

Academic Staff Profile

Personal Details

Name: Prof. Ezekiel Mugendi Njeru

Title/Qualification: PhD

Department: Department of Biochemistry, Microbiology and Biotechnology, Kenyatta University

Designation/Position: Associate Professor

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Area of Specialization:

- Microbiology

Research Interests:

- Agricultural and Soil Microbiology

-Environmental Microbiology

-Applied Microbiology

-Industrial Microbiology

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Academic & Professional Qualifications

Sant' Anna School of Advanced Studies, Pisa, Italy; Institute of Life Sciences –PhD (100/100-Cum Laude)

Kenyatta University-Master of Science (Microbiology)

Employment History

2025- Department of Biochemistry, Microbiology and Biotechnology, Kenyatta University- Associate Professor

2019-2024- Department of Biochemistry, Microbiology and Biotechnology, Kenyatta University- Senior Lecturer

2014-2019- Department of Microbiology, Kenyatta University- Lecturer

Publications

Referred Journals

1. Ouma, D. A., Mutai, M., **Njeru, E. M.**, Oyore, J. P., Neondo, J. O., Jagongo, A., Omwenga, G., Ngugi, M. P., Otieno Ngayo, M., & Oduor, R. O. (2025). Characterization, Accumulation Profiles, and Antibiotic-Resistance of Bacteria on Worn Disposable Masks at Githurai Market in Nairobi County, Kenya. *Journal of the Oman Medical Association*, 2(2), 12. <https://doi.org/10.3390/joma2020012>
2. Bitolitolli, E. N., Mutai, M. J., **Njeru, E. M.**, Oyore, J. P., Neondo, J., Awuor, K., Muthee, D. W., Barasa, S. S., Letema, S., & Oduor, R. O. (2025). Bacteria contamination and antibiotic resistance profile on worn reusable face masks

in Githurai Market, Kenya. *International Journal of Food Science and Biotechnology*, 10(2), 33-48. <https://doi.org/10.11648/j.ijfsb.20251002.12>

3. Jones, K., **Njeru, E. M.**, Garnett, K., & Girkin, N. T. (2025). Organic management in coffee: a systematic review of the environmental, economic and social benefits and trade-offs for farmers. *Agroecology and Sustainable Food Systems*, 1–35. <https://doi.org/10.1080/21683565.2025.2510361>
4. Panyako, B. W., Wacira, T. N., **Njeru, E. M.**, Gicharu, G. K., & Makonde, H. M. (2025). Molecular characterization and lead (Pb) tolerance of *Penicillium* and *Aspergillus* species from contaminated soils in Owino Uhuru, Mombasa, Kenya. *African Journal of Microbiology Research*, 19(8), 171-186. <https://doi.org/10.5897/AJMR2025.9793>
5. Koech, K., Koskey, G., **Njeru, E.M.**, & Maingi, J. (2024). Leveraging the complex interplay between arbuscular mycorrhizal fungi, seasonal dynamics, and genotypic diversity to optimize maize productivity in semi-arid agroecosystems. *Heliyon* (10), 18e37659. <https://10.1016/j.heliyon.2024.e37659>
6. Kamore, H. K., **Njeru, E. M.**, Nchore, S. B., Ombori, R. O., Muthini, J. M., & Kimiti, J. (2024). Prevalence of banana diseases and post-harvest losses in Kenya, and biocontrol potential of arbuscular mycorrhizal fungi against *Fusarium* wilt. *International Journal of Horticultural Science*, 30(1), 62-73. <https://doi.org/10.31421/ijhs/30/2024/13781>
7. Jones, K., **Njeru, E.M.**, Garnett, K. & Girkin, N. (2024). Assessing the Impact of Voluntary Certification Schemes on Future Sustainable Coffee Production. *Sustainability* 2024, 16, 5669. <https://doi.org/10.3390/su161356>
8. Lugonzo, G.O., **Njeru, E.M.**, Songock, W., Okumu, A.A. & Ndombi, E.M. (2024). Epidemiology of multi-drug resistant Tuberculosis in the western region of Kenya. *AIMS Microbiology* 2024 Apr 22;10(2):273-287. <https://www.aimspress.com/article/doi/10.3934/microbiol.2024014>
9. Wahome, C. N., Ombori, O., Maingi, J., **Njeru, E. M.**, Nchore, S. B., Kimiti, J. M., & Muthini, M. (2023). Response of micropropagated tissue culture banana (*Musa* spp.) to acclimatization using arbuscular mycorrhiza fungi. *African Journal of Pure and Applied Sciences*, 4(2), 50–58. <https://doi.org/10.33886/ajpas.v4i2.410>
10. Muindi, M.M., Muthini, M., **Njeru, E.M.** & Maingi J. (2023). Greenhouse studies showing arbuscular mycorrhizal fungi and rhizobia as potential tools for improving cowpea (*Vigna unguiculata*) production in lower Eastern Kenya. *Tropical Agriculture*, 100(3), 136-148. <https://journals.sta.uwi.edu/ojs/index.php/ta/article/view/7841>

