Other Engagements

1. Member, departmental Quality Management System committee September 2025 to date
2. Member, departmental innovation and products committee July 2023 to date
3. Chairperson Marks verification Committee, Department of Agricultural Science and Technology July 2022
4. Staff mentor for 2021/2022 and 2022/2023 academic years, Kenyatta University
5. Member, departmental curriculum review committee January 2025
6. Member, Post Graduate Board of Post Graduate Studies, Department of Agricultural Science and Technology July 2022 to date
7. Chairperson, Post Graduate Board of Post Graduate Studies, Department of Agricultural Science and Technology July 2021 to July 2022
8. Vice Chair of Post Graduate Board of Post Graduate Studies, Department of Agricultural Science and Technology October to July 2021
9. Member, reconstituted university ranking committee, Kenyatta University April 2021 to date
10. Chairperson, School of Agriculture and Enterprise Development Teaching and Research Farm Management Committee March 2019 to date
11. Staff mentor for 2019/2020 and 2020/2021 academic years December 2019 to date
12. Session Chair, Kenyatta University Biennial Research and Innovation Conference held at Kenyatta University, Nairobi 23rd -25th October 2019
13. Member Post Graduate guidelines review committee School of Agriculture and Enterprise development March 2019 to date
14. Member School Board of Postgraduate Studies, School of Agriculture and Enterprise Development January 2019 to date

15. Member Quality Management System committee, Department of Agricultural Science and Technology January 2019 to date
16. Field attachment/internship committee, Department of Agricultural Science and Technology November 2017
17. Staff mentor for 2017/2018 and 2018/2019 Academic years November 2017
18. Member Curriculum Committee, Department of Agricultural Science and Technology June 2017 to date
19. Chairperson, Post Graduate Board of Post Graduate Studies, Department of Agricultural Science and Technology April 2017
20. Chairperson Marks verification Committee, Department of Agricultural Science and Technology February 2016
21. Member School of Agriculture and Enterprise Development Conference Organizing Committee January 2016
22. Chairperson, School of Agriculture and Enterprise Development Conference Registration and Protocol sub committee January 2016
23. Member School of Agriculture and Enterprise Development Conference Abstracts review, book of abstracts development, full papers review and full papers publications committee January 2016
24. Member Board of Post Graduate Studies, Department of Agricultural Science and Technology December 2015
25. Member School of Agriculture and Enterprise Development Conference Organizing Committee May 2015
26. Member Proposal writing Sub Committee for Proposed Centre of Excellence in Agriculture February 2015
27. Chairperson, Post Graduate Board of Post Graduate Studies, Department of Agricultural Science and Technology January 2015

1.9 Affiliation of Professional Bodies

1. Member, Forum for Agriculture Advisory Services –Kenya (KeFAAS)
2. Member, African Women in Science (AWIS)
3. Mentor, African Center for Aquatic Research and Education, African Women in Science Mentorship Program
4. Member, African women in science and Engineering (AWSE)

2.1 Administrative Positions Held

2.1.1 Recognized university administrative positions

1. Examinations Coordinator, Department of Agricultural Science and Technology, Kenyatta University July 2022 to date
2. Examinations Coordinator, Department of Agricultural Science and Technology, Kenyatta University October 2015 – October 2016