

Curriculum Vitae: Sissel Hansen



Present position	Senior Scientist, NORSØK
Nationality, age	Norwegian, born 1956,
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Languages	Norwegian (mother tongue), English (fluent), German (fluent)

EDUCATION

1993 Dr. Scientarium, Agricultural University of Norway. Thesis title: Agronomic and environmental effects of fertilization and soil compaction.

1981 MSc in agriculture, Agricultural University of Norway, Dept. of Soil Science. Thesis title: Rock powder in agriculture.

KEY QUALIFICATIONS

Assessment and improvement of environmental sustainability in agriculture at farm level including greenhouse gas emissions, nutrient flows and - management, energy efficiency and soil management. The main impact is on nutrient dynamics within organic farming systems.

EXPERIENCE

2016 – present Senior Scientist at Norwegian Centre for Organic Agriculture (Norsøk)

1/7-31/12 2015 Senior Scientist at NIBIO

2006 – 2015 Researcher at Bioforsk – Organic Food and Farming Division.

2012 – 2013 Guest researcher at Institute of Organic Agriculture (FiBL), Switzerland (11 months).

2000 – 2002 & 2003 – 2005 Full- and part-time leaves of absence because of adoption.

1993 – 2006 Research scientist at the Norwegian Centre for Ecological Agriculture.

1988 – 1992 Research scholarship at Kvithamar Agricultural Research Station, Stjørdal, Norway.

1985 – 1987 Research manager of the project: Nutrition support and balance in alternative agriculture,

1982 – 1988 Manager of the first organic farming extension service in Norway (Midnorsk Økoring).

1981 – 1982 Internship at the Research Institute of Organic Agriculture (FiBL), Switzerland (7 months).

PROJECT LEADER IN CURRENT AND RECENT RESEARCH PROJECTS

2017- 2010 Lead WP2 (Review of factors controlling N₂O emission) in project “Improved estimation and mitigation of nitrous oxide emissions and soil carbon storage from crop residues (ResidueGas)” (*Era-Gas Project*)

2015 – 2017 Lead WP5 (N losses, C gains, and greenhouse gas emissions) in project “Managing fertility building in organic cropping systems (Fertil Crop)” (*Core Organic Project*)

2015 – 2017 Muligheter for miljø- og klimavennlig melkeproduksjon (*Landbruksdirektoratet*)

2010 – 2014 Environmental and economic sustainability of organic dairy farms (ENVIROMILK) (*NFR*)

CO-SUPERVISOR FOR PHD STUDENTS

Dr. Anne Kristin Løes, 2003, Studies of the availability of soil phosphorous (P) and potassium (K) in organic farmings systems, and of plant adaptations to low P- and K-availability, Doctor Scientarium Thesis 2003:29, Norwegian University of Life Sciences

Dr. Espen Govasmark, 2005, Trace element status of soil and organically grown herbage in relation to animal requirements. Doctor Scientarium Thesis 2005:7, Norwegian University of Life Sciences

Dr. Zhihui Yang, 2006, Sulphur fractions in long-term fertilized soils, elemental sulphur oxidation and

inhibitory effect of sulphur compounds on pathogens. Philosophiae Doctor (PhD) Thesis: 2006:10, Norwegian University of Life Sciences

Dr. Randi B. Frøseth, 2016, Nitrogen dynamics in an organic green manure - cereal rotation and mineralization of clover leaves at low temperature. Philosophiae Doctor (PhD) Thesis: 2016:25, Norwegian University of Life Sciences

Dr. Matthias Koesling, 2017, Nitrogen and Energy Utilization on Conventional and Organic Dairy Farms in Norway. Dr. agr. University of Kassel. <http://dx.doi.org/urn:nbn:de:hebis:34-2017041052342>

PUBLICATIONS

International refereed journals (1993-2018)