11. Wahome C.N., Maingi J.M., Ombori O., **Njeru, E.M.**, Muthini M. & Kimiti J.M. (2023). Diversity and abundance of bacterial and fungal communities in rhizospheric soil from smallholder banana producing agroecosystems in Kenya. *Frontiers in Horticulture*, 2:1061456. <https://doi.org/10.3389/fhort.2023.1061456>
12. Wanjala, D., Mutune, A. & **Njeru, E.M.** (2023). Arbuscular mycorrhizal fungi and *Trichoderma* spp influence on nutrient uptake and water stress tolerance in cowpea (*Vigna unguiculata* L. Walp). *African Journal of Horticultural Science*, (Sept 2023) 22:35-48
13. Munywoki J., Omosa L.K., Subramanian S., Mfuti D.K., **Njeru, E.M.**, Nchiozem-Ngnitedem V-A. & Akutse K.S. (2022). Performance of *Metarhizium anisopliae* Isolate ICIPE 41 in the laboratory and field in comparison to another fungal biopesticide and a chemical product to sustainably control the invasive fall armyworm *Spodoptera frugiperda* (Lepidoptera: Noctuidae) *Agronomy*, 2022; 12(11):2636. <https://doi.org/10.3390/agronomy12112636>
14. Wakarera P. W., Ojola P. & **Njeru E. M.** (2022). Characterization and diversity of native Azotobacter spp. isolated from semi-arid agroecosystems of Eastern Kenya. *Biology Letters*. 18: 2021061220210612. <http://doi.org/10.1098/rsbl.2021.0612>
15. Kirui CK, **Njeru E.M.** & Runo S. (2022). Diversity and phosphate solubilization efficiency of phosphate solubilizing bacteria isolated from semi-arid agroecosystems of Eastern Kenya. *Microbiology Insights*. January 2022:15. <http://doi.org/10.1177/11786361221088991>
16. Mburu, S.W., Koskey, G., **Njeru, E.M.**, Ombori M., Maingi J. & Kimiti, J. (2022). Genetic and phenotypic diversity of microsymbionts nodulating promiscuous soybeans from different agro-climatic conditions. *Journal of Genetic Engineering and Biotechnology* 20, 109 (2022). <https://doi.org/10.1186/s43141-022-00386-5>
17. Asamba, M. N., **Njeru E.M.**, Oshule, S.P., Suliman, E., Mwagandi, C.L. & Atego, N. (2022). Molecular Characterization of Chlorpyrifos Degrading Bacteria Isolated from Contaminated Dairy Farm Soils in Nakuru County, Kenya. *Heliyon*. <http://dx.doi.org/10.2139/ssrn.3940828>
18. Kyule D.M., Maingi, J.M, **Njeru E.M.** & Nyamache, A.K. (2022). Molecular Characterization and Diversity of Bacteria Isolated from Fish and Fish Products Retailed in Kenyan Markets. *International Journal of Food Science*. Volume 2022 Article ID 2379323 <https://doi.org/10.1155/2022/2379323>
19. **Njeru, E.M.**, Awino, R., Kirui, K., Koech, K., Jalloh, A. & Muthini, M. (2022). Agrobiodiversity and perceived climatic change effect on family farming systems in semiarid tropics of Kenya. *Open Agriculture*, 7(1), 360-372. <https://doi.org/10.1515/opag-2022-0099>
20. Bolo, P., Kihara, J., Mucheru-Muna, M., **Njeru E.M.**, Kinyua, M. & Sommer, R. (2021). Application of residue, inorganic fertilizer and lime affect phosphorus solubilizing

microorganisms and microbial biomass under different tillage and cropping systems in a Ferralsol, *Geoderma* 390, 114962. <https://doi.org/10.1016/j.geoderma.2021.114962>

21. Okeyo, S., Nyamwange, M.M & **Njeru, E.M.** (2021). Microbial succession pattern, isolation and characterization in *Brassica oleracea* var. capitata at different decomposition stages. *Plant Physiology and Soil Chemistry* 1(1) (2021) 25-29. DOI: <http://doi.org/10.26480/ppsc.01.2021.25.29>
22. Ogada A. R., **Njeru E.M**, Omari, A & Birgen, J.K (2021). New evaluation of *Alternaria brassicicola* isolates against *Striga hermonthica* seeds emergence on maize in Kenya, *Journal of Weed Research Science* 4(2), 218-225. <https://dx.doi.org/10.26655/JRWEEDSCI.2021.2.8>
23. Muindi, M.M., Muthini, M., **Njeru E.M.** & Maingi J. (2021). Symbiotic efficiency and genetic characterization of rhizobia and non rhizobial endophytes associated with cowpea grown in semi-arid tropics of Kenya. *Heliyon* 7 (4) 1-8. <https://doi.org/10.1016/j.heliyon.2021.e068677>
24. Ogada A. R., **Njeru E.M**, Omari, A. & Birgen, J.K (2021). Characterization of *Alternaria* species causing dark leaf spot disease on cabbages grown in Limuru and Nyeri, Kenya. *Plant Pathology & Quarantine* 11(1): 23–33 (2021). doi 10.5943/PPQ/11/1/4. https://plantpathologyquarantine.org/pdf/PPQ_11_1_4.pdf
25. Koskey, G., Simon, M., Awino, R., **Njeru, E. M.** & Maingi, J. M. (2021). Potential use of beneficial microorganisms for soil amelioration, phytopathogen biocontrol, and sustainable crop production in smallholder agroecosystems. *Frontiers in Sustainable Food Systems*, 5, 130. <https://doi.org/10.3389/fsufs.2021.606308>
26. Mburu, S.W., Koskey, G., **Njeru, E.M.** & Maingi J. (2021). Revitalization of bacterial endophytes and rhizobacteria for nutrients bioavailability in degraded soils to promote crop production, *AIMS Agriculture and Food* Volume 6, 2: 496-524. doi: <https://doi.org/10.3934/agrfood.2021029>
27. Musonye H.A., **Njeru E.M.**, Hassanali A., Langata L.M., Mijeje D., Kaitho T., King'ori E. & Nonoh J. (2021). Molecular identification and antibiotic susceptibility patterns of bacterial isolates from urine samples of African buffalo, eland and cattle. *International Journal of Applied Biology*, Vol. 5 No. (1) (2021).
28. Mutai, M., **Njeru, E.M.** & Ntabo, R. (2021). Ethnobotanical Survey of Medicinal Plants Used by the Marakwet Community in Cherangani Forest, Kenya. *Journal of Medicinal and Chemical Sciences*, 4(3), 289-300. doi: [10.26655/JMCHEMSCI.2021.3.9](https://doi.org/10.26655/JMCHEMSCI.2021.3.9)
29. Njagi, A., Mang'erere M. N., **Njeru, E. M.** & Birgen J. K. (2021). Antibacterial Effect of Artemisia and Ginger Extracts in Controlling *Agrobacterium tumefaciens* in Roses. *Journal of Floriculture and Landscaping*, vol. 7, Apr. 2021, pp. 1-5, doi: <https://doi.org/10.25081/jfcls.2021.v7.6386>

