RESEARCHER ID:

SCOPUS ID:

ORCHID:

Position: *Research Scientist (Microbiology)*

1. PERSONAL INFORMATION

1.1. **NAME** **Emmanuel Tendwa Makatiani**
1.2. **ADDRESS** P.O Box 20412-00200, Nairobi
1.3. **PHONE** 0720777542
1.4. **EMAIL ADDRESS** **tendwa2003**@gmail.com or emakatiani@kefri.org
1.5. **NATIONALITY** Kenyan
1.6. **GENDER** Male

2. QUALIFICATIONS

2.1. Academic Qualifications

2013-2018: Masters of Science (MSc.) in Microbiology, Kenyatta University, Nairobi, Kenya.
2007-2010: Bachelor of Science (BSc.) in Microbiology, Moi University, Eldoret, Kenya.
2002-2004: Higher National Diploma in Applied Biology Kenya Polytechnic, Nairobi, Kenya.
1992-1995: Diploma in Applied Biology, Kenya Polytechnic, Nairobi, Kenya.

2.2. Key Competencies

2.3. Other Courses

3rd–4th February, 2020: Africa Regional Data Cube and Monitoring for Environment Workshop Institute for Meteorological Training and Research World Meteorological Organization Regional Training Centre (IMTRJWMO-RTC) – Nairobi, Kenya.

10th–12th December, 2019: Regional training course of Forest Genetic Resources, KEFRI HQ, Nairobi.

7th July, 2014 to 3rd October, 2014: Development and implementation of a species identification and timber tracking system with DNA fingerprints and stable isotopes in Africa, Centre for Ecology and Hydrology, Edinburgh, United Kingdom (UK)

26th-30th May, 2014: Information security management system champions.

17th-20th Feb., 2014: Quality Assurance in Laboratory Testing.

11th-17th March 2013: Training on the application of molecular genetic markers for timber tracking in Africa, KEFRI, Nairobi, Kenya.

2009: Molecular techniques, University of Nairobi-Kenya

14th-20th March 2007: FOREAIM (Bridging restoration and multi-functionality in degraded forest landscapes of Eastern Africa and Indian Ocean islands) Project. Mycorrhizal training workshop, Nairobi (Kenya).

2007: Occupational Health and Safety. (Ministry of Labor and Human Resource Development-Kenya).

2006: AFORNET Science writing course at Kenya Forestry Research Institute (KEFRI) headquarters, Nairobi, Kenya

2004: National workshop on Scientific Equipment Management [Network of Users of Scientific equipment in East and Southern Africa-NUSESA (Nairobi-Kenya)].

1998: Use and maintenance of Gas Chromatographs (University of Addis Ababa-Ethiopia).

1988-1992: Rhizobium Technology training. Department of Soil Science-Mircen Laboratory (University of Nairobi).

3. EMPLOYMENT HISTORY

July 2020-Date: Research Scientist I, Tree breeding and Improvement, Kenya Forestry Research Institute (KEFRI), P.O Box 20412-00200 Nairobi, Kenya.

2013-2020: Research Scientist II Kenya Forestry Research Institute (KEFRI), P.O Box 20412-00200 Nairobi, Kenya

2010-2013: Senior Technologist, Biotechnology, Kenya Forestry Research Institute (KEFRI), P.O Box 20412-00200 Nairobi, Kenya

2006-2010: Technologist I, Biotechnology, Kenya Forestry Research Institute (KEFRI), P.O Box 20412-00200 Nairobi, Kenya

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1997-2006: Technologist III, Kenya Forestry Research Institute (KEFRI), P.O Box 20412-00200 Nairobi, Kenya

1986-1997: Technician Trainee, Kenya Forestry Research Institute (KEFRI), P.O Box 20412-00200 Nairobi, Kenya

4. ADMINSTRATIVE RESPONSIBILITY

May 2019- Date: Deputy Regional Director, Central Highlands Eco-Region Research Programme, Kenya Forestry Research Institute (KEFRI), P.O Box 20412 - 00200 Nairobi, Kenya.

5. PUBLICATIONS

5.1. Journal papers

Riany KG, Akinyi AA, Kivati CB and **Makatiani ET** (2017) Role of Knowledge Management Systems on the retention of tacit knowledge in research institutes in Kenya. In: Emerging Trends in Information and Knowledge Management Eds: Tom Kwanya, Joseph Kiplang'at and Justus Wamukoya. Moi University Press, pp. 167-179.

Otieno JO, Omondi SF, Perry A, Odee DW, **Makatiani ET**, Kiplagat O. and Cavers S (2016) Development and characterization of microsatellite markers for *Osyris lanceolata* Hochst. & Steud., an endangered African sandalwood tree species. Tropical Plant Research, 3(3):701–703. Available online (www.tropicalplantresearch.com).

Luvanda A, Wanjiru G and **Makatiani ET** (2013) The use of remote sensing techniques in assessing the distribution trends of *Commiphora myrrha* in Wajir county, Kenya.