- Schueler, M., Hansen, S., & Paulsen, H. M. (2018). Discrimination of milk carbon footprints from different dairy farms when using IPCC Tier 1 methodology for calculation of GHG emissions from managed soils. *Journal of Cleaner Production*, 177, 899–907. <https://doi.org/10.1016/J.JCLEPRO.2017.12.227>
- Koesling, M., Hansen, S., & Bleken, M.A. 2017. Variations in nitrogen utilisation on conventional and organic dairy farms in Norway. *Agricultural Systems*. <https://doi.org/10.1016/j.agry.2017.06.001>
- Koesling, M., Hansen, S., & Schüler, M. 2017. Variations of energy intensities and potential for improvements in energy utilization on conventional and organic Norwegian dairy farms. *Journal of Cleaner Production*. <https://doi.org/10.1016/j.jclepro.2017.06.124>
- Krauss, M., Ruser, R., Müller, T., Hansen, S., Mäder, P., Gattinger, A. 2017. Impact of reduced tillage on greenhouse gas emissions and soil carbon stocks in an organic grass-clover ley - winter wheat cropping sequence. *Agric. Ecosyst. Environ.* 239, 324-333. [DOI 10.1016/j.agee.2017.01.029](https://doi.org/10.1016/j.agee.2017.01.029)
- Koesling, M., Ruge, G., Fystro, G., Torp, T., Hansen, S. 2015. Embodied and operational energy in buildings on 20 Norwegian dairy farms – introducing the building construction approach to agriculture. *Energy and Buildings*. 108, 330-345..
- Tesfai, M., Hauge, A., & Hansen, S. 2015. N₂O emissions from a cultivated mineral soil under different soil drainage conditions. *Acta Agriculturae Scandinavica, Section B—Soil & Plant Science*, 65 (sup1), 128-138.
- Hansen, S., Bernard, M.E., Rochette, P., Whalen, J.K. and Dörsch, P. 2014. Nitrous oxide emissions from a fertile grassland in Western Norway following the application of inorganic and organic fertilizers. *Nutrient Cycling in Agroecosystems*. 98:71-85. [DOI 10.1007/s10705-014-9597-x](https://doi.org/10.1007/s10705-014-9597-x)
- Frøseth R B, Bakken A K, Bleken M A, Riley H, Pommeresche R, Thorup-Kristensen K, Hansen S. 2014. Effects of green manure herbage management and its digestate from biogas production on barley yield, N recovery, soil structure and earthworm populations. *European Journal of Agronomy*. 52:90-102. DOI: 10.1016/j.eja.2013.10.006
- Nadeem, S., Hansen, S., Bleken M.A., Dörsch, P. 2012. N₂O emission from organic barley cultivation as affected by green manure management. *Biogeosciences*, 9, 2747–2759.
- Øgaard, A. F. & Hansen, S. 2010, "Potassium uptake and requirement in organic grassland farming related to soil analyses", *Nutrient Cycling in Agroecosystems*. 87:137-149.
- Bakken, A. K., Brandsæter, L. O., Eltun, R., Hansen, S., Mangerud, K., Pommeresche, R., & Riley, H. 2009. Effect of tractor weight, depth of ploughing and wheel placement during ploughing in an organic cereal rotation on contrasting soils. *Soil & Tillage Research*, 103, 433-441 .
- Riley, H., Pommeresche, R., Eltun, R., Hansen, S., & Korsæth, A. 2008. Soil structure, organic matter, earthworm activity and nutrient status in a comparison of cropping systems with contrasting tillage, rotations, fertilizer levels and manure use. *Agric. Ecosyst. Environ.* 124, 275-284.
- Yang, Z., Singh, B.R., Hansen, S. 2007. Aggregate associated carbon, nitrogen and sulfur and their ratios in long-term fertilized soils. *Soil Till. Res.* 95, 161–171.
- Yang, Z.H, Singh, B.R., Hansen, S., Hu, Z. & Riley, H. 2007. Aggregate associated sulphur fractions in long-term (>80 years) fertilized soils. *Soil. Sci. Soc. Am. J.*, 71, 163-170.
- Bleken, M. A., Steinshamn, H., & Hansen, S. 2005. High nitrogen costs of dairy production in Europe: Worsened by intensification, *Ambio*, 34, 598-606.
- Govasmark, E., Steen, A., Bakken, A. K., Strøm, T., Hansen, S., & Bernhoft, A. 2005. Copper, molybdenum and cobalt in herbage and ruminants from organic farms in Norway, *Acta Agric. Scand. Sec. A – Animal Science*, 55, 21-30.
- Govasmark, E., Steen, A., Bakken, A. K., Strøm, T., & Hansen, S. 2005. Factors Affecting the Concentration of Zn, Fe and Mn in Herbage from Organic Farms and in Relation to Dietary Requirements of Ruminants,

Acta Agric. Scand. Sec.B - Soil and Plant Science, 55, 131-142.