30. Omoke, D., Kipsum, M., Otieno, S., Esalimba, S., Sheth, M., Lenhart, A. **Njeru E.M.**, Ochomo, E. & Dada, N. (2021). Western Kenyan *Anopheles gambiae* showing intense permethrin resistance harbour distinct microbiota. *Malaria Journal* 20, 77 (2021). <https://doi.org/10.1186/s12936-021-03606-4>
31. Gitonga N.M., **Njeru, E.M.**, Cheruiyot, R & Maingi J.M. (2021). Genetic and Morphological Diversity of Indigenous *Bradyrhizobium* Nodulating Soybean in Organic and Conventional Family Farming Systems. *Frontiers in Sustainable Food Systems* 4:606618. <https://doi.org/10.3389/fsufs.2020.606618>
32. Mang'erere, M., **Njeru, E. M.**, & Muna, M. M. (2021). Tillage, mulching and nitrogen fertilization differentially affects soil microbial biomass, microbial populations and bacterial diversity in a maize cropping system. *Frontiers in Sustainable Food Systems*, 5, 102. <https://doi.org/10.3389/fsufs.2021.614527>
33. Gitonga N.M., **Njeru E.M.**, Cheruiyot, R. & Maingi J.M. (2021). Dual inoculation of soybean with *Rhizophagus irregularis* and commercial *Bradyrhizobium japonicum* increases nitrogen fixation and growth in organic and conventional soils. *AIMS Agriculture and Food* 6, 2: 478-495. <https://doi.org/10.3934/agrfood.2021028>
34. Wahome, C.N., Maingi, J.M., Ombori, O., Kimiti, J.M. & **Njeru E.M.** (2021). Banana Production Trends, Cultivar Diversity, and Tissue Culture Technologies Uptake in Kenya. *International Journal of Agronomy*, 6634046, <https://doi.org/10.1155/2021/663404>
35. Gitonga N.M., **Njeru E.M.**, Cheruiyot, R. & Maingi J.M. (2021). *Bradyrhizobium* inoculation has a greater effect on soybean growth, production and yield quality in organic than conventional farming systems, *Cogent Food & Agriculture*, 7:1,1935529, <https://doi.org/10.1080/23311932.2021.1935529>
36. Kyule D.M., Maingi,J.M, **Njeru E.M.** & Nyamache, A.K. (2021). Characterization and antibiotic resistance patterns of bacteria from fish products retailed at various markets in Kirinyaga county, Kenya. *East African Medical Journal* Vol. 98 No. 11 November 2021. <https://www.ajol.info/index.php/eamj/article/view/219623>
37. Musyoka D.M., **Njeru E.M.**, Nyamwange M.M., & Maingi J.M. (2020) Arbuscular mycorrhizal fungi and *Bradyrhizobium* co-inoculation enhances nitrogen fixation and growth of green grams (*Vigna radiata* L.) under water stress. *Journal of Plant Nutrition*, 43(7): 1036-1047. <https://doi.org/10.1080/01904167.2020.171194>
38. Avio, L., **Njeru, E. M.**, Oehl F., Turrini A., Bocci, G., Barberi, P., Manuela, G. & Sbrana, C. (2020). Small-scale soil heterogeneity affects the distribution of arbuscular mycorrhizal fungal species in a hot-spot field in a Mediterranean site. *Applied Soil Ecology* 154, 103631 <https://doi.org/10.1016/j.apsoil.2020.103631>
39. Jalloh, A.A. **Njeru, E. M.** & Maingi J.M. (2020) Potential of native rhizobia isolates to improve production of legume crops in small holder farms. *Bioscience Research*, 17(2): 1498-1510. [https://www.isisn.org/BR17\(2\)2020/1498-1510-17\(2\)2020BR20-103.pdf](https://www.isisn.org/BR17(2)2020/1498-1510-17(2)2020BR20-103.pdf)

40. Muchoka, J. P., Mugendi, D. N., Njiruh, P. N., Onyari, C. N., Mbugua, P. K. & **Njeru, E. M.** (2020). Mycorrhiza co-association with *Aspilota pruliseta* Schweif. and phosphorus uptake effects on growth of gadam sorghum in the semi-arid lower Eastern Kenya. *Journal of Dryland Agriculture*, 6(5), 46-53. <https://doi.org/10.5897/JODA2020.0048>
41. Mburu, S.W., Koskey, G., **Njeru, E.M.**, Ombori M., Maingi J. & Kimiti, J. (2020). Differential Response of Promiscuous Soybean to Local Diversity of Indigenous and Commercial *Bradyrhizobium* Inoculation Under Contrasting Agroclimatic Zones. *International Journal of Plant Nutrition*. <https://doi.org/10.1007/s42106-020-00117-1>
42. Nyaga J.W. & **Njeru E.M.** (2020). Potential of Native Rhizobia to Improve Cowpea Growth and Production in Semiarid Regions of Kenya. *Frontiers in Agronomy* 2:606293. <https://www.frontiersin.org/articles/10.3389/fagro.2020.606293/full>
43. Muchoka, J. P., Mugendi, D. N., Njiruh, P. N., Onyari, C. N., Mbugua, P. K. & **Njeru, E. M.** (2020). Arbuscular Mycorrhizal Fungi Colonization in the Rhizosphere of *Aspilota pruliseta* Schweif. ext Schweif in the Semiarid Eastern Kenya. *Air, Soil and Water Research*. doi: <https://doi.org/10.1177/1178622120969190>
44. Karanja, A.W., Maingi, J.M. & **Njeru, E.M.**, (2019) Evaluation of maturity levels and heavy metal content in composts made from rice straw. *Advances in Agricultural Science*. 7 (2019), Issue 03, 17-30. <http://aaasjournal.org/submission/index.php/aaas/article/view/137>
45. Karanja, A.W., **Njeru, E.M.**, & Maingi, J.M. (2019) Assessment of physicochemical changes during composting rice straw with chicken and donkey manure. *International Journal of Recycling of Organic Waste in Agriculture*, 8:65–72. <https://doi.org/10.1007/s40093-019-0270-x>
46. Musonye H.A., **Njeru E.M.**, Hassanali A., Langata L.M., Mijele D., Kaitho T., King'ori E. & Nonoh J. (2019) 16S rRNA gene profiling of bacterial communities mediating production of tsetse attractive phenols in mammalian urine. *The Onderstepoort Journal of Veterinary Research* 86:1-12. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6676987/>
47. **Njeru, E.M.** (2018) Exploiting diversity to promote arbuscular mycorrhizal symbiosis and crop productivity in organic farming systems, *AIMS Agriculture and Food* 3 (3): 280–294. <https://www.aimspress.com/fileOther/PDF/agriculture/agrfood-03-03-280%281%29.pdf>
48. Koskey G, Mburu S.W., Kimiti J.M., Ombori M., Maingi J. & **Njeru E.M.** (2018) Genetic characterization and diversity of *Rhizobium* isolated from root nodules of mid-altitude climbing bean (*Phaseolus vulgaris* L.) varieties. *Frontiers in Microbiology* 9:968, 1–12 <https://doi.org/10.3389/fmicb.2018.00968>. Also selected and published as a book chapter Rouphael Y., Colla G. (2020) Biostimulants in Agriculture. *Frontiers in Plant Science* 11. DOI: 10.3389/fpls.2020.00040. <https://www.frontiersin.org/research-topics/6502/biostimulants-in-agriculture>

