

## Curriculum vitae - Anne-Kristin Løes

Norwegian Centre for Organic Agriculture (NORSØK), Gunnars veg 6, N-6630 Tingvoll, Norway.  
Tel +47 404 79 962 Fax +47 71 53 44 05 E-mail: anne-kristin.loes@norsok.no

### General information:

Date of birth January 10<sup>th</sup>, 1961  
Nationality Norwegian  
Spoken languages Norwegian, English, German.

### Main education:

M.Sc. in soil sciences at the Agricultural University of Norway, Ås, 1986.  
Doctor Scientiarum in plant nutrition and soil chemistry at the Norwegian University of Life Sciences, NMBU (formerly the Agricultural University of Norway), Ås, 2004.

### Title of Dr.Sc. thesis:

Studies of the availability of soil phosphorus (P) and potassium (K) in organic farming systems, and of plant adaptations to low P- and K-availability. Doctor Scientiarum Thesis 2003:29, NMBU. ISSN: 0802-3220  
ISBN: 82-575-0569-2, 117 p.

### Current and former employment:

Since January 1, 2016: Senior researcher in Norwegian Centre for Organic Agriculture, Tingvoll.  
2006-2015: Senior researcher in Bioforsk Norwegian Institute of Agricultural and Environmental Research, Organic Food and Farming division.  
1988-2005: Researcher in Norwegian Centre for Ecological Agriculture (part of Bioforsk 2006-2015).  
1998-2000: Editor of Herba, the Norwegian journal on biodynamic farming (part-time position)  
1987-1988: Teacher in mathematics and biology grade 9-11, Waldorf School in Moss, Norway  
1986-1987: Research assistant on the project "Acid rain research, terrestrial ecosystems", describing 75 soil profiles in spruce forests in Norway and W. Germany.

### Completed and ongoing projects that I (have) lead or coordinate(d):

2017-2020: *Marine rest raw materials for fertilizers to organic agriculture*. Funded by Møre and Romsdal county council.  
2016-2018: *Quality grains for food – the potential of non-commercialized Norwegian varietal material*. Funded by the Norwegian Agriculture Agency, and the county governor's agricultural departments in Oppland and N.Trøndelag.  
2016-17: *Reduced nitrogen emissions from digestate with application of marble*. Funded by the Regional Research Fund Mid-Norway (RFF-Midt).  
1988-1992: *The "Thirty farm-project"*. Funded by the Agricultural Agreement Fund (AAF).  
1993-96: *Agronomy and economy in organic farming – whole farm case studies*. Funded by AAF.  
2003-04: *Combined nutrient supply and weed regulation in organic vegetable production by grass mulch*. Funded by the Norwegian Agricultural Authority (SLF).  
2007-08: *Reasons for opting out of certified organic production in Norway*. Funded by the Research Council of Norway (RCN) and AAF.  
2007-10: *innovative Public Organic food Procurement for Youth (iPOPY)*. Funded by the CORE Organic I Funding Body Network (ERA-net).  
2010-2014: *Effects of anaerobically digested manure on soil fertility - establishment of a long-term study under Norwegian conditions (SoilEffects)*. Funded by RCN (EnergiX) and AAF.  
2011: *Farm based biogas plants in Mid-Norway, qualification project to reveal knowledge gaps (Biogasskunnskap)*. Funded by RFF-Midt.  
2012-14: *Documentation of energy production and GHG emissions in a farm level biogas plant digesting animal manure and various types of fish waste (Biogasdok)*. Funded by AAF.

### Completed and ongoing projects where I have been/am a WP leader:

2018-2021: Organic-PLUS: Pathways to phase-out contentious inputs from organic agriculture in Europe. RIA-EU project funded by Horizon 2020, coordinated by Coventry university, UK. Leader of WP5, Soil.  
2013-2017: *Total utilization of raw materials in the supply chain for food with a bio-economical perspective*

(Cycle). Research project funded by RCN (Bionær). Leader of WP3: Bio-processing of waste for feed, fertilizer and energy.

2014-2017: *Helhetlig bioØkonomisk utnyttelse av verpehøNE (HØNE) (Holistic bioEconomic utilisation of laying hens)*. Research project funded by the RFF Midt. Leader of WP3: Utilization of laying hens as feed and fertilizer.

2013-16: *IMproved Phosphorus Resource efficiency in Organic agriculture Via recycling and Enhanced biological mobilization (Improve-P)*. Funded by the CORE Organic II Funding Body Network. Leader of WP4: Stakeholder perceptions about applicability of alternative P fertilizers in organic farming.

