

Innovative Solutions for SUSTAINABLE MANAGEMENT OF NITROGEN

SustainableNconference.dnmark.org, Aarhus University, June 2017

Programme

Sunday 25 June:

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| 16:00 – 18:00 | Welcome reception and registration. Mounting posters.
Venue: 'Vandrehallen', building 1530, Ny Munkegade 118, DK-8000 Aarhus C |
| 18:00 | Bus departure to the Climate Planet |
| 18:30 - | Visit the Climate Planet at the waterfront in Aarhus. Tickets for the show 19:00 (duration 40 minutes) is required. |

Monday 26 June:

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| 07:45 | Registration opens
Mounting of posters
Venue: 'Vandrehallen', building 1530, Ny Munkegade 118, DK-8000 Aarhus C |
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| 08:30 – 08:50 | Conference Opening
<i>Chairs: Tommy Dalgaard and Jørgen E. Olesen, Aarhus University</i>
Venue: Auditorium F 1534-125, Ny Munkegade 118, DK-8000 Aarhus C
Welcome address by <i>Niels Christian Nielsen, Dean, AU Science & Technology</i> |
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Plenary session 1

Chairs: Irene A. Wiborg, SEGES and Henrik Vejre, University of Copenhagen
Venue: Auditorium F 1534-125

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| 08:50 – 09:15 | Sustainable Nitrogen Management in Denmark
<i>Tommy Dalgaard, Aarhus University</i> |
| 09:15 – 09:45 | The California N assessment – learnings and outcomes
<i>Aubrey Thompson, University of California, Davis</i> |
| 09:45 – 10:15 | Nitrogen solution scenarios
<i>Jørgen E. Olesen, Aarhus University</i> |

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| 10:15 – 10:35 | Coffee in 'Vandrehallen' |
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Plenary session 2

Chairs: Brian H. Jacobsen, University of Copenhagen and Birgitte Hansen, Geological Survey of Denmark and Greenland

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| 10.40 – 11:05 | Water quality policies at the crossroad between common targets and decentralized enforcement
<i>Katarina Elofsson, Swedish University of Agricultural Sciences</i> |
| 11:05 – 11:30 | Targeted regulation: A framework for Nitrogen Regulation. Cost-effectiveness, spatial distribution and policy trade-offs
<i>Berit Hasler, Aarhus University</i> |
| 11:30 – 12:00 | Current water quality ambitions in many Dutch regions incompatible with intensive agriculture
<i>Hans van Grinsven, Netherlands Environmental Assessment Agency</i> |

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| 12:00 – 13:00 | Lunch in Building 1523, 7 th floor |
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13:00 – 14:00 Parallel oral sessions A

Venues: Aud. F 1534-125 and Aud. 1523-318

S1: New technologies for improved N management for more food chains

Chairs: Jan K. Schjørring, University of Copenhagen and Jørgen E. Olesen, Aarhus University

Venue: **Aud. 1523-318**

- 13:00 – 13:15 Nitrogen losses following food-based digestate and compost applications to agricultural land
F. Nicholson, A. Bhogal, L. Cardenas, D. Chadwick, T. Misselbrook, A. Rollett, M. Taylor, R. Thorman, J. Williams
- 13:15 – 13:30 A comparison of disaggregated nitrogen budgets for Danish agriculture using Europe-wide and national approaches
J. Kros, N. Hutchings, I. T. Kristensen, I. S. Kristensen, C. D. Børgesen, J. C. Voogd, T. Dalgaard, W. de Vries
- 13:30 – 13:45 Monitoring maize N status with airborne and ground level sensors
M. Quemada, J. L. Gabriel, P. Zarco-Tejada, J. López-Herrera
- 13:45 – 14:00 Canopy double sensor for precision nitrogen fertilization
A. Thomsen, M.N. Andersen
- 14:00 – 14:15 Sustainable intensification and extensification of cropping system for biorefinery in Denmark-what does the nitrogen balance say?
K. Manevski, P.E. Lærke, U. Jørgensen