49. Nyamwange M.M, **Njeru, E.M.**, Mucheru-Muna, M. & Ngetich, F. (2018) Soil management practices affect arbuscular mycorrhizal fungi propagules, root colonization and growth of rainfed maize. *AIMS Agriculture and Food* 3 (2): 120–134. <https://www.aimspress.com/article/10.3934/agrfood.2018.2.120>
50. Motaroki E.M., **Njeru, E.M.**, Koskey G. & Maingi J. (2018). Rhizobial inoculation methods affect the nodulation and plant growth traits of host plant genotypes: A case study of Common bean *Phaseolus vulgaris* L. germplasms cultivated by smallholder farmers in Eastern Kenya. *Advances in Agricultural Science* 6(3):77-94 <https://aaasjournal.org/submission/index.php/aaas/article/view/83>
51. Oruru, M.B., **Njeru, E.M.**, Pasquet, R. & Runo, S. (2018). Response of a wild-type and modern cowpea cultivars to arbuscular mycorrhizal inoculation in sterilized and non-sterilized soil, *Journal of Plant Nutrition*, 41:1, 90-101, <https://doi.org/10.1080/01904167.2017.1381728>
52. Ndivo F.M., **Njeru, E.M.** & Birgen, J. (2018) Efficacy of neem, garlic and aloe extracts in the management of postharvest potato soft rot caused by *Erwinia carotovora*. *Asian Journal of Research in Crop Science* 1(2): 1-7. <https://doi.org/10.9734/AJRCS/2018/40255>
53. **Njeru, E.M.**, Bocci, G., Avio, L., Sbrana, C., Turrini, A., Giovannetti, M. & Bàrberi, P. (2017) Functional identity has a stronger effect than diversity on mycorrhizal symbiosis and productivity of field grown organic tomato. *European Journal of Agronomy* 86(2017) 1–11. <https://doi.org/10.1016/j.eja.2017.02.007>
54. Mburu S.W., Koskey G, Kimiti J.M., Ombori M., Maingi J. & **Njeru E.M.** (2016), Agrobiodiversity conservation enhances food security in subsistence-based farming systems of Eastern Kenya; *Agriculture and Food Security Journal* 5 (19): 1-10. <https://doi.org/10.1186/s40066-016-0068-2>
55. Ouma E.A., Asango A.M., Maingi J. & **Njeru, E.M.** (2016). Elucidating the potential of native rhizobial isolates to improve biological nitrogen fixation and growth of common bean and soybean in smallholder farming systems of Kenya. *International Journal of Agronomy* 1-7. <https://doi.org/10.1155/2016/4569241>
56. Turrini A., Sbrana C., Avio L., **Njeru E. M.**, Bocci G., Barberi, P. & Giovannetti, M. (2016) Changes in the composition of native root arbuscular mycorrhizal fungal communities during a short-term cover crop-maize succession. *Biology and Fertility of Soils* 52(5) 543-553. <https://doi.org/10.1007/s00374-016-1106-8>
57. Oruru, M. B. & **Njeru, E. M.** (2016). Upscaling Arbuscular Mycorrhizal Symbiosis and Related Agroecosystems Services in Smallholder Farming Systems. *BioMed Research International* 2016: 1-12. <https://doi.org/10.1155/2016/4376240>
58. **Njeru E.M.**, Avio L., Sbrana C., Turrini A., Bocci G., Giovannetti M., Bàrberi P. & Oehl F. (2015). Contrasting effects of cover crops on 'hot spot' arbuscular mycorrhizal fungal communities in organic tomato. *Biology and Fertility of Soils* 51(2), 151-166. <https://doi.org/10.1007/s00374-014-0958-z>

59. **Njeru, E.M.**, Avio, L., Sbrana, C., Turrini, A., Bocci, G., Bàrberi, P. & Giovannetti, M. (2014). First evidence for a major cover crop effect on arbuscular mycorrhizal fungi and organic maize growth. *Agronomy for Sustainable Development* 34, 841-848. <https://doi.org/10.1007/s13593-013-0197-y>
60. **Njeru, E.M.**, Maingi, J.M., Cheruiyot, R. & Gitonga, N.M. (2013) Managing soybean for enhanced food production and soil bio-fertility in smallholder systems through maximized fertilizer use efficiency. *International Journal of Agriculture and Forestry* 3(5):191-197. <http://article.sapub.org/10.5923.j.ijaf.20130305.01.html>
61. **Njeru, E.M.** (2013) Crop diversification: a potential strategy to mitigate food insecurity by smallholders in sub Saharan Africa. *Journal of Agriculture, Food Systems, and Community Development* 3(4): 63-69. <https://doi.org/10.5304/jafscd.2013.034.006>
62. Luziatelli, G., Blanco, S. M., **Mugendi, E.** & Wright, H. (2012) Is the post-production phase of the food value chain even more affected by climate change than the production phase? an example of aflatoxin in stored maize in Kenya. Food Security-How can Science and Policy Contribute; PSC- ETNA Summer School 2011 Brochure, Zurich-Basel Plant Science Center.

