

Curriculum Vitae

Name Eva Brod
Date of birth 13 July 1986
Nationality German
Mother tongue German
Other languages English, Norwegian
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Position

6/2016 – to date Research Scientist, PhD
NIBIO, Norwegian Institute of Bioeconomy Research

Relevant work experience

4/2019 – 7/2019 Research stay
University of Copenhagen, Section for Plant and Soil Sciences with supervision by Dr. Sander Bruun
5/2012 – 6/2016 PhD candidate
NIBIO, Norwegian Institute of Bioeconomy Research
8/2014 – 1/2015 Research stay
Eidgenössische Technische Hochschule, Zürich, Group of Plant Nutrition with supervision by Dr. Astrid Oberson and Prof. Emmanuel Frossard
1/2012 – 5/2012 Research assistant
Bioforsk, Norwegian Institute for Agricultural and Environmental Research, Frederik A Dahls Vei 20, 1430 Ås, Norway

Education

5/2012 – 6/2016 Philosophiae Doctor (PhD)
Norwegian University of Life Sciences, P.O. Box 5003, 1432 Ås, Norway
Supervisors: Prof. Tore Krogstad, Dr. Anne Falk Øgaard, Dr. Trond Knapp Haraldsen, Prof. Daniel Müller
1/2010 – 1/2012 Master of Science in Agroecology
Norwegian University of Life Sciences, P.O. Box 5003, 1432 Ås, Norway
8/2006 – 8/2009 Bachelor of Science in Organic Farming and Marketing
Hochschule für Nachhaltige Entwicklung, Friedrich-Ebert-Straße 28, 16225 Eberswalde, Germany

Career breaks

2018/2019, 2022/2023 Parental leaves

Key qualifications

Effect of organic waste as fertiliser (nitrogen and phosphorus)
Characterisation of inorganic phosphorus compounds
Soil analysis (phosphorus)
Organic farming
Material flow analysis

Current projects

1. Biorest fra nye marine råstoffer og husdyrgjødsel: Bruksanbefalinger for landbruket (2021-2023, Norwegian Agriculture Agency)
2. From blue waste to green resource: Fish sludge as fertiliser in agriculture (2019-2023, Personal postdoctoral scholarship funded by the Norwegian Research Council)
3. Sustainable recycling of organic waste resources in the future bioeconomy (2017-2022, Strategical Institute Program funded by the Norwegian Ministry of Agriculture and Food, project leader and supervision of M.Sc. student)

Publications

Journal articles (peer reviewed)

