

**Curriculum Vitae****Therese W. Berge, PhD**

NIBIO – Norwegian Institute of Bioeconomy  
Research  
Høgskoleveien 7  
Ås, Norway

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Language: Norwegian – mother language,  
English – fluent



**NIBIO**  
Norwegian  
Institute of  
Bioeconomy  
Research

**Current position**

**Research Scientist** (Weed Science/Precision Farming)  
NIBIO, Department of Invertebrate Pests and Weeds

2008 -

**Work experience**

**Research Assistant** (Remote Sensing of Vegetation)  
Within EU Project: Climate Impact Research Centre,  
Swedish Univ. of Agricultural Sciences (SLU),  
Dept. Geomatics and Remote Sensing, Umeå, Sweden.

1998 - 2000

**Education**

**PhD** (Weed Science/Precision Farming)  
Norwegian University of Life Sciences,  
Dept. of Plant and Environmental Sciences  
Ås, Norway.  
PhD thesis: "Spatial patchiness of broadleaved weeds  
in cereals and simulated patch spraying".

2008

**MSc** (Plant Ecology/Remote sensing)

University of Tromsø, Dept. of Biology and Geology  
Tromsø, Norway.  
MSc thesis: "Use of AVHRR NDVI data to map phytogeographical  
zones and phytomass on Svalbard".

1998

**Selected projects**

DROPTEK – [Evaluation of robotic drop-on-demand technology  
for intra-row weed control in vegetables]  
*T W Berge is project leader in NIBIO*

2018-2019

ECRUSLI – Controlling *Echinochloa-crus-galli* in cereals,  
potatoes and vegetables

(<https://www.nibio.no/prosjekter/ecrusli-bekjemping-av-honsehirse-i-korn-potet-og-gronnsaker>)

*T W Berge is in charge of two work packages*

2017-2020

## Innovationer för hållbar växtodling

[Innovations for sustainable crop production]

(<https://www.nibio.no/prosjekter/innovasjon-for-baerekraftig-plantedyrking?locationfilter=true>)

*EU Interreg project, T W Berge is project leader in NIBIO*

2016-2018

SMARTCROP – Innovative approaches and technologies for Integrated Pest Management to increase sustainable food production] ( <a href="https://www.nibio.no/en/projects/smartcrop?locationfilter=true">https://www.nibio.no/en/projects/smartcrop?locationfilter=true</a> ) <i>T W Berge is in charge of one work package and two tasks</i>	2015-2019
VEGINN - Innovasjon for bedre ugresskontroll i grønnsaker [Innovations for better weed control in vegetables] ( <a href="https://www.nibio.no/prosjekter/vegin-n-innovasjon-for-bedre-ugresskontroll-i-gronnsaker?locationfilter=true">https://www.nibio.no/prosjekter/vegin-n-innovasjon-for-bedre-ugresskontroll-i-gronnsaker?locationfilter=true</a> ) <i>T W Berge was principal researcher and project leader in NIBIO</i>	2014-2018
Weedseeker - [Test of technology for automatic patch spraying of glyphosate in cereals] ( <a href="https://www.nibio.no/prosjekter/test-av-kommersiell-teknologi-for-precisionsproyting?locationfilter=true">https://www.nibio.no/prosjekter/test-av-kommersiell-teknologi-for-precisionsproyting?locationfilter=true</a> ) <i>TW Berge was principal researcher and project leader</i>	2016-2018
AUTOHOE – [Sensor-guided weed hoeing in cereals] ( <a href="http://www.bioforsk.no/radrensing">www.bioforsk.no/radrensing</a> ) <i>T W Berge was in charge of one work package and principal researcher</i>	2014-2017
MULTISENS - Multisensory precision agriculture - improving yield and reducing environmental impact ( <a href="http://www.bioforsk.no/multisens">www.bioforsk.no/multisens</a> ) <i>T W Berge was principal researcher in two work packages</i>	2011-2015
STRAPP- Strategies for implementation of sound cereal production methods with low loss of pesticides and phosphorus ( <a href="http://www.bioforsk.no/strapp">www.bioforsk.no/strapp</a> ) <i>T W Berge was principal researcher in one work packages</i>	2013-2015
PlantStrength – Strengthening the basis of sound plant protection by understanding the ecology and interactions of different pest groups and beneficials in Norwegian cereals <i>T W Berge was in charge of one work package</i>	2012-2017
Weedcer - Automatic weed detection for patch spraying in cereals ( <a href="http://www.bioforsk.no/weedcer">www.bioforsk.no/weedcer</a> ) <i>T W Berge was principal researcher</i>	2007-2009
<b>Research guidance</b>	
Co-advisor for PhD student Stephanie Saussure, Norwegian Univ. of Life Sciences, Dep. of Plant Sciences	Present
Co-advisor for PhD student Trygve Utstumo, Norwegian Univ. of Science and Technology, Dep. of Engineering Cybernetics	2018
Co-advisor for MSc students at Norwegian University of Life Sciences:	2011
• Dudek, David J. Weed harrowing in spring barley: timing and intensity.	
• Stout, Daniel. Effects of management practices on control of docks ( <i>Rumex</i> spp.) when renewing highly infested organic grassland	2010