Book Chapters in a University Scholarly Level Scholarly Book

- 1) Mang'erere Nyamwange, M. & **Njeru, E.M.** (2024). Development and Management of Arbuscular Mycorrhizal Fungi Inocula for Smallholder Farmers: Challenges and Opportunities. In: Parihar, M., Rakshit, A., Adholeya, A., Chen, Y. (eds) *Arbuscular Mycorrhizal Fungi in Sustainable Agriculture: Inoculum Production and Application*. Springer, Singapore. https://doi.org/10.1007/978-981-97-0296-1_8
- 2) **Njeru E.M.** & Koskey G. (2021) Using Beneficial Microorganisms to Promote Sustainable Crop Production and Resilience of Smallholder Agroecosystems to Changing Climate. In: Hebsale Mallappa V.K., Shirur M. (eds) *Climate Change and Resilient Food Systems*. Springer, Singapore. https://doi.org/10.1007/978-981-33-4538-6_11
- 3) **Njeru E.M.**, Muthini M., Muindi M.M., Ombori O., Nchore S.B., Runo S. & Maingi J.M. (2020) Exploiting Arbuscular Mycorrhizal Fungi-Rhizobia-Legume Symbiosis to Increase Smallholder Farmers' Crop Production and Resilience Under a Changing Climate, in: B. R. Singh, et al. (Eds.), *Climate Impacts on Agricultural and Natural Resource Sustainability in Africa*, Springer International Publishing, Cham. pp. 471-488. https://link.springer.com/chapter/10.1007/978-3-030-37537-9_27
- 4) Muthini M., Awino R., Kirui K.C., Koech K., Jalloh A.A. & **Njeru E.M.** (2020) Optimizing *Rhizobium*-Legume Symbiosis in Smallholder Agroecosystems. In: Guleria P., Kumar V., Lichtfouse E. (eds) *Sustainable Agriculture Reviews* 45. *Sustainable Agriculture Reviews*, vol 45. Springer, Cham. https://doi.org/10.1007/978-3-030-53017-4_8
- 5) Macharia, M.W., **Njeru E.M.** & Maingi J (2018) Acid tolerance of native and commercial bradyrhizobia: the effect of liming acid soils on growth and the nodulation of soybean. In;

Gorawala, P and Mandhatri, S. eds (2018) *Agricultural Research Updates Vol 24*, Nova Science Publishers, New York.

- 6) Koskey G, Mburu S.W., **Njeru E.M.**, Kimiti J.M., Ombori M. & Maingi J., (2017). Potential of Native Rhizobia in Enhancing Nitrogen Fixation and Yields of Climbing Beans (*Phaseolus vulgaris* L.) in Contrasting Environments of Eastern Kenya. In; Tsiafouli, M A., Drakou, E G., Orgiazzi, A., Hedlund, K., Ritz, K., eds. (2017). *Optimizing the Delivery of Multiple Ecosystem Goods and Services in Agricultural Systems*. Lausanne: Frontiers Media. doi: 10.3389/978-2-88945-296-5

Conference/Workshops/Seminar Papers

Conference Papers

- a) **Njeru E.M.**, Kanyita, G.M. & Johnson, D. (2024). Genetic Diversity Boosts Arbuscular Mycorrhizal Responsiveness, Growth, and Water Stress Resilience in Local Kenyan Maize Genotypes . 4-10 August 2024, ICOM 12 conference, Manchester, UK.
- b) **Njeru E.M**, Muthini,M., Kibet,C., Kipkorir, K., Nyaga, J., Awino, R. Wakarera P (2022). Using root associated microorganisms to promote crop production and resilience of smallholder farming systems to climate change. Commonwealth conference, Accra Ghana 13-17 March 2022.
- c) **Njeru E.M**, Muthini,M., Kibet,C., Kipkorir, K., Nyaga, J., Awino, R. Wakarera P (2022). Using root associated microorganisms to promote crop production and resilience of smallholder farming systems to climate change. Commonwealth conference, Accra Ghana 13-17 March 2022.
- d) Muthini, M., Muindi, M.M, **Njeru, E.M.**, Runo, S. and Maingi. J. (2019). Biodiversity and abundance of arbuscular mycorrhizal fungi in lower Eastern Kenya. Kenyatta University, Biennial Research and Innovation Conference, 23rd-25th October, 2019, Nairobi, Kenya.
- e) Wahome, C.N., Maingi, J.M., Ombori, O. and **Njeru, E.M** (2019). Cultivar diversity, smallholder banana production practices and awareness of tissue cultured technologies in Kisii, Nyamira and Embu Counties, Kenya (2019). Kenyatta University, Biennial Research and Innovation Conference, 23rd-25th October, 2019, Nairobi, Kenya.
- f) Karanja, A.W., Maingi, J.M. and **Njeru, E.M.** (2019). Using lignocellulolytic bacteria to bioconvert organic residue to bioorganic fertilizer for sustainable crop productivity. Kenyatta University, Biennial Research and Innovation Conference, 23rd-25th October, 2019, Nairobi, Kenya.
- g) Gitonga, M.N., **Njeru, E.M.** and Maingi, J (2019). Optimizing the use of *Bradyrhizobium* inoculants to promote soybean production in organic and conventional farming systems. Kenyatta University, Biennial Research and Innovation Conference, 23rd-25th October, 2019, Nairobi, Kenya.
- h) Motaroki E.M., **Njeru, E.M.**, Koskey G. and Maingi J. (2018). Does Rhizobial Inoculation Functionality Vary With Host Plant Genotype? A Case Study of Common Bean (*Phaseolus vulgaris* L). Germplasms Grown by Smallholder Farmers In Eastern Kenya. Proceeding of the

1st Annual International Conference held on 17th-19th April 2018, Machakos University, Kenya.