1. **Brod E**, Henriksen TM, Ørnstrud R, Eggen T (2023) Quality of fish sludge as fertiliser to spring cereals: Nitrogen effects and environmental pollutants. Accepted for publication in *Science of the Total Environment*
2. **Brod E**, Øgaard AF, Müller-Stöver DS, Rubæk GH (2022) Considering inorganic P binding in bio-based products improves prediction of their P fertiliser value. *Science of the Total Environment* 836: 155590
3. **Brod E**, Øgaard AF (2021) Closing global P cycles: The effect of dewatered fish sludge and manure solids as P fertiliser. *Waste Management* 135: 190-198
4. **Brod E**, Toven K, Haraldsen TK, Krogstad T (2018) Unbalanced nutrient ratios in pelleted compound recycling fertilizers. *Soil Use and Management*: doi: 10.1111/sum.12407
5. **Brod E**, Oppen J, Kristoffersen AØ, Haraldsen TK, Krogstad T (2017) Drying or anaerobic digestion of fish sludge: Nitrogen fertilisation effects and logistics. *AMBIO* 46(8): 852-864
6. **Brod E**, Bechmann M, Øgaard AF (2017) Løst fosfat i jordbruksavrenning – forskjell mellom driftssystemer. *VANN* 1: 47-56 (in Norwegian)
7. Hamilton HA, **Brod E**, Hanserud O, Müller DB, Brattebø H, Haraldsen TK (2016) Recycling potential of secondary phosphorus resources as assessed by integrating substance flow analysis and plant-availability. *Science of the Total Environment*: doi: 10.1016/j.scitotenv.2016.10.056
8. Øgaard AF, **Brod E** (2016) Efficient phosphorus cycling in food production: Predicting the phosphorus fertilization effect of sludge from chemical wastewater treatment. *Journal of Agricultural and Food Chemistry* 64 (24): 4821-4829
9. **Brod E**, Øgaard AF, Krogstad T, Haraldsen TK, Frossard E, Oberson A (2016) Drivers of phosphorus uptake by barley following secondary resource application. *Frontiers in Nutrition* 3(12): doi: 10.3389/fnut.2016.00012
10. **Brod E**, Øgaard AF, Hansen E, Wragg D, Haraldsen TK, Krogstad T (2015a) Waste products as alternative phosphorus fertiliser. Part I: Inorganic P species affect fertilisation effects depending on soil pH. *Nutrient Cycling in Agroecosystems* 103: 167-185
11. **Brod E**, Øgaard AF, Haraldsen TK, Krogstad T (2015b) Waste products as alternative phosphorus fertiliser. Part II: Predicting P fertilisation effects by chemical extraction. *Nutrient Cycling in Agroecosystems* 103: 187-199
12. Hanserud OS, **Brod E**, Øgaard AF, Müller D, Brattebø H (2015) A multi-regional soil phosphorus balance for exploring secondary fertilizer potential: the case of Norway. *Nutrient Cycling in Agroecosystems* 104: 307-320
13. Hamilton HA, **Brod E**, Hanserud O, Gracey E, Vestrum M, Steinhoff F, Müller D, Brattebø H (2015) Investigating cross-sectoral synergies through integrated aquaculture, fisheries and agricultural phosphorus assessments: A case study of Norway. *Journal of Industrial Ecology*, doi:10.1111/jiec.12324
14. **Brod E**, Haraldsen T, Krogstad T (2014) Combined waste resources as compound fertiliser to spring cereals. *Acta Agriculturae Scandinavica - Section B* 64: 329-340

15. Haraldsen T, **Brod E**, Krogstad T (2014) Optimising the organic components of topsoil mixtures for urban grassland. *Urban Forestry & Urban Greening* 13: 821-830
16. **Brod E**, Haraldsen T, Breland T (2012) Fertilization effects of organic waste resources and bottom wood ash: results from a pot experiment. *Agricultural and Food Science* 21: 332-347

Abstracts, posters etc.

1. **Brod E**, Øgaard AF (2018) Olsen-P can predict the plant-availability of phosphorus in recycling fertilizers. Poster presented at PSP 6 Phosphorus in Soils and Plants 10 – 13 September 2018, Leuven, Belgium
2. **Brod E**, Øgaard AF (2016) Decision tool for predicting P fertilisation effects of secondary resources. Poster presented at 8th International Phosphorus Workshop 12 – 16 September 2016, Rostock, Germany
3. **Brod E** (2016) Fosfor, det nye arvesølv? Invited speaker at TEKSET – Innovasjon for settefisk 2 – 3 February 2016, Trondheim, Norway (in Norwegian)
4. **Brod E**, Hamilton H, Hanserud O, Haraldsen TK, Müller D (2015) The recycling potential of P in Norwegian secondary resources in a system's context. Reviewed abstract presented at RAMIRAN, 16th International Conference Rural-Urban Symbiosis 8 - 10 September 2015, Hamburg, Germany
5. **Brod E**, Øgaard AF, Haraldsen TK, Krogstad T (2014) How much P in waste is plant-available at different soil pH levels? Poster presented at 5th International Symposium on Phosphorus in Soils and Plants 26 – 29 August 2014, Montpellier, France
6. Hanserud OS, **Brod E**, Brattebø H (2014) A regional-scale soil phosphorus balance for exploring mineral fertilizer substitution potentials – the case of Norway. Abstract presented at 4th Sustainable Phosphorus Summit 1 – 3 September 2014, Montpellier, France

Reports, theses etc.