- Govasmark, E., Steen, A., Strøm, T., Hansen, S., Singh, B. R., & Bernhoft, A. 2005. Status of selenium and vitamin E at Norwegian organic sheep and dairy cattle farms, *Acta Agric. Scand. Sec. A – Animal Science*, 55, 40-46.
- Bakken, A. K., Synnes, O. M., & Hansen, S. 2004. Nitrogen fixation by red clover as related to the supply of cobalt and molybdenum from some Norwegian soils, *Acta Agric. Scand. Sec.B - Soil and Plant Science*, 54, 97-101.
- Riley, H., Loes, A. K., Hansen, S., & Dragland, S. 2003. Yield responses and nutrient utilization with the use of chopped grass and clover material as surface mulches in an organic vegetable growing system, *Biolog. Agric. & Hortic.* 21, 63-90.
- Smith, K.A., Dobbie, K.E., Ball, B.C., Bakken, L.R., Sitaula, B.K., Hansen, S., Brumme, R., Borken, W., Christensen, S., Priemé, A., Fowler, D., MacDonald, J.A., Skiba, U., Klemetsson, L., Kasimir-Klemetsson, A., Degórska, A., & Orlanski, P. 2000. Oxidation of atmospheric methane in Northern European soils, comparison with other ecosystems, and uncertainties in the global terrestrial sink. *Global Change Biology*, 6, 791-801.
- Sitaula B.K., Hansen, S., Sitaula J.I.B. and Bakken, L.R. 2000. Effects of soil compaction on N₂O emission in agricultural soil. *Chemosphere: Global Change Science*, 2, 367-371
- Hansen, S. and Engelstad, F. 1999. Earthworm populations in a cool and wet district as affected by tractor traffic and fertilisation. *Appl. Soil Ecol.* 13, 237-250.
- Sitaula, B.K., Hansen, S., Sitaula, J.I.B. and Bakken, L.R. 1999. Methane oxidation potentials and fluxes in agricultural soil: Effects of fertilization and soil compaction. *Biogeochemistry*, 48, 323-339
- Breland, T.A. and Hansen, S., 1998. Comparison of the difference method and ¹⁵N technique for studying the fate of nitrogen from plant residues in soil. *Biol.Fert.Soils.* 26, 164-168.
- Ball, B.C., Smith, K.A., Klemetsson, L., Brumme, R., Sitaula, B.K., Hansen, S., Priemé, A. and MacDonald, J., 1997. The influence of soil gas transport properties on methane oxidation in a selection of northern European soils. *J. Geophys. Res.* 102, 23,309-23,317.
- Breland, T.A. and Hansen, S., 1996. Nitrogen mineralization and microbial biomass as affected by soil compaction. *Soil Biol. Biochem.*, 28, 655-663.
- Hansen, S., 1996. Effects of manure treatment and soil compaction on plant production of a dairy farm system converting to organic farming practice. *Agric.Ecosys.Environ.* 56,173-186
- Hansen, S., Mæhlum, J.E., & Bakken, L.R. 1993, N₂O and CH₄ fluxes in soil influenced by fertilization and tractor traffic. *Soil Biol. Biochem.*, 25:621-630.