S2: Local N solutions: Watersheds, landscapes, communities and farming systems. Involvement and interactions with stakeholders

Chairs: Henrik Vejre, University of Copenhagen and Tommy Dalgaard, Aarhus University

Venue: **Aud. F 1534-125**

- 13:00 – 13:15 Development and implementation of a simulation game for the introduction of a revised Fertilizer Ordinance in Germany
G. Wiese, T. Kuhn
- 13:15 – 13:30 Evaluating scenarios of land management practices in contrasted landscapes using a nitrogen landscape model: Comparing the effectiveness of optimizing agricultural practices versus landscaping on mitigation nitrogen fluxes
L. Casal, P. Durand, F. Vertès, F. Laurent, L. Philippe, J. Salmon-Monviola, N. Akkal-Corfini, C. Benhamou, S. Ferrant, A. Probst, S. Sauvage, J.-L. Drouet
- 13:30 – 13:45 A participatory protection within the Vittel mineral watershed: Making farmer the best experimenter to improve nitrogen use efficiency and water quality
A. Gobillot, M. Benoit, J. Auzeral
- 13:45 – 14:00 Open landscape nitrate retention mapping - rOpen
E. Auken, T. Norvin Vilhelmsen, A. Vest Christiansen
- 14:00 – 14:15 Designing decision support tools for targeted N-regulation
– Experiences from developing and using the Danish dNmark landscape model
A. Aagaard Christensen, K. Piil, P. Stubkjær Andersen, E. Andersen, H. Vejre
- 14:15 – 14:30 Coffee in 'Vandrehallen'
- 14:30 – 15:30 **Poster presentations** in 'Vandrehallen'

15:30 – 17:00 Parallel oral sessions B
Venue: Aud. F 1534-125 and Aud. 1523-318

S4: Policies and abatement

Chairs: Mette Termansen and Berit Hasler, Aarhus University

Venue: **Aud. F 1534-125**

- 15:30 – 15:45 Towards protecting the Great Barrier Reef from land-based pollution – a focus on nitrogen
P. Thorburn, F. J. Kroon, B. Schaffelke, S. Whitten
- 15:45 – 16:00 Cost Efficient Regulation of the Danish Agricultural Discharges of Nitrogen to Coastal Waters – Economic analysis of total cost and the distribution of cost
M. Nygaard Källström, U. Richardt Beck, L. Gårn Hansen, J. Dejgård Jensen, T. Dalgaard
- 16:00 – 16:15 A sectorial and integrated approach to solve the Nitrogen Problem is necessary
E. Schmid, M. Salomon, A. Volkens
- 16:15 – 16:30 Comparing measures for nitrogen reduction in northern Europe
M. Hvarregaard Thorsøe, M. Graversgaard, T. Dalgaard
- 16:30 – 16:45 From field to factory: shifting regulatory focus to reduce nitrogen pollution
D. R. Kanter, T. D. Searchinger
- 16:45 – 17:00 Effectiveness of markets in nitrogen abatement: A Danish case study
L. Block Hansen, B. Hasler, M. Termansen

