Welcome to the Soil News

August 2026
Issue 3 – Vol 74
ISSN 1178-8968 (Online)

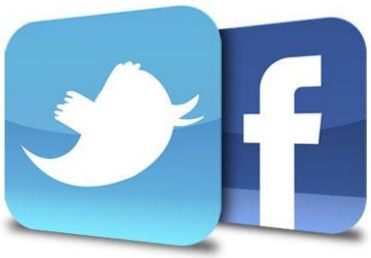
In this issue...

Welcome to the Soil News
From the Editor
Award Nominations 2026
NZSSS Conference 2026
Honouring the Legacy of Dr Graham Shepherd: The Father of Visual Soil Assessment
S-map updates across Aotearoa for 2026
New Zealand Soil Classification 4th edition complete!
News from the Regions
New book: Secrets from the Antarctic Dry Valleys
Job opportunity: Team Leader Air & Terrestrial Sciences
Abstracts



Your contributions are required - New Zealand Soil News is your newsletter

Balin Robertson
Bioeconomy Science Institute
(Manaaki Whenua - Landcare Research)
74 Gerald Street
Lincoln 7608
email:
robertsonb@landcareresearch.co.nz



Have you liked us on Facebook?
The NZSSS has a Facebook page and Twitter handle (@NZ_Soil_Soc). If you are already a user, please follow us. You can also keep an eye out for new NZSSS posts by checking the feed from our website

Officers of the NZSSS December 2024-2026

President: Pierre Roudier (Bioeconomy Science Institute - Manaaki Whenua - Landcare Research)
Vice President: Diana Selbie (Bioeconomy Science Institute - AgResearch)
Past President: Sam Carrick (Bioeconomy Science Institute - Manaaki Whenua - Landcare Research)
Secretary: Wei Hu (Bioeconomy Science Institute - Plant & Food Research)
Treasurer: Natalie Bartlett (Bioeconomy Science Institute - AgResearch)

Council: Chris Anderson (Massey University); Kirstin Deuss (Bioeconomy Science Institute - Manaaki Whenua - Landcare Research; Early Career Researcher); Brendon Malcolm (Bioeconomy Science Institute - Plant & Food Research; Awards); Tanya O'Neill (Waikato University); Dori Torres-Rojas (Massey University); Haydon Jones (Waikato Regional Council; Policy); Jim Moir (Lincoln University); Fiona Curran-Cournane (Ministry for the Environment)

From the Editor

Welcome to this issue of Soil News.

This is my first Soil News as Editor, and I would like to begin by expressing my sincere thanks to John Drewry for the hard work he has put into the role over many years, and for the personal support and mentorship he has given me. I hope to do my best to carry on his outstanding work.

Now, having never written a poem before, or read one for that matter, this is an unusual moment to try (let alone to share it broadly!), but I thought I could get the ball rolling before inviting contributions for future editions of Soil News. Submissions may be entered anonymously and can include soil- or research-related poems, art, photographs (with a short caption if possible), cartoons/illustrations, and jokes. Please send to robertsonb@landcareresearch.co.nz

Balin Robertson

Soil in Winter

Off go the cows, to winter away,
Into the shed the cultivator will stay.

The soil exhales, what a relief,
Time to rejuvenate and get over the grief.

Some of our land must carry on,
To feed the stock through winter, all season long.

So think of the earth as our true wealth,
What we do now will shape the soil's health.

When the sun is weak and low,
Take things easy, yes, take things slow.

And like the soil, if today you're still busy,
Take care of yourself, or you might get dizzy!

Disclaimer: any opinions expressed are those of the writer only.

Award Nominations 2026

Following up on the notification of award nominations included in the May issue of Soil News, awards offered by the Society for 2026 are currently open, and the deadline has been **extended to 31 August 2026**. The list of awards and key details regarding nomination requirements are provided in the table below.

JK Taylor Medal

We would also like to highlight the following award from Soil Science Australia, which is open to both Australian and New Zealand soil scientists (nominations are currently open and close 30 August 2026). Further details are available here.

Please contact Brendon, the NZSSS Awards Convenor, for full award details (Brendon.Malcolm@plantandfood.co.nz).

Award	Presented	Nominations close	Nominee eligibility	Nominator eligibility
NZSSS Fellowship	Annually	31 August 2026	Nominees must be active members of the Society at the time of nomination.	Nominations must be made by two Full Members, or Life Members of the Society.
The Grange Medal	Biennially (conference year)	31 August 2026	Open to both non-members of the Society as well as members, fellows, or life members of the NZSSS.	Nominations must be made by two or more active members of the Society.
The Blakemore Award	Biennially (conference year)	31 August 2026	Open to technicians/support staff who have been employed in the field of science for at least three years.	Any two active members of the NZSSS can nominate an eligible candidate from a university, CRI, or other organisation (e.g. a Regional Council).
The Leamy Award	Biennially (conference year)	31 August 2026	Open to the author or authors of the most meritorious New Zealand contribution to soil science, published in the previous three calendar years.	Any two active members of the NZSSS can nominate an eligible candidate(s) from a university, CRI, or other organisation (e.g. a Regional Council).
The Postgraduate Bursary	Annually	31 August 2026	Open to postgraduate (PhD) students in soil science about to enter their third year of study. Candidates must be either student or full members of the NZSSS and should not be on the academic or technical staff of the department that nominates them.	Nominations must be received in writing from the Head of the Soil or Earth Science Department/Group at a New Zealand University. Only one nomination will be accepted from each University Department/Group.

The Morice Fieldes Award	Annually	31 August 2026	A PhD thesis submitted within the previous calendar year.	The Head of the Soil or Earth Science Department/Group at a New Zealand University may nominate the best PhD thesis from their department/group.
The Rigg Award	Annually	31 August 2026	A Masterate thesis submitted within the previous calendar year.	The Head of the Soil or Earth Science Department/Group at a New Zealand University may nominate the best Masterate thesis from their department/group.
Early Career Researcher (ECR) Award	Biennially (conference year)	31 August 2026	Open to ECR's within eight years of completing their highest research qualification (Masterate or Doctorate).	No more than 2-page written nomination by any two active members of the NZSSS.
Undergraduate Prizes	Annually	31 August 2026	A third-year student in Soil or Earth Sciences.	The Head of the Soil or Earth Science Department/Group at Massey, Lincoln, and Waikato University may each nominate the best third-year student from their department/group.
The US/NZ Exchange Award	Annually	15 April 2026 for initial submission (18 April for final submission)	Nominees are required to have at least seven years of membership in SSSA or the NZSSS. Former recipients of this Award are not eligible.	This award allows self-nominations.
Soil Judging Stipend ($2,000)	Annually	31 August 2026	Open to student teams for attendance at a conference-related soil judging competition in New Zealand or Australia. Priority will be given to the highest performing team from the previous calendar year.	The Head of the Soil or Earth Science Department/Group at a New Zealand University may nominate a team from their department/group.

Nominations and requests for further information regarding NZSSS awards should be addressed to:

Dr Brendon Malcolm
NZSSS Awards Convenor
C/O Plant & Food Research
Private Bag 4704, Christchurch Mail Centre, Christchurch 8140 (normal post), or
Canterbury Agriculture & Science Centre, Gerald St, Lincoln 7608 (courier)
New Zealand

Email: Brendon.Malcolm@plantandfood.co.nz

NZSSS Conference 2026

Save the date!

