Kenji Maurice

Curriculum Vitae

Post-Doc in French National Research Institute for Agriculture, Food and the Environment (INRAE)

Team EmerSys - Emergence, systematics and ecology of plant-associated bacteria - IRHS Lab (UMR1345) - Research Institute in Horticulture and Seeds – INRAE, Angers

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Research interest

My PhD research aimed at studying the microbial ecology of a hot arid desert ecosystem in Saudi Arabia. I performed field sampling of soil, rhizosphere and roots to study how the microbiome responds to land uses, precipitation, and how plant symbionts, especially mycorrhiza, are integrated in the microbiome. To do so, I used metabarcoding sequencing, histology, and microorganisms cultivation. Biostatistics, co-occurrence networks and null models were used to gain a holistic view of microbiome structure in this highly constrained environment, with its link with environmental parameters. Ecology concepts are the backbone of my research, as I integrate community ecology, assembly processes and interactions in my work.

Research skills

Conceptualization of a research project and hypotheses

Writing and publishing research articles: from draft to response to reviewers

Reviewer for scientific journals (Applied Soil Ecology, Microbial Ecology, New Phytologist, PeerJ, Scientific Reports)

Field sampling: Design and sampling

Molecular biology: High-throughput sequencing library preparation (DNA extraction, multiplexed PCR, purification)

Histology and microbiological culture

Numerical ecology: Co-occurrence networks, tools for microbiome analysis, compositional data analysis, phylogeny, null models

Communication: Conference, master teaching

Education

05/2025 to current: **Post-Doctoral** position, Monitoring the contribution of European grasslands to the conservation of soil biodiversity and ecosystem function under multiple global change stressors (GRASS4FUN). *Team EmerSys - Emergence, systematics and ecology of plant-associated bacteria - IRHS Lab (UMR1345) - Research Institute in Horticulture and Seeds – INRAE, Angers*

04/2024 to 05/25: **Post-Doctoral** position, Microbial ecology and chemistry of Aquilaria in French Guyana, toward a sustainable production of agarwood (Acquilascent). *Agap-Institut, CIRAD, Montpellier*

10/2020 to 04/2024: **PhD,** Structure of soil and plant microbial communities and networks in an arid ecosystem (SoFunLand). *LSTM lab, CIRAD, Montpellier, parternship with Institute of Systematics, Evolution and Biodiversity (UMR 7205), National Musuem of Natural History, Paris and Valorhiz start-up, Montpellier*

2020: **Master**, Conceptual, quantitative, systemic and experimental approach to the functioning of natural, cultivated and exploited aquatic and terrestrial ecosystems. University of Montpellier, *Major*

-Internship, 2020, The use of traits in terrestrial nematodes to highlight intra-guild variability and assign new genera, UMR Eco&Sols, INRAE, Montpellier

-Internship, 2019, Impacts of zinc and lead mining pollution on the ectomycorrhizal diversity associated with Salix purpurea in the Vis River in Saint-Laurent-le-Minier, UMR LSTM, CIRAD, Montpellier

-Internship, 2018, Introduction to research for development: Edible mycorrhizal fungi, black and white truffles cultivation in New Zealand, Plant And Food Research, Christchurch, New-Zealand

2018: **Bachelor**, Ecology and biology of organisms. University of Montpellier

List of publications

-Boivin, S., Bourceret, A., **Maurice, K**., Laurent-Webb, L., Figura, T., Bourillon, J., Nespoulous, J., Domergue, O., Chaintreuil, C., Boukcim, H., Selosse, M.A., Fiema, Z., Botte, E., Nehme, L., Ducousso, M. (2023). Revealing human impact on natural ecosystems through soil bacterial DNA sampled from an archaeological site. Environmental Microbiology. https://doi.org/10.1111/1462-2920.16546

-Maurice, K*., Laurent-Webb, L*., Dehail, A., Bourceret, A., Boivin, S., Boukcim, H., Selosse, M.A., Ducousso, M. (2023). Fertility islands, keys to the establishment of plant and microbial diversity in a highly alkaline hot desert. Journal of Arid Environments, 219, 105074. https://doi.org/10.1016/j.jaridenv.2023.105074