S6: Monitoring and trends assessment

Chairs: Brian Kronvang and Nick Hutchings, Aarhus University

Venue: **Aud. 1523-318**

- 15:30 – 15:45 Groundwater nitrate response to sustainable nitrogen management
B. Hansen, L. Thorling, J. Schullehner, M. Termansen, T. Dalgaard
- 15:45 – 16:00 Assessing nitrogen-mass flows between sub-systems within dairy farms
A. Sundrum, A. Machmüller
- 16:00 – 16:15 Map-based screening to achieve cost-effective spatially targeted WFD river basin action programmes
M. Butts, T. V. Jacobsen, H. G. Müller, B. S. Kaspersen
- 16:15 – 16:30 Adoption of precision agriculture technologies for efficient nitrogen application and greenhouse gas emissions mitigation in the EU
M. Gómez-Barbero, I. Soto-Embodas, B. Sánchez, E. Rodríguez-Cerezo
- 16:30 – 16:45 Documenting the effect of nitrogen mitigation measures by monitoring root-zone nitrogen concentration and nitrogen transport in streams
G. Blicher-Mathiesen, J. Rolighed, M. V. Carstensen, A. Rasmussen, J. Windolf, H. E. Andersen
- 16:45 – 17:00 Nitrate leaching from new forests on arable land – short and long term monitoring
P. Gundersen

Conference dinner:

18:30 **Bus departure from meeting-point at [Toldbodgade 6, 8000 Aarhus C](#)**

19:00 – 22:00 **Conference dinner at Varna palæet**
 Restaurant [Varna](#), Ørneredevej 3, 8000 Aarhus C

Bus back to the meeting point

Tuesday 27 June:

Plenary session 3

Chairs: Jørgen E. Olesen, Aarhus University and Brian H. Jacobsen, University of Copenhagen

Venue: **Aud. F 1534-125**

- 08:30 – 09:00 Nitrogen and Health
Torben Sigsgaard, Aarhus University, Dept. Public Health
- 09:00 – 09:30 Changing consumption and N impacts
Adrian Leip, EC, Joint Research Centre, Directorate on Sustainable Resources
- 09:30 – 10:00 Nitrogen fluxes, impacts and boundaries at global and regional scale
Hans Kros/ Wim de Vries, Wageningen University
- 10:00 – 10:20 Coffee in 'Vandrehallen'

10:20 – 12:00 Parallel oral power sessions

Venue: **Aud. F 1534-125 and Aud. 1523-318**

S3, S5, S4, S2: Health, food, local solutions and policies for abatement

Chairs: Peter Stubkjær Andersen and Brian H. Jacobsen, University of Copenhagen

Venue: **Aud. F 1534-125**

- 10:20 – 10:30 Atmospheric ammonia, ammonium and incident asthma – A nationwide case-control study in Danish preschool children
G. Holst, M. Thygesen, C. B. Pedersen, R. G. Peel, J. Brandt, J. H. Christensen, J. Bønløkke, O. Hertel, T. Sigsgaard
- 10:30 – 10:40 Nitrogen and agriculture in the Nordic countries - policy, measures and recommendations
S. Hellsten, T. Dalgaard, K. Rankinen, K. Tørseth
- 10:40 – 10:50 Generating EU-wide endogenous crop yield responses to nitrogen to predict the impact of environmental policies on farm-level cropping systems
J. De Waele, J. de Frutos Cachorro, A. Bral, D. De Pue, S. De Neve, J. Buysse
- 10:50 – 11:00 Nitrogen emission trading: a comparative study of the potentials
M. Termansen, L. Block, J. Smart, S. Hasan, B. Hasler
- 11:00 – 11:10 A participative network of organic and conventional crop farms in the Seine Basin (France) for evaluating nitrate leaching
M. Benoit, J. Garnier, N. Beaudoin, G. Billen
- 11:10 – 11:20 Reducing agricultural nitrogen loads through spatially targeting measures
F. Hashemi, J. E. Olesen, C. D. Børgesen, T. Dalgaard, A. L. Hansen
- 11:20 – 11:30 Developing local scenarios to nitrogen management using participatory planning – a practical perspective
K. Piil, I. A. Wiborg, P. A. Stubkjær, A. A. Christensen, E. Andersen, H. Vejre, T. Dalgaard
- 11:30 – 11:40 The distribution of mineral nitrogen in soil in relation to risk of nitrogen leaching in farms with irrigated vegetables
J. Klír, T. Šimon, P. Svoboda, G. Kurešová, J. Haberle
- 11:40 – 11:50 The meat dogme project: exploring nitrogen mitigation in Denmark
S. Stiles Andersen, M. Graversgaard