**Referee in international journals**

- Weed Research
- Weed Science
- Biosystems Engineering
- Computers and Electronics in Agriculture
- Sensors

**Member of research societies**

- European Weed Research Society
- International Society of Precision Agriculture
- Nordic Association of Agricultural Scientists

**Publications (peer review)**

- Ringselle B., Berge TW, Stout D, T.A. Breland, P.E. Hatcher, E. Haugland, M. Koesling, K. Mangerud, T. Lunnan & Brandsæter, LO. 2019. Effect of renewal timing, taproot cutting, ploughing practice, false seedbed and companion crops on docks (*Rumex* spp.) when renewing grassland European Journal of Agronomy 103: 54-62. <https://www.sciencedirect.com/science/article/pii/S1161030118303435>
- Utstumo, T., Dørum, J., Netland, J., Urdal, F., Overskeid, Ø., Brevik, A., Berge, T. W., Gravdahl, J.T. 2018. Robotic in-row weed control in vegetables. Computers and Electronics in Agriculture 154: 36-45 (<https://www.sciencedirect.com/science/article/pii/S016816991830276X?via%3Dihub>)
- Brandsæter, LO, Mangerud, K, Helgheim M and Berge TW. 2017. Control of perennial weeds in spring cereals through stubble cultivation and mouldboard ploughing during autumn or spring. Crop Protection 98: 16 -23, <http://dx.doi.org/10.1016/j.cropro.2017.03.006>
- Peteinatos, G, Korsæth, A, Berge, TW, Gerhards, R. 2016. Using optical sensors to identify water deprivation, nitrogen shortage, weed presence and fungal infection in wheat. Agriculture 6, 24, doi: 10.3390 (<https://www.mdpi.com/2077-0472/6/2/24>)
- Streibig, JC, Rasmussen, J., Andújar, D., Andreasen, C., Berge, TW *et al.* 2014. Sensor-based assessment of herbicide effects. Weed Research 54: 223-233 (<https://onlinelibrary.wiley.com/doi/full/10.1111/wre.12079>).
- Berge, TW, Goldberg, S., Kaspersen, K. & Netland, J. 2012. Towards machine vision based site-specific weed management in cereals. Computers and Electronics in Agriculture 81: 79-86 (<https://www.sciencedirect.com/science/article/pii/S0168169911002602?via%3Dihub>).
- Berge, TW, Aastveit, A & Fykse, H. 2008. Evaluation of an algorithm for automatic detection of broad-leaved weeds in spring cereals. Precision Agriculture 9: 391-405 (<https://link.springer.com/article/10.1007/s11119-008-9083-z>).
- Berge, TW, Cederkvist, HR, Fykse, H & Aastveit, AH. 2008. Simulating the effects of mapping and spraying resolution and threshold level on accuracy of patch spraying decisions and herbicide use on mapped weed data. Acta Agriculturae Scandinavica Section B - Soil and Plant Science 58: 216-229 (<https://www.tandfonline.com/doi/abs/10.1080/09064710701593087>).
- Berge, TW, Fykse, H & Aastveit, AH. 2007. Patch spraying of weeds in spring cereals: Simulated influences of threshold level and spraying resolution on spraying errors and potential herbicide reduction. Acta Agriculturae Scandinavica Section B - Soil and Plant Science 57: 212-221 (<https://www.tandfonline.com/doi/abs/10.1080/09064710600914202>).
- Dahlberg, U, Berge, TW, Petersson, H & Vencatasawmy, CP. 2004. Modelling biomass and leaf area index in a sub-arctic Scandinavian mountain area. Scandinavian Journal of Forest Research 19: 60-71 (<https://www.tandfonline.com/doi/full/10.1080/02827580310019266>).

