

Curriculum Vitae

Name: Nicholas John Hutchings
Date of birth: 26 November 1954
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Position: Senior researcher (appointed August 1995)

Qualifications:

1976 BSc Plymouth (CNAAB) (Biological Sciences) Class IIA
1982 PhD Keele (Biological Sciences)

Previous appointments:

1983-84 Postdoctoral Assistant, University of Strathclyde, Glasgow, UK
1984-95 Modeller, Macaulay Land Use Research Institute, Aberdeen, UK

Current research activities

- Modelling production, nitrogen losses and greenhouse gas emissions at the farm-scale (specialist areas: animal housing, manure storage, livestock, grazed pasture).
- Modelling ammonia emissions from livestock systems.
- Modelling nitrogen flows in grazed pasture.

Previous experience:

- Planning, establishing and managing field trials, with and without grazing animals.
- Construction and maintenance of micro-meteorological equipment.
- Modelling micro-meteorology in forestry and agro-forestry.

Membership of academic organisations

Member of the British Grassland Society
Member of the UNECE Task Force on Reactive Nitrogen (since 2007)
Member of the UNECE Task Force on Emissions, Inventories and Projections (since 2004);
co-chair of Expert Panel on Agriculture and Nature.

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Refereed publications:

1. Serra, J., et al., *Nitrogen inputs by irrigation is a missing link in the agricultural nitrogen cycle and related policies in Europe*. Science of the Total Environment, 2023. **889**.
2. Serra, J., et al., *Is irrigation water an overlooked source of nitrogen in agriculture?* Agricultural Water Management, 2023. **278**.
3. van der Weerden, T.J., et al., *Influence of key factors on ammonia and nitrous oxide emission factors for excreta deposited by livestock and land-applied manure*. Science of the Total Environment, 2023. **889**.
4. Hassouna, M., et al., *DATAMAN: A global database of methane, nitrous oxide, and ammonia emission factors for livestock housing and outdoor storage of manure*. Journal of Environmental Quality, 2022. **n/a(n/a)**.
5. Leip, A., et al., *Halving nitrogen waste in the European Union food systems requires both dietary shifts and farm level actions*. Global Food Security-Agriculture Policy Economics and Environment, 2022. **35**.
6. Ward, A.J., et al., *Monitoring of Anaerobic Degradation in Batch Assays Using Fiber Bags*. Chemical Engineering & Technology, 2022.
7. van der Weerden, T.J., et al., *Ammonia and nitrous oxide emission factors for excreta deposited by livestock and land-applied manure*. Journal of Environmental Quality, 2021. **50(5)**: p. 1005-1023.
8. Skiba, U., et al., *Assessing the contribution of soil NO_x emissions to European atmospheric pollution*. Environmental Research Letters, 2021. **16(2)**.
9. Serra, J., et al., *Development of a groundwater contamination index based on the agricultural hazard and aquifer vulnerability: Application to Portugal*. Science of the Total Environment, 2021. **772**.
10. Mahmoud, N., et al., *A Method to Quantify the Detailed Risk of Serious Injury in Agricultural Production*. Sustainability, 2021. **13(7)**.
11. Kipling, R.P., et al., *Short communication: Identifying key parameters for modelling the impacts of livestock health conditions on greenhouse gas emissions*. Animal, 2021. **15(1)**.
12. Beltran, I., et al., *DATAMAN: A global database of nitrous oxide and ammonia emission factors for excreta deposited by livestock and land-applied manure*. Journal of Environmental Quality, 2021. **50(2)**: p. 513-527.
13. Mahmoud, N. and N.J. Hutchings, *The advantages of using field- and farm-scale data to target agri-environmental measures—an example of afforestation*. Environmental Science & Policy, 2020. **114**: p. 14-21.
14. Hutchings, N.J., et al., *Measures to increase the nitrogen use efficiency of European agricultural production*. Global Food Security, 2020. **26**.
15. Sommer, S.G., J. Webb, and N.D. Hutchings, *New Emission Factors for Calculation of Ammonia Volatilization From European Livestock Manure Management Systems*. Frontiers in Sustainable Food Systems, 2019. **3**.
16. Serra, J., et al., *Challenges and solutions in identifying agricultural pollution hotspots using gross nitrogen balances*. Agriculture, Ecosystems & Environment, 2019. **283**.
17. Kipling, R.P., et al., *To what extent is climate change adaptation a novel challenge for agricultural modellers?* Environmental Modelling & Software, 2019. **120**.
18. Groenestein, C.M., et al., *Comparison of ammonia emissions related to nitrogen use efficiency of livestock production in Europe*. Journal of Cleaner Production, 2019. **211**: p. 1162-1170.
19. Kros, J., et al., *A comparison of disaggregated nitrogen budgets for Danish agriculture using Europe-wide and national approaches*. Sci Total Environ, 2018. **643**: p. 890-901.
20. Hutchings, N.J., et al., *How do farm models compare when estimating greenhouse gas emissions from dairy cattle production?* Animal, 2018. **12(10)**: p. 2171-2180.
21. Snow, V.O., et al., *Increasing the spatial scale of process-based agricultural systems models by representing heterogeneity: The case of urine patches in grazed pastures*. Environmental Modelling & Software, 2017. **90**: p. 89-106.
22. Petersen, S.O., et al., *Ammonia abatement by slurry acidification: A pilot-scale study of three finishing pig production periods*. Agriculture Ecosystems & Environment, 2016. **216**: p. 258-268.
23. Kipling, R.P., et al., *Modeling European ruminant production systems: Facing the challenges of climate change*. Agricultural Systems, 2016. **147**: p. 24-37.
24. ten Hoeve, M., et al., *Life cycle assessment of pig slurry treatment technologies for nutrient redistribution in Denmark*. Journal of Environmental Management, 2014. **132**: p. 60-70.