#### Other relevant experience and positions:

- Member of the board of ISOFAR, International Society for Organic Farming Research 2008-2011. Vice president 2011-2017, treasurer 2018-2020.
- Norwegian editor of the digital archive Organic E-prints, www.orgprints.org 2005-2015
- Leader of the planning committee of NJF seminar 461, “Organic farming systems as a driver for change”, Bredsten, Denmark August 21-23 2013
- Member of the planning committee of NJF seminar 401, “Phosphorus management in Nordic-Baltic agriculture – reconciling productivity and environmental protection“, in Uppsala, Sweden September 22-23, 2008
- Leader of planning committee of NJF seminar 369, “Organic farming for a new millennium – status and future challenges“, in Alnarp, Sweden June 15-17, 2005
- Member of the assessment committee for Annbjørg Øverli Kristoffersen, Dr.scient; doctoral thesis: “Availability and utilization of soil and fertilizer phosphorous with focus on starter fertilization in spring cereals“, published by the Norwegian Crop Research Institute and NMBU, 2005
- Member of the assessment committee for Siri Pugesgaard, PhD; doctoral thesis: “Environmental effects of agricultural production of biomass for energy on arable land“. Institute for Agroecology, Faculty of Science and Technology, Aarhus University, Denmark. June 2014
- Opponent for Tora Råberg, PhD, doctoral thesis: “Strategic nitrogen management in stockless organic cropping systems“. Faculty of Landscape Architecture, Horticulture and Crop Production Science, Dep. of Biosystems and Technology, Alnarp. Swedish University of Agricultural Sciences, Acta Universitatis agriculturae Sueciae 2012:2017. ISSN 1652-6880.
- Lectures and censorship (4 M Sc theses) at NMBU
- Paper and proposal review, several journals and funding bodies
- Associated editor of the scientific journal Organic Agriculture (Springer)

#### Scientific publications in English 2018-2014, papers published in peer-reviewed journals in bold:

##### Agronomy:

**Cooper J, Reed EY, Hörtenhuber S, Lindenthal T, Løes AK, Mäder P, Magid J, Oberson A, Kolbe H, Möller K 2018. Phosphorus availability on many organically managed farms in Europe. Nutrient Cycling in Agroecosystems, DOI: 10.1007/s10705-017-9894-2.**

**Möller K, Oberson A, Bünemann EK, Cooper J, Friedel JK, Glæsner N, Hörtenhuber S, Løes AK, Mäder P, Meyer G, Müller T, Symanczik S, Weissengruber L, Wollmann I, Magid J. Improved phosphorus recycling in organic farming: navigating between constraints. Advances in Agronomy. In print.**

Løes AK 2017. Laying hens for soil fertilization. NORSØK Report Vol 2(13), 31 p. Norwegian Centre for Organic Agriculture, Tingvoll, Norway.

Løes AK, Ebbesvik ME 2017. Phosphorus deficits by long-term organic dairy farming? In: Rahmann, G. et al. (2017) Proceedings of the Scientific Track “Innovative Research for Organic Agriculture 3.0”, Organic World Congress 2017 in New Delhi, India, November 9-11, 2017, p. 530-533.

**Løes AK, Sandquist J, Meyer G 2017. Elemental composition and phosphorous availability in hydrochars from seaweed and organic waste digestate. Acta Agric. Scand. Sect. B Pl Soil Sci, DOI 10.1080/09064710.2017.1363909**

**Pommeresche R, Løes AK, Torp T 2017. Effects of animal manure application on springtails (Collembola) in perennial ley. Applied Soil Ecology 1001: 137-145.**

Løes AK, Pommeresche R, Khalil R 2017. Effects of marble application to manure and anaerobic digestates. NORSØK report vol 2, no. 5 2017. NORSØK, Tingvoll. 29 p.

**Løes AK, Bünemann E, Cooper J, Hörtenhuber S, Magid J, Oberson A, Möller K 2016. Nutrient**

**supply to organic agriculture as governed by EU regulations and standards in six European countries. Organic Agriculture (Springer). DOI 10.1007/s13165-016-0165-3**

Løes AK 2016. What does the organic sector think about different P fertilizers? NORSØK report 1(3) 2016, Norwegian Centre for Organic Agriculture, Tingvoll, 40 p.

Bünemann E, Symanczik S, Mäder P, Løes AK 2016. Rezyklierte Phosphordünger – was die Branche davon hält. Bioaktuell 5 p. 13/Engrais phosphatés de recyclage –Ce que le secteur bio en pense. Bioactualités 6, p. 12.

