Curriculum Vitae

Personal details

Name:	**ALEXIS KAYIRANGA**
Residence:	**Xiamen-China**
Nationality:	**Rwandese**
Birth date:	**13th October 1989**
Martal Status:	**Single**
Telephone:	**13005141431**

E-mail: sbony2sbony@yahoo.com/ alexiskay1989@gmail.com /kayiranga@iue.ac.cn

---

Qualification Summary:

Mr. Alexis KAYIRANGA is an environmental scientist. As an accomplished, research driven, and highly analytical professional with expertise of conducting studies, monitoring and evaluation throughout life cycles. He is a professional and passionate researcher, with an experience over than 5 years in areas of Urban and agriculture soil ecology, Soil and water remediation, Biochar, Soil fauna in soil health. He is aspired to be part of a progressive team where creative thinking and collaboration solves problems and contributes to the well-being of the company/organization.

Research interests:

Urban and Agricultural Soil Ecology; Soil and Water Remediation through Biochar; Identification and Classification of Soil Fauna for Soil Health, and Carbon and Nitrogen Mineralization.

Education:

Chinese Academy of Sciences (CAS)
Institute of Urban Environment (IUE), Xiamen, China

- **PhD in Environmental Science (Urban Soil Ecology, adviser: Prof. Sun Xin)**

PhD thesis title: Urban flooding effect on soil fauna communities and soil nutrient cycling

Chinese Academy of Sciences (CAS)
Institute of Urban Environment (IUE), Xiamen, China

- **MSc in Environmental Science (Agriculture Soil remediation, adviser: Prof. Luo Zhuanxi)**

MSc thesis title: Comparative study of thallium adsorption onto biochar, soil, and biochar amended soil in Pomelo orchard and their potential mechanisms

The University of Rwanda, College of Agriculture, Animal Science and Veterinary Medicine (UR-CAVM)
Department of Soil and Water Management (SWM), Faculty of Agriculture Engineering and Environmental Science (FAEES).

- **BSc thesis title:** The Effect of Land Use Systems on Soil Properties; A case study from Rwanda

Research Projects:

I have completed four (4) major projects within the last seven (7) years sponsored by the government of People Republic of China

- **Project 1: The National Natural Science Foundation of China (NSFC: 32361143523), the Ningbo S&T project (2021-DST-004) and the International Partnership Program of Chinese Academy of Sciences (No. 322GJHZ2022028FN):** Distribution patterns of soil bacteria, fungi, and protists emerge from distinct assembly processes across subcommunities
- **Project 2: The funds of the Strategic Priority Research Program of the Chinese Academy of Sciences (XDA23020500), the Alliance of International Science Organizations (Grant No. ANSO-PA-2020-18), the China Postdoctoral Science Foundation (No. YJ20220191), and the National Science and Technology Fundamental Resources Investigation Program of China (No. 2018FY100300):** The Effects of Heavy Metal Pollution on Collembola in Urban Soils and Associated Recovery Using Biochar Remediation
- **Project 3: The STS project of the Chinese Academy of Sciences in Fujian province (2018T3016), the Nature Science Foundation of Fujian Province (2017Y0081 and 2018J01473), and the Scientifc Research Funds of Huaqiao University (605-50Y19047):** Insights into thallium adsorption onto the soil, bamboo-derived biochar, and biochar amended soil in Pomelo orchard
- **Project 4: The STS project of the Chinese Academy of Sciences in Fujian province (2018T3016), the Nature Science Foundation of Fujian Province (2017Y0081), the Scientifc Research Funds of Huaqiao University (605-50Y19047), and Program for New Century Excellent Talents in Fujian Province University:** Thallium contamination in agricultural soils and associated potential remediation via biochar utilization

Employment history:

Non-Profit Organization: Center for Agriculture biodiversity (CABI)

- Research on Pest and Disease Management.
- Research related to agricultural biodiversity, including the preservation of plant and soil animals and the protection of ecosystems that support agriculture.
- Climate Change and Sustainable Agriculture.
- Research on agroforestry (the practice of integrating trees with crops and livestock), which focuses on its role in enhancing biodiversity, soil health, and resilience to climate change.
- **Plantwise**: A global initiative aimed at improving plant health through the creation of plant clinics that provide advice to farmers about managing plant diseases and pests.
- **Invasive Species Management**: Research and projects focused on the biological control of invasive pests that threaten agriculture and natural ecosystems.
- **The International Phytosanitary Portal**: A platform for sharing information related to plant health and biosecurity practices around the world.