25. Taghizadeh-Toosi, A., et al., *C-TOOL: A simple model for simulating whole-profile carbon storage in temperate agricultural soils*. Ecological Modelling, 2014. **292**: p. 11-25.
26. Snow, V.O., et al., *The challenges - and some solutions - to process-based modelling of grazed agricultural systems*. Environmental Modelling & Software, 2014. **62**: p. 420-436.
27. Pedersen, C.O., M. Hjorth, and N.J. Hutchings, *Effect of Livestock Slurry Ozonation and Separation on pH, Particles, and Phosphate*. Journal of Environmental Quality, 2014. **43**(3): p. 1043-1049.
28. Hutchings, N.J., et al., *A nitrogen budget for Denmark; developments between 1990 and 2010, and prospects for the future*. Environmental Research Letters, 2014. **9**(11).
29. Dalgaard, T., et al., *Policies for agricultural nitrogen management-trends, challenges and prospects for improved efficiency in Denmark*. Environmental Research Letters, 2014. **9**(11).
30. Webb, J., et al., *An Assessment of the Variation of Manure Nitrogen Efficiency Throughout Europe and an Appraisal of Means to Increase Manure N Efficiency*. Agronomy Journal, 2013. **119**: p. 373-441.
31. Hutchings, N.J., et al., *Modelling the potential of slurry management technologies to reduce the constraints of environmental legislation on pig production*. Journal of Environmental Management, 2013. **130**: p. 447-456.
32. Dammgen, U., et al., *Methane emissions from enteric fermentation as well as nitrogen and volatile solids excretions of German calves - a national approach*. Landbauforschung, 2013. **63**(1): p. 37-46.
33. Dammgen, U., et al., *Estimate of methane, volatile solids and nitrogen excretion rates of German suckler cows*. Landbauforschung, 2013. **63**(4): p. 285-301.
34. Dammgen, U., et al., *Anticipated changes in the emissions of greenhouse gases and ammonia from pork production due to shifts from fattening of barrows towards fattening of boars*. Landbauforschung, 2013. **63**(1): p. 47-60.
35. Webb, J., et al., *Emissions of Ammonia, Nitrous Oxide and Methane During the Management of Solid Manures*. Agroecology and Strategies for Climate Change, ed. E. Lichtfouse. Vol. 8. 2012. 67-107.
36. Hutchings, N.J., et al., *A model for simulating the timelines of field operations at a European scale for use in complex dynamic models*. Biogeosciences, 2012. **9**(11): p. 4487-4496.
37. Dämmgen, U., et al., *Enteric methane emissions from German pigs*. Agriculture and Forestry Research, 2012. **62**: p. 83-96.
38. Dämmgen, U., et al., *Enteric methane emissions from German dairy cows*. Agriculture and Forestry Research, 2012. **62**: p. 21-32.
39. Dämmgen, U., et al., *Data sets to assess methane emissions from untreated cattle and pig slurry and solid manure storage systems in the German and Austrian emission inventories*. Agriculture and Forestry Research, 2012. **62**: p. 1-20.
40. Dalgaard, T., et al., *Farm nitrogen balances in six European landscapes as an indicator for nitrogen losses and basis for improved management*. Biogeosciences, 2012. **9**(12): p. 5303-5321.
41. Jarvis, S.C., et al., *Nitrogen flows in farming systems across Europe*, in *European Nitrogen Assessment*, M.A. Sutton, et al., Editors. 2011, Cambridge University Press. p. 211-218.
42. Herrero, M., et al., *Livestock and greenhouse gas emissions: The importance of getting the numbers right*. Animal Feed Science and Technology, 2011. **166-67**: p. 779-782.
43. Happe, K., et al., *Modelling the interactions between regional farming structure, nitrogen losses and environmental regulation*. Agricultural Systems, 2011. **104**(3): p. 281-291.
44. Duret, S., et al., *NitroScape: A model to integrate nitrogen transfers and transformations in rural landscapes*. Environmental Pollution, 2011. **159**(11): p. 3162-3170.
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48. Dalgaard, T., et al., *Developments in greenhouse gas emissions and net energy use in Danish agriculture - How to achieve substantial CO₂ reductions?* Environmental Pollution, 2011. **159**(11): p. 3193-3203.
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51. Webb, J., et al., *Reliability of Ammonia Emission Estimates and Abatement Efficiencies. Atmospheric Ammonia - Detecting Emission Changes and Environmental Impacts*, 2009: p. 423-431.