New Zealand Society of Soil Science Conference 2026 will be in Christchurch



Venue: Chateau on the Park

Conference: Monday 30th November to Thursday 3rd December

Soil Judging Competition: Friday 27th to Sunday 29th November

Honouring the Legacy of Dr Graham Shepherd: The Father of Visual Soil Assessment



It is with great sadness that we advise that **Dr Graham Shepherd** passed away on **Saturday, 18 July**.

Graham was a highly respected soil scientist, an unwavering advocate for sustainable land management, and one of New Zealand's leading authorities on soil quality. Throughout his career, he dedicated himself to helping farmers, land managers, consultants, researchers and regulators better understand and care for one of our most valuable natural resources—our soils.

Many of you will know Graham as the principal developer and champion of the **Visual Soil Assessment (VSA)** methodology, a practical and accessible tool that

transformed how soil health is assessed in New Zealand. The VSA has become widely adopted across the agricultural, environmental and regulatory sectors and remains an enduring part of his legacy. His work demonstrated that visual assessment could provide a reliable, science-based and cost-effective way to monitor soil condition and support sustainable farming practices.

Graham's passion for soil science, his willingness to share his knowledge, and his commitment to improving the stewardship of New Zealand's land have had a lasting impact on countless professionals and organisations. His contributions will continue to influence the way we manage and protect our soils for generations to come.

Our thoughts are with Graham's family, friends, colleagues, and all those who had the privilege of working with and learning from him.

The family would be deeply grateful for any stories or reflections you would like to share about Graham. If you have any questions or would like to share your memories of working with Graham, please feel free to email his beloved wife, Netty Shepherd, at nettynz@hotmail.com or phone her at 022 350 8408.

Graham will be remembered fondly and greatly missed by his wife, children, extended family, friends, and colleagues.

S-map updates across Aotearoa for 2026

Pedologists and soil surveyors across Aotearoa have successfully completed soil surveys for S-map Online updates due this August. Funding for this year's soil surveys was through regional councils, as well as MfE.

Soil surveys that are to be in this year's upload include:

Kaitaia, Northland – 11,100 ha
West Coast Waikato – c. 99,300 ha
Northern Tauranga Harbour, Bay of Plenty – c. 33,300 ha
Lower Oroua/Kiwitea and Ashhurst, Horizons – c. 35,000 ha
Lower Waitaki, Canterbury – c. 12,000 ha
Murchison, Tasman – c. 5200 ha

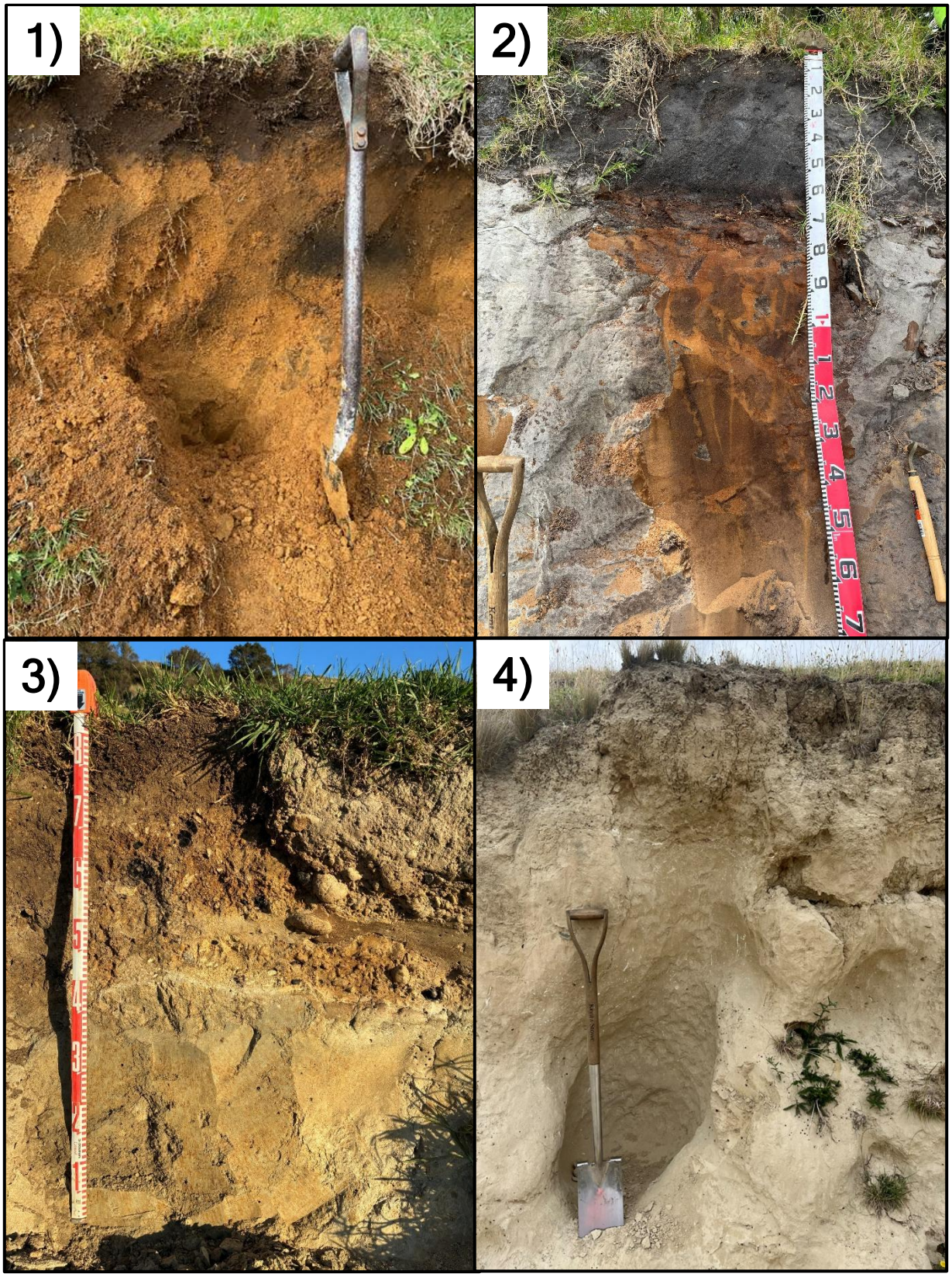
There have also been updates to legacy linework in significant areas of East Otago (16,605 ha) and Horizons (178,382 ha) based on LiDAR improvements, and updates in the dry greywacke mountains of the South Island (532,548 ha). Check out S-map Online (link below) to see the new updates in August 2026.

The year ahead sees soil survey efforts in the Far North (Kaitaia to Ngātaki), Rangitaiki West (Bay of Plenty), North-west Waikato, and Flaxbourne. BSI hopes to secure more funding for S-map expansion around the country.

A huge thank you to our S-map team at BSI for a huge year of mahi:
Scott Fraser, Emily McKay, Maddison Bingham, Akhil Sam Son, Robbie Price, Andrew Manderson, Anthony Ward, Lauren O'Brien, Kaleb McCollum, Graeme Curwen, Michelle Barnes, Andre Eger, Balin Robertson, Nathan Odgers, Amy Milnes, Thomas Caspari, Linda Lilburne, and Sam Carrick.
S-Map Online | Manaaki Whenua - Landcare Research



Landscape photo in the Flaxbourne survey area.



