

Academic Staff Profile

1.1 Personal Profile

1.1.1 Personal Details

Name: Muchemi Kariuki Peterson

Title/Qualification: Bsc (JKUAT), Msc(KU), PhD (KU)

Department: Plant Sciences

Email: muchemi.kariuki@ku.ac.ke

Contact Address: 0726450393

Area of Specialization:

-Genetics and Plant Breeding

-Avocado quality and export

-Crop protection

-Botany

-Safe Pesticides Use in Agronomy

-Agricultural value addition and

Dissemination

Research Interests:

-Plant Breeding and Genetics

- Horticultural Crops and Export Requirements

-Crop Pathology and Breeding- Production and Training

-Avocado production, breeding, management toward quality for export market

-Pesticides Use and safe disposal



-Agriculture baseline survey and implementations	
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1.1.2 Academic & Professional Qualifications

- Kenyatta University (KU), Nairobi, Kenya
PhD
- Kenyatta University (KU), Nairobi, Kenya
Master of Science Biotechnology
- Jomo Kenyatta University of **Agriculture** and Technology (JKUAT), Nairobi
Bachelor of Science Botany

1.1.3 Employment History

- 2014-To Date Lecturer--Kenyatta University, Lecturing at the Department of Plant Sciences- Crop Pathology, Agronomy, Plant Breeding for Quality Product, Plant Improvements and Agricultural Biotechnology
- 2014-2019-Senior Technician-Department of Plant Sciences, Kenyatta University
- 2015-2018 Part-Time Lecturer Tangaza University CTIE Institute of Saint Mary University of Minnona Minesota United State of America (USA)
- 2012-2013- Part-Time Lecturer and Researcher, Technical University of Mombasa, Plant Bio-systematic and Genetics Laboratory
- 2013-2014-Sasumua High School Nyandarua
- 2010-2012- Kirima High School
- 2010-Research Assistant Characterization of Pollinators in Marigat, Baringo County
- 2008-2009- Coffee Research Foundation—Tissue culture of Plants like Banana, muringa, Muteta and *Catha edulis*
- 2005-2008- Biology, Agriculture, Kiswahili and Geography teacher-Lake olobolossat Secondary School
- 2005- Huhirio Secondary School-Agri/Bio Teacher

1.1.4 Training under **COLEACP (BELGIUM) and Other AGRICULTURAL/HORTICULTURAL Research Institutions** on Horticultural Fresh Produce (Vegetables, Beans and Fruits)

1. Export regulatory requirements for fresh produce market
2. Postharvest management for Fresh produce Export
3. Fresh produce production and management practices for export quality
4. Fresh produce harvesting
5. Agriculture Sustainability
6. Transportation of Fresh produce to pack house and export destinations
7. Packaging and classes of fresh produce for export
8. The activities carried out at Pack house for ensuring the quality of Fresh produce for export
9. Registration of facilities that handle fresh fruit and vegetable exports
10. Treatment and other control measures
11. Phytosanitary inspections of goods, packaging and transport units
12. Channels To Market For Fresh Fruit And Vegetable Export
13. Steps In The Export Pathway

1.2.3 **Publications /Seminar Papers**

1. Jedidah Wangari Mwangi, Oduor Richard Okoth, **Muchemi Peterson Kariuki**, and Ngugi Mathew Piero (2021). Genetic and phenotypic diversity of selected Kenyan **Mung bean** (*Vigna radiata* L. Wilczek) genotypes- **Springer**
2. Kabachi Timothy, Stanley Kimaru and **Peterson Muchemi** (2021). Evaluation of fungicides on *Colletotrichum gloeosporioides* in **Avocado** which causes Anthracnose disease in Kenya, Kenyatta University.
3. Njambi Waraga, Stanley Kimaru and **Peterson Muchemi** (2021). Evaluation of the effects of Bio fertilizers on tomatoes (*Solanum lycopersicum*) yields. Kenyatta University
4. Christine Wanjiru, Stanley Kimaru and **Peterson Muchemi** (2021). Evaluation of the effects of Bio fertilizers on Beans Family yields, Kenyatta University
5. Hilda Michieka, Stanley Kiamaru and **Peterson Muchemi** (2021). Effects of pepper (*Capsicum annum*) and *onion* (*Allium cepa*) on *Colletotrichum gloeosporioides* causal of Anthracnose in **Mangoes in Kenya**, Kenyatta University
6. Mwaka Jone Mwanzo, Stanley Kiamaru and **Peterson Muchemi** (2021). Evaluation of Effectiveness between home-made traps and commercial traps in managing **mango** fruit fly in mango production in Kenya
7. Pauline W. Njoroge; Joseph Kamau and **Peterson Muchemi**. 2021. Screening of selected maize (*Zea mays* L.) genotypes for resistance to maize chlorotic mottle virus (M.C.M.V) in Kenya. Kenyatta University
8. Jeneffer Wamucii, Joseph Kamau and Peterson Muchemi. 2021. Screening of selected maize genotypes for resistance to sugarcane mosaic virus (SCMV) in Kenya. Kenyatta University