S1, S6: Technologies, monitoring and trends assessment

Chairs: Per Gundersen, Jørgen E. Olesen

Venue: **Aud. 1523-318**

- 10:20 – 10:30 Integrated approaches for improving crop nitrogen use on dairy farms
S. Bittman, D. Hunt
- 10:30 – 10:40 Controlled traffic farming increases crop yield, root growth and soil mineral N in organic vegetable production
M. Hefner, R. Labouriau, H. L. Kristensen
- 10:40 – 10:50 Catch crop with legumes can reduce N leaching and increase productivity in organic systems
C. De Notaris, P. Sørensen, J. Rasmussen, J. E. Olesen
- 10:50 – 11:00 The suitability of organic residues as agricultural fertilisers in a circular economy
S. P. Case, L. S. Jensen
- 11:00 – 11:10 ~~A comparison of disaggregated nitrogen budgets for Danish agriculture using Europe-wide and national approaches~~
J. Kros, N. Hutchings, I. T. Kristensen, I. S. Kristensen, C. D. Borgesen, J. C. Voogd, T. Dalgaard, W. de Vries
- 11:10 – 11:20 Spatial and time variations in agricultural loss of nitrogen to 44 small Danish streams – 1990-2015
J. Windolf, S. E. Larsen, G. Blicher-Mathiesen, H. Tornbjerg, B. Kronvang
- 11:20 – 11:30 High resolution modelling of N-retention in a restored riparian wetland
B. von Christierson, M. Butts, L. A. Nieuwenhoven, F. T. Hansen, J. K. Jensen, J. R. Poulsen
- 11:30 – 11:40 How green are your pastures? Variations in nitrogen content of grazed forages on dairy farms in Australia
C. J. P. Gourley, S. R Aarons
- 11:40 – 11:50 Novel legumes and technologies to reduce environmental N impact and increase production
A. W.H. Lake, Y. Wang, H. Wang
- 12:00 – 12:45 **Lunch** in building 1523, 7th floor

12:45 – 14:00 Parallel oral sessions C

Venue: Aud. F 1534-125 and Aud. 1523-318

S3, S5, S4, S2: Health, food, local solutions and policies for abatement

Chairs: Birgitte Hansen, Geological Survey of Denmark and Greenland and Torben Sigsgaard, Aarhus University

Venue: Aud. F 1534-125

- 12:45 – 13:00 Nitrate in drinking water and colorectal cancer
J. Schullehner, B. Hansen, M. Thygesen, C. Bøcker Pedersen, T. Sigsgaard
- 13:00 – 13:15 The nitrogen footprint – environmentally relevant?
R. Einarsson, C. Cederberg
- 13:15 – 13:30 The environmental benefits of plant-based diets contested: the nitrate footprint of agricultural commodities compared
M. J. J. Hoogsteen, B. Baumann, A. van Pul, J. Spijker, A. E. J. Hooijboer, M. W. Hoogeveen
- 13:30 – 13:45 How can we remove accumulated nitrogen by use of farming systems in order to protect our groundwater?
P. Stampe Jakobsen, P. Grønvald



S1, S6: Technologies, monitoring and trends assessment

Chairs: Anker Lajer Højberg, Geological Survey of Denmark and Greenland and Irene A Wiborg, SEGES