1) *Allophanic Soil on deep composite tephra in Katikati, Bay of Plenty;* ***2)*** *Orstein Pan Podzol related to Te Kopuru series on podzolised sand dunes near Houhora, Northland;* ***3)*** *Pumice Soil in the Horizons region related to the Putiki Loam Soils;* ***4)*** *A deep loess profile of a Semiarid Soil at the base of a riser associated with a Q4 fan near Otiake. Secondary carbonates are visible as white mottles and nodules from about 50 cm depth.*



Granular Soil from Hamilton Ash looking out to Raglan.



Landscape photo of the Horizons survey area.



Kirstin Deuss (BSI) and Matt Oliver (MDC) observing soil profiles in Flaxbourne.



Landscape photo of the Murchison survey area.



Landscape photo of the Lower Waitaki survey area.

New Zealand Soil Classification 4th edition complete!

The 4th edition of the New Zealand Soil Classification is now complete and will be available for download as a digital document (PDF format) from https://soils.landcareresearch.co.nz by late August. It is planned to offer a printed hardcopy later this year. A huge thank you to everyone involved in shaping the new edition of this fundamental pillar of soil science in Aotearoa (and now also extending to the Ross Sea Region). We hope that the next update won't take another 16 years.

Contact: Andre Eger egera@landcareresearch.co.nz

News from the Regions

Auckland

Bioeconomy Science Institute

Valuing Urban Soils: Don't treat them as dirt!

MWLR group researchers Robyn Simcock (Tamaki), Emily McKay (Kiriririoa) and Jo Cavanagh (Lincoln) have been collaborating with the Auckland Botanic Gardens at Manurewa over the last 18 months. This broadens a decade-long relationship constructing and measuring the performance of raingardens, swales and greenroofs along the 'Sustainable Water Trail' 236056-stwater-dle.pdf that informs stormwater engineers, landscapers, school children and public. All devices use specific Anthropic Soils that deliver minimum permeabilities and/or water storage while supporting healthy plant growth.



Emily explaining how special Ultic Soil is at Auckland Botanic Gardens hui.

Robyn is also helping develop specifications for root zones that support native ecosystems being created on capped contaminated land: in the past root zones have been uniform, full-depth ‘tree pit’ or ‘landscape’ mixes with 30 to 50% by volume compost. In this case two layers are proposed, and the depth of root zones above an impermeable liner deliberately varied to locally retain water. Locally-sourced mulches and boulders are being used to reflect local geology given the difficulty of verifying, sourcing and stockpiling suitable natural soils from sites within the central suburbs.

Waikato/Bay of Plenty

Bioeconomy Science Institute

Attending conferences: From China to the Netherlands

Dr Jiafa Luo recently attended the 23rd World Congress of Soil Science in Nanjing, China, and the 10th International Symposium on Non-CO2 Greenhouse Gases in Utrecht, the Netherlands. The World Congress provided an excellent opportunity to attend presentations on nitrogen cycling and environmental research, expand international networks, and engage with leading soil scientists. In Nanjing, Jiafa also met with professors and students at Nanjing University to discuss future research collaboration and student exchange. The Utrecht symposium broadened his understanding of non-CO2 greenhouse gases and highlighted strong international interest in BSI’s research on biological nitrification inhibition for mitigating nitrous oxide emissions.

Soils workshops for Northland Regional Council

Emily McKay & Maddison Bingham.

In May, staff from Bioeconomy Science Institute Maiangi Taiao held a 2-day workshop for staff at Northland Regional Council on all things SOIL.
Day 1 was hosted at a NRC owned nursery in Mata, Whangārei, where 15 NRC staff were fully immersed in soil descriptions and classifications on 3 pit sites. The team were challenged with 2 typical clayey Northland soils, Ultic and Gley Soils, known for being challenging for farming and management. The day covered how to describe soils, identify key features such as drainage and texture, and how to classify soils. The team then related the findings to land management and how to practically apply soil information and communicate this to landowners. As part of the workshop, NRC staff were provided with an 80-page handbook that covered an overview of soils across Northland, and key soil description techniques.



Left: NRC staff using the Munsell Colour Book to identify low chroma colours and mottles in a Gley Soil; right: Typic Acid Gley Soil described by NRC staff.



Emily McKay (Pedologist) talking NRC staff through the soil description handbook.



Maddison Bingham (Soil Technician) talking NRC staff through soil description techniques.



Emily McKay (Pedologist) discussing an Ultic Soil on the side of a greywacke hill and the key soil features.

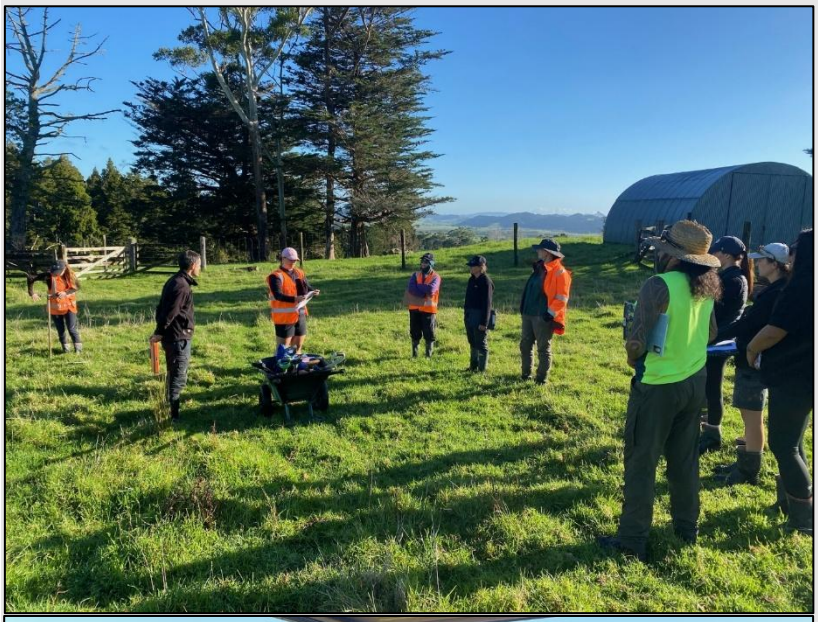
Day 2 covered Visual Soil Assessments. The team were taught how to follow the traditional VSA Guide by Graham Shepherd on pastoral land. We investigated two different soil types - one a “good” soil on Kerikeri basalt, and one a “bad” soil that was in a very wet depression with underlying basalt lava flow causing a perching water table. The team were challenged to carry out VSA's at each site and to relate this to plant indicators. They were then asked to discuss what it might mean for land management, and how this could be used and communicated to landowners. The team were also shown how to use the Foundation for Arable Research “Mini VSA” for cropping soils.



Emily McKay (Pedologist) with NRC staff near Ruatangata after carrying out VSA.



NRC staff carrying out a Visual Soil Assessment.





Emily McKay (Pedologist) talking NRC staff through the Visual Soil Assessment Guide.