9. K. S Kimaru , **K. P Muchemi** & J. W Mwangi (2020) Effects of anthracnose disease on avocado production in Kenya, *Cogent Food & Agriculture*, **6:1**, 1799531: <https://doi.org/10.1080/23311932.2020.1799531>
10. **Muchemi, PK.**, Kamau, J.W., **Nchore, S. B**, Mathew P. N, Kimaru, S.K.Mwangi. JW, Joyce.W, Florence. M. 2019. Genetic Response of Selected Maize Germplasm Screening for MLND Resistance in Kenya. Kenyatta University Biennial research and innovation Conference, Kenyatta University, Nairobi, Kenya, 23-25 October 2019.
11. **Muchemi, PK**, Kamau, J.W., **Nchore, S. B**, Mathew P. N, Kimaru, S.K., Mwangi, JW., Waithira, J.,Munguti, F. 2019. The relationship between level of education, Farmers varietal prevalence, control and distribution of Maize Lethal Necrosis in Bomet County. Kenyatta University Biennial research and innovation Conference, Kenyatta University, Nairobi, Kenya, 23-25 October 2019.
12. **Muchemi, PK.**, Kamau, JW., **Nchore, S. B**, Omwoyo, RO., Kimaru, SK., Mathew, PN. 2019. The use of low Tissue Culture Technology towards food sustainability in Kenya. Kenyatta University Biennial research and innovation Conference, Kenyatta University, Nairobi, Kenya, 23-25 October 2019.
13. **Muchemi PK**, Kamau, JW., **Shem, B.N.**, Mathew. PN. Omwoyo, RO., Kimaru, SK., 2018. The use of low Tissue Culture Technology towards food sustainability in Kenya. RUFORUM Biennial Conference.
14. **Muchemi Peterson**, Joseph Kamau, Emily Wabuye (2018). The Effects of Invasive Plants in East Africa and its Wild Beauty Beast. RUFORUM Biennial
15. Morris Muthini, Mercy Muindi, **Muchemi Peterson** (2018). Symbiotic Efficiency of Native Rhizobia Nodulating Common Bean (*Phaseolus vulgaris* L.) in soils of Eastern Regions of Kenya. **RUFORUM Biennial**
16. **Muchemi Peterson**, Joseph Kamau, Mathew Piero, Shem Nchore and J. Mwangi (2018) The current status of Maize Lethal Necrosis Disease in Nyandarua County, Kenya, Horticultural Association of Kenya
17. Jiveri Bonface, Adhiambo Brendah, Kahindo John, Dianah Kwanyiri, Malala Bonface and **Muchemi Peterson** (2015). Bio-alkanol gel as a form of renewable energy. National Science Council
18. **Muchemi Peterson** (2015). Somatic embryogenesis and regeneration of DHO4 and SC DUMA 43 maize genotypes at coastal region of Kenya. Master of Science Thesis submitted to Kenyatta University,
19. Jiveri B, **Muchemi P**, Mwadime L, Malala B. Potential of Lubricating Oil (MGALO) and organic bio-fertilizer production from Marine Green Algae (**patent No.KE/UM/2012/00295**). Applied Research & Innovation for Development.
20. Jiveri B, **Muchemi P**, Mwadime L, Malala B. Bio-alkanol gel as a form of renewable energy. Kabianga University 2nd Annual Postgraduate Conference, 17 – 18 December, 2013, Main Campus, Kabianga. Theme: "Crossing Boundaries: Critical Debates in Quality Postgraduate Research"