-Maurice, K¤., Bourceret, A., Youssef, S., Boivin, S., Laurent-Webb, L., Damasio, C., Boukcim, H., Selosse, M.A., Ducousso, M. (2024). Anthropic disturbances impact the soil microbial network structure and stability to a greater extent than natural disturbances in an arid ecosystem. Science of the Total Environment, 907, 167969. https://doi.org/10.1016/j.scitotenv.2023.167969

-Maurice, K¤., Bourceret, A., Robin-Soriano, A., Vincent, B., Boukcim, H., Selosse, M. A., & Ducousso, M. (2024). Simulated precipitation in a desert ecosystem reveals specific response of rhizosphere to water and a symbiont response in freshly emitted roots. Applied Soil Ecology, 199, 105412. https://doi.org/10.1016/j.apsoil.2024.105412

-**Maurice, K¤**., Laurent-Webb, L., Bourceret, A. et al. Networking the desert plant microbiome, bacterial and fungal symbionts structure and assortativity in co-occurrence networks. Environmental Microbiome 19, 65 (2024). https://doi.org/10.1186/s40793-024-00610-4

-Maurice, K¤., Boukcim, H., Selosse, M-A., Ducousso, M. (2024). Historical contingencies of land use as a driver of bacterial communities assembly processes in an arid desert. (Preprint: https://www.researchsquare.com/article/rs-4128270/v1)

-Laurent-Webb, L.*, **Maurice, K.***, Perez-Lamarque, B., Bourceret, A., Ducousso, M., & Selosse, M. A. (2024). Seed or soil: Tracing back the plant mycobiota primary sources. Environmental Microbiology Reports, 16(3), e13301. https://doi.org/10.1111/1758-2229.13301

-Robin-Soriano, A., **Maurice, K**., Boivin, S. et al. Absence of Gigasporales and rarity of spores in a hot desert revealed by a multimethod approach. Mycorrhiza 34, 251–270 (2024). https://doi.org/10.1007/s00572-024-01160-w

-Vincent, B., Bourillon, J., Gotty, K., Boukcim, H., Selosse, M.A., Cambou, A., Damasio, C., Voisin, M., Boivin, S., Figura, T., Nespoulous, J., Galiana, A., **Maurice, K**., Ducousso, M. (2024). Ecological aspects and relationships of the emblematic Vachellia spp. exposed to anthropic pressures and parasitism in natural hyper-arid ecosystems: ethnobotanical elements, morphology, and biological nitrogen fixation. Planta, 259(6), 132. https://doi.org/10.1007/s00425-024-04407-0

-Robin-Soriano, A., Vincent, B., **Maurice, K**., Battesti, V., Boukcim, H., Ducousso, M., & Gros-Balthazard, M. (2025). Digging deeper into the impacts of different soil water systems on the date palm root architecture and associated fungal communities. Symbiosis, 1-18. https://doi.org/10.1007/s13199-024-01030-1

-Malou, O. P., Sebag, D., Taugourdeau, O., Ravelojaona, H., Tellez, M., Nespoulous, J., Boivin, S., Ducousso, M., **Maurice, K**., Aubertin, M.A., Boukcim, H., Alves-Fortunato, M. (2025). Using a Rock-Eval device for thermal oxidative analysis of calcareous soils with low organic carbon content: A technical note. Soil Science Society of America Journal, 89(3), e70067. https://doi.org/10.1002/saj2.70067

**Shared first-authorship*

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Conferences

ICES, 2023: Riyadh, Saudi Arabia, *Past land uses affect microbial diversity and composition in arid ecosystems (Oral communication)*

Journées Jean Chevaugeon, 2024, Aussois, France, *Networking the plant microbiome, symbionts are engineer of the desert ecosystem (Oral communication)*

French Mycorrhizal Days 7, 2024, Microbial networks in desert plants: do symbionts structure the extended microbiota ? *(Oral communication)*

SoFunLand Restitution project, 14-15 January 2025, Restitution to project funders and administrators, *(3 posters and oral communication)*

Contact references:

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