**Other publications and presentations**

- Berge, T. W. 2018. Nya tekniker för hållbar ogräsbekämpning: Sensor-styrt ugrasharving i bygg. Oral presentation and 2 page handout at Grøna møten: Hållbar växtodling för långsiktig lönsamhet/Framtidsspaning för hållbart lantbruk i Norden, 5.-6. desember 2018, Naturbruksskolan Uddetorp, Skara, Sverige.

- Berge, T. W. 2018. Sensor-basert ugraskontroll. Oral presentation and summary. Nationell Växtskyddskonferens 14-15 november 2018, Ultuna, Uppsala, Sverige, 1 p.  
<https://www.slu.se/contentassets/8243e6d7a9464b079543fc7e7018e9d2/vaxtskydd2018-program-bok.pdf>
- Tørresen, KS., Brandsæter, L.O., Netland, J., Berge, TW, Ringselle, B. & Strand, E. 2018. Alternativer til glyfosat i korn og grasmark. [Alternatives to glyphosate in cereals and grassland]. NIBIO Rapport 4 (79).
- Tørresen, KS, Berge, TW, Bjugstad, N & Netland, J. 2018. How to manage increasing problems with *Echinochloa crus-galli* in northern Europe. Poster and Abstract at 18<sup>th</sup> European Weed Research Society Symposium, Ljubljana, Slovenia, 17-21 June 2018
- Berge, TW. & Wærnhus, K. 2018. Automatisk flekksprøyting av glyfosat i gulmoden bygg og stubb om høsten [Automatic patch spraying of glyphosate in barley and stubble]. Poster at the 1st NIBIO-conference, Hellerudsletta, Norway, February 2018
- Stenrød, M., Berge, TW *et al.* 2017. Integrated pest management and farmer awareness – a Norwegian case study. Abstract and Poster presented at the 7th International Conference on Pesticide Behaviour in Soils, Water and Air. Ron Cooke Hub, York, North Yorkshire, UK, 30 August - 1 September 2017.
- Berge, TW, 2017. Oral presentation entitled “The DAT sensor – precision weed control in cereals” at Agri-Robotics seminar arranged by Norwegian University of Life Sciences, Ås, Norway, 4 August 2017.
- Berge, TW. 2017 Oral presentation entitled “Presisjonsbekjempelse av ugras – teknologiske muligheter” [Precision control of weeds – technological possibilities] at open day arranged by Center for Precision Agriculture at NIBIO, Apelsvoll, Kapp, Norway, 15 June 2017
- Berge, TW. 2017 Oral presentation (via Skype) at seminar entitled “Smarta løsninger med ny sensorteknikk og bildanalyse - seminarium med fokus på væxtskydd” [Smart solutions through new sensor technologies and machine vision – seminar with focus on crop protection] arranged by Partnerskap Alnarp, Swedish University of Agriculture, Alnarp, Sweden, 18 May 2017.