21. Jiveri B, **Muchemi P**, Mwadime L, Malala B. Potential of Lubricating Oil (MGALO) and organic bio-fertilizer production from Marine Green Algae (patent No.KE/UM/2012/00295). Sustainable Dev.
22. Jiveri B, **Muchemi P**, Mwadime L, Malala B. Potential of Lubricating Oil (MGALO) and organic bio-fertilizer production from Marine Green Algae (patent No.KE/UM/2012/00295). Global Development.
23. Jiveri B, **Muchemi P**, Mwadime L, Malala B. Potential of Lubricating Oil (MGALO) and organic bio-fertilizer production from Marine Green Algae (patent No.KE/UM/2012/00295). African Green Rev.
24. Jiveri B, **Muchemi P**, Mwadime L, Malala B. International Conference on Integrated Ecosystem and Water Management in the Lake Victoria Basin: “From Science To Integrated Socio-Economic Development” held at Maseno University, Kisumu Hotel from 3rd -6th February 2015
25. **Muchemi P**, Mwadime L, A Jalemba Mgtu, S Anami, J Mwangi, Malala B and Jiveri B. (2014). *Somatic Embryogenesis and Regeneration of SC DUMA 43 and DHO4 Maize: Genotypes Adapted to Arid, Semi Arid and Coastal Ecosystems of Kenya* in “Bridging the gap between society, science and industry” 1st African Green Revolution Students Conference & 14th workshop on sustainable horticulture in the tropics: 1st - 5th December, Kenyatta University, Nairobi- Kenya. Abstract pp 71
26. Mwadime L, **Muchemi P**, A Jalemba Mgtu, S Anami. (2013). Independent somatic embryogenesis and regeneration of PHO4 and DK831 Coastal genotypes.”The JKUAT Scientific Technological and industrialization Conference and Exhibition.”
27. Mwadime L, **Muchemi P**, A Jalemba Mgtu, S Anami. (2013). Independent somatic embryogenesis and regeneration of PHO4 and DK831 Coastal genotypes. “2nd The Biosafety Annual Conference at KICC”

1.2.3 Workshops/Short Courses Training

1. **Certificate on Digital Education For UNIVERSITIES- The Open University UK, Leonard Cheshire, UKaid, Government of KENYA, Skills for Prosperity Kenya-2021-2023**
2. **International Day of Awareness of Food Loss and Waste Panel Discussion- Webex for IOWA STATE UNIVERSITY-2022**
3. **HEInnovate webinar - A system for determining the degree of digitisation of a (higher) education institution**
4. **Digital Budge on Theories, Framework, Practices and experiences of managing Change in EDUCATION-The Open University**

5. **Digital Budge on Online Learning and Teaching-The Open University UK**
6. **Digital Budge on Learning Theory and Content- The Open University UK**
7. **Digital Budge on Selecting Technology and AV- The Open University UK**
8. **Digital Budge on Accessibility and Inclusion- The Open University UK**
9. **Digital Budge on OER, Creative commons and Learning Analytics- The Open University UK**
10. **Digital Budge on Learning Together- The Open University UK**
11. **Digital Budge on Changing Practice and Change Management- The Open University UK**
12. **COLEACP Session D'information Sur L'e-Learning / COLEACP E-Learning Information Session For Universities-2022**
13. **Integrating [COLEACP](#) self-learning courses into university programmes-2022**
14. **Caribbean Agri-food Business Session: High-End Market Opportunities For Caribbean Agri-food Product-August –COLEACP AND IAAC4-2022**
15. **Online Module development Training Certificate- COLEACP Belgium**
16. **The Stakeholders in Agro-Ecological value chain, market of organic products (Horticultural and Avocado farming in Kenya)- Institute for Culture and Ecology (ICE)- 2022**
17. **OECD-COLEACP- Fruits And Vegetables Industry Series-2022**
18. **Successes in Exporting to the EU markets from SMEs and Entrepreneurs-2022**
19. **Trainer Expert with COLEACP on Agriculture Trade : opportunities for SMEs and businesses in export markets- COLEACP-2022**
20. **Fruits and Vegetables Industry Series-COLEACP-2022**
21. **Policies for encouraging healthier food choices: Opportunities for the Fruit and Vegetable sector**
22. **Trainer Expert to KENYAN EXPORTERS on Good Practices for harvest and post-harvest handling of Avocado for Export Market- Next Kenya-2022**
23. **Trainer Expert to Horticultural Crops Directorate Regional and Headquarter Directors on Good Practices for harvest and post-harvest handling of Avocado for Export Market- Next Kenya-2022**
- 24.
25. **Horticultural Stakeholders in Kenya toward development of practical guide use for Avocado and Fresh beans Hosted by Next Kenya-COLEACP Program**
26. **Undergraduate Module development and vetting- Digital School Kenyatta University**
27. **COIL-Training on International Collaboration of Global University Staff for enhancing research exchange-UNIVERSITY DELASALLE-MEXICO**
28. **Trainer of trainee-New modern methods of teaching online students and Module development-COLAACP with collaboration with Department of Plant Sciences**
29. **The scientific methods of Certified Potatoes seeds Production in Kenya- KEPHIS POTATOES RESEARCHERS AND STAKEHOLDERS WORKSHOP-2019**
30. **The Role of Tissue Culture, Aeroponic, Hydroponic and Apical grafting toward mass production of Certified Irish Potato seeds in Kenya- KEPHIS 2019 Oct**