Kisinyo PO, Gudu SO, Othieno CO, Okalebo JR, Opala PA, Maghanga JK, Agalo JJ, Ng'etich WK, Kisinyo JA, Osiyo RJ, Nekesa AO, **Makatiani ET**, Odee DW and Ogola BO (2012) Effects of lime, phosphorus and rhizobia on *Sesbania sesban* performance in a Western Kenyan acid soil. African Journal of Agricultural Research. **7**(18): 2800-2809.

Gudu SO, Kisinyo PO, **Makatiani ET**, Odee DW, Esegu JFO, Shamchama SAO, and Othieno CO (2009) Screening of Sesbania for tolerance to aluminum toxicity and symbiotic effectiveness with acid tolerant rhizobia strains in acid soil in Western Kenya. *Cambridge University Press*. *Expl Agric.* 45: 417–427

Makatiani ET and Odee DW (2007) Response of *Sesbania sesban* (L.) Merr. to rhizobial inoculation in an N-deficient soil containing low numbers of effective indigenous rhizobia. *Agroforestry Systems* **70**: 211–216.

Odee DW, Sutherland JM, **Makatiani ET**, McInroy SG and Sprent JI (1997) Phenotypic characteristics and composition of rhizobia associated with woody legumes growing in

diverse Kenyan conditions. Plant and Soil. Kluwer academic Publishers. Netherlands. **188**:65-75.

Odee D, Machua J, **Makatiani ET**, Ochieng J, Indieka S and Esitubi M (2002) Symbionts in Agroforestry Systems: what are the long-term impacts of inoculation of *Calliandra calothysrsus* and its intercrops? (EU-SAFSYS PROJECT).

Odee D, Machua J, **Makatiani ET**, Ochieng J, Indieka S and Esitubi M (2001) Improved fallows by legume plants (trees and shrubs) in eastern and southern Africa: Impacts on microbial diversity (EU-IMPALA PROJECT).

Odee D, Machua J, **Makatiani ET**, Ochieng J, Indieka S and Esitubi M (2001) Improved fallows by legume plants (trees, shrubs and grasses) in Eastern and Southern Africa: Impact of soil biota (SOM, roots, BNF microbes, mycorrhiza, and soil fauna) on improvement on bean and maize yields, soil organic matter dynamics and soil conservation. INCO-DEV ICDC –ICA4-CT-2000-30011. First and second annual reports.

5.2. Books

5.3. Book Chapter

5.4. Technical Notes /Protocols/Guidelines

Makatiani ET, Otieno JO, Magare CO, Odee DW (2018) EU-TRUE-SOP-046 "Isolation and initial growth characterization of rhizobia on yeast extract agar (YEMA) plates". Developed by the EU-H2020 project TRUE ('Transition paths to sustainable legume-based systems in Europe'), funded by the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement Number 727973

5.5. Policy Briefs

6. RESEARCH

6.1. Completed

1. ACACIAGUM Project 2007-2012 (Innovative management of *Acacia senegal* trees to improve resource productivity and gum-arabic production in arid and semi-arid sub-Saharan Africa), Project No. INCO 032233.

2. AFORNET- The African Forest Research Network: Screening for Acid and Aluminum tolerant *Calliandra calothyrsus* and *Sesbania sesban* together with their respective rhizobia in East Africa (Kenya, Uganda and Tanzania) (2003-2012).

3. EU-FOREAIM- Project No. INCO-CT-2005-510790. Bridging restoration and multi-functionality in degraded forest landscape of Eastern Africa and Indian Ocean islands-Kenya, Uganda and Madagascar (2005-2010).

4. BGBD- Below Ground Biodiversity Project-Conservation and Sustainable Management of Below-Ground Biodiversity: Tranche I &11. Project No. MIS: GFL/2328-2715-4517 PMS:GF/1030-02-05 in Brazil, Cote d'Ivore, India, Indonesia, Kenya, Mexico and Uganda (2002-2008).

5. EU-SAFSYS Project No. ICA4-CT-2001-10093- Symbionts in Agroforestry Systems: what are the long-term impacts of inoculation of *Calliandra calothyrsus* and its intercrops?

6. EU-IMPALA Project No. INCO-DEV ICDC –ICA4-CT-2000-30011. Improved fallows by legume plants (trees and shrubs) in Eastern and Southern Africa: Impacts on microbial diversity (1992-1998).

6.2. Ongoing research

a. Component lead investigator in the EU funded project "**Designing InnoVative plant teams for Ecosystem Resilience and agricultural Sustainability (DIVERSify) 2017-2021.**"

b. 2. Team leader in the EU funded project "**Transition paths to sustainable legume based systems in Europe (TRUE), case study of Kenya 2017-2021.**"

c. 3. Team leader in the LTS-ODA funded project No. NEC06476- **"Sustainable Use of Natural Resources to Improve Human Health and Support Economic Development (SUNRISE) 2018-2022."**

6.3. Mentorship and supervision

Undergraduate on attachment in KEFRI, Nairobi (Kenya).