- Berge, TW. 2017. Oral presentation entitled “Presisjonssprøyting av ugras i korn – utstyr og miljøgevinst” [Precision control of weeds in cereals – equipment and environmental benefits] at meeting for farmers entitled “Ny teknologi i landbruket” [New technologies in the agriculture] arranged by PURA, Follo landbrukskontor og Ås Landbrukslag, Ås, Norway, 9 May 2017.
- Kaurstad, O.K., Urdal, F. & Berge, TW. 2017. Oral presentation entitled “Presisjonssprøyting” [Precision Spraying] at meeting KORN 2017 [CEREALS 2017] arranged by NIBIO and The Norwegian Extension Service, Quality Hotell Olavsgaard, Skjetten, Norway, 13-14 February 2017.
- Berge, TW, Utstumo, T, Urdal, F & Tørresen, KS. 2016. Tools and technologies for reduced herbicide use in cereals. Oral presentation at the 2nd joint NJF - Agromek- EurAgEng joint seminar, 28-29 November 2016, Herning, Denmark.
- Tørresen, KS & Berge, TW. 2016. The potential of two tools for integrated weed management to reduce herbicide use against annual weeds in cereals. Oral presentation at 7th International Weed Science Congress, Prague, Czech Republic, 19-25 June 2016.
- Utstumo, T, Berge, TW & Gravdahl, T. 2015. Non-linear model predictive control for navigation in row crops. IEEE International Conference on Industrial Technology, Seville, Spain 17-19 March 2015.
- Berge, TW. 2015. Evaluering av DAT ugrassensor 2013-2014. Sluttrapport [Evaluation of DAT weed sensor 2013-2014. Final report]. Bioforsk Rapport Vol 10 (4).
- Berge, TW, Utstumo, T & Netland, J. 2015. Kartlegging av flerårig ugras i kornåker med automatisk bildeanalyse – basis for presisjonssprøyting [Automatic image analysis to map perennial weeds for precision spraying in cereals]. Bioforsk FOKUS 10 (2) (ISBN 978-82-17-01389-1): 30.
- Utstumo, T, Dørum, J, Arbo, M, Berge, TW, Goldberg, S, Overskeid, Ø & Gravdahl, T. 2015. Asterix – Automatisk ugraskontroll i radkulturer [Asterix- automatic weed control in row-crops]. Bioforsk FOKUS 10 (2) (ISBN 978-82-17-01389-1): 129.
- Stenrød, M, Tørresen, K, Berge, TW, Ficke, A, Eklo, OM, Øgaard, AKF, Flaten, O, Refsgaard, K, Kvakkestad, V. 2015. IPM-strategies for cereal production - a Norwegian case-study, Bioforsk FOKUS 10 (2) (ISBN 978-82-17-01389-1): 120.
- Gustafsson, K, K. Hauge Madsen & T W Berge. 2014. Sustainable agriculture through precision farming. NJF Report (ISSN 1653-2015) 10 (10): 27-31.