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58. Sommer, S.G., et al., *Algorithms determining ammonia emission from buildings housing cattle and pigs and from manure stores*, in *Advances in Agronomy, Vol 89*, D.L. Sparks, Editor. 2006. p. 261-335.
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60. Sommer, S.G., et al., *Processes controlling ammonia emission from livestock slurry in the field*. European Journal of Agronomy, 2003. **19**(4): p. 465-486.
61. Dalgaard, T., N.J. Hutchings, and J.R. Porter, *Agroecology, scaling and interdisciplinarity*. Agriculture Ecosystems & Environment, 2003. **100**(1): p. 39-51.
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63. Sommer, S.G. and N.J. Hutchings, *Ammonia emission from field applied manure and its reduction - invited paper*. European Journal of Agronomy, 2001. **15**(1): p. 1-15.
64. Hutchings, N.J., et al., *A detailed ammonia emission inventory for Denmark*. Atmospheric Environment, 2001. **35**(11): p. 1959-1968.
65. Hutchings, N.J. and I.J. Gordon, *A dynamic model of herbivore-plant interactions on grasslands*. Ecological Modelling, 2001.
66. Hutchings, N.J., *Estimating the metabolisable energy requirement for pregnancy in sheep*. Animal Science, 1997. **64**: p. 463-467.
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81. Sibbald, A.R., et al., *Agroforestry research in the hills and uplands*, in *Agriculture and Conservation in the Hills and Uplands*, M. Bell and R.G.H. Bunce, Editors. 1987, Institute of Terrestrial Ecology Symposium No 23: Merlewood. p. 74-77.
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