1. **Brod E** (2021) Fiskeslam som nitrogengjødsel til korn – Resultater fra FishBash prosjektet. *NIBIO report* 137 (7) 41 p. (in Norwegian)
2. **Brod E**, Øgaard AF (2021) Fosforeffekt av organisk avfall. *NIBIO report* 30 (7) 59 p. (in Norwegian)
3. **Brod E**, Henriksen TM (2021) Fiskeslam som nitrogengjødsel til korn. *NIBIO bok* 7 (1), 140-147 (in Norwegian)
4. **Brod E**, Øgaard AF (2020) Fosforeffekt av organisk avfall. *NIBIO bok* 6 (1), 131-136 (in Norwegian)
5. Henriksen TM, Kristoffersen AØ, **Brod E**, Øgaard AF (2019) Nitrogeneffekt av organisk avfall til korn – et forsøk i laboratoriet. *NIBIO bok* 5 (1), 140-145 (in Norwegian)
6. Cabell J, **Brod E**, Ellingsen J, Løes A-K, Standal IB, Tordnes B, Vivestad H (2019) Bruk av tørket slam fra settefiskanlegg som gjødsel i norsk landbruk. *NIBIO report* 146 (5) 146 p. (in Norwegian)
7. **Brod E** (2018) Manure-based recycling fertilisers – A literature review of treatment technologies and their effect on phosphorus fertilisation effects. *NIBIO report* 91 (4) 25 p.
8. Haraldsen TK, **Brod E**, Øgaard AF (2017) Kvalitetskriterier og merkekrav for organiske Avfallsmaterialer. Forslag til endringer i forskrift om gjødselvarer mv. av organisk opphav. *NIBIO report* 156 (3) 38 p. (in Norwegian)
9. **Brod E**, Haraldsen TK (2017) Miljøvennlige jordblandinger – klima, resirkulering og bruksområder. *NIBIO report* 151 (3) 40 p. (in Norwegian)
10. Blytt LD, **Brod E**, Øgaard AF, Johannessen E, Estevez MM, Paulsrud B (2017) Bedre utnyttelse av fosfor. *Miljødirektoratet report* M-846 64 p. (in Norwegian)
11. **Brod E**, Haraldsen TK, Krogstad T (2016) Fiskeslam som nitrogengjødsel. Effekt av ulike behandlingsteknologier. *NIBIO report* 118 (2) 19 p. (in Norwegian)

12. Horn H, Tellnes L, **Brod E**, Clarke N, Dibdiakova J, Hanssen KH, Haraldsen TK, Karlsen T, Toven K (2016) Innovativ utnyttelse av aske fra trevirke for økt verdiskapning og bærekraftig skogbruk. *Report Norsk Treteknisk Institutt*. 50 p. (in Norwegian)
13. **Brod E** (2016) The recycling potential of phosphorus in secondary resources. *Doctoral thesis*. Ås, Norwegian University of Life Sciences. 37 p. + appendix
14. Haraldsen TK, **Brod E**, Stabbetorp J (2014) Oppkonsentrert biorest som gjødsel til korn. In: *Jord- og Plantekultur 2014*: 164-173 (in Norwegian)
15. **Brod E**, Haraldsen TK, Krogstad T (2012) Efficiency of combined waste resources as N and P fertiliser to spring cereals. *Bioforsk Report* 184 (7) 31 p.

