Céline LAURENT – Biogeochemist of agricultural soils

Competence Centre for Plant Health
Free University of Bolzano

Academic background

2016-2019	PhD in Environmental Sciences - Université Paris-Saclay (France)
2015-2016	Master's degree 2 Agronomy & Agroecology, AgroParisTech - Université Paris-Saclay (France)
2014-2015	Master's degree 1 Biodiversity and continental ecosystems- Université de Bordeaux (France)
2012-2014	Bachelor Biology of organisms and ecosystems- Université de Bordeaux (France)

Professional experience

2024 - 2025 **Research assistant, Competence Centre for Plant Health, Free University of Bolzano (Italy)**
Engaging Citizens in soil science: the road to Healthier sOils – ECHO project, HORIZON MISSION SOIL 2024

2022-2024 **Post-doc position, UMR 1120 Laboratoire Sols et Environnement, UL-INRAe (Nancy, France)**
Assessment of soil-plant transfer of mineral and organic pollutants in urban agriculture – Ademe PlantEval2.0 project

2020-2022 **Post-doc position UPR Recyclage et risque, Cirad (La Réunion)**
Assessment of nickel and chromium phytoavailability to market garden crops and fodder crops in organic fertilization context – Ademe PhytAO Ni/Cr project

2016-2019 **PhD, UPR Recyclage et risque, Cirad (La Réunion)**
Bioavailability of copper and zinc to plants and earthworms: interactions between long term effects of organic fertilization and organisms on the evolution of soil physico-chemical properties

2016 **Master Internship, UMR Ecosys, Inra (Versailles, France)**
Assessment of copper pesticides on soil oligochaete annelids

Skills

Experimentation

- Laboratory assessment of trace elements bioavailability to earthworms (bioaccumulation test, acute toxicity and avoidance tests) and to plants (RHIZOtest, ISO 1698)
- Plant growing and earthworm breeding in controlled conditions (growth chamber, mesocosms)
- Biodiversity monitoring, *in situ* arthropod and earthworm recognition

Analytics

- Soil physico-chemical analyses interpretation
- Soil solution extraction, Cu speciation in solution (specific electrode) and Zn with diffusive membrane (DGT)
- Mineralization of biological matrices with micro-wave method

Statistical analyses and modeling

- Statistics: R
- Databases, mass balance model on trace element dynamic (R), support-decision tool with R package R-shiny
- Geochemistry-speciation: PHREEQC, WHAM

Chairing and project management

- Participation in chairing project monitoring committees, report writing, participation in schedule management
- Scientific publications and scientific communications (oral & poster) in international congress
- Students' supervision from Bachelor to master's degree

Langues

- French (mother tongue)
- English
- Italian (basic)
- Spanish (basic)

Publications

Bart, S., **Laurent, C**., Péry, A.R.R., Mougin, C. & Pelosi, C. 2017. Differences in sensitivity between earthworms and enchytraeids exposed to two commercial fungicides. *Ecotoxicology and Environmental Safety*, 140, 177–184. https://doi.org/10.1016/j.ecoenv.2017.02.052

Laurent Céline, 2019, Biodisponibilité du cuivre et du zinc pour les plantes et les vers de terre : interactions entre les effets de fertilisants organiques sur le long terme et des organismes sur l'évolution des propriétés physico-chimiques du sol, Thèse de doctorat (Université Paris-Saclay). https://pastel.archives-ouvertes.fr/tel03276302

Laurent, C., Bravin, M.N., Crouzet, O., Pelosi, C., Tillard, E., Lecomte, P. & Lamy, I. 2020. Increased soil pH and dissolved organic matter after a decade of organic fertilizer application mitigates copper and zinc availability despite contamination. *Science of The Total Environment,* 709, 135927. https://doi.org/10.1016/j.scitotenv.2019.135927

Laurent, C., Bravin, M.N., Blanchart, E., Crouzet, O., Pelosi, C., Lamy, I. 2022, Does a decade of soil organic fertilization promote copper and zinc bioavalability to an epi-endogeic earthworm? *Environmental Science and*
Pollution Research. https://doi.org/10.1007/s11356-022-23404-y

