

Curriculum Vitae: Sissel Hansen



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

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Academic qualifications

2019 Professor competence (Forsker 1183 med professorkompetanse)

1993 Dr. Scientiarum, Agricultural University of Norway. Thesis title: Agronomic and environmental effects of fertilization and soil compaction. Doctor Scientiarum Theses 1993:2, Agricultural University of Norway, 96 pp

1981 MSc in agriculture, Agricultural University of Norway, Dept. of Soil Science. Thesis title: Steinmel i landbruket (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.

Employment, post – Cand. Agric.:

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 (Midtnorsk Økoring).

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

Project leader in ongoing national projects, WP-leader in international research projects

2020-2021 Behandling av fast organisk materiale for god gjødselkvalitet og reduserte utslipp av drivhusgasser (*National research fund for agriculture and food industry*)

2020-2021 Karbon til bondens beste, Klima- og miljøprogrammet (KMP), *Landbruksdirektoratet*

2017- 2020 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*)

Participating in other ongoing research projects

Peat inversion for reducing GHG emissions from farmed organic soils; Local crowdfunding for a low emission society; Utslipp av klimagasser fra gjødsellager - En vurdering av åpne lager for bløtgjødsel og biorest og lager med dekke; Deep Litter of Woodchips for Cattle

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>

Reviewer:

Journal papers for: Agricultural and Food Science –journal; Acta Agriculturae Scandinavica, Section B - Plant Soil Science; Agricultural Water Management; Agronomy Journal; Ambio; Biological Agriculture and Horticulture; Field Crops Research; Sustainability, Biogeochemistry, Agronomy for Sustainable Development *Conferences:* ISOFAR 2008 and 2011, EGF 2008, *Research proposals:* I CROFS, DK 2010

Opponent/evaluator for PhD-theses:

- Rasmus Einarson 2020. Agricultural nutrient budgets in Europe: data, methods, and indicators. Dep. of Space, Earth and Environ.. Div. Physical Resource Theory, Chalmers University Technology, Sweden.
- Betina N. Pedersen 2020. Residual effect of nitrogen in fertilizer applications – Plant uptake, leaching and mineralization. Dep. of Agroecology, Faculty of Technical Sciences, Aarhus University, Denmark
- Ognjen Zurovec 2018. Agriculture, livelihoods and climate change in Bosnia and Herzegovina – Impacts, vulnerability and adaptation. Department of International Environment and Development Studies, Faculty of Landscape and Society. Norwegian University of Life Sciences
- Nawa Raj Dhamala 2017. Nitrogen dynamics in temporary multi-species grasslands. Department of Agroecology, Aarhus University
- Torbjørn Rydberg 1995. Weed harrowing in growing cereals. Significance of time treatment, driving speed, harrowing direction and harrowing depth. Sveriges Lantbruksuniversitet

Publications

International refereed journals 32 papers, Papers from 2010-2020 are shown

1. Sissel Hansen, Randi Berland Frøseth, Maria Stenberg, Jarosław Stalenga, Jørgen E. Olesen, Maike Krauss, Paweł Radzikowski, Jordi Doltra, Shahid Nadeem, Torfinn Torp, Valentini Pappa, Christine A. Watson (2019) Review of key causes and sources of N₂O emissions and NO₃-leaching from organic arable crop rotations. Biogeosciences, 16, 2795-2819, <https://doi.org/10.5194/bg-16-2795-2019>
2. Doltra, J., Gallejones, P., Olesen, J.E., Hansen, S., Frøseth, R.B., Krauss, M., Stalenga, J., Jończyk, K., Martínez-Fernández, A., Pacini, G.C., (2019). Simulating soil fertility management effects on crop yield and soil nitrogen dynamics in field trials under organic farming in Europe. F. Crop. Res. 233, 1–11. <https://doi.org/10.1016/j.fcr.2018.12.008>, <http://orgprints.org/34308/>
3. Flaten, O., Koesling, M., Hansen, S., Veidal, A., 2018. Links between profitability, nitrogen surplus, greenhouse gas emissions, and energy intensity on organic and conventional dairy farms. Agroecol. Sustain. Food Syst, 1–27. <https://doi.org/10.1080/21683565.2018.1544960>
4. 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>

5. 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.agsy.2017.06.001>
6. Koesling, M., Hansen, S., & Schöler, 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>
7. 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)
8. 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. <https://doi.org/10.1016/j.enbuild.2015.09.012>
9. 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. <https://doi.org/10.1080/09064710.2015.1006669>
10. 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)
11. 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
12. 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. DOI: [10.5194/bg-9-2747-2012](https://doi.org/10.5194/bg-9-2747-2012)
13. 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.
a. DOI: 10.1007/s10705-009-9320-5