Popular-scientific dissemination

1. Øgaard AF, Bechmann M, **Brod E**, Hanserud OS (2021) Nye gjødselkrav vil gi renere vann og mindre fosforsløyning. *Bondevennen* p. 14-15, 26.11.2021 (in Norwegian)
2. Gulden KT (2021) Enkel metode viser fosforeffekten til organisk gjødsel. Article in *Nationen* based on interview with **Eva Brod** 24.4.2021 (in Norwegian)
3. Øgaard AF, Bechmann M, **Brod E**, Hanserud OS (2021) Nye gjødselkrav gir renere vann og mindre fosforsløyning. *Nationen*, 16.4.2021 (in Norwegian)
4. Fenstad A (2021) Tror klimaavgift kan åpne for fiskeslam som gjødsel – En varslet avgift på mineralgjødsel kan gjøre det mer aktuelt å satse på organisk gjødsel, mener forsker. Article in *Teknisk Ukeblad Industri* based on interview with **Eva Brod** 18.1.2021 (in Norwegian)
5. **Brod E**, Bjordal MV, Erbs S (2020) Fiskeslam kan bli bondens nye gull. *Dagens Næringsliv*, 10.7.2020 (in Norwegian)
6. **Brod E**, Henriksen TM, Øgaard AF (2020) Kvalitetskrav til fiskeslam som skal brukes til gjødsel. *Norsk Fiskeoppdrett* 2, 36-40 (in Norwegian)
7. Spilde I (2020) Verdens matproduksjon er avhengig av fosfor. Er vi i ferd med å gå tom? Article in *Forskning.no* based on interview with **Eva Brod** 2.6.2020 (in Norwegian)
8. Fenstad A (2020) Disse gjødseltypene kan hindre fosformangel - Den mest klimavennlige gjødselen gir lite fosfor til plantene. Article in *Teknisk Ukeblad Klima* based on interview with **Eva Brod** 10.2.2020 (in Norwegian)
9. Fenstad A (2019) Her gjødsler de åkeren med fiskeskitt – Tester om lakseslam kan erstatte mineralgjødsel. Article in *Teknisk Ukeblad Maritim* based on interview with **Eva Brod**, 13.5.2019 (in Norwegian)
10. **Brod E**, Haraldsen TK (2018) Ingen gode alternativer til torv. *Forskning.no*, 24.5.2018
11. Gulden KT (2017) Ikke mulig å erstatte torven helt. Article in *Nationen* based on interview with **Eva Brod**, 19.2.2018 (in Norwegian)
12. **Brod E**, Haraldsen TK (2017) Oppdrettsnæringen kan bli en viktig gjødselprodusent. *Norsk Fiskeoppdrett* 2: 28-32 (in Norwegian)
13. **Brod E**, Krogstad T (2017) Norsk fiskeslam til gjødseleksport. *Dagens Næringsliv*, 20.7.2017 (in Norwegian)
14. **Brod E**, Hanserud O (2017) Fosfor må brukes smartere. *Økologisk Landbruk* 2: 8-10 (in Norwegian)
15. Gulden KT (2017) Tørket fiskebæsj gir god kornvekst. Article in *Nationen* based on interview with **Eva Brod**, 9.1.2017 (in Norwegian)
16. Gulden KT (2017) Bedre gjødsel og billigere i transport. Article in *Nationen* based on interview with **Eva Brod**, 9.1.2017 (in Norwegian)
17. Petersen M (2017) Tørket fiskeslam gir god gjødseleffekt. Article on *kyst.no* based on interview with **Eva Brod**, 3.1.2017 (in Norwegian)
18. Dybdal SE (2016) Meiner landbruket må satse på resirkulering av fosfor. Article in *Nationen* based on interview with **Eva Brod**, 18.5.2016 (in Norwegian)

19. Jensen PM (2016) Næringen må reguleres enda strengere. Article on *kyst.no* based on interview with **Eva Brod**, 3.2.2016 (in Norwegian)
20. Gulden KT (2015) Oppdrettsnæringen sløser med fosfor. Article in *Nationen* based on interview with **Eva Brod**, 19.10.2015 (in Norwegian)
21. Grønlund A, **Brod E**, Hanserud OS (2015) Potensial for gjenvinning og resirkulering av fosfor. *VANN* 50: 197-200 (in Norwegian)