- i) **Njeru, E.M**, Morris Muthini, Mercy Martha Muindi, John Maingi (2018). Exploiting arbuscular mycorrhizal fungi-rhizobia-legume tripartite symbiosis to increase crop production and resilience in semi-arid tropics of Kenya. Sustainable Agricultural and Natural Resource Management Under Changing Climate in Sub-Saharan Africa (SANCCSSA-MALAWI) Conference. BICC, Lilongwe Malawi, 16th to 18th October, 2018.
- j) Avio, L., **Njeru, E.M**, Oehl, F., Turrini, A. , Giovannetti, M. Sbrana, C. (2017). Arbuscular mycorrhizal fungi are spatially structured in a hot spot field site In; Calasso, M, Cocolin, L., Eds. (2017). *Drivers of Microbial Diversity*, SIMTREA, Firenze, Italy. 24-26th October 2017
- k) Sbrana, C, **Njeru, E.M**, Turrini, A., Giovannetti, M.. Avio, L. (2017). Spatial Distribution of arbuscular mycorrhizal fungi spores in a hot spot field, In ICOM 9, 9TH International Conference on Mycorrhiza, Book of Abstracts, Prague, Czech Republic. 30th July – 4th August 2017.
- l) Koskey G, Mburu S.W., **Njeru E.M.**, Kimiti J.M., Ombori M., Maingi J., (2016). Unlocking climbing bean (*Phaseolus vulgaris* L.) yield using potential using elite native rhizobia in Eastern Kenya. The Fifth African Higher Education Week and RUFORUM Biennial Conference, Cape Town, South Africa.
- m) Mburu S.W., Koskey G, Kimiti J.M., Ombori M., Maingi J. and **Njeru E.M.**, (2016). Symbiotic effectiveness of indigenous bradyrhizobia nodulating soybean varieties grown in Eastern Kenya. The Fifth African Higher Education Week and RUFORUM Biennial Conference, Cape Town, South Africa. BEST POSTER IN AFRICA AWARD.
- n) **Njeru, E.M** (2013). Enhancing mycorrhizal symbiosis and productivity of field grown organic tomato through crop and management diversification. International Conference on Organic Agriculture Sciences (ICOAS) conference proceedings. 'Targeting Global Sustainability – Food Security, Biodiversity and Climate Change, Budapest and Eger, Hungary.

Funded Projects

- a) **October 2024- October 2028:** MSCA Staff Exchanges (HORIZON Unit Grant) . Jointly awarded the Marie Skłodowska-Curie Actions (MSCA) grant by the European Commission. Project Title; *Understanding Neutral Weed Communities - Crops Interactions and Identification of Artificial Intelligence Algorithms for Species-Specific Weed Management Using Robots*.
- b) **February 2024- January 2026:** Jointly awarded the UK Research and Innovation (UKRI) Engineering and Physical Sciences Research Council (EPSRC) research grant. Project title, Towards Low Cost Soil Fertility Sensor Systems for Smallholder Food Security in Kenya.
- c) **November 2022- November 2024:** Awarded The World Academy of Sciences (TWAS) Research Grant: Optimizing vermicomposting conditions to improve compost quality, soil health and sustainable crop production.
- d) **June 2022- January 2024:** Awarded a collaborative project funding by Ekaterina, UK and Cranfield University, UK: Project title, In Feasibility study in organic tea management. The

project aims to develop sustainable fertilisers that either combines organic (such as livestock manure, food waste) and mineral sources or organic on its own to formulate organo-mineral and organic fertilisers respectively.

- e) **August 2021- July 2023:** Jointly awarded The National Research Fund Collaborative Consortium Research. Project title, Optimizing parameters for the proper use of face masks to reduce severity of underlying infection of enhanced tolerance to COVID-19.
- f) **April 2021- March 2023:** Awarded the Future Leaders – African Independent Research (FLAIR) Fellowship, by the Royal Society, United Kingdom, costed project extension. Project title, Using root-associated microorganism to enhance sustainable crop production and resilience of smallholder agroecosystems to climate change.
- g) **February 2020 - December 2023:** Awarded Future Leaders – African Independent Research (FLAIR) collaboration research grant, by the Royal Society, United Kingdom. Project title, Manipulating plant and soil diversity to maximise resource capture and resilience in African agri-ecosystems.
- h) **January 2020- June 2021:** Awarded the Frontiers of Engineering for Development Award by the Royal Academy of Engineering, Project title, Identification of microbial sensor targets for low cost soil fertility assessment.
- i) **April 2019 - March 2023:** Awarded the Prestigious Future Leaders – African Independent Research (FLAIR) Fellowship, by the Royal Society, United Kingdom. Project title, Using root-associated microorganism to enhance sustainable crop production and resilience of smallholder agroecosystems to climate change.
- j) **July 2017-July 2019:** Awarded Kenyatta University Vice-Chancellors' Grant. Project title. Exploiting arbuscular mycorrhizal fungi-rhizobia-legume tripartite symbiosis to increase crop production and resilience in semiarid tropics of Kenya.
- k) **March 2017- March 2020:** Awarded the National Research Fund Grant (NRF). Participatory approach in the production and acclimatization of planting materials and management of postharvest losses of bananas in Kisii, Nyamira and Embu Counties, Kenya.
- l) **December 2016-December 2018:** Awarded The World Academy of Sciences (TWAS) Research Grant: Project title: Management and conservation of arbuscular mycorrhizal fungi for improved crop production in semi-arid tropics of Eastern Kenya.
- m) **October 2014-October 2016:** Awarded the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) 5th Graduate Research Grant (GRG). Project title: Increasing Soybeans and Climbing Beans Production in Smallholders' Farms in Eastern Kenya.

Travel grants

- a) February 2023- The Royal Society and TATA group, UK, travel grant to London, UK, for the Meeting of Minds Conference.
- b) **March 2022-** The Royal Society, travel grant to Accra Ghana, Commonwealth Science Conference.

- c) **October 2019:** The Royal academy of engineering travel grants to attend Frontiers of Engineering for Development symposium in Antananarivo, Madagascar.
- d) **October 2017** The World Academy of Sciences (TWAS) Research Grant: Conference participation grant in Lilongwe Malawi
- e) **May 2016:** The Research and Innovation Support for Europe and Africa (RINEA) mobility grant to attend a Network and Consortium Building meeting in Aarhus, Denmark.
- f) **October 2013.**The Sant' School of Advanced Studies' Pisa, Italy travel grant to attend the International Conference on Organic Agriculture Sciences (ICOAS) conference proceedings. 'Targeting Global Sustainability – Food Security, Biodiversity and Climate Change, Budapest and Eger, Hungary.