Abstracts in proceedings, 55 papers, Papers from 2016-2020 are shown

1. Dörsch P, Heggset S, Rivedal S, Deelstra J, Øpstad S, Hansen S. 2017. Inversion of previously tile drained peat soil: In. Effects on greenhouse gas emissions. Proceedings of the International Conference on Climate Smart Agriculture on Organic Soils 23.-24.11.2017.
2. Hansen S., Rivedal S., Øpstad S., Heggset S., Deelstra J. and Dörsch P. 2016. 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
3. 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
4. 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 2016, Skara Sweden, pp. 255-256
5. Hansen, S., Koesling, M., Schöler, 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 2016, Skara Sweden, pp. 82-83

Books

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

Reports

1. Rivedal, S., Prestvik, A. S., Aune, A., *Hansen, S.* and Morken, J. 2019 Tiltak for å redusere ammoniakkslepp fra jordbruket. [Measures to reduce ammonia volatilization from agriculture.] NIBIO-rapport, no. 5 / 160. NIBIO, Ås, Norway. 77 pp.
2. *Hansen, S.*, Øygarden, L., 2019. Innspill til norsk klimagassmodell på gårdsnivå. NIBIO-rapport 5, 1–36.
3. Otte, P.P., Zahl-Thanem, A., *Hansen, S.*, Mæhle, N., 2019. Norwegian farmers' willingness to participate in a local climate crowdfunding program - results from a national survey. Trondheim.
4. Serikstad, Grete Lene; Pommeresche, Reidun; McKinnon, Kirsty and *Hansen, Sissel* .2018. Karbon i jord – kilder, handtering og omdanning. NORSØK Rapport, no. 9, 2018. NORSØK, Tingvoll, <http://orgprints.org/34314>
5. *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. http://orgprints.org/33980/1/NIBIO_RAPPORT_2018_4_96.pdf
6. 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, <http://orgprints.org/32829>
7. Pommeresche, R., McKinnon, K., Sørheim, K. *Hansen, S.* 2017. Biologiske metoder for nedbrytning av medisinerester i gjødsel. NORSØK Rapport, Vol 2, no 11, 28 pp, <http://orgprints.org/32541/>
8. *Hansen, S.*, Morken, J., Nesheim, L., Koesling, M., Fystro, G. 2009. Reduserte nitrogenutslipp gjennom bedre spredningsrutiner for husdyrgjødsel. Bioforsk Rapport 4 (188) 2009.
9. Øygarden, L., Nesheim, L., Dorsch, P., Fystro, G., *Hansen, S.*, Hauge, A., Korsæth, A., Stornes, A.K., Krokan, K. 2009. Klimatiltak i jordbruket - mindre lystgassutslipp gjennom mindre N-tilførsel til jordbruksareal og optimalisering av dyrkingsforhold. Bioforsk rapport, vol 4 (175). 65 s.
10. *Hansen, S.*, Hansen, B., Kahiluoto, H., Brynjólfsson, R., Höök, K. 1999. Organic agriculture - sustainability, quality and health. Nordic research on organic agriculture : report from a NKJ working group on organic agriculture, NKJ 1999
11. Lund, M., Valde, K. & *Hansen, S.* 1998. Mekanisering i økologisk engdyrking - resultater fra et treårig forsøk. Mechanisation in ecological ley production – results from a three-year trial. NORSØK-Report nr. 1 1998, 40 pp
12. Løes, A.K., *Hansen, S.*, Eltun, R., Korsæth, A. & Nordheim O., 1998. Fosfor og kalium i jord, og næringsbalanser ved økologisk, integrert og konvensjonell dyrking. Phosphorous and potassium in soil and nutrient balances with ecological, integrated and conventional agricultural production. Report from Planteforsk (The Norwegian Crop Research Institute), nr 2 1998, Apelsvoll, Tingvoll, Norway, 33 pp.

Videos

Responsible for the scientific and agricultural content in the following movies based on the results from a farm survey on six farms:

Jord og gjødsling, Soil and fertilization

https://www.youtube.com/watch?time_continue=7&v=Si1wO4LUGcw

Bygninger, Buildings

<https://www.youtube.com/watch?v=NOt5MMVrqFc>

Dyrehold, animal husbandry

<https://www.youtube.com/watch?v=36Mj0BtAuDc>

Other contributions on agricultural issues, 1993 -2020:

- articles in Norwegian proceedings or journals; 39
- booklets or articles in popular scientific magazines mainly for farmers and advisers; 28
- articles on agronomic and environmental issues published on agropub.no; 28
- contributions or interviews in newspapers or popular magazines; 24
- talks or lectures for farmers, advisers, students or agricultural authorities 155
- Tools for advisors and farmers to estimate content of clover in grassland, agropub.no
- Leader for NKJ working group on environmentally friendly and organic agricultural production year 1999