- Gustafsson, K, Hauge Madsen, K. & Berge, TW. 2014 Hållbart jordbruk genom precisionsodling [Sustainable farming through precision agriculture]. Brosjyre.
- Gustafsson, K, Hauge Madsen, K. & Berge, TW. 2014. Hållbart jordbruk genom precisionsodling. Förstudie Öresund-Kattegat-Skagerrak-området [Sustainable farming through precision agriculture. Pre-study Öresund-Kattegat-Skagerrak region]. Rapport, 23 sider.
- Karlsen, R, Guren G & Berge TW. 2014. Temadag i Danmark: Mekanisk bekjempelse av ugras i frilandsgrønnsaker [Report from Denmark: Mechanical weeding in field vegetables]. Gartneryrket nr. 6/2014: 10-12.
- Berge, TW. 2014. Presisjonsjordbruk i Norge: Presisjonsprøyting av ugras [Precision farming in Norway: Precision spraying of weeds]. Presentasjon på Borgeby Fältdagar, Sverige, 25 - 26. juni 2014.
- Streibig, JC, J Rasmussen, D Andújar, C Andreassen, TW Berge *et al.* 2013. Sensors for herbicide efficacy assessment, Poster at 16<sup>th</sup> European Weed Research Society Symposium 2013, Samsun, Turkey, 24-26 June 2013.
- Christensen, S, D Andújar, C Andreassen, TW Berge *et al.* 2013. Use of sensors for assessment in herbicide trials In: Proceedings of 16<sup>th</sup> European Weed Research Society Symposium 2013, 24-26 June 2013, Samsun, Turkey, p. 315.
- Berge, TW. 2013. Redusert forbruk av ugrasmidler gjennom presisjonsjordbruk [Reduced usage of herbicides with precision agriculture]. Bioforsk FOKUS 8 (2): 110.
- Berge, TW, Utstumo, T. & J. Netland. 2012. Field robots for research and developments in site-specific weed management. In: Peruzzi, A. (Ed.). Proceedings of the first International Conference on Robotics and associated High-technologies and Equipment for Agriculture. September 19-21 2012, Pisa, Italy, p. 31-34.
- Berge, TW. & Ficke, A. 2012. Developing precision crop protection in wheat. Bioforsk FOKUS 7(2): 228.
- Berge, TW. & Ficke, A. 2012. Presisjonsjordbruk: Soppsykdommer og flerårig ugras i korn [Precision farming: Fungal diseases and perennial weeds in cereals]. Poster, Bioforsk-konferansen 2012.
- Brandsæter, L.O. & Berge, TW. 2012. Effects of tractor weight, wheel placement and depth and timing of ploughing on perennial weeds in organically farmed cereals. Abstract, The 6th International Weed Science, 17-22 June 2012, Hangzhou, China, p. 90.
- Berge, TW. 2011. Site-specific weed management (SSWM) - the concept, R&D and herbicide reductions. Nordic Association of Agricultural Scientists (NJF), Report 7 (9): 95-99.
- Tørresen, KS, Bechmann, M, Brandsæter, L, Hermansen, A, Lundon, A, Mangerud, K, TW Berge *et al.* 2011. Redusert bruk og risiko av pesticider i dyrkingssystem med korn og potet [Reduced use and risk of pesticides in cropping system with cereals and potato]. Abstract - Miljø 2015-konferansen, Norges forskingsråd, Oslo, Norway, 15-16. februar 2011.1 p.
- Berge, TW, A Ficke, J Netland, I Klingen & T Rafoss. 2011. Plantevern for et endra klima – Forskingen må starte nå. [Plant protection in a changed climate – Start research now ]. Bioforsk FOKUS 6: 132.
- Brandsæter, LO., Tørresen, KS., Berge, TW, Lundon, AR. & Mangerud, K. 2011. Jordarbeiding og redusert bruk av glyfosat [Soil tillage and reduced glyphosate use]. Bioforsk FOKUS 6: 99.
- Berge, TW., S. Goldberg, S. Løvås, J. Netland & Ø. Overskeid. 2010. Developing Sweedy – a robot for weed control in swedes (*Brassica napus* ssp. *rapifera*). 3rd Precision Crop Protection Conference, Bonn, Germany, September 2010. Poster and abstract (1 p.).
- Kaspersen, K., TW Berge, S. Goldberg, J. Netland, Ø. Overskeid & T. Stølan. 2010. Estimation of weed pressure in cereals using digital image analysis. 3rd Precision Crop Protection Conference, Bonn, Germany, September 2010. Poster and abstract (1 p.).
- Berge, TW., S. Goldberg, K. Kaspersen, J. Netland, Ø. Overskeid & T. Stølan. 2010. Testing image-based site-specific weed control in cereals. 15th European Weed Research Society Symposium, Kaposvár, Hungary, July 2010. Poster and abstract (p. 317).
- Berge, TW. & Brandsæter, LO. 2010. Mekanisk ugrasbekjempelse i grønnsaker – viktigere enn noen gang [Mechanical weed control in vegetables – more important than ever]. Oral presentation, "Grønt på Mære", 17. mars 2010.
- Berge, TW., S. Goldberg, K. Kaspersen, J. Netland, Ø. Overskeid, & T. Stølan. 2010. Presisjonsjordbruk: flekksprøyting av frøugras i korn. [Precision farming: patch spraying of annual weeds in cereals]. Bioforsk FOKUS 5: 238-239.

