

# Teneille Nel, Ph.D.

- ✉ [teneille.nel@gmail.com](mailto:teneille.nel@gmail.com)
- 📄 [Teneille Nel](#)
- 🌐 <http://teneillenel.com/>
- 🐙 [github.com/Teneille97](https://github.com/Teneille97)



## Employment History

- Oct 2025 – present **Postdoctoral Researcher** University of Antwerp – Antwerp, Belgium.
  - Investigating soil organic carbon dynamics under enhanced rock weathering treatments
- Feb 2025 – Aug 2025 **Postdoctoral Researcher** University of California, Merced – Merced, USA.
  - Studied carbon–climate feedback and erosional exposure impacts in buried soils of the Great Plains, Nebraska
- Feb 2023 – Dec 2023 **Soil Scientist** AfriCarbon (Pty) Ltd – Cape Town, South Africa.
  - Optimized soil chemical analytical methodologies for carbon stock evaluation
- Feb 2020 – Jul 2020 **Jnr Lecturer, Soil Chemistry** Stellenbosch University – Stellenbosch, South Africa.
  - Coordinated final-year Soil Chemistry module; developed assessments and delivered lectures
- University Research Assistant** Stellenbosch University – Stellenbosch, South Africa.
  - Conducted soil sampling/classification, rhizosphere studies, and physical/chemical analyses

## Education and Training

- Jan 2022 – Dec 2024 **Ph.D. Soil Science, Stellenbosch University** EQF Level 8, NQF Level 10  
Thesis: *Termite-affected soils in the Western Cape – a toolkit for the assessment of oxalotrophy and carbon storage potential* [Thesis link]
  - Quantified and mapped soil carbon pools in termite mounds.
  - Developed infrared spectroscopy method for oxalate salt measurements in soils, vegetation, and termite frass.

## Education and Training (continued)

- Jan 2020 – Dec 2021  **M.Sc. Soil Science, Stellenbosch University** EQF Level 7, NQF Level 9, *Cum laude*  
Thesis: *Conversion of soil pH values and exchangeable cation quantities obtained by different methods* [Thesis link]
- Modelled conversions between chemical analytical methods; evaluated infrared spectroscopy as an alternative.
- Feb 2016 – Dec 2019  **B.Sc. Soil Science, Stellenbosch University** EQF Level 7, NQF Level 8, *Cum laude*
- Majors: Soil Science & Chemistry.
- Jan 2011 – Dec 2015  **National Senior Certificate, Parel Vallei High School** EQF Level 4, NQF Level 4
- DUX award, Distinctions in Advanced Programme Mathematics and Music.

## Research Publications

### Journal Articles

- 1 M. Dolui, T. Nel, L. M. Phillips, *et al.*, "Soil organic matter stabilization by polyvalent cations in a buried alkaline soil," *Journal of Geophysical Research: Biogeosciences*, 2026.  DOI: 10.1029/2025JG009241.
- 2 M. Dolui, T. Nel, L. M. Phillips, *et al.*, "Composition and persistence of soil organic matter along eroding and depositional transects in buried vs. modern soil layers: A case of the brady paleosol at wauneta, nebraska," *Geoderma*, 2025.  DOI: 10.1016/j.geoderma.2025.117660.
- 3 T. Nel *et al.*, "Carbon sequestration in termite mounds: The contributions of microbial oxalotrophy," *Catena*, 2025.  DOI: 10.1016/j.catena.2025.109141.
- 4 T. Nel *et al.*, "Impacts of land use change on carbon storage in termite mounds of south africa," *Catena*, 2025.  DOI: 10.1016/j.catena.2025.109141.
- 5 T. Nel *et al.*, "Oxalate content of vegetation and termite frass in western south africa," *Ecosphere*, 2025.  DOI: 10.1002/ecs2.70265.
- 6 D. Cowan *et al.*, "Oxalate and oxalotrophy: An environmental perspective," *Sustainable Microbiology*, 2024.  DOI: 10.1093/sumbio/qvad004.
- 7 T. Nel *et al.*, "Efficient quantification of soluble and insoluble oxalates in clay mineral mixtures," *Communications in Soil Science and Plant Analysis*, 2024.  DOI: 10.1080/00103624.2024.2336574.
- 8 N. Vermonti *et al.*, "Termites as vectors for the lateral movement of ions in the landscape: Their influence on nutrient cycling and landscape heterogeneity," *Applied Soil Ecology*, 2024.  DOI: 10.1016/j.apsoil.2025.105898.
- 9 T. Nel *et al.*, "Comparison of five methods to determine the cation exchange capacity of soil," *Journal of Plant Nutrition and Soil Science*, 2023.  DOI: 10.1002/jpln.202200378.
- 10 T. Nel *et al.*, "Soil ph and extractable basic cations of western cape soils measured by infrared spectroscopy," *Communications in Soil Science and Plant Analysis*, 2023.  DOI: 10.1080/00103624.2023.2223657.