**Johansen TJ, Thomsen MG, Løes AK, Riley H 2015. Root Development in Potato and Carrot Crops – Influences of Soil Compaction. Acta Agriculturae Scandinavica, Section B - Plant Soil Science, 65 (2), 182-192.**

Johansen A, Pommeresche R, Riley H, Løes AK 2015. Anaerobic digestion of animal manure – implications for crop yields and soil biota in organic farming. Oral presentation. In: (eds). Nordic Association of Agricultural Scientists (NJF) Congress 2015, Riga, Latvia June 16-18.

**Pommeresche R, Løes AK 2014. Diversity and density of Collembola in a grass-clover ley in North-western Norway. Norwegian Journal of Entomology 61, p. 165-179.**

Løes AK, Johansen A, Pommeresche R, Riley H. 2014. Animal manure – reduced quality by anaerobic digestion? Oral presentation at the 4<sup>th</sup> scientific conference of ISO FAR during the 18<sup>th</sup> IFOAM Organic World Congress, Istanbul, Turkey October 13. In: In: G. Rahmann & U. Aksoy (Eds.) Building Organic Bridges, Johann Heinrich von Thünen-Institut, Braunschweig, Germany, 3, Thuenen Report, no. 20, pp. 891-894.

**Public procurement/food chain:**

**Rahmann G, Ardakani MR, Barberi P, Boehm H, Canali S, Chander M, David W, Dengel L, Erismann JW, Galvis-Martinez AC, Hamm U, Kahl J, Koepke U, Kuhne S, Lee SB, Løes AK, Moos JH, Neuhof D, Nuutila JT, Olwe V, Oppermann R, Rembialkowska E, Riddle J, Rasmussen IA, Shade J, Sohn SM, Tadesse M, Tashi S, Thatcher A, Uddin N, Fragstein P, Wibe A, Wivstad M, Wenliang W, Zanolli R. 2017. Organic agriculture 3.0 is innovation with research. Organic Agriculture 7 (3): 169-197.**

Løes AK, Adler S, Seljåsen R, Carvajal A, Tveit GM, Slizyte R, Honkapää K, Rommi K. 2015. Food co-streams for innovative food and feed products. In: Zevete-Rivza S. (ed.) Nordic view to sustainable rural development. Proceedings of the 25th NJF congress, Riga, Latvia June 16-18, 2017. Nordic Association of Agricultural Scientists (NJF), pp 299-304.

**Strassner C, Cavoski I, Kahl J, Kesse-Guyot E, Lairon D, Lampkin N, Løes AK, Matt D, Niggli U, Paoletti F, Pehme S, Rembialkowska E, Schader C, Stolze M. 2015. How the organic food system supports sustainable diets and translates this into practice. Frontiers in Nutrition 2 Article 19, 6 p.**

Løes AK, Dýrmundsson OR, Kreismane D, Mikkola M, Pehme S, Rasmussen IA, Skulskis V, Wivstad M 2015. The organic sector in the Nordic-Baltic region – what is achieved, and what is challenging further growth? Keynote presentation. In: Zevete-Rivza S. (ed.) Nordic view to sustainable rural development. Proceedings of the 25th NJF congress, Riga, Latvia June 16-18, 2017. Nordic Association of Agricultural Scientists (NJF), pp p 79-84.

Løes AK 2015. Organic food procurement in schools – iPOPY, a European case study. In: Meybeck A, Redfern S, Paoletti F, Strassner C (Eds.) Proceedings of the International Workshop Assessing Sustainable Diets Within the Sustainability of Food Systems. Mediterranean Diet, Organic Food: New Challenges. Rome, FAO.

Adler S, Honkapää K, Saarela M, Slizyte R, Sterten H, Vikman M, Løes AK 2014. Utilisation of co-streams in the Norwegian food processing industry. A multiple case study. Bioforsk Report 9 (82), 58 p.

Papers published in peer-reviewed journals before 2014:

Koesling, M., Løes, A.-K., Flaten, O., Kristensen, N.H. & Weinreich, M. 2012. Farmers' reasons for deregistering from organic farming. Organic Agriculture 2: 103–116.

Løes, AK, Eltun R, Sjørusen H, Henriksen TM 2011. Repeated use of green manure catch crops in organic cereal production – grain yields and nitrogen supply. Acta Agriculturae Scandinavica, Section B - Plant Soil Science 61: 164-175.

Ward A, Løes AK 2011. The potential of fish and fish oil waste for bioenergy generation: Norway and beyond. Biofuels 2(4): 375–387.

Løes AK, Nölting B 2011. Increasing organic consumption by school meals – lessons learned in the iPOPY project. Organic Agriculture 1: 91-110.

