

Candidate Information

Position:	Research Fellow in Soil Biogeochemistry and Sustainable Agriculture
School/Department:	Institute for Global Food Security
Reference:	22/109944
Closing Date:	Monday 25 July 2022
Salary:	£34,304 - £35,326 per annum
Anticipated Interview Date:	Monday 8 August 2022
Duration:	Fixed term available until 29 February 2024

JOB PURPOSE:

To be an active member of the research team in the planning and delivery of research led by the School of Biological Sciences and Institute for Global Food Security. The successful candidate will work on an EPA research project entitled "Towards a bio-based all-island economy: Urban bio-waste conversion to carboxylates, nutrient products and renewable energy". This project will seek to develop and evaluate the suitability and sustainability of blended municipal-solid-waste- compost and wastewater-recovered-struvite composite (COM-VITE) for displacing conventional chemical granular fertilisers in silviculture.

The Research Fellow will undertake research to develop these new organo-mineral fertilisers and evaluate both their agronomic performance and environmental risk, for example mass balance and kinetic modelling of nutrient release along with analysis of microbial community impacts, e.g. on antimicrobial resistance gene prevalence.

MAJOR DUTIES:

1. Undertake research to develop and assess the performance of blended municipal-solid-waste- compost and wastewater-recovered-struvite composite (COM-VITE).
2. Carry out basic chemistry on the composite materials and soils using methods such as EDXRF and photometric multi-chemistry discrete batch robotics analysis (PMDBRA).
3. Conduct enzymological analysis of phosphatase activity.
4. Perform Illumina Next-generation sequencing to produce soil metagenomes for the analysis of the prevalence of antimicrobial resistance and nutrient cycling genes.
5. Apply carbon sequestration prediction models to fertiliser treatment scenarios.
6. Contribute to the design of COM-VITE deployment trials across ca. 40 Irish forest sites. Maintain the experiments and complete sampling and analysis campaigns.
7. Lead the design and sampling of forest soil cores for mesocosm experiments.
8. Maintain mesocosm experiments and oversee chemical and biological sampling.
9. Present regular progress reports on research to members of the research group, project partners or to external audiences to disseminate and publicise research findings.
10. Prepare, often in consultation with supervisors, material for research reports, publication in national and international journals and presentations at international conferences.
11. Assist grant holder in the preparation of funding proposals and applications to external bodies.
12. Perform all formal requirements associated with safety and good working practice in the research laboratory.
13. Complete risk assessments for all the research activities undertaken.
14. Carry out routine administrative tasks associated with the research project to ensure that goals are completed on time and within budget.
15. May contribute to introductory courses, for example, on the use of research methods and equipment.
16. Read academic papers, journals and textbooks to keep abreast of developments.
17. Carry out occasional undergraduate supervision or demonstrating within the post holder's area of expertise and under the direct guidance of a member of academic staff.
18. Carry out any other duties designated by a line manager, and which fall within the general ambit of the post.

ESSENTIAL CRITERIA:

1. Have or be about to obtain a PhD in environmental sciences, environmental microbiology, molecular biology, analytical chemistry or related disciplines.
2. 3 years recent relevant practical experience in standard chemical and microbiological or molecular analysis.
3. Practical experience of field work.
4. Practical experience of sample preparation methods for environmental analysis.
5. Practical experience in setting up and maintaining plant growth experiments.
6. Ability to work with industry partners.
7. Ability to supervise, mentor and support undergrad and postgraduate students on research projects within the laboratory setting.
8. Methodical approach to project management and meticulous in terms of experimental procedures and record keeping.
9. Willingness to contribute to the School and project outreach activities in a professional manner.
10. Evidence of strong interest in working in a dynamic research environment, and a strong self- motivation to succeed within a competitive research field.
11. Strong analytical and problem-solving skills.
12. Ability to assess and organise resources.
13. Ability to logically conceptualise and summarise the research findings and data.
14. Ability to interact with research colleagues and support staff.
15. Ability to analyse and communicate effectively.
16. Strong ability to work independently from own initiative.
17. Willing to travel to support the dissemination activities at meetings / workshops in UK/Ireland.

DESIRABLE CRITERIA:

1. Relevant experience of Irish agriculture/soils and the agri-industry sector.
2. Experience in soil nutrient testing and soil coring.
3. Experience managing rhizotrons/mesocosms.
4. Experience in fertiliser or plant bio-stimulant development or evaluation.
5. Experience in metagenomics.
6. Practical experience in the validation of analytical methods.
7. Experience of outreach and networking.
8. Previous experience in multicentre UK/international research projects.
9. Experience of presenting results in front of peers, meetings or conferences.
10. Experience of publishing research in journals or media.
11. Interest in teaching, contribution to training staff and partners in techniques.
12. Knowledge of report / grant writing for funding bodies.
13. Hold a personal NI/UK/ROI driving license.