31. Training and **Networking on Dissemination Strategies** and Statistical Data Analysis-Hortilinea Diversifying Agricultural Food Systems, DAAD, and Jomo Kenyatta University of Agriculture and Technology (**JKUAT**)
32. Molecular Biology Tools for Research in Plant Agriculture- **Inqaba Biotec**
33. Scientific Communication and Publishing-**DAAD** and Training Centre in Communication
34. Leadership Coaching a Tool for effective communication and Community Training- Tangaza University and **DePaul University**
- 35. Leading Community Change: The Challenge-** Tangaza University and **DePaul University**
36. Workplace and Community Coaching for Organizational Performance- Tangaza University and **DePaul University**
37. Training Workshop at Tangaza University and **DePaul University** on Proposal and Grant writing
38. Training on modern molecular tools toward Striga elimination in Africa-Kenyatta University
39. Kenya Standing Technical Committee on Imports and Export (**KSTCIE**) Stakeholders Conference-Kenya Plant Health Inspectorate Services (**KEPHIS**)- and Ministry of Agriculture (MOA), **2022**
40. Kenya Standing Technical Committee on Imports and Export (**KSTCIE**) Stakeholders Conference-Kenya Plant Health Inspectorate Services (**KEPHIS**)-2020
41. Kenya Standing Technical Committee on Imports and Export (**KSTCIE**) Stakeholders Conference-Kenya Plant Health Inspectorate Services (**KEPHIS**)-2018

42. Kenya Standing Technical Committee on Imports and Export (**KSTCIE**)- Ministry of Agriculture-Nov 2017
43. Kenya Standing Technical Committee on Imports and Export (**KSTCIE**)- **KEPHIS** Sept 2017
44. Kenya Standing Technical Committee on Imports and Export (**KSTCIE**)- **KEPHIS** Feb 2017
45. Sensitization seminar on funding opportunity with **IFS**, Kenyatta University - 2015
46. National Debate on effect of banning GMO, s Food production and Consumptions in Kenya at Kenyatta University.
47. Work Ethics, Setting, Marking examinations, Teaching methodology, Innovation, Research in modern teaching environments, E-Learning and use of ICT in teaching Sciences (**SMASSE**)- Magomano Girls High School
48. Conference on Ecological Biodiversity at National Museum Kenya-2010

1.3 Research

- a. Avocado maturity Test, efficacy trials *in vitro* and export Research- on going
- b. -Molecular Characterization of Kenyan Maize Germplasm- On going
- c. -Maize Breeding for MLND Resistant- On going
- d. -Bio-fertilizers Trials- on going
- e. -Somatic Embryogenesis of Maize Germplasm in Coastal Region, Kenya. completed

1.4 Funded Projects

Organization	Academic/Research	Year
DAAD-Germany	Research Grant Crops	2018-2019
Kenyatta University	Crops	2018
DAAD-Germany	Research Maize	2016-2017
DAAD-Germany	Research Crops	2017-2018
DAAD-Germany	Crops	2016-2018
Kenyatta University	Training KEMRI	2017

1.4.1 Undergraduate Students undertaking Research Graduated-2021

1. Pauline W. Njoroge. Screening of selected maize (*Zea mays*) genotypes for resistance to Maize Chlorotic Mottle Virus (M.C.M.V) in Kenya
2. Jeneffer Wamucii. Screening Of Selected Maize Genotypes For Resistance To Sugarcane Mosaic Virus (SCMV) in Kenya
3. Kabachi Timothy. Evaluation of fungicides on *Colletotrichum gloeosporioides* in Avocado which causes Anthracnose disease in Githurai, Kiambu County, Kenyatta University.
4. Njambi Waraga. Evaluation of the effects of Bio-fertilizers on tomatoes (*Solanum lycopersicum*) yields. Kenyatta University
5. Christine Wanjiru. Evaluation of the effects of Bio-fertilizers on Beans Family yields. Kenyatta University
6. Hilda Michieka. Effects of pepper (*Capsicum annum*) and onion (*Allium cepa*) on *Colletotrichum gloeosporioides* causal of Anthracnose in **Mangoes in Kenya**, Kenyatta University