Scope of work: October 2016-July 2018

Position: Senior Researcher

Rwanda Environmental Management (REMA)

- Research on the effects of heavy metals to the environment

- Research on health and environmental effects of Air quality
- Monitoring the seasonal soil degradation level caused by soil erosion, flooding and others factors

Scope of work: October 2014-July 2016
Position: Internee
Rwanda Agriculture Board (RAB)

- Research on water treatment plant
- Research on role of Soil Fauna in Nutrient Cycling
- Research on Biological Pest Control
- Research on Soil Fauna Adaptation to Climate Variability
- Research on how soil fauna populations vary in different farming systems, including traditional, smallholder, and commercial agriculture
- Research on how different types of fertilizers (organic vs. synthetic) interact with soil fauna populations and their activity
- Research on the role of soil fauna in composting
- Small scale irrigation technology at Kirehe watershed management project (KWAMP)

Scope work: July 2012-May 2015
Position: Researcher (Team leader)

Academic Excellent Award

Outstanding International Student, Institute of Urban Environment (IUE), Chinese Academy of Sciences (CAS), 2023

Language skills

- English (Proficient: oral, written)
- French (Good)
- Kiswahili (Proficient: oral, written)
- Kinyarwanda (Proficient: oral, written)

Membership of Professional Association

Organization of Rwandan Academic Doctors (member)

Conferences Participated

- I attended the International Symposium on Urban Biodiversity and Sustainable Development (**Asia region, 20–21 February 2025; also assisted in hosting by receiving a guest at the airport**).
- International workshop on coastal and wetland ecosystems and global change organized by College of the Environment and Ecology, Xiamen University Key Laboratory of the Coastal and Wetland Ecosystems (Xiamen University), Ministry of Education, International Institute for Sustainability Science, Xiamen University Coastal and Ocean Management Institute, Xiamen University (**9 November 2024, attendee**).
- Urban Science and Climate Adaptation organized by Institute of Urban Environment, Chinese Academy of Sciences (**24/06/2024, attendee**).
- Sino-Russia International Symposium on Urban Biodiversity and Ecological Functions **(11-13/06/2024, assisted in hosting by receiving a guest at the airport).**
- International conference on Many ecologists glibly designate soil as the abiotic environment of plants, a phrase that gives me the creeps (**online conference, 14/10/2024, attendee**).

Sampling Activity

Soil sampling in Xiamen, China

- 25-27/3/2022-Soil vegetation types (invasive and native plants)
- 13/09/2023 Urban green space (phase I)
- 27/09/2023-Urban green space (phase II)
- 25/10/2023-Urban green space (phase (phase III)
- 15/11/2023-Urban green space (phase IV)
- 20/12/2023-Urban green space (phase V)

Soil sampling in Four District of Rwanda

- Huye City, 2/04/2024 (park, residential area, cultivated land, forest)
- Kigali City, 3/04/2024 (park, residential area, cultivated land, forest)
- Musanze City, 4/04/2024 (park, residential area, cultivated land, forest)
- Rwamagana City, 5/04/2024 (park, residential area, cultivated land, forest

Empowering Students Through Research: A Summer School Experience (2024).

Publications (* indicates corresponding authors)

1) Kayiranga, A., A. Isabwe, H. Yao, H. Shangguan, J. L. K. Coulibaly, M. Breed, and X. Sun*. 2024. Distribution patterns of soil bacteria, fungi, and protists emerge from distinct assembly processes across sub communities. Ecology and Evolution 14 (2024) e11672: https://doi.org/10.1002/ece3.11672.

2) Kayiranga, A., Z. Li, A. Isabwe, X. Ke, C. H. Simbi, B. E. Ifon, H. Yao, B. Wang, and X. Sun*. 2023. The Effects of Heavy Metal Pollution on Collembola in Urban Soils and Associated Recovery Using Biochar Remediation: A Review. Int J Environ Res Public Health 20. https://doi.org/10.3390/ijerph20043077.

3) Kayiranga, A., Z. Luo*, J. C. Ndayishimiye, F. Nkinahamira, E. Cyubahiro, T. Habumugisha, C. Yan, J. Guo, Z. Zhen, A. Tuyishimire, and H. D. Izabayo. 2021. Insights into thallium adsorption onto the soil, bamboo-derived biochar, and biochar amended soil in Pomelo orchard. Biochar 3:315-328. https://doi.org/10.1007/s42773-021-00095-1.

4) Zhuanxi L*., **Kayiranga, A**., Ernest U., Qinghua Z., Changzhou Y., Jianhua G., Baoshan X 2020. Thallium contamination in agricultural soils and associated potential remediation via biochar utilization: Biochar, Vol 2:33–46: https://doi.org/10.1007/s42773-020-00042-6.

