

## Outputs from *Reducing nitrogen losses from farms*

### Publications

1. Leptin A, Whitehead D, Orwin KH, McNally SR, Hunt JE, Cameron KC, Lehto NJ. High additions of nitrogen affect plant species-specific differences in microbial community composition and uptake of rhizodeposited carbon in a grassland soil. *Biology & Fertility of Soils* (submitted July 2021).
2. Dopheide A, David C, Nunez J, Rogers G, Whitehead D, Grelet G-A. Depth-structuring of multi-kingdom soil communities in deep-rooted pastures. *FEMS Microbiology Ecology* (submitted August 2021).
3. Biggs E, Dhami MK, Podolyan A, Dopheide A, Davis C, Grelet G. Stones - the abandoned component of soil microbial ecology. *ISME Journal* (submitted).
4. Nuñez J, Orwin KH, Moinet GYK, Graham SL, Rogers GND, Turnbull MH, Clough TJ, Dopheide A, Davis C, Grelet G-A, Whitehead D. The contribution of mineralizable nitrogen to soil nitrogen transformations increases with depth under deep-rooted lucerne (*Medicago sativa* L.). *Applied Soil Ecology* (submitted September 2021).
5. Wakelin SA, Matson A, Wigley K, Waller L, Dickie I, Whitehead D, Garrett L. 2021. High maintenance of rhizosphere soil C and N equilibrium regardless of plant species or species traits. *Frontiers in Soil Science* doi:10.3389/fsoil.2021.762510.
6. Nuñez J, Moinet GYK, Graham SL, Turnbull MH, Grelet G-A, Whitehead D. 2021. Mineral addition to soils decreases decomposition of soil organic matter by reducing microbial access. *European Journal of Soil Science* doi:10.1111/ejss.13176
7. Graham SL, Laubach J, Hunt JE, Mudge PL, Nunez J, Rogers GND, Buxton RP, Carrick S, Whitehead, D. 2021. Components of nitrogen balance in irrigated and non-irrigated lucerne. *Agricultural Water Management* 259:107233. doi:10.1016/j.agwat.2021.107233
8. Leptin A, Whitehead D, Anderson CR, Cameron KC, Lehto NJ. 2021. Increased soil nitrogen supply enhances root-derived available soil carbon leading to reduced potential nitrification activity. *Applied Soil Ecology* 159:103842. doi:10.1016/j.apsoil.2020.103842
9. Talbot WD, Malcolm BJ, Cameron KC, Hong JD, Whitehead D. 2020. Effect of timing of cattle urine deposition timing and pasture composition on nitrogen leaching losses. *Soil Use and Management* doi:10.1111/sum.12652.
10. Gray CW, McDowell RW, Graham SL, Hunt JE, Laubach J, Rogers GND, Carrick S, Whitehead D. 2020. Phosphorus losses to subsurface flow from a stony soil under irrigated and non-irrigated lucerne. *New Zealand Journal of Agricultural Research* 64:429-443. doi:10.1080/00288233.2020.1792514
11. Nascente AS, Nuñez J, Graham SL, Moinet GYK, Hunt JE, Rogers GND, Whitehead D. 2020. Soil carbon availability affects nitrogen transformations under irrigated lucerne. *Pedosphere* 31:977-980. doi:10.1016/S1002-0160(21)60028-0
12. Talbot, WD, Malcom, BJ, Cameron KC, Di HJ, Whitehead D. 2020. Cattle diet and winter plant growth effects on nitrogen losses from cattle urine patches. *Nutrient Cycling in Agroecosystems* doi:10.1007/s10705-020-10050-4
13. Graham SL, Laubach J, Hunt JE, Whitehead D, Carrick S. 2019. Predicting soil water balance for irrigated and non-irrigated lucerne on stony, alluvial soils. *Agricultural Water Management* 226:105790. doi:10.1016/j.agwat.2019.105790

14. Laubach J, Hunt JE, Graham SL, Buxton RP, Rogers GND, Mudge PL, Carrick S, Whitehead D. 2019. Irrigation increases forage production of newly established lucerne but enhances net ecosystem carbon losses. *Science of the Total Environment* 689:921-936. doi:10.1016/j.scitotenv.2019.06.407
15. Wakelin S, Maclean P, Cave V, Zhou J, Grelet G, Whitehead D. 2019. Characterising the soil ecosystem phenotype associated with relatively low nitrate-N concentrations. *Applied Soil Ecology* 142:189-198. doi:10.1016/j.apsoil.2019.04.012
16. Talbot WD, Cameron KC, Di HJ, Malcolm BJ, Whitehead D. 2019. Effects of adding readily available carbon to soil on nitrogen losses from cattle urine patches. *New Zealand Journal of Agricultural Research*. doi:10.1080/00288233.2019.1581237