- Berge, TW. 2009. Resultater fra forsøk med presisjonssprøyting i korn [Results from precision spraying trials in cereals]. Oral presentation, Markdag på Øsaker 23. juni 2009.
- Berge, TW., J. Netland, M. Helgheim, K. Wærnhus, A. Berge, S. Clausen, K. Kaspersen, S. Goldberg, Ø. Overskeid, & T. Stølan. 2009. Sprøyting etter behov med kamerastyrt åkersprøyte [Camera-guided herbicide application]. *Bioforsk FOKUS 4*: 56-57.
- Meadow, R., Brandsæter, LO., Birkenes, S., Hermansen, A., Ascard, J., Bysveen, K., Andersen, A., Berge, TW., Blystad, D-R., Hammeraas, B., Holgado, R., Munthe, T., Skuterud, R. & Sletten, A. 2008. Plantervern og plantehelse i økologisk landbruk. Bind 2: Grønnsaker og potet. [Plant protection and plant health in organic farming. Issue 2: Vegetables and potatoes]. *Bioforsk FOKUS 3 (10)*, 158 pp.
- Berge, TW, Aastveit, A & Fykse, H. 2008. Spatial weed patterns and relative time of emergence profoundly affect weed performance and crop yield. 5th International Weed Science Congress, Vancouver, Canada, June 2008. Oral presentation and abstract (p. 285 on CD).
- Berge, TW. 2008. SPATIAL PATCHINESS OF BROADLEAVED WEEDS IN CEREALS AND SIMULATED PATCH SPRAYING. PhD thesis, Norwegian University of Life Sciences, Dep. Plant and Environmental Sciences. ISBN 978-82-575-0808-1.
- Berge, TW, Fykse, H. & Aastveit, AH. 2007. Automated weed detection using digital images as a decision tool for site-specific weed control in cereals. Oral presentation and abstract (1 p.), 2nd Workshop on Precision Crop Protection, Bonn, Germany, October, 2007.
- Berge, TW, Cederkvist, HR, Aastveit, AH & Fykse, H. 2007. Spatial resolution for site-specific weed control in cereals. 14th European Weed Research Society Symposium, Hamar, Norway, June 2007. Oral presentation and abstract (p. 119).
- Berge, TW & Netland, J. 2006. Implementation of real-time precision spraying against annual weeds in cereals - status in Norway. Oral presentation and proceedings, Precision Technology in Crop Production – Implementation and benefits, Nordic Association of Agricultural Scientists seminar No. 390, Lillehammer, Norway, November 2006. NJF Report 2 (8): 68-69.
- Berge, TW & Fykse, H. 2005. Preliminary results from simulations of site-specific weed management in Norwegian cereal fields for decision of patch sprayer design. 1st Workshop on Precision Crop Protection, Uppsala, Sweden, June 2005. Oral presentation and abstract (1 p.).
- Berge, TW & Fykse, H. 2005. Simulations of site-specific weed management in spring cereal to define detection and spraying resolution of a patch sprayer. 5th European Conference on Precision Agriculture, Uppsala, Sweden, June 2005. Poster and abstract (pp. 42-43).
- Berge, TW & Fykse, H. 2005. Presisjonssprøyting mot frøugras i vårkorn - bestemmelse av presisjonsnivå [Precision spraying of seed-propagated weeds in spring cereals – determination of precision level]. Oral presentation and proceedings, Plantemøtet Østlandet, Sarpsborg, Norway, February 2005. *Grønn kunnskap 9(2)*:24-29. ISBN 82-479-0517-5.