Manawatū

Bioeconomy Science Institute

World Congress of Soil Science & more …

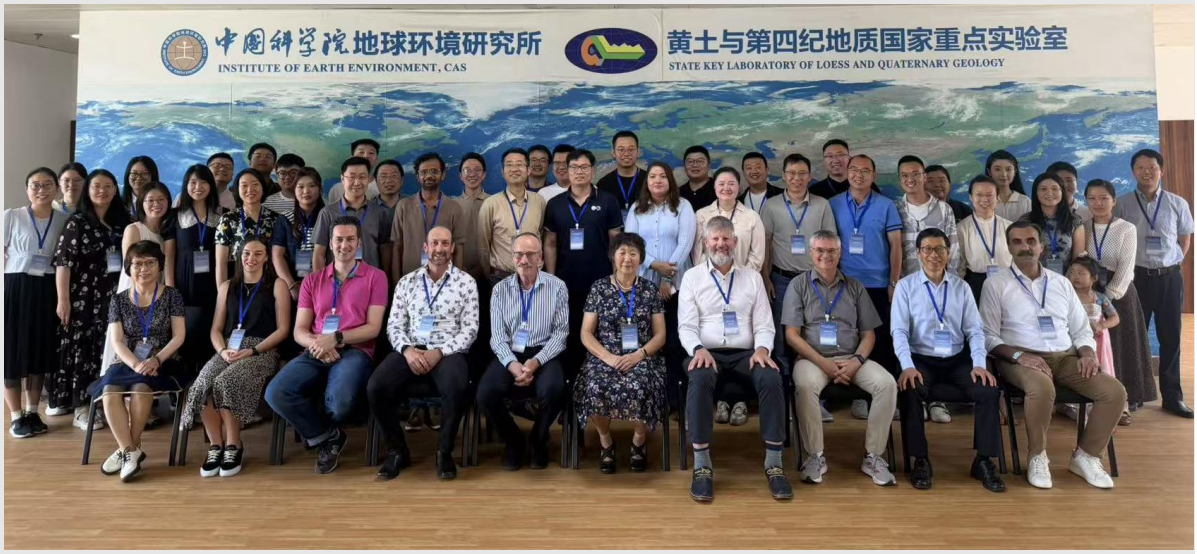
Brent Clothier (BSI, Palmerston North), Wei Hu, and Brent Malcolm (both BSI, Lincoln) attended the 23rd World Congress of Soil Science in Nanjing in early June. Our visit was made possible through generous support from Prof. Min Li of Northwest Agriculture & Forestry University (NWAFU) in Yangling, Shaanxi.
We all flew into Beijing on 5 June, and Brent immediately flew on to Dongying to attend a workshop on the saline soils and brackish waters of the Yellow River Delta. We all then met up in Nanjing and gave our papers at the Congress. We also met colleagues from the Institute of Soil Science, Chinese Academy of Sciences in Nanjing (Prof. Donghao Ma) who organised the Congress, and also colleagues from Nanjing Agricultural University (Profs Bing Zhang and Zhipeng Liu) who all attended the NZ-China Water Research Centre workshop last year at Lincoln University.



After the Congress at the base of the 391 steps leading up to Sun Yat-San's mausoleum in Nangjing. In the middle is Brent Clothier, Chamindu Deepagoda (Lincoln University), Brendon Malcolm, Jinbo Li (NWAFU – a Lincoln PhD graduate), with Prof Min Li (NWAFU) on the right. Sun Yat-San founded the Republic of China in 1912 following the abdication of Puyi, the last Emperor of the Qing Dynasty. There are 391 steps, as the population of China in 1912 was 391 million.

Following the Congress, we travelled to Xi'an with Chamindu Deepagoda (Lincoln University), Stephan Peth and Vincent Felde (Leibniz University Hannover), Brett Robinson and Mingyuan Liu (Canterbury University), plus Hadee Thompson-Morrison (BSI, Christchurch), Jianming Xue (BSI, Christchurch) and Xueqin Lin

(PHF, Christchurch). We all attended an International Earth Critical Zone Symposium in Xi'an on "Soil-Hydrology-Ecology Synergistic Regulation and Sustainable Development" hosted by Academician Weijian Zhou and Prof. Yunqiang Wang of the Institute of Earth Environment of the Chinese Academy of Sciences.

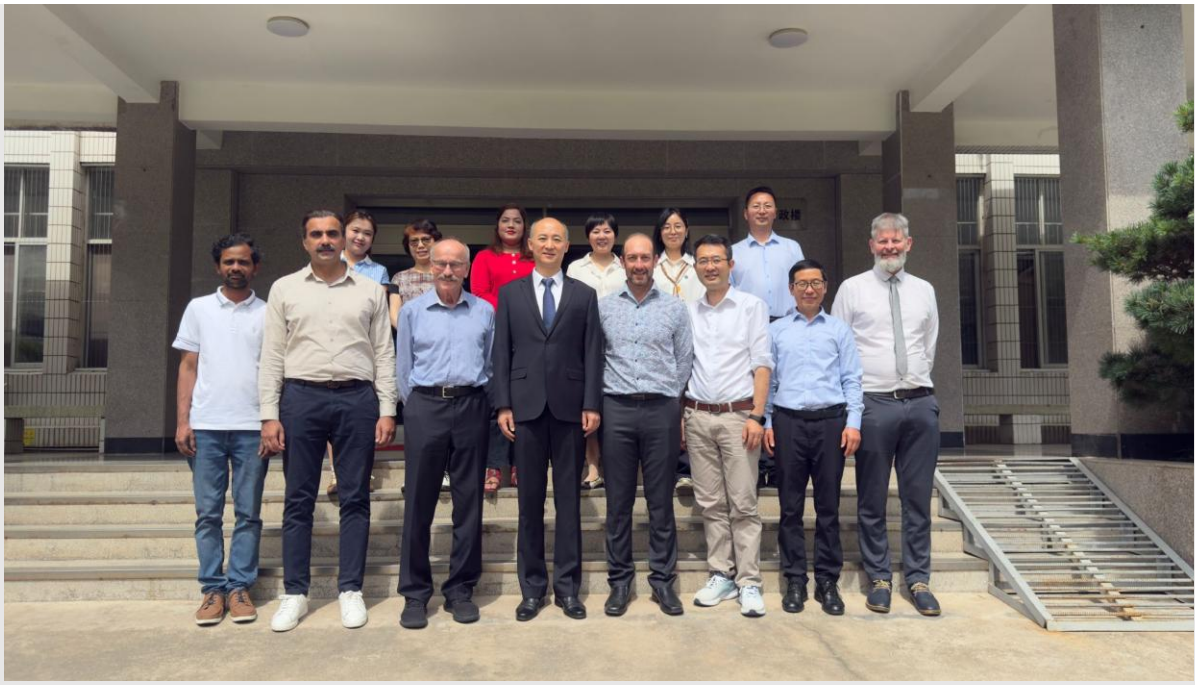


Participants at the Symposium in Xi'an hosted by Academician Zhou (front row centre) and Prof Yunqiang Wang (back row right) of the Chinese Academy of Sciences.

We next visited the Xi'an University of Technology, where we were hosted by Prof. Beibei Zhou, Dean of the School of Eco-Environmental & Chemical Engineering.