- Flaten O, Lien G, Koesling M, Løes AK 2010. Norwegian farmers ceasing certified organic production: Characteristics and reasons. *Journal of Environmental Management* 91: 2717-2726.
- Pommeresche R, Løes AK 2009. Relations between Agronomic Practice and Earthworms in Norwegian Arable Soils. *Dynamic Soil Dynamic Plants (Special Issue 2)*, p. 129-142.
- Løes AK, Gahoonia TS 2004. Genetic variation in specific root length in Scandinavian wheat and barley accessions. *Euphytica* 137: 243-249.
- Riley H, Løes AK, 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. *Biological Agriculture and Horticulture* 21: 63-90.
- Løes AK, Øgaard 2003. Concentrations of soil potassium after long-term organic dairy production. *International Journal of Sustainable Agriculture* 1: 14-29.
- Øgaard AF, Krogstad T, Løes AK 2002. Potassium uptake by grass from a clay and a silt soil in relation to soil tests. *Acta Agriculturae Scandinavica, section B, Soil and Plant Science* 51: 97-105.
- Watson CA, Bengtsson H, Ebbesvik M, Løes AK, Myrbeck Å, Salomon E, Schroder J, Stockdale EA 2002. A review of farm-scale nutrient budgets for organic farms as a tool for management of soil fertility. *Soil Use and Management* 18 supplement, Soil fertility in organically managed soils, p. 264-273.
- Løes AK, Øgaard AF 2001. Long-term changes in extractable soil phosphorus (P) in organic dairy farming systems. *Plant and Soil* 237: 321-332.
- Løes AK, Øgaard AF 1997. Changes in the nutrient content of agricultural soil by conversion to ecological farming, compared to clay content and farm nutrient budgets. *Acta Agriculturae Scandinavica, section B, Soil and plant science* 47: 201-214.

#### Selected publications in Norwegian 2018-2014:

- Mjøen GT, Carvajal AK, Slizyte R, Rustad T, Løes AK 2017. Fra restråstoff til verdifulle råvarer. *Fjørfe* 9-17, s. 35-37.
- Løes, AK 2017. Høner som gjødsel? *Fjørfe* 8-17, s. 35-37.
- Løes AK 2017. Hva gjør vi med slakteklare verpehøns? *Økologisk landbruk* 3-2017, s. 14-16, og *Agropub* <https://www.agropub.no/fagartikler/hva-gjor-vi-med-slakteklare-verpehons>
- Løes AK 2017. Mangfold i åkeren, og vafler fra førkorn. *Agropub* 26. juli 2017.
- Løes AK 2016. Å strebe etter gode regler. *Økologisk landbruk* 4 (2016), s. 39-41.
- Løes AK 2016. Såfrø- livsviktig og sårbart. *Økobloggen* 15. april 2016, forskning.no
- Løes AK 2016. Den vanskelige resirkuleringa. *NORSØK nettside* 22. august 2016
- Løes AK 2016. Hva slags korn trenger vi å foredle i Norge? *Hamar Arbeiderblad* 16. juli 2016 s. 34.
- Adler S, Løes AK 2015. Potetball i stort volum. *Norsk landbruk* 19 (2015), s. 49-50.
- Pommeresche R, Løes AK 2015. Flere meitemark døde etter fire tonn blautgjødsel. *Økologisk landbruk* 1 (2015), s 26-28.
- Løes AK 2015. Utrangerte verpehøner: Store forskjeller i utnyttelsen i Norge, Sverige og Danmark. *Fjørfe* 9 (15) s. 39-41.
- Løes AK 2015. Eggeskall og eggehinner: Verdifulle ressurser. *Fjørfe* 6 (15), s. 40-41.
- Løes AK 2014. Prisen for proteinene. *Kronikk i Klassekampen* 6. februar 2014, s. 16-17.
- Løes AK 2014. Prisen for proteiner. *Kronikk i Bondebladet* 6. mars 2014, s. 3.
- Løes AK, Øverland JI, Nordal J. 2014. Kalkingsforsøk med eggeskall – en utprøving i Cycle-prosjektet. *Bioforsk Tema* nr. 10 2014, 6 s.
- Adler S, Løes AK 2014. Vet du hva som er i kraftfôret? *Økologisk landbruk* nr. 2 (2014), s. 20-23.
- Løes AK, Johansen A, Pommeresche R, Riley H. 2014. Husdyrgjødsel til biogass – hva skjer med jord og avlinger? *Presentasjon (AK Løes) og artikkel, Bioforsk Fokus* vol. 9 nr. 1, s. 170-176.
- Kvande I, Løes AK 2014. Energiproduksjon, klimaeffekt og avlingseffekt i et gårdsbasert biogassanlegg. *Bioforsk Rapport* 9 (98), 37 s.