- 11 T. Nel *et al.*, “Evaluation of simple and multivariate linear regression models for exchangeable base cation conversion between seven measurement techniques on south african soils,” *Geoderma Regional*, 2022.  DOI: 10.1016/j.geodrs.2022.e00571.
- 12 T. Nel *et al.*, “Simple and multivariate linear regression models for ph conversion between measurement techniques,” *Communications in Soil Science and Plant Analysis*, vol. 43, no. 13, pp. 1797–1808, 2022.  DOI: 10.1080/00103624.2022.2063324.

## Conference Proceedings

- 1 T. Nel *et al.*, “Assessing contributions of microbial oxalotrophy to soil carbon sequestration,” in *Arid Zone Ecology Forum*, Abstract & oral presentation, Calvinia, South Africa, 2024.
- 2 T. Nel *et al.*, “Oxalate salt concentrations of vegetation and termite frass in the greater cape floristic region of south africa,” in *SSSSA, SASHS, SASCP Combined Congress*, Abstract & oral presentation; Awarded best paper for author under 30, Wilderness, South Africa, 2024.
- 3 T. Nel *et al.*, “Rapid quantification of oxalate minerals by infrared spectroscopy,” in *ASA, CSSA, SSSA International Annual Meeting*, Poster & rapid oral presentation, Baltimore, USA, 2022.

## Books and Chapters

- 1 J. R. McAuliffe, T. Nel, *et al.*, *Heuweltjie-covered landscapes of western South Africa – Interpretive Fieldtrip Guidebook*. Figshare, Sep. 2025.  DOI: 10.6084/m9.figshare.30048331.

## Skills

Languages	 Fluent English & Afrikaans. Beginner Dutch (A2 Listening/Reading, A1 Speaking/Writing)
Data Analysis & Software	 Multivariate data and statistical analyses (R), typesetting (L <sup>A</sup> T <sub>E</sub> X), spatial data visualization and analyses (Surfer, QGIS), version control for reproducible data analysis & collaborative development (GitHub)
Biogeochemistry	 infrared spectroscopy, radiocarbon analysis, soil incubation experiments, soil chemical characterisation, soil elemental analysis, soil textural analyses, soil classification/taxonomy, environmental nutrient cycling
Driver’s license	 Code B (South Africa) – manual & automatic

## Honours and awards

- 2026  **Research, Innovation & Valorisation Antwerp (RIVA)**, Seal of Excellence Postdoctoral Scholarship
-  **University of Antwerp Research Fund (BOF)**, Early Career Research Grant
- 2025  **Research Foundation Flanders (FWO)**, Travel grant for research stay abroad
-  **Deputy Vice-Chancellor, Stellenbosch University**, Best Postgraduate Student.
- 2024  **DAAD**, Short-term Research Scholarship.
-  **Soil Science Society of South Africa**, Student Award & Best Paper for Author under 30
- 2023  **NRF & DAAD**, Doctoral Scholarship
- 2022  **Stellenbosch University Postgraduate Office**, Overseas Conference Grant
-  **Soil Science Society of America**, Hans Jenny Soil Field Trip Award
-  **Skye Foundation**, Travel Grant

## Honours and awards (continued)

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2020  **Erasmus+**, International Credit Mobility Scholarship

## International visits

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May 2024 – Jul 2024  **Max Planck Institute for Biogeochemistry, Germany**

- Radiocarbon analyses of soils and respired CO<sub>2</sub>; workshop for <sup>14</sup>C data analysis and modeling soil organic matter decomposition

Oct 2022 – Dec 2022  **Kent State University, Ohio, USA**

- Soil incubation technical experimental setup
- Automated soil gas collection (programmable logic controller), CO<sub>2</sub>/O<sub>2</sub> analyses and data processing

Feb 2021 – Jul 2021  **Katholieke Universiteit Leuven, Belgium**

- Soil chemistry research project – comparisons of methods for determination of soil cation exchange capacity
- Plant Nutrition and Tropical Soil Fertility Course (Distinction)

## Community involvement & leadership

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- 2026  **Team-building & Social media** Biobased Sustainability Engineering research group, University of Antwerp
- 2021 – 2025  **Volunteer kids service & musician** NewGen, Grace Life & Summit Church
- 2024  **Student Committee: Social media** Soil Science Society of South Africa
- 2020 – 2021  **Soil Science course representative** Stellenbosch University
- 2021  **Global Citizenship course** Stellenbosch University
- 2020  **Virtual exchange & German course** University of Tübingen
- 2017  **Academic Support Volunteer** Minerva Ladies Residence

## References

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**Prof Catherine E. Clarke**

Dept Soil Science  
Stellenbosch University  
(+27) 21 808 3659  
cdowding@sun.ac.za

**Prof Sara Vicca**

Dept Bioscience Engineering  
University of Antwerp  
(+32) 32 651 742  
sara.vicca@uantwerpen.be

**Prof Asmeret A. Berhe**

Dept Life and Environmental Science  
University of California, Merced  
(+1) 209 228 4712  
aaberhe@ucmerced.edu