7. INNOVATIONS AND PATENTS (Intellectual Property)

8. CONFERENCES/SEMINARS/WORKSHOPS

8.1. Presentation of Papers at Academic and Professional Conferences

Odee DW, **Makatiani ET**, Ochieng JO, Magare CO, Esitubi MO and Kinyanjui M (2020) TRUE Case Study 22, Productivity of cereal-legume intercrop under smallholder farms in western Kenya. Developed by the EU-H2020 project TRUE ('Transition paths to sustainable legume-based systems in Europe'), funded by the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement Number 727973.

Odee DW, **Makatiani ET**, Otieno JO, Magare CO, Gathara M (2018) TRUE Case Study 24 [Productivity of cereal-legume intercrop under smallholder farms in western Kenya]. Developed by the EU-H2020 project TRUE ('Transition paths to sustainable legume-based systems in Europe'), funded by the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement Number 727973.

Wangaruro S, Karanja NK, **Makatiani ET**, Odee DW and Woomer PL (1998) Chemical properties, initial microbial populations and survival of rhizobia in peat, vermiculite and filtermud. (eds. S.M. Mpepereki and F.I. Makonese). pp 160-164. In: Harnessing Biological Nitrogen Fixation in African Agriculture (challenges and opportunities) Conference: Proceedings of the sixth International Conference of the African Association for Biological Nitrogen Fixation (AABNF), 12-17 September, 1994, Harare, Zimbabwe ISBN 0-908307-58-6

Wangaruro S, Karanja NK, **Makatiani ET**, Odee DW and Woomer PL (1996) Physico-chemical properties, initial microbial population and survival of rhizobia in Peat, Vermiculite and Filtermud. In: Soil Science Society of East Africa (SSSEA). Proceedings of the 15th Annual General meeting- Nanyuki, Kenya. Pp. 21-30.

8.2. Participation in Workshops/Conferences

4th March 2005: Report of the BGBD Project Activities of Tranche I. Land Mark Hotel, Nairobi (Kenya).

14th-20th March 2007: FOREAIM (Bridging restoration and multi-functionality in degraded forest landscapes of Eastern Africa and Indian Ocean islands) Project Mycorrhizal training workshop. "The general features of arbuscular mycorrhizas (AM) and ectomycorrhizas (ECM) dealt specifically with the laboratory, nursery and field methods relevant to mycorrhizal work in the project". KEFRI, Muguga (Kenya).

10th January 2018: DIVERSify Project Stakeholder Workshop. "Identify tacit knowledge, bottom-up innovations, strategies and current farmer best practice in diverse cropping systems". Held at KEFRI Maseno (Kenya).

16th-20th April 2018: TRUE (Project No. 727973 by the European Union's Horizon 2020 Research and Innovation Programme) Workshop- Presented a Poster and an Abstract on "Evaluation of Legume-non-legume mixtures using varying spatial and temporal designs under on-farm conditions". Agricultural University, Athens (Greece).

9th-13th July 2019: TRUE (Project No. 727973 by the European Union's Horizon 2020 Research and Innovation Programme) Workshop -Presented a poster "Productivity of Cereal-Legume Intercrop under Small Holder Farms in Western Kenya". Universidade Católica Portuguesa & EUREST, Porto (Portugal).

1st October 2020: 3rd Mediterranean Legume Innovation Network (LIN) Workshop: Presented a Poster "Selecting for elite rhizobial strains compatible with Common bean (*Phaseolus vulgaris*) for Bio-fertilizer production". Online video conference.

23rd-24th June 2020: TRUE (Project No. 727973 by the European Union's Horizon 2020 Research and Innovation Programme) Workshop. Online-workshop, hosted by University of Hohenheim (Germany). Online video conference.

8.3. Convening/Coordinating Conferences

10th–12th December, 2019: Regional training course of Forest Genetic Resources, KEFRI HQ, Nairobi.

9. PROFESSIONAL ENGAGMENT

9.1. Training

9.2. Consultancies

9.3. Collaboration with external organizations

a. DIVERSify Project
b. TRUE project
c. SUNRISE Project

10. EXTERNAL AND INTERNAL RESEARCH GRANTS

Include research grants won

11. LOCAL, REGIONAL & INTERNATIONAL APPOINTMENTS

11.1. Local

11.2. Regional

11.3. International

12. AWARDS AND RECOGNITION

13. CONTRIBUTION TO KEFRIs ADVANCEMENT

- One of the pioneers of KEFRI's Biotechnology department and microbiology section.

14. MEMBERSHIP TO PROFESSIONAL BODIES

- **American Society of Microbiology (AMS)** Membership Number: 56899727.

15. REFEREES

David W. Odee (PhD).
Chief Research Scientist
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