7. Mwaka Jone Mwanzo. Evaluation of Effectiveness between home-made traps and commercial traps in managing **Mango** fruit fly production in Kenya

Undergraduate Students undertaking Research Completed Graduated-2022

1. Godhard Kimani - Investigating on drought tolerance among various maize genotypes grown in Kenya
2. Margaret Nyambura. Identification of resistant maize genotypes (*Zea mays* L.) for sugarcane mosaic virus (SCMV) in Murang'a County
3. Vida Obora Ananga. Identification of selected maize (*Zea mays* L) genotypes resistant to Maize Chlorotic Mottle Virus (MCMV) in Kisumu county
4. Naomi Chepng'etish- Evaluation of the effects of Bio-fertilizers on Potatoes yields at Narok County, Kenya,
5. Chepkoech Lily-Evaluation of the effects of Bio-fertilizers on Potatoes yields at Nakuru County, Kenya,
6. Margret Kipkemoi. Evaluation of the effects of Bio-fertilizers from selected plant extracts on Potatoes yields, Baringo County Kenya
7. John Otieno- Evaluation of the effects of Bio-fertilizers on Tomatoes at Kiambu County, Kenya.
8. Nixon Majanga-- Evaluation of the effects of Bio-fertilizers on Kenyan Beans yields and other agronomical parameters
9. Isaac Mukwana- Insecticidal Properties Of Aqueous Leaf Extracts Of *Lantana camara* Against *Sitophilus zeamais* On Stored Grains
10. Cyrus Musyoki- Evaluation of *Lantana camara* allelopathy secondary metabolites on weed suppression at Kitui County Kenya

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

- Bio-fertilizer Efficacy trials for commercialization and Plant Breeding
 - Avocado Agronomic Practices and managements (Pest and Diseases), Commercialization and Export Market Requirements
 - Digital learning, Manual Development and Vetter for face-face teaching and Online Digital Platform- Kenyatta University trained, COLEACP DIGITAL TRAINING AND CURENTLY OPEN UNIVERSITY-UK

1.8 Community Service and Other Engagements

1. 2018-Date-**PATRON-KENYATTA UNIVERSITY NYANDARUA STUDENTS ASSOCIATION (KUSA).**
2. 2022-Date- Board of Management Member (Committee) in charge of School Academics- Lake Olobolossat Secondary School- Nyandarua County
3. Academic motivator to High Schools and **Young People** toward overcoming low self-esteem and emerging technological use and challenges
4. Board Member **Health** (Treasurer)- Shalom PCEA- Mwioko Parish-Nairobi North Presbytery

5. Member- Church **Corporate Social Responsibility**- Shalom PCEA- Mwihoko Parish
6. 2020-2021-Deacon Shalom PCEA and Development Committee Council Member
7. 2006-Date- Network Evangelistic Team International- Visits High school to **mentors the young people** on career choice, self-awareness, overcoming emerging challenges and donate Sanitary and underpants to Girls and Boys in Primary and Secondary Schools
8. Train farmers **on need to diversify agricultural** through adoption of **Avocado** (Hass) production for food and poverty eradication among peasant farmers, youth and Women.
9. Train Farmers on **safe use of pesticides on vegetables, fruits and other food crops**
10. Train young farmers on fodder production, zero grazing set up and requirement **toward food and economic sustainability`**

2.1.2 Other administrative positions Held

1. **2023-Acting Exam Coordinator**
Department of Plant Sciences
Kenyatta University
2. **2021-2023- Co-ordinator- Undergraduate Research Projects**
Department of Plant Sciences
Kenyatta University -Responsibilities
 1. Organize Seminars for Undergraduate Students
 2. Take students through research gaps related to current market Needs/gaps
3. **2015-2019- In charge of New Laboratories- Plant and Microbial Sciences and Botanical Research and Breeding Farm and Research dissemination**

Other Administrative Duties

1. Committee member, Departmental Time-Tabling Team
2. Committee Member Online Staff Group-Department of Plant Sciences
3. Committee member, Departmental Undergraduate and Postgraduate Seminars Organiser
4. Committee member, Research and Linkages committee- Secretary
5. Committee member, Library, Archive & Herbarium
6. Committee member, Staff Welfare Committee
7. Library and Archive-member
8. Assistant Secretary-Departmental Board Meeting
9. Secretary Website Departmental Committee