Abstracts in international proceedings – 2010-2018

- Hansen S., Rivedal S., Øpstad S., Heggset S., Deelstra J. and Dörsch P. Greenhouse gas emissions and agronomic feasibility for forage production on inverted peat soil. In: EGF 2016: The Multiple Roles of Grassland in the European Bioeconomy, 4-8 September 2016, Trondheim, Norway, pp 771-773
- Frøseth, R.B., Hansen S., Thorup-Kristensen, K., Bleken M.A. 2016. Improving nitrogen recovery from green manure on contrasting soil types under cold climate conditions. In: Abstracts of 19th Nitrogen workshop: Efficient use of different sources of nitrogen in agriculture – from theory to practice. 27 -29 June, Skara Sweden. pp. 72-73
- Bleken M.A., Hansen S., Frøseth, R.B., 2016. Nitrogen mineralization from clover leaves: Effect of soil type and low temperature. In: Abstracts of 19th Nitrogen workshop: Efficient use of different sources of nitrogen in agriculture – from theory to practice. 27 -29 June, Skara Sweden, pp. 255-256
- Hansen, S., Koesling, M., Schüller, M., Fystro, G., Bleken, M.A. 2016. Large variation in nitrogen efficiency among organic and non-organic farms. In: Abstracts of 19th Nitrogen workshop: Efficient use of different sources of nitrogen in agriculture – from theory to practice, 27 -29 June, Skara Sweden, pp. 82-83
- Koesling, M., Fystro, G., & Hansen, S. 2015. Variasjon i utnyttning av næringsstoff i mjølkeproduksjon, In Bioforsk-konferansen 2015, vol. 10 (2) E. Fløistad & M. Günther, eds., Hamar: Bioforsk, p. 46.
- Koesling, M., Ruge, G., Fystro, G., & Hansen, S. 2015. Vereinfachte Berechnung der Grauen Energie in Gebäuden. In Beiträge zur 13. Wissenschaftstagung Ökologischer Landbau. Am Mut hängt der Erfolg: Rückblicke und Ausblicke auf die ökologische Landbewirtschaftung. A. M. Häring, B. Hörning, & R. Hoffmann-Bahnsen, eds., pp. 614-617
- Koesling, M., Fystro, G., & Hansen, S. 2014. Effektivitet av nitrogen og energi i melkeproduksjon på Vestlandet. In Bioforsk-konferansen 2014, E. Fløistad & M. Günther, eds., Ås: Bioforsk, p. 112.
- Koesling, M., Hansen, S., & Fystro, G. 2013, "Stickstoffeffizienz von Milchviehbetrieben," In Beiträge zur 12. Wissenschaftstagung Ökologischer Landbau. Ideal und Wirklichkeit: Perspektiven ökologischer Landbewirtschaftung, H. Neufeldt et al., eds., Berlin: Verlag Dr. Köster, pp. 24-27.
- Koesling, M., Hansen, S. and Fystro, G. 2013. Embedded energy in dairy stables. In Løes et.al 2013. NJF Seminar 461. Bredsten DK 21-23 August 2013. Organic Farming as a driver for change. P 105-106
- Hansen, S. Frøseth, R.B., Bakken, A.K., Riley, H., Thorup-Kristensen, K. and Bleken, M.A. 2013. Effect of green manure management on barley yields and N-recovery. In Løes et.al 2013. NJF Seminar 461. Bredsten DK 21-23 August 2013. Organic Farming as a driver for change. p 161-162