### **Publications in preparation**

17. Malcolm BJ, Talbot WD, Cameron KC, Hong JD. Rhizosphere nitrogen and carbon dynamics in urine-treated soil as affected by crop species and soluble carbon addition. In preparation for submission to *New Zealand Journal of Agricultural Research*
18. Sharp J, McNally S, Graham S, Chicota R, Whitehead D. Balancing the trade-offs of increased dry matter production and environmental impact: a case-study of contrasting management on a free draining soil. In preparation for *Science of the Total Environment*
19. Dopheide A, Wakelin SA, Talbot WD, Davis C, Whitehead D, Grelet G-A. Microbial taxonomy and functional change in response to carbohydrate inputs under high nitrogen conditions. In preparation for submission to *FEMS Microbiology Ecology*
20. Matunga H, Haremata G, Chakraborty R, Matunga H. Restoring the Mauri. The Mauriora Systems framework, as a methodology for facilitating the exercise of kaitiakitanga across land based production contexts. In preparation for submission to *MAI Journal: A New Zealand Journal of Indigenous Scholarship*

### **Articles in end user magazines**

1. Dopheide A 2021. Soil biota in productive landscapes: improving our understanding. Pūtaiao Manaaki Whenua Science Summary, Issue 5, p14, 2 March 2021. [2020https://www.landcareresearch.co.nz/news/soil-biota-in-productive-landscapes-improving-our-understanding/](https://www.landcareresearch.co.nz/news/soil-biota-in-productive-landscapes-improving-our-understanding/)
2. Graham S, Hunt J, Laubach J, Rogers G, Whitehead D. 2020 Lysimeter research identifying management practices to reduce nitrogen leaching. *Soil Horizons* Issue 30, October 2020, Manaaki Whenua – Landcare Research. <https://www.landcareresearch.co.nz/publications/soil-horizons/soil-horizons-articles/lysimeter-research-identifying-management-practices-to-reduce-nitrogen-leaching/>
3. Ashley Dene as OzFlux site of the month. Article in TERN newsletter, October 2020 <https://www.tern.org.au/site-of-the-month-ashley-dene/>
4. Video presentation to APEC-GRA Virtual Farm Tour working with MPI and RAMP Productions. Filming at Leeston Farm and Ashley Dene, January 2021 [2021 Virtual New Zealand Farmer Study Tour Reducing while producing: Innovate - YouTube](https://www.youtube.com/watch?v=...)
5. Programme website <https://www.landcareresearch.co.nz/discover-our-research/projects/reducing-nitrogen-losses-from-farms/>

6. Green tools are not available. Annette Scott with David Whitehead and Scott Graham. Farmers Weekly, 16 March 2020, p17 [https://issuu.com/farmersweeklynz/docs/fw\\_16-03\\_issuu/1?ff&showOtherPublicationsAsSuggestions=true](https://issuu.com/farmersweeklynz/docs/fw_16-03_issuu/1?ff&showOtherPublicationsAsSuggestions=true)
7. Lucerne without effluent for less N and more C. 2020. Pūtaiao Manaaki Whenua Science Summary Issue 1, p6, February 2020. <https://www.landcareresearch.co.nz/publications/putaiao/>
8. Whitehead D (contact) Managing irrigation and harvest intensity of lucerne to increase soil carbon stocks. 2019. Soil Horizons Issue 28, December 2019, Manaaki Whenua – Landcare Research. <https://www.landcareresearch.co.nz/news/managing-irrigation-and-harvest-intensity-of-lucerne-to-increase-soil-carbon-stocks/>
9. Black A with Whitehead D 2019. Soil is not a dirty word in the fight for carbon capture. Stuff 6 November 2019, <https://www.stuff.co.nz/business/farming/116039148/soil-is-not-a-dirty-word-in-the-fight-for-carbon-capture>
10. Lee A with Cameron K, Hong Di, Talbot W, Graham S, Whitehead D 2019. Carbon could hold the key to leaching. Dairy Exporter, September 2019, <https://nzfarmlife.co.nz/carbon-could-hold-key-to-leaching/>
11. Casey-Cox A with Whitehead D Radio podcast with Anna Casey-Cox, Earth Matters - Community Radio, Hamilton, 5 September 2019 <http://www.accessradio.org/ProgrammePage.aspx?PID=2bffd9cf-5551-41a7-a70e-8720dc87454c>
12. Laubach JS, Hunt J, Grelet G, Buxton R, Rogers G, Whitehead D 2017. The carbon balance of dryland and irrigated lucerne growing on stony soils. *Soil Horizons* 26, Landcare Research. <http://www.landcareresearch.co.nz/publications/newsletters/soil/issue-26>,

### PhD Theses and Honours Dissertation

1. Jonathan Nuñez Potes. 2021. Linkages between carbon and nitrogen substrate availability in regulating soil nitrogen transformations. PhD awarded University of Canterbury, February 2021.
2. Andrea Leptin 2021. Biogeochemical coupling and microbial regulation of soil carbon and nitrogen cycles in grasslands. PhD awarded Lincoln University, June 2021.
3. William Talbot. 2020. Reduction of nitrogen losses by manipulating carbon inputs and pasture composition PhD awarded Lincoln University, August 2020.
4. Wilbur Morrison. 2020. 'Effect of soil type on the effectiveness of plantain to reduce nitrate leaching losses. B Agr Sci Honours Dissertation, Lincoln University, December 2020, 49p.

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