Venue: **Aud. 1523-318**

- 12:45 – 13:00 Inclusion of nitrification inhibitor in animal feed to reduce environmental N losses
K. Richards, E. Minet, S. Ledgard, J. Luo, G. Lanigan
- 13:00 – 13:15 Diet management to effectively abate N₂O emissions from surface applied pig slurry
L. Sanchez-Martín, A. Beccaccia, C. De Blas, A. Sanz-Cobena, P. García-Rebollar, F. Estellés, K. A. Marsden, D. R. Chadwick, A. Vallejo
- 13:15 – 13:30 National Nitrogen Budgets from 1965 to 2010 for 212 countries
B. Leon Bodirsky, J. Philipp Dietrich, I. Weindl, L. Baumstark, U. Kreidenweiss, A. Popp
- 13:30 – 13:45 Assessing and matching landuse with land suitability – the model development and landuse implications
R. Singh, D. Horne, A. Elwan, A. Rivas, A. Manderson, J. Roygard, M. Hedley
- 13:45 – 14:00 Coffee in ‘Vandrehallen’

Plenary session 4

Chairs: Berit Hasler and Tommy Dalgaard, Aarhus University Venue: Venue: **Aud. F 1534-125**

- 14:00 – 14:30 Mitigating ammonia emissions in the absence of government policy, the Canadian experience
Shabtai Bittman and Derek Hunt
- 14:30 – 15:00 New approaches for improved food chain N use efficiency
Oene Oenema
- 15:00 – 15:30 The European N assessment 5 years after – what was the outcome
Mark Sutton

15:30 – 16:30 International panel debate and reflections

Venue: **Aud. F 1534-125**

Chairs: Henrik Vejre, University of Copenhagen; Jørgen E. Olesen, Aarhus University

Panelists: Claudia Marques-dos-Santos Cordovil (Portugal), Mark Sutton (UK), Katarina Elofsson (Sweden), Oene Oenema (The Netherlands), Aubrey Thompson (US), Shabtai Bittman (Canada), Irene A. Wiborg (Denmark)

- 16:30 – 17:00** Closure
Tommy Dalgaard, Jørgen E. Olesen, Aarhus University
- Intro to excursion
 - The dnmark statement

Posters:

Sessions

- **S1: New technologies for improved N management** for more efficient food chains
- **S2: Local N solutions:** Watersheds, landscapes, communities & farming systems. Involvement & interactions with stakeholders
- **S3: Health impact challenges:** drinking water & air, human and public health
- **S4: Nitrogen abatement policies:** instruments, costs and benefits
- **S5: Sustainable consumption** and N flows: Food consumption and production effects, footprints, & N-tools
- **S6: N Monitoring for emission estimates and trends assessment**