- Hansen, S., Riley, H., Bernard, M.E. and Dörsch, P. 2012. Improved drainage and reduced soil compaction as a strategy to reduce GHG emissions from grassland soils. In Prestløkken, E. (ed.) Conference Abstracts. Agriculture and greenhouse gases" NJF seminar Oslo, 5th to 6th November 2012.
- Hansen, S.; Bernard, M.E.; Rochette, P.; Riley, H.; Nadeem, S.; Hauge, A.; Dörsch, P. 2011. N₂O-emissions from fertile grasslands in the west coast of Norway – effect of fertilization and drainage. Oral presentation and 2 page abstract. In: Sutton, M. et.al. (ed.) Conference Proceedings. NitroEurope. Nitrogen and Climate Change, Key findings-future challenges. Edinburgh, 11-15 April, 2011. Online: <http://nitrogen.ceh.ac.uk/nitrogen2011/Oral> presentations; S9.
- Frøseth, R.B., Bakken, A.K., Bleken, M.A., Riley, H., Thorup-Kristensen, K., Hansen, S. 2012. Improving N efficiency in barley through green manure management and biogas slurry. 17th International Nitrogen Workshop, Wexford Ireland, 26-29 June 2012. P 124-125. http://programme.exordo.com/nitrogenworkshop2012/proceedings_v7.pdf
- Hansen, S.; Bernard, M.E.; Rochette, P.; Riley, H.; Nadeem, S.; Hauge, A.; Dörsch, P. 2011. N₂O-emissions from fertile grasslands in the west coast of Norway – effect of fertilization and drainage. Oral presentation and 2 page abstract. In: Sutton, M. et.al. (ed.) Conference Proceedings. NitroEurope. Nitrogen and Climate Change, Key findings-future challenges. Edinburgh, 11-15 April, 2011. Online: <http://nitrogen.ceh.ac.uk/nitrogen2011/Oral> presentations; S9.
- Nadeem S., Hansen S., Bleken M., Dörsch P. 2011. N₂O emission from organic barley cultivation as affected by green manure treatment. Poster and 2 page abstract. In: Sutton, M. et.al. (ed.) Conference Proceedings. NitroEurope. Nitrogen and Climate Change, Key findings-future challenges. Edinburgh, 11-15 April, 2011. Online: <http://nitrogen.ceh.ac.uk/nitrogen2011/poster> presentations; S9
- Hansen, S., Frøseth, R.B., Bakken, A.K., Riley, H., Kristensen, K.T.K., Bleken, M. 2011. Improving barley yields in organic stockless farming systems through innovations in green manure management. Poster and 2 page abstract. In: Sutton, M. et.al. (ed.) Conference Proceedings. NitroEurope. Nitrogen and Climate Change, Key findings-future challenges. Edinburgh, 11-15 April, 2011. Online: <http://nitrogen.ceh.ac.uk/nitrogen2011/poster> presentations; S18
- Hansen, S., Frøseth, R.B., Bakken, A.K., Riley, H., Kristensen, K.T.K., Bleken, M. 2011. Improving barley yields in organic stockless farming systems through innovations in the management of green manure swards. Poster and 4 page abstract. In: Stockdale, E. et.al. (ed) Conference Proceedings. Making Crop Rotations Fit for the Future, Newcastle 20-21 December 2011.
- Hansen, S. & Bleken, M. A. 2010. Strategies to reduce nitrous oxide emissions from agricultural soils. In: Stalenga, J. (ed.) Proceedings from Polish-Norwegian Seminar 17-18 September 2009, IUNG-PIB Pulawy, Poland. Strategies to mitigate GHG emission from agriculture. Institute of Soil Science and Plant Cultivation (IUNG-PIB), Polen and Bioforsk, Norway, Pulawy, pp. 36-41.
- Bleken, M. A., Steinshamn, H. & Hansen, S. 2010. Potential of different farming systems to mitigate GHG emissions. In: Stalenga, J. (ed.) Proceedings from Polish-Norwegian Seminar Seminar 17-18 September 2009, IUNG-PIB Pulawy, Poland.. Strategies to mitigate GHG emission from agriculture. Institute of Soil Science and Plant Cultivation (IUNG-PIB), Polen and Bioforsk, Norway, Pulawy, pp. 68-73.
- Grønlund, A. & Hansen, S. 2010. The level of greenhouse emissions in agriculture in Norway. In: Stalenga, J. (ed.) Proceedings from Polish-Norwegian Seminar 17-18 Sept. 2009, IUNG-PIB Pulawy, Poland.. Strategies to mitigate GHG emission from agriculture. Institute of Soil Science and Plant Cultivation (IUNG-PIB), Polen and Bioforsk, Norway, Pulawy, pp. 7-12.

Books

- Hansen, S. & McKinnon, K. 1999. Økologisk jordkultur (Ecological soil cultivation and nutrient management – in Norwegian). Landbruksforlaget, Oslo, 344 pp.
- Hansen, S., McKinnon, K. Mohr, E. Synnevåg, V.R. & Vie, G. 1997. Økologisk hagebruk (Ecological Gardening – in Norwegian). Landbruksforlaget, Oslo, 2nd ed. 96 pp.
- Hansen, S., K. Mohr, E. Synnevåg, V.R. & Vie, G. 1990. Økologisk hagebruk (Ecological Gardening – in Norwegian). Landbruksforlaget, Oslo, 1st ed. 64 pp.

Reports 2017-2018

- Hansen, S., Bakke Haavik, T., Bergslid, I.K., Elvatun, H., van Gool, B. et.al. 2018. Miljø og klimavennlig melkeproduksjon - Inspirasjon fra seks melkeproduksjonsbruk. NIBIO Rapport, Vol 4, no. 96 53 pp.
- Adler, S., Ebbesvik, M., Hansen, S., Granås, R., Lindås, A. & Steinshamn, H. 2018. Økologisk mjølkeproduksjon uten kraftfôr. NIBIO Rapport, Vol 4, no. 41 50 pp.
- Pommeresche, R., McKinnon, K., Sørheim, K. Hansen, S. 2017. Biologiske metoder for nedbryting av medisinerester i gjødsel. NORSØK Rapport, Vol 2, no 11, 28 pp.

Other contributions on agricultural issues, 1993 -2018:

- articles or abstracts in international proceedings from 1993 - 2009; 33
- reports or articles in Norwegian proceedings or journals; 39
- booklets or articles in popular scientific magazines mainly for farmers and advisers; 27
- articles on agronomic and environmental issues published on agropub.no; 27
- contributions or interviews in newspapers or popular magazines; 22
- talks or lectures for farmers, advisers, students or agricultural authorities 150
- Tools for advisors and farmers to estimate content of clover in grassland, agropub.no