The team with Prof. Beibei Zhou of Xi'an University of Technology (third from left), comprising Brett, Brent, Brendon, Wei, Chamindu, Jianming, Xueqin, Prof. Min Li, and Mingyuan.



The team with Vice-President Dong Xiaobing of Xi'an University of Technology (fourth from left).

The University reported on-line that "..a delegation of more than ten scholars visited the University, including Professor Brent Clothier, Fellow of the Royal Society Te Apārangi and Foreign Member of the Chinese Academy of Engineering; Professor Wei Hu, Vice-President of the New Zealand-China Science and Technology Society; Professor Brendon Malcolm of Plant & Food Research New Zealand; and Professor Muhammad Aamer Maqsood of the Institute of Soil and Environmental Sciences at the University of Agriculture Faisalabad, Pakistan. Vice-President Dong Xiaobing met with the delegation in the First Reception Room, where the two sides held in-depth discussions on expanding cooperation across multiple fields".

The team then moved to Yangling where we were hosted at Northwest Forestry and Agriculture University by Prof. Min Li and colleagues, and where we all attended and presented at the 2026 International Symposium of Agricultural Soil & Water Processes and Sustainable Ecosystem Management.

Brent, Wei, and Brendon then flew west with Profs Min Li and Beibei Zhou to the Hotan Oasis on the southern rim of the Taklimakan Desert in the Xinjiang Uygur Autonomous Region of China. We were joined by Prof Xiaoxu Jia of the Institute of Geographic Sciences and Natural Resources Research of the Chinese Academy of Sciences (CAS) in Beijing.

We visited the experimental site where Prof Zhou and her team are involved in a critical project to combat desertification encroachment into the Hotan Oasis through revegetation initiatives. Prof Zhou calls her project "turning yellow sand into yellow gold" as she is using plants with economic benefits to control desertification.



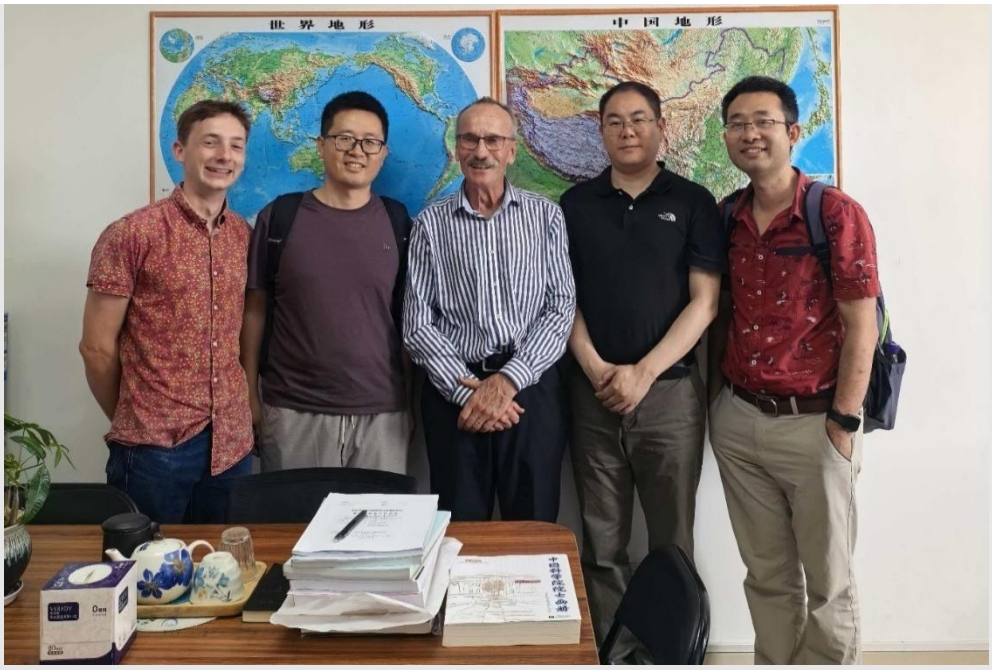
The experimental site of Prof. Beibei Zhou's revegetation projects to combat desertification by the Taklimakan Desert on the outskirts of Hotan in the Xinjiang Region of China.

Brent, Wei, and Brendon then flew up to Urumqi, the capital of Xinjiang, to visit with researchers from the Xinjiang Academy of Agricultural Sciences and Xinjiang Agricultural University. It was then a privilege to visit Turpan, which is near Urumqi on the northern rim of the Taklamakan Desert and see the Karez Well System. This is an ancient underground irrigation network built to collect and transport mountain water through to the line of oases under the Tianshan Mountains which served as the northern corridor for the Silk Road. The construction of the karez in Turpan began in 200 BC. In Persia, these ancient well systems are called qanat, and on the Arabian Peninsula they are named aflaj. Water was critical for the operation of both the northern and southern forks of the Silk Road in Xinjiang, traversing through Turpan and Hotan, respectively.



Colleagues from the two institutes in Urumqi, including Wei Hu's master's supervisor Quanjiu Wang who is an Adjunct Professor with Xinjiang Agricultural University (third from right) and Dr Qiuping Fu (fifth from left) from Xinjiang Agricultural University who hosted us.

We then flew southeast down to Guangdong to drop Brendon off to fly back to New Zealand, and for Brent and Wei to fly back up to Beijing.
In Beijing, Brent and Wei met with Academician Shaozhong Kang and his team from China Agricultural University and then we spent several days with Prof. Xi Benye of Beijing Forestry University and his students. Brent also gave two seminars at the Institute of Geographic Sciences and Natural Resources Research of the Chinese Academy of Sciences in Beijing, hosted by Prof Xiaoxu Jia – and that's where Wei did his PhD.



From the middle, Brent with Prof. Xiaoxu Jia and Wei Hu at the Institute of Geographic Sciences and Natural Resources Research of the Chinese Academy of Sciences in Beijing.

To cap off the trip, Brent was invited to be one of 17 foreign experts to attend the 105th General Assembly of the Chinese Communist Party in the Great Hall of the People. The Assembly was addressed by both President Xi Jinping and Premier Li Qiang.



A screen-grab from the CCTV National News (1st July 2026) reporting on the 105th General Assembly of the Chinese Communist Party in the Great Hall of the People. Brent can be seen sitting in the aisle seat of the second-row [the snip courtesy of Prof. Xi Benye!].

Massey University

Massey University Soil Society Lunch Time Seminar with Greg Dow (Ravensdown)

Over the past three months, the Massey University Soil Society has continued to connect students with industry through professional development and networking opportunities. Most recently, the society hosted a lunchtime seminar at Massey University, Palmerston North, featuring guest speaker Greg Dow, a Senior Agri Manager at Ravensdown. Around 50 undergraduate and postgraduate students attended the event, where Greg provided an overview of Ravensdown as a farmer-owned cooperative and highlighted advances in precision nutrient management. He demonstrated how technologies such as GPS guided aircraft and trucks, variable-rate fertiliser application, and Ravensdown's HawkeEye platform are enabling fertiliser to be applied at the right rate, in the right place, at the right time. HawkeEye integrates multiple farm datasets including soil maps, digital elevation models, and four year rolling average satellite derived pasture production estimates to support economically and environmentally informed nutrient management decisions. The seminar involved a lively question and answer session and a shared pizza lunch, providing an excellent opportunity for students to engage with industry and discuss the future of fertiliser management and environmental stewardship.