Laurent, C., Bravin, M.N., Crouzet, O., Lamy, I. 2024, Does a decade of organic fertilization promote copper and zinc phytoavalability? Evidences from a laboratory biotest with field-collected soil samples. *Science of the Total Environment,* 906, 167771. https://doi.org/10.1016/j.scitotenv.2023.167771

Laurent, C., Genies, L., Bidar, G. *et al.* An international dataset on organic molecule concentrations in soil and related kitchen garden crops. *Sci Data* **12**, 732 (2025). https://doi.org/10.1038/s41597-025-05033-5

Genies, L., **Laurent, C.**, Ouvrard, S. *et al.* An international literature-based dataset on metallic trace element contamination in kitchen garden plants. *Sci Data* **12**, 738 (2025). https://doi.org/10.1038/s41597-025-05085-7

Communication-poster

Drivers of copper availability in agricultural soils receiving long-term applications of organic fertilizers. Laurent, C., Bravin, M.N, Crouzet, O., Pelosi, C., Lamy, I. 2018. SETAC Europe. Rome: SETAC Europe, 1 p. SETAC Europe Annual Meeting. 28, Rome (IT), May 13th-17th 2018.

Risk assessment of soil-plant transfer of pollutants in urban agriculture. Laurent, C., Genies, L., Dumat, C., Ouvrard, S., Schwartz, C., Séré, G., Sterckeman, T., Bidar, G. 2023. ICOBTE-ICHMET, Wuppertal (DE), September 6th-10th 2023.

Engaging Citizens in soil science: the road to healthier soils. Mimmo, T., Tiziani, R., Borruso, L., Cappello, C., **Laurent, C**; 19th International Symposium on Microbial Ecology (ISME); Cape Town (ZA), 18th-23rd August 2024.

Communication-oral

Do long-term applications of organic residues promote copper ecotoxicity in soil? Laurent, C., Bravin, M.N, Crouzet, O., Pelosi, C., Lamy, I. 2019. Nanjing Agricultural University. Nanjing: Nanjing Agricultural University, 1 p. ICOBTE 2019. 15, Nanjing (CN), May 5th 2019/May 9th 2019.

Plant-earthworm interactions alter copper availability in the rhizosphere. Laurent, C., Bravin, M.N, Crouzet, O., Pelosi, C., Lamy, I. 2019. Nanjing Agricultural University. Nanjing: Nanjing Agricultural University, Résumé, 1 p. ICOBTE 2019. 15, Nanjing (CN), May 5th2019/May 9th 2019.

La fertilisation organique augmente-t-elle à long terme la biodisponibilité de Cu et Zn dans les sols agricoles ? Laurent, C., Bravin, M.N, Crouzet, O., Pelosi, C., Lamy, I. 2020. Webinaire du réseau écotox (FR). November 16th 2020.

Ecotoxicité terrestre à long terme des éléments traces apportés par une fertilisation organique intensive dans un agro-écosystème maraîcher. **Laurent, C.**, Bravin, M.N, Doelsch, E. 2022. Colloque annuel de la SEFA, Université de Lorraine, Metz (FR), June 30th/ July 1st 2022.

Long term terrestrial ecotoxicity of trace elements in a context of intensive organic fertilization in market garden crops. Laurent, C., Doelsch, E., Bravin, M.N. 2023. ICOBTE-ICHMET Wuppertal (DE), September 6th-10th 2023.

Third Missions

2018 – **European Night of researchers** (La Réunion, FR)

2024 - **Mission Soil in-person cluster event** (Brussels, BE, 12th-14th November 2024)

- Communication cluster event: facilitation of the “Use art to communicate on Soil health”.
- Soil indicators and monitoring.

Nov. 2024–Aug. 2025 - **FUTURES: exhibition at the Grassi Museum**, Leipzig, DE, van Bezooijen, A., Stahl, M.C., Cappello, C., **Laurent, C.**, Borruso, L., Mimmo, T.

Interest and volunteering

- Outdoor sports (trail-running, cycling), music (piano), travel
- Volunteering with an autistic child (play sessions of 1h30 per week from January 2020 to April 2022)
- Involvement in the management committee of running club CAN Saint-Max in Nancy from 2022 to 2024 (participation to committees, volunteer on running event organized by the club…)