S1:	New <u>technologies</u> for improved N management for more efficient food chains
S1-1	Implications of the cover crop killing date on N and water cycles under different scenarios <i>M. Alonso-Ayosu, J. L. Gabriel, M. Quemada, M. Vanclooster</i>
S1-2	Collection and Preservation of Urea Nitrogen from Grow-Finish Pig Urine <i>J. Classen, J. Mark Rice, A. Deviney, J. Shye, D. Wegerif</i>
S1-3	Nutrient Recovery Membrane Technology: Pilot-Scale Evaluation <i>J. Classen, J. Mark Rice, A. Deviney</i>
S1-4	Novel legumes and technologies to reduce environmental N impact and increase production <i>A. W.H. Lake, Y. Wang, H. Wang</i>
S1-5	Dynamisation of the Nitrogen Balance Method with “CHN” Crop Model <i>B. Soenen, X. Le Bris, P. Bessard-Duparc, M. Laberdesque, J.-P. Cohan, C. Le Souder, F. Laurent</i>
S1-6	Nitrogen mineralisation and greenhouse gas emission from soil application of sludge from sludge treatment reed bed systems <i>B. Gómez-Muñoz, J. Larsen, G. Bekiaris, C. Scheutz, S. Bruun, S. Nielsen, L. S. Jensen</i>
S1-7	N-Guru™: development of a novel technology to assist N-fertiliser decision making in grazed ryegrass-white clover pastoral systems <i>Aa. Stafford, W. Catto, J. Blennerhassett</i>
S1-8	Modelling the Impact of N inhibitors and climate change on field N losses <i>G. Lanigan, E. Minet, S. Ledgard, J. Luo, K. Richards</i>
S1-9	The new nitrification inhibitor DMPSA has the same efficiency as DMPP reducing N ₂ O emissions from grasslands <i>S. Menéndez, T. Fuertes-Mendizábal, X. Huérfano, J. María Estavillo, C. González-Murua</i>
S1-10	Validation of a new Nitrogen Management Tool on Winter Wheat based on Remote Sensing Diagnostic and Agronomic Prognosis: “QN METHOD” - FARMSTAR® Expert <i>B. Soenen, X. Le Bris, A. Bonnard, M. Closset</i>
S1-11	Producing more rice with less fertilizers: Determining optimum nitrogen rate and placement method for lowland rice cultivation <i>Y. K. Gaihre, S. M. Mofijul Islam, U. Singh, M. Rafiqul Islam, J. Chandra Biswas</i>
S1-12	Effect of a Nitrification Inhibitor on Nitrous Oxide Emissions and Ammonia Volatilization from a Maize Crop <i>J. Recio-Huetos, A. Sanz-Cobeña, G. Guardia, J. le Noé, S. García-Marco, G. Andreu, J. M. Álvarez, A. Vallejo</i>
S1-13	Moving towards an integrated system modelling tool for nitrogen management in agriculture <i>Rick Li, Maria do Rosário Cameira, David Fangueiro</i>
S1-14	Vizura®: the nitrification inhibitor to enhance the fertilizer value of slurry and biogas digestate. Review of European studies showing the impact of using Vizura® on environmental and agronomic parameters <i>J. Sanz-Gomez, M. Knauer, G. Pasda, A. Wissemeyer, W. Zerulla, J. W. Jensen, S. Tarlazzi, L. M. Muñoz-Guerra, M. E. Chiodini, M. Acutis, J. M. Villar-Mir, I. F. Pedersen, P. Sørensen</i>



S1-15 Limus®: a novel combination of urease inhibitors reducing ammonia emissions from urea containing fertilizers and its performance concerning environmental and agronomic parameters, handling, transport and storage properties

J. Sanz-Gomez, M. Knauer, G. Pasda, A. Wissemeier, M. Staal, K. H. Schneider, W. Zerulla, M. Schmid, H. Menger, S. Tarlazzi, L. M. Muñoz-Guerra, M. E. Chiodini, M. Acutis, J. M. Villar-Mir, A. Muskolus

S1-16 Effect of nitrogen supply on biomass quality for biorefining

Jan K. Schjoerring, Henning Jørgensen, Laetitia Baldwin

S1-17 Controlled traffic farming increases crop yield, root growth and soil mineral N in organic vegetable production

M. Hefner, R. Labouriau, H. L. Kristensen

S2: **Local N solutions:** Watersheds, landscapes, communities & farming systems. Involvement & interactions with stakeholders

S2-1 Balancing optimum fertilisation and N losses in dairy systems

I. Vogeler, R. Cichota, B. Paton, J. Trethewey, A. Werner

S2-2 The role of seed coatings in enhancing rhizobium colonisation, deep N soil levels and yield increases in pulse crops in the Northern Mallee of South Australia

S. Phillips, R. Saunders

S2-3 Evaluation of the effectiveness of the use of organic fertilizer for the crop production

L. Moklyachuk, V. Pinchuk, V. Boroday

S2-4 Effects of land use changes on the provision of ecosystem services in relation to implementation of nitrogen reduction measures – a scenario study

P. S. Andersen, H. Vejre, E. Andersen, A. Aa. Christensen, A. K. Jensen, M. Graversgaard, T. Dalgaard, M. Termansen, B. Hasler

S2-5 Collaborative planning in natural resource management – the case of regulation of nitrogen in the agri-environment