Greg Dow (Ravensdown) presenting to a range of undergraduate and postgraduate students in the Agriculture and Horticulture lecture block at Massey University in Palmerston North (31st July, 2026).

Monitoring the application of oil and gas drilling mud to land in Taranaki

The Farmed Landscapes Research Centre (FLRC) at Massey University is continuing to monitor South Taranaki landfarming research sites, providing insights into changes in soil and pasture quality over time. A key milestone has been reached with the completion of one full year of pasture sampling, allowing seasonal assessments of how drilling mud application and associated earthworks is influencing pasture growth and quality. In July 2026, the third annual round of winter soil sampling was completed, with analyses underway to track changes in soil chemical, physical and biological properties over time. The next phase of the project involves continued soil and pasture sampling and installation of piezometers to assess groundwater and potential effects to the wider environment.



View toward Taranaki Maunga from the study site in south Taranaki on a fine and frosty winter's morning (July 2026).

Te Horo i Whakakotahi a Pūtōrino e Rua: Discovering the past, present and future impact on land, water and people caused by the Pūtōrino landslide

The Pūtōrino e Rua research project reached an important milestone with its final wānanga, held at Rātā Marae on 23 May 2026. The project has successfully brought together mātauranga Māori, oral histories, archival research and earth science to improve understanding of landscape evolution, natural hazards and cultural history in the Rangitīkei Valley. Key outcomes include strengthened partnerships between iwi, researchers, landowners and council, the preservation of valuable historical records, and new insights into the age and origin of major

landslides and their influence on the Rangitīkei River. The final wānanga provided an opportunity to share these findings with project partners and the wider community, while celebrating the collaborative relationships and research capability developed through the project.



Attendees during the field trip component of a wānanga at Rātā Marae on 23rd May 2026.



Andrew Wells (Senior ecologist at Wildlands Consultants) coring a Tōtara (Podocarpus totara) at Pātōtara near Rātā Marae on the 23 May 2026 and explaining what information you can learn from dendroecology to field trip participants.

Whenua Haumanu Winter Soil Sampling – Antonia Illingworth

Since the beginning of June 2026, I've had the exciting opportunity to work in a temporary role at Massey, mainly leading a fieldwork team on the Whenua Haumanu project, as well as assisting with other work. With an undergraduate degree in Zoology (BSc), and my early career experience in UK river ecology, public engagement and forestry, I was enthusiastic to develop my understanding of sustainable land management further through learning more about soil. I took bulk density cores, sampled earthworms, and learnt laboratory techniques to investigate aggregate stability and hot water extractable carbon. Developing my scientific skills at Massey was a great way to consolidate my practical understanding of sustainable farming strategies, gained through WWOOF-volunteering on organic and regenerative farms across Aotearoa New Zealand. Engaging with global perspectives, exciting innovations and new ideas is key to tackling the challenging future of environmental stewardship. Working at Massey presented an excellent opportunity to develop my knowledge of soil and pasture management, while building my network with international peers. While I'm soon to return to the UK to pursue further study, I'm keen to hear about the outcomes of Whenua Haumanu as the seven-year project progresses, and wish everyone at Massey the best success for the future.



From left to right: Ishara Weerarathna, Andor Laszlo, Antonia Illingworth and Arnel Pocsedio helping with Whenua Haumanu soil sampling on Massey University's Dairy One.



From left to right: Ishara Weerarathna, Antonia Illingworth, Rukshagini Sutharsan and Piumi Kumaratenna assisting with Whenua Haumanu soil sampling on the Pasture and Crop Research Unit (PCRU).



Antonia Illingworth taking bulk density cores in Manawatu sandy loam on Massey University's Dairy One.

Canterbury and Otago

Bioeconomy Science Institute

Linda Lilburne: A Career in Review (on the occasion of her retirement, 30 June 2026)

Linda Lilburne retired this year after an extraordinary 32-year career with Manaaki Whenua – Landcare Research, capping a professional journey that helped transform how New Zealand collects, models, and applies environmental and soils information.

Linda's foundation was strongly quantitative: a degree in Mathematics from Victoria University of Wellington, followed by postgraduate study in Information Science at the University of Otago, including a PhD (2002) building on an earlier MSc (1997). Before joining Landcare Research, she built broad experience in computing, GIS, and project leadership — as an analyst/programmer at the University of Exeter, at DOSLI in Wellington on cadastral GIS, as a GIS consultant in Bristol, and as a project leader with Digital Equipment Corporation in Christchurch.

Linda returned from her OE in the UK in 1994 and joined Landcare Research as a GIS Specialist, initially working in the landscapes team. From there, her interests grew into spatial modelling and the challenges of matching the scale of spatial data and models to the scale of the questions being asked — a theme that became central to her PhD and to her career more broadly, alongside a deepening focus on uncertainty in research and applied decision-making.

Working with colleagues, Linda helped develop the application of spatial modelling to soil properties across landform features, giving rise to S-map — now one of New Zealand's most important land-characterising tools, used by regional councils, CRIs, ministries, forestry companies, researchers, and consultants across the country. Her leadership of the S-map programme, sustained annually through new data and model revisions, represents perhaps her most significant and lasting legacy.

In recognition of her scientific excellence and impact, Linda was appointed a Principal Researcher in the inaugural 2020 cohort (Principal Scientist – Spatial Data Science), and she has held various other leadership roles over the years, including within the Our Land and Water National Science Challenge.

Linda's influence reached well beyond Manaaki Whenua. From 2000 to 2014 she chaired the Steering Committee of the International Spatial Accuracy Research Association, reflecting a sustained international contribution around spatial accuracy and uncertainty. She worked closely with Environment Canterbury for many years — on soil mapping, environmental risk modelling, nutrient loads, and collaborative limit-setting, contributing to the Canterbury Water Management Strategy and the Matrix for Good Management, and completing a secondment focused on models for policy and water quality. More recently, her work through Whitiwhiti Ora, the Data Supermarket, and Matarau continued this thread of

bringing environmental, social, and economic information together to support land-use decisions.

We have appreciated Linda as a careful, rigorous, and generous scientist and colleague – one who pays close attention to data limitations, model assumptions, and fitness for purpose, and who has built bridges between researchers, councils, ministries, and sector groups throughout her career.

Congratulations, Linda, on a remarkable career, and best wishes for all the adventures ahead. Linda will stay on in a Research Associate capacity.



Linda at MWLR's 25th Anniversary planting event at Liffey Springs, Lincoln (2017).

Lincoln University

New Zealand soil judging team makes strong international debut

A team of Lincoln University students has placed seventh at the 5th International Soil Judging Contest, held in Nanjing, China, in June.

Breanna Holt, Carys Luke, Kayley Wiffen and Meila Picard represented New Zealand at the event, which brought together 18 teams from around the world. After three days of training, the students competed in both team and individual events, testing their ability to describe, interpret and classify soils.

The contest marked the first time a New Zealand team had attended the international competition. It also required the students to work with two classification systems that were new to them: the World Reference Base and Soil Taxonomy. The field programme gave the team an opportunity to learn from international soil scientists and examine Chinese soils, including soils shaped by extensive human modification and centuries of paddy cultivation.