5) Coulibaly, J. L. K., X. Gong, Y. Shao, H. Shangguan, **Kayiranga, A**, I. Koné, Y. Cai, and X. Sun*. 2025. Urban greenspaces reduce the community specialization of soil nematodes. Geoderma. 453 (2025) 117139: DOI:10.1016/j.geoderma.2024.117139.

6) Gasana Zachee, **Kayiranga A**, Jean Claude Nizeyimana; Shaohua Tian; Justin Rugema; Lelan You; Xu Huang*; Jian-Qiang Su. Removal of antibiotics and antibiotic resistance genes using microalgae-based wastewater treatment system: a bibliometric review and mechanism analysis. Journal of Water Process Engineering 72 (2025) 107496: https://doi.org/10.1016/j.jwpe.2025.107496.

7) Cyubahiro, E., Z. Luo*, **Kayiranga, A**, T. Habumugisha, F. Nkinahamira, J. C. Ndayishimiye, C. Yan, J. Guo, and Z. Wang. 2022. Thallium removal by the montmorillonite biochar composite: insights and environmental implications. Desalination and Water Treatment **253**:177-193. doi: 10.5004/dwt.2022.28301.

8) Habumugisha, T., Z. Zhang, J. C. Ndayishimiye, F. Nkinahamira, **Kayiranga, A**, E. Cyubahiro, A. Rehman, C. Yan, and X. Zhang*. 2022. Evaluation and optimization of the influence of silver cluster ions on the_MALDI-TOF-MS analysis of polystyrene nanoplastic polymers. Anal Methods 14:763-772. doi:10.1039/d1ay02219a.

9) Simbi, C. H., F. Yao*, J. Zhang, D. Tenaw, J. Sugira Murekezi, M. T. Magati, H. Hirwa, A. S. Al-Sakkaf, **Kayiranga, A**, and J. Peng. 2024. Balancing growth and preservation: Unravelling Africa's carbon-economic nexus through the environmental kuznetscurve. Journal of Heliyon:10:e39269. https://doi.org/10.1016/j.heliyon.2024.e39269.

10) Kalisa, W., J. Zhang*, T. Igbawua, **Kayiranga, A**, F. Ujoh, I. S. Aondoakaa, P. Tuyishime, S. Li, C. H. Simbi, and D. Nibagwire. 2021. Spatial Multi-Criterion Decision Making (SMDM) Drought Assessment and Sustainability over East Africa from 1982 to 2015. Remote Sensing 13. https://doi.org/10.3390/rs13245067.

Manuscript in progress of submission

1) Alexis Kayiranga, Bin Wang, An Xie, Justin Louis Kafana Coulibaly, Jean Claude Ndayishimiye, Faith Ka Shun Chand, Stefan Scheu, Xin Sun*. Urban flooding disrupts soil fauna communities in urban greenspaces resulting in shifts in body size distribution particularly in exotic plant communities. Submitted manuscript (in progress of submission).

2) Alexis Kayiranga, Denis Mburu Njoroge, Justin Louis Kafana Coulibaly, Bin Wang, An Xie, Hua-Yuan Shangguan, Jean Claude Ndayishimiye, Peter Rwibasira, Xin Sun*. The Impact of Flooding on Terrestrial Invertebrate Communities: A Global Meta-Analysis Across Different Land Use Types and Taxa. Submitted manuscript.

3) Justin Louis Kafana Coulibaly, Xin Gong, **Alexis Kayiranga**, Huayuan Shangguan, Yanbo Chen, Xiuling Yu, Saichao Zhang, An Xie, Taha Ahmed Mohamed, Nico Eisenhauer, Xin Sun. Nematode diversity loss and community change in urban green spaces explained by alterations in soil pore structure and chemical properties.

References

Prof. SUN XIN
Chinese academy of Science (CAS/IUE)
Mobile: 15960800776
Email: xsun@iue.ac.cn

Prof. ZHUANXI LUO
Huaqiao University
Mobile: 13328784636
Email: zxluoire@163.com; zxluo@hqu.edu.cn

Dr. JEAN CLAUDE NDAYISHIMIYE
Senior Lecturer (Shenzhen MSU-BIT University, Shenzhen, China)
Email: 6420210004@smbu.edu.cn

Dr. ALAIN ISABWE
Senior Researcher (Michigan State University)
Mobile: +1 (734) 819-5661
Email: aisabwe@umich.edu