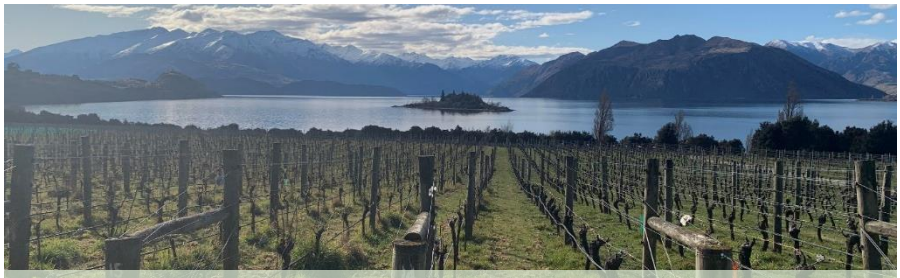
Funded Master of Science position in Soil Science



Increasing the value of grape marc waste material through biochar production and implementation

Grape marc is a carbon-rich waste material that can be composted and used as a soil amendment. This supports bio-circularity and is well-known to improve soil microbial activity and vine performance. However, the positive benefits of using compost as an amendment are short-lived, and the need to apply it frequently challenges the economic and environmental sustainability of the practice. Thermal decomposition of grape marc using pyrolysis yields biochar: a lighter and more stable form of carbon that resists microbial decomposition when used as a soil amendment. Current evidence suggests that grape marc biochar can provide a long-term carbon sink and aid with the physical and chemical conditioning of soils. However, research has yet to provide evidence of biochar's advantages over compost treatments and examine thoroughly the net carbon footprint and economics of the respective practices.

This project will use laboratory incubations and greenhouse trials to determine the relative benefit of grape marc biochar over composting and carry out a targeted life cycle assessment to determine the total carbon footprint of producing grape marc-based biochar and applying it to soils. This project is supported by the Bragato Research Institute and Green Circle NZ, who contribute expertise, facilities and contacts in viticultural operations and biochar production.

Programme Structure

- Year 1 (course work): You will select and work on a range of courses relevant to soil sciences and viticulture
- Year 2 (project and thesis): Undertaking of field and glasshouse trials, lab analysis, data processing and thesis writing.

Supervisors

- Dr Olaf Schelezki, Lincoln University
- Associate Professor Niklas Lehto, Lincoln University
- Dr Seth Laurenson, Bragato Research Institute

Requirements: You must fulfil the entry requirements for undertaking a Master of Science (Research). Your undergraduate qualification should be in viticulture, agriculture, environmental science or a related discipline, with strong grades in chemistry and soil science courses. You must possess a full driver's license. Applications from overseas applicants are welcome; however, you will need to have a valid visa to undertake study in New Zealand to start the programme in February 2024.

Funding: This two year Masters is funded by Bioresource Processing Alliance, NZ, The Green Circle and Lincoln University and includes a $42,000 stipend, $11,000 towards overall tuition fees as well as $13,500 operating funds.

Starting Date: The successful candidate will commence course work in Semester 1, 19 February 2024.

Location: The student will be hosted by Lincoln University. There will be travel and field work involved at locations in Marlborough and potentially other regions.

To Apply: Please send your **CV and Cover Letter** to Dr Olaf Schelezki (olaf.schelezki@lincoln.ac.nz)

Review of applications will commence at 9am 18th December 2023 (New Zealand time, GMT+13h), but will remain open until a suitable candidate has been chosen.

LINCOLN UNIVERSITY Centre for Viticulture & Oenology

The Green Circle

BRAGATO RESEARCH INSTITUTE
NEW ZEALAND GRAPE AND WINE RESEARCH
RANGAHAU KAREPE, WĀINA O AOTEAROA

Bioresource Processing Alliance