New Zealand finished seventh overall, while Picard placed 13th out of 72 competitors in the individual competition.

The group was also the only all-women team at the event. Team member Carys Luke said the experience demonstrated the growing contribution women are making to agricultural and environmental science in New Zealand.

Coaches Josie Mazzetto and Carol Smith said soil judging provided students with practical skills, confidence and professional connections while allowing them to apply their knowledge in unfamiliar landscapes.

The team thanked the New Zealand Society of Soil Science and other supporters whose financial assistance made the trip possible.




5TH INTERNATIONAL
SOIL JUDGING
CONTEST
June 2-6, 2026
Nanjing and Zhenjiang, China









Lincoln University represented at World Congress of Soil Science

Lincoln University had a strong presence at the 23rd World Congress of Soil Science, held in Nanjing, China, which brought together nearly 3,000 participants from more than 100 countries.

Lincoln University was represented by a broad range of participants, including professors, lecturers, tutors and graduate students. Together, they contributed to the congress programme through oral presentations, panel discussions and poster sessions.

The event gave Lincoln University attendees the opportunity to share their knowledge and research with an international audience. It also enabled staff and students to hear from other soil scientists and learn about work underway in different parts of the world.

For graduate students, the congress provided valuable experience in communicating their research and in receiving feedback from specialists in their fields. More experienced researchers also had the opportunity to contribute to international discussions and to build new professional connections.

Participation in the event also helped to strengthen the university’s links with the wider international soil science community.

The congress was a valuable academic and professional experience for attendees. It gave Lincoln University participants the opportunity to share their expertise, learn from others, and return to New Zealand with new ideas and perspectives for their research, teaching and future collaborations.



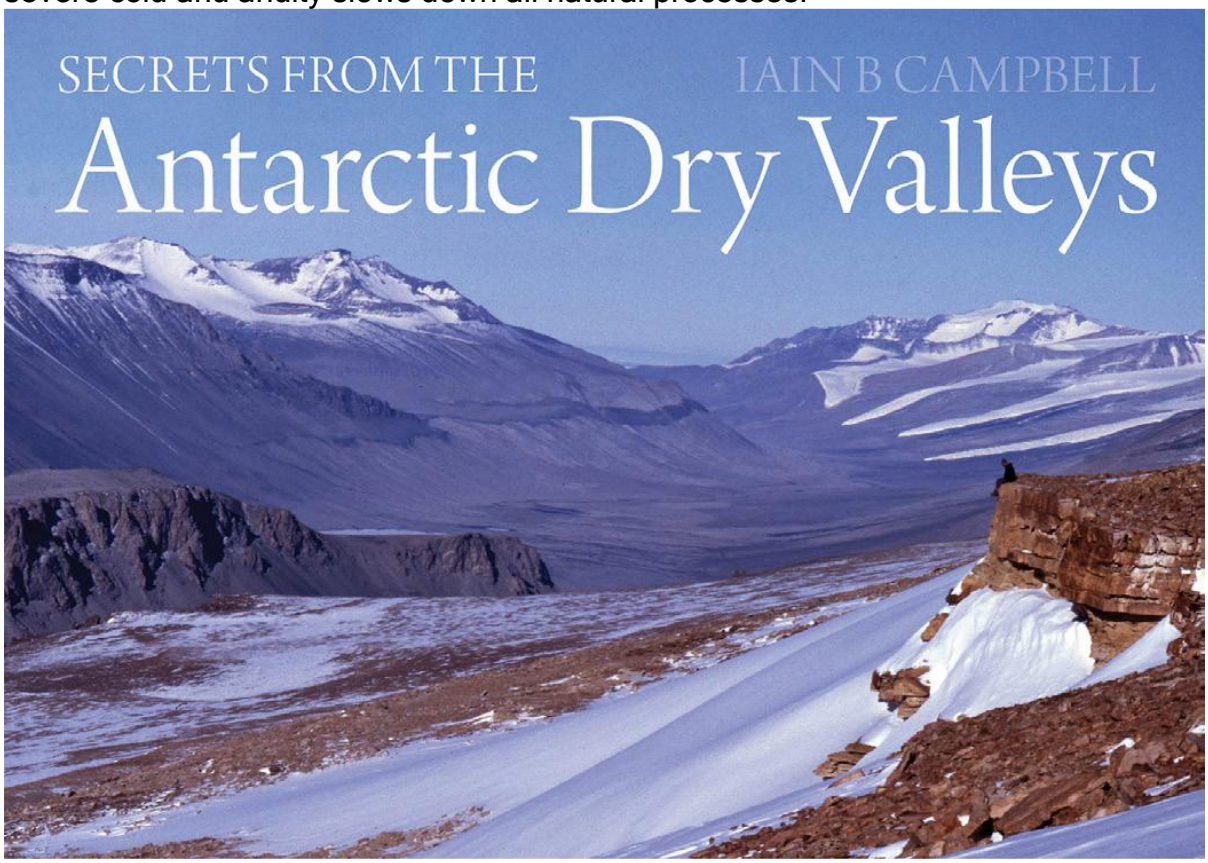
Australia

Both Richard Doyle and Peter McIntosh have recently retired from their work at the University of Tasmania and the Tasmanian Forest Practices Authority, respectively. Richard is now an Honorary Research Fellow at UTas where he continues some research and teaching while Peter is on home duties with a spot of paper writing. Mike Laffan retired from Forestry Tasmania many years back, and Bill Cotching now lives in Queensland and operates a soil-focused pottery and arts business with his wife.

New book: Secrets from the Antarctic Dry Valleys

Iain B Campbell, one of NZ's Antarctic soil pioneers, has just published a beautifully illustrated, authoritative description of the many unique features of the Antarctic Dry Valleys.

After many visits to Antarctica and the Dry Valleys over a 35-year period, Iain takes the reader of this book on a journey into the coldest and driest part of this planet. The unique features of the Dry Valleys lie in the long and complicated glacial history, and the extraordinary age and undisturbed nature of the land surfaces, which, with the severe cold and aridity slows down all natural processes.



Illustrated with more than 220 pictures, the book outlines some of the processes that operate in this timeless landscape and produce the many strange features seen in the Dry Valleys, including land surfaces and rocks shaped by wind, Mars-like landscapes and, more recently, some impacts from human activity.