Supervision of Postgraduate Students

a) Successful supervision of postgraduate students to graduation

S/No	Name of student	Thesis title	Status of project
1	Joseph .M. Munywoki I56/38053/2018	Potential use of <i>Metarhizium anisopliae</i> based-biopesticides for biocontrol of fall army worm in maize production system in Kenya. Funded by ICIPE	Graduated on July 2024
2	Juma Daniel Wanjala I56/28453/2018	Arbuscular mycorrhizal fungi and <i>Trichoderma</i> spp influence on nutrient uptake and water stress tolerance in <i>Vigna unguiculata</i> (L.) walp. (cowpea)	Graduated on July 2024
3	Charles Kirui I56/CE/28294/2015	Harnessing the potential of phosphate solubilising bacteria for improvement of cowpea and maize production in smallholder agro-ecosystems. Funded by the Royal Society-UK	Graduated on July 2023
4	George Lugonzo Odongo I56/33463/2014	Molecular characterization of drug resistant tuberculosis in western Kenya	Graduated on July 2023
5	Julian Wanja I56/38673/2017	Potential of rhizobia and arbuscular mycorrhizal fungi to enhance nitrogen fixation and growth of cowpea genotypes in Eastern Kenya. Funded by the Royal Society-UK	Graduated on December 2022
6	Mutai Mourine I56/25169/2018	Ethnobotanical survey, characterization of antimicrobial fungal endophytes from <i>Zehneria scabra</i> and <i>Croton macrostachyus</i> found in Cherangani forest, Kenya.	Graduated on July 2022
7	Micah Asamba I56/37934/2016	Microbial degradation of organophosphate residues and their effect on calcium levels in milk sampled from farms in Nakuru county, Kenya.	Graduated on July 2022
8	Winfridah Bwari Onyari I56/CTY/PT/29159/15	Genetic diversity and antibiotic resistance of <i>Escherichia coli</i> in human, cattle and buffalo in the Maasai mara ecosystem	Graduated on July 2022

9	Martha Muindi I56/37659/2017	Exploiting belowground biodiversity of native rhizobia and arbuscular mycorrhizal to upscale production and drought tolerance of cowpea in Eastern Kenya.	Graduated on July 2021
10	Reuben Ogada 156/CE/33052/2014	Biocontrol of <i>Striga hermonthica</i> on maize (<i>Zea mays</i>) field using <i>Alternaria brassicicola</i> in east Gem ward Siaya county, Kenya.	Graduated on July 2021
11	Diana Omoke Nyanting'a I56/CE/31089/2015 (MSc)	Using 16s rRNA amplicon sequencing to characterize the microbiota of the malaria vector, <i>Anopheles gambiae</i> s.s, in Western Kenya	Graduated on July 2021
12	Abdul A. Jalloh I56F/37998/2017	Determination of screening for biodiversity and symbiotic efficiency of native rhizobia isolated from different regions in Kenya.	Graduated on December 2020
13	Njagi Alfred Kariuki I56/CE/24566/2012	Use of artemisia and ginger extracts in management of crown gall disease as an alternative to cultural and chemical methods.	Graduated on December 2020
14	Peter Omondi Bolo N50/31707/2015 (MSc)	Effect of long-term use of mineral fertilizers and organic inputs on soil microbes, nutrient availability and use efficiency in Nyabeda, Siaya county	Graduated on July 2019
15	Harry Asena Musonye I56/CTY/PT/32671/2015 (MSc)	Profiles of microbial communities mediating production of tsetse attractive phenols in urine of selected mammals	Graduated on July 2019
16	Methuselah Nyamwange Mang'erere I56/32943/2015 (MSc)	Response of soil microbial communities to long-term use of soil fertility management systems at Kirege, Tharaka-Nithi county	Graduated on December 2018
17	Daniel Mumo Musyoka (MSc) I56/CE/23810/2013	Influence of Arbuscular mycorrhizal fungi and <i>Bradyrhizobium japonicum</i> on nitrogen fixation and growth of green grams under water stress.	Graduated on December 2017
18	Ndivo Felix Mwanzia (MSc) I56/CE/21654/2012	Efficacy of plant extracts (neem leaf, aloe vera stem and garlic bulb extracts) on the management of potato post harvest diseases.	Graduated on August 2017
19	Ephraim Motaroki Menge (MSc) I56/CE/25333/2014	Increasing biological nitrogen fixation by common bean grown in eastern Kenya.	Graduated on December 2016
20	Simon Mburu W. (MSc) I56/28268/2014	Genetic diversity and nitrogen fixing potential of indigenous bradyrhizobia nodulating soybean varieties grown in Eastern Kenya (Funded by RUFORUM)	Graduated in Dec 2016
21	Oruru Marjorie Bonareri (MSc) I56/21653/2012	Enhancing cowpea production through arbuscular mycorrhizal fungi inoculation and wide interspecific crosses.	Graduated on July 2015

1.3.4.2 PhD

S/No	Name of student	Thesis title	Status of project
1	Simon Mburu W. (PhD) I84/38659/16	Genetic diversity and phylogeny of endophytes and bradyrhizobia strains and their symbiotic efficiency with promiscuous soybeans varieties. Funded by DAAD	Graduated on July 2025
2	Wahome Caroline Nyawira (PhD) I84/37752/2016	Genetic stability, microbial contamination Susceptibility and differential growth Response of tissue cultured bananas (<i>Musa</i> spp.) to arbuscular mycorrhizal inoculation Funded by NRF	Graduated on July 2024
3	Nicholas G. Mawira I84/29010/2014	Enhancing tripartite symbiosis between soybean, bradyrhizobia and arbuscular mycorrhizal fungi under contrasting land management practices.	Graduated on July 2021
4	Muchoka James Peter (PhD) A800/156/2015 (University of Embu)	Mycorrhizal fungi associated with <i>Aspilia pruliseta</i> on phosphorus availability to sorghum plants	Graduated on October 2021 (UoEM)
5	Kyule N. Domitila (PhD) I84/27759/2014	Microbiological Quality and Safety of Farmed Fish and Fish Products Sold in Kenya (Funded by NRF)	Graduated on December 2019.
6	Anncarol Karanja (PhD) I84/27640/2014	Rapid bioconversion of rice straw using cellulolytic cultures for improved and sustainable crop productivity and soil fertility in Mwea, Kenya (Funded by NACOSTI)	Graduated on December 2018