H. Vejre, E. Andersen, P. S. Andersen, T. Dalgaard, A. Aa. Christensen, M. Graversgaard, C. Kjeldsen

S2-6 Reducing agricultural nitrogen loads through spatially targeting measures

F. Hashemi, J. E. Olesen, C. D. Børgesen, T. Dalgaard, A. L. Hansen

S2-7 A landscape ecological perspective on the regulation of N, P and organic matter in the Danish agri-environment

E. Andersen, H. Vejre, T. Dalgaard, P. S. Andersen, J. E. Olesen, A. Aa. Christensen

S2-8 Estimating nitrate leaching from forests in fragmented agricultural landscapes with and empirical model

P. Gundersen, Y.-J. Cheng

S2-9 Preliminary results of nitrogen leaching under minimum and no-tillage in northern Italy

A. Perego, C. Tieghi, E. Chiodini Marcello, R. Motta Silvia, S. Brenna, M. Acutis

S2-10 Modelling spatial nitrogen attenuation and land-based nitrogen loads to rivers

Ahmed Elwan, Ranvir Singh, Dave Horne, Andrew Manderson, Jon Roygard, Brent Clothier, Geoffrey Jone

S2-11 Land Use Land Cover as a consequence and a driver for soil quality changes

CMdS Cordovil, J. Marinheiro, M. J. Vale, R. Reis, T. Dalgaard, N. J. Hutchings

S2-12 WATERPROTECT: Innovative tools enabling drinking water protection in rural and urban environments

A. L. Højberg, P. Seuntjens, P. Campling, I. Joris, E. Wauters, M. Lopez de Alda, A. Kuczynska, E. Capri, C. Brabyn, C. Boeckaert, P. E. Mellander, E. Pauwelyn, E. Pop

S2-13 Innovative monitoring methods for high resolution quick scans of water quality

Boogaard, Floris C., de Lima, Rui L.P., Irene Asta Wiborg, Flemming Gertz, Morten Graversgaard



S4:	Nitrogen abatement policies: instruments, costs and benefits
S4-1	Mitigating China's N, P ₂ O ₅ and irrigation water inputs for staple food by potato as staple food <i>B. Gao, W. Huang, C. Huang, S. Cui</i>
S4-2	Environmental assessment of livestock farms in the context of BAT system introduction in Russia <i>A. Briukhanov, E. Vasilev, N. Kozlova, S. Lukin</i>
S4-3	Abatement of ammonia emissions from dairy cow house concrete floor surfaces under simulated north-west European conditions <i>J. P. McIlroy, K. L. McGeough, R. J. Laughlin, R. Carolan</i>
S4-4	Assessment of options to support sustainable intensification of grazed grasslands <i>N. Hoekstra, R. Schulte, P. Forrestal, D. Hennessy, G. Lanigan, C. Müller, L. Shalloo, E. Minet, K. Richards</i>
S4-5	Nitrogen and agriculture in the Nordic countries - policy, measures and recommendations <i>S. Hellsten, T. Dalgaard, K. Rankinen, K. Tørseth</i>
S5:	Sustainable consumption and N flows: Food consumption and production effects, footprints, & N-tools
S5-1	Changes of nitrogen flows in Swiss agriculture – drivers and consequences <i>H. Menzi, E. Spiess</i>
S5-2	Environmental Assessment of Nutrient flows for livestock supply chains <i>A. Leip, S. Ledgard, A. Uwizeye, Members of the Nutrient Technical Advisory Group</i>
S5-3	The Danish nitrogen footprint - Applying nitrogen footprints and using policy scenarios to change consumption behaviour <i>M. Graversgaard, T. Dalgaard, T. Kristensen, I. S. Kristensen, J. E. Olesen, N. J. Hutchings, R. Parajuli, A. M. Leach, L. R. Cattaneo, J. N. Galloway</i>
S5-4	The Danish Nitrogen Research Alliance (DNMARK): Research and Know-how for a sustainable, low-Nitrogen food production. <i>T. Dalgaard, S. Brock, B. Hansen, B. Hasler, O. Hertel, N. J. Hutchings