The book can be purchased from CopyPress:
https://www.copypress.co.nz/product/secrets-from-the-antarctic/
Book details: 132 pages | 297mm x 210mm | RRP $58.00 | ISBN 9780473791933

Job opportunity: Team Leader Air & Terrestrial Sciences

A role is available at Environment Southland as Team Leader Air & Terrestrial Sciences. More information can be found:

https://environmentsouthland.recruitmenthub.co.nz/Vacancies/6916334/title/Team-Leader-Air-Terrestrial-Sciences

Applications close: 23 August 2026

Abstracts

Drewry JJ, Yan G, Hu W, Zhao Y, Zhang W, Cichota R, Shang Z, Li J, Yang J, Clothier BE, Beare MH, Deepagoda C, Clough TJ, Peth S. 2027. Impact of topsoil compaction on crop and pasture yield under varying climates and soil textures: a data synthesis. Soil & Tillage Research 265: 107401. Special issue: Functional Assessment and Productivity Improvement of Soil-Plant Systems. https://doi.org/10.1016/j.still.2026.107401

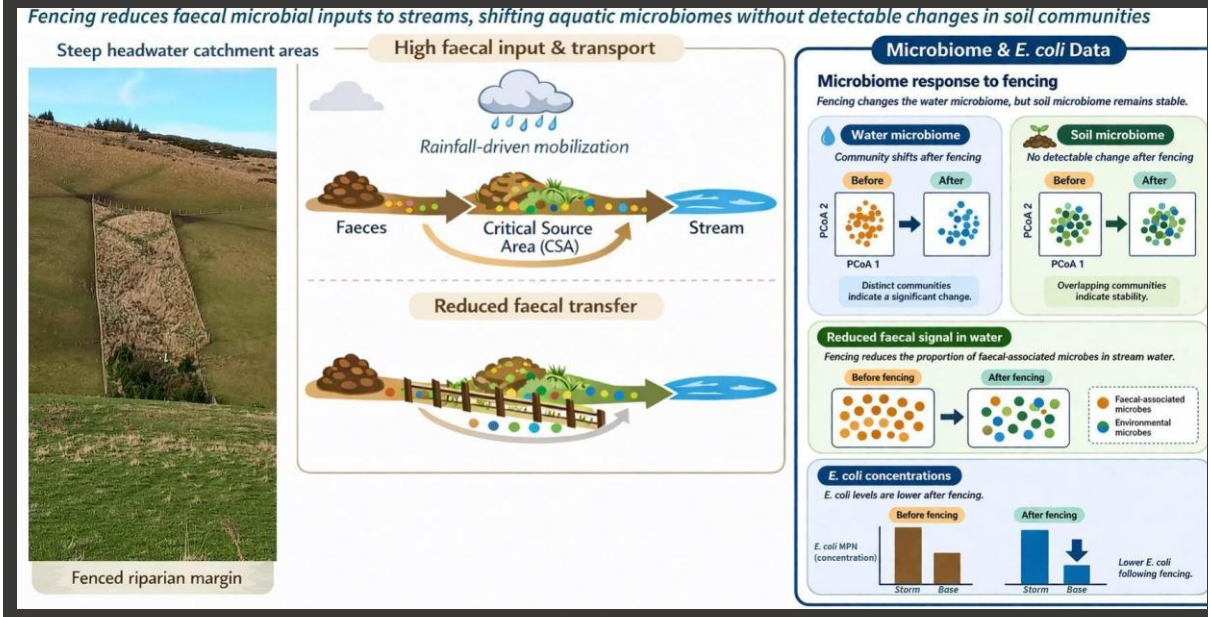
Soil compaction caused by machinery traffic or livestock grazing typically reduces crop and pasture yields, lowering farmer incomes while increasing input costs for tillage, irrigation, and nutrients. However, few studies have quantified how yield responses to compaction vary across soil textures and climates. Here we synthesise published data to quantify the relationships between yield and soil physical indicators, and to evaluate the moderating roles of soil texture and climate. We extracted yield responses to bulk density (BD) and degree of compaction (DoC) from the literature and conducted a global synthesis using main-effect regression models. Across studies, yield responses followed two dominant patterns: a negative linear decline with increasing BD or DoC, or a quadratic response with yields increasing to an optimum and then declining. For quadratic relationships, coarse-textured soils tended to show a higher optimum BD but a lower optimum DoC than fine-textured soils. Dry climates tended to show a higher optimum BD and a lower optimum DoC than wet climates. Beyond the optimum, whether inferred from linear or quadratic relationships, wet conditions had a less negative yield-DoC slope than in dry conditions, suggesting greater vulnerability to compaction in drier climates once critical thresholds are exceeded. Knowledge gaps include the lack of studies relating pastoral and many crop responses specifically to dynamic structural values (e.g., air capacity, available water capacity, penetration resistance, and aggregate stability) across textures and climates.

Cookson AL, Collis RM, Soni A, Srey F, Muirhead RW. 2026. Fencing off critical source areas reduces faecal contamination and reshapes microbial communities in agricultural headwater catchments. Science of the Total Environment 1041: 181867. https://doi.org/10.1016/j.scitotenv.2026.181867

Agricultural headwater catchments are critical sources of microbial contamination to surface waters, yet the effectiveness of mitigation practices in these small, dynamic systems is not well defined. A paired-catchment experimental design was used to assess the effects of permanent fencing of critical source areas (CSAs) in ephemeral streams within deer-grazed pastures. Faecal, soil, and freshwater samples were collected over four years, comprising two years of baseline monitoring and two years following mitigation. Viable *Escherichia coli* concentrations were measured in faeces, soil and water alongside high-resolution microbiome profiling and microbial source tracking.

Microbiomes of freshly voided faeces were dominated by anaerobic taxa (Bacteroidia, Clostridia and Spirochaetia) which were significantly reduced ($p < 0.001$) in aged faeces and replaced by aerotolerant Actinobacteria, Alphaproteobacteria and Gammaproteobacteria ($p < 0.001$). Fencing reduced *E. coli* concentrations in CSA soils by 87.4% ($p < 0.0001$) and by 47.0% ($p = 0.041$) in storm event flows, with the strongest effects in water during baseflow conditions with a 60.6% ($p < 0.0004$) reduction in *E. coli*. Freshwater microbial alpha diversity increased in the treated catchment, while soil microbiomes remained stable. Beta diversity analyses indicated distinct shifts in freshwater communities after the permanent fenced treatment, but shifts in the CSA soil microbiomes after fencing were not observed. Source tracking indicated reduced CSA soil contributions ($p < 0.001$), with a greater relative influence of aged faeces during storm events ($p < 0.0001$).

These results demonstrate that fencing off CSAs can lower faecal inputs and alter aquatic microbial communities. Culture-based and sequencing approaches provided complementary insights into contamination patterns, linking observed reductions in *E. coli* concentrations to changes in microbial diversity and community structure. This work highlights how mitigation targeting CSAs can influence both water quality and freshwater microbiomes, and underscores the value of integrating traditional monitoring with molecular methods in evaluating agricultural management practices.



Deadline..... for the next issue of Soil News is 2 November

We are the New Zealand Soil News:
Editor: **Balin Robertson** – robertsonb@landcareresearch.co.nz
Correspondents: **Thomas Caspari,** Bioeconomy Science Institute - Manaaki Whenua-Landcare Research (Lincoln); **Josie Mazzetto,** Lincoln University; **Callum Rees**, Massey University; **John Drewry**, Environment Southland; **Suzanne Lambie**, Bioeconomy Science Institute - Manaaki Whenua - Landcare Research (Hamilton); **Vitor de Jesus Martins Bianchini**, Waikato University; **Matt Taylor**, Waikato Regional Council (Hamilton); **Nicole Schon**, Bioeconomy Science Institute - AgResearch (Lincoln); **Juliet Clague**, Lincoln Agritech (Hamilton); **Richard Gillespie**, Bioeconomy Science Institute - Plant & Food (Lincoln); **Natalie Bartlett**, Bioeconomy Science Institute - AgResearch (Hamilton); **Matt Norris**, Bioeconomy Science Institute - Plant & Food (Ruakura); *Vacant*, Bioeconomy Science Institute - Scion