1.3.3 Ongoing Supervisions

S/No	Name of student	Thesis title	Status of project
1	Morris Muthini (PhD) I84/24336/2017	Biodiversity, effectiveness and anastomotic interaction of indigenous arbuscular mycorrhizal fungi from lower East Kenya. Funded by NRF	Data collection completed. Ongoing thesis writing
2	Kimulwo Maureen Jebichii (PhD.) 184/28264/2018	Persistence and potential neutralizing effect of anti-SARS-COV-2 antibodies in recovered patients and immunized individuals	Proposal developed awaiting graduate school submission.
3	Gideon Towett K.(PhD) I8/27503/2019	Enhancing low-cost banana tissue culture with native plant growth-promoting endophytic bacteria and mycorrhizal fungi for sustainable growth.	Proposal developed awaiting graduate school submission.
4	Esther Nabwire Bitolitoli I56/20099/2020	Sources and characterization of bacteria on worn reusable face masks and their antimicrobial susceptibility at Githurai market, Kenya	Ongoing-data collection, proposal registered by Graduate school
5	Valentine Wanjiku Mburu I56/21008/2020	Genetic Diversity of Rhizobia Isolates Nodulating and Improving Growth and Production of Cowpea Genotypes in Eastern Kenya and Cross Inoculation Potential	Ongoing-data collection, proposal registered by Graduate school

6	Damaris Apiyo Auma I56/20884/2020	Isolation, characterization and accumulation of bacteria on worn disposable masks and their antibiotic sensitivity at Githurai market, Kenya	Ongoing-data collection, proposal registered by Graduate school
7	Priscillah Wanjira Wakarera I56/ 26594/2018	Biodiversity of native <i>Azotobacter</i> in Eastern Kenya soils and their efficacy in the nutritional uptake and growth of maize. Funded by the Royal Society-UK	Draft thesis complete. To submit thesis to graduate school for examination.
8	Kipkorir Koech I56/25255/2018	Biodiversity and potential of native arbuscular mycorrhizal fungi to improve maize production in smallholder agroecosystems in Eastern Kenya. Funded by the Royal Society-UK	Draft thesis complete. To submit thesis to graduate school for examination.
9	Charles Nyaga N50/37643/2017	Tillage and cropping systems effects on soil microbial biomass and abundance in Siaya county, Kenya.	Draft thesis complete. Submitted thesis to graduate school for examination.
10	Harrison Kibe I56/37504/2017	Characterization and biocontrol of pathogenic microorganisms associated with commonly grown banana cultivars in Embu, Kisii and Nyamira counties of Kenya.	Draft thesis complete. To submit thesis to graduate school for examination.
11	Araka Rebecca Sarange (MSc) I56/CE/24044/2012	Characterization of anthracnose caused by <i>Colletotrichum gloesporioides</i> f.sp manihotis in cassava in Western Kenya	Ongoing-data collection, proposal registered by Graduate school
12	King'ori Catherine Wanjiru I56/CE/26242/2014 (MSc)	Influence of plant growth promoting fluorescens pseudomonads and mycorrhizal fungi on biocontrol of <i>Ralstonia solacearum</i> and tomato growth.	Ongoing-data collection, proposal registered by Graduate school
13	Macharia Ruth Muthoni I56/CE/28136/2013 (MSc)	Antimicrobial and phytochemical screening of solvent extracts of selected medicinal plants used in Murang'a county of Kenya	Ongoing-data collection, proposal registered by Graduate school
14	Gitundu Prisca Njeri I56/37624/2016	Antimicrobial activity of selected medicinal plants against selected pathogenic enteric and food spoilage bacteria and fungi.	Ongoing-data collection, proposal registered by Graduate school
15	Benjamin Wesonga I56/CE/25898/2014	Characterization and biodegradation ability of indigenous fungi isolated from lead contaminated soils in Mombasa county.	Ongoing-data collection, proposal registered by Graduate school
16	Mukonyi Samuel Mulunda I56/CE/26258/2014 (MSc)	Identification, isolation and characterization of antimicrobial selected medicinal plants used in Kakamega county, Kenya	Proposal developed awaiting graduate school submission.
17	Oluoch Charles Odhiambo I56/CE/25951/2014	Genetic diversity, lead tolerance and nitrogen fixing potential of indigenous rhizobia isolated from lead polluted soils of Owino Uhuru slums, Mombasa County	Proposal developed awaiting graduate school submission.

18	Libokoyi Emma Dorcas I56/CTY/PT/20187/2012 (MSc)	Determination of pathogenic protozoans and heavy metals in selected borehole water within Nairobi county	Proposal developed awaiting graduate school submission.
19	Angela Wairimu Gatero 156/32669/2015 (MSc)	Characterization of antimicrobial activity of honey from Baringo and Kitui using physicochemical and biochemical properties	Proposal developed and registered by Graduate School. Ongoing data collection
20	Richard Awino I56/CE/25067/2014	Antagonistic efficacy and plant growth promoting potential of <i>Trichoderma</i> isolates from semi-arid agroecosystems of Eastern Kenya.	Proposal developed and registered by Graduate School. Ongoing data collection

Affiliation of Professional Bodies

- Kenya Society for Microbiology
- America Society for Microbiology

Administrative Positions Held

2014-2019, Department of Microbiology, Examinations Coordinator

Other Key Responsibilities

2023- Present: Board member of Kenyatta University Ethics and Review Committee (KUERC)

2022- Present: Editorial Board Member of Pedobiologia: Journal of Soil Ecology

International awards

2019- Future Leaders – African Independent Research (FLAIR) collaboration research fellowship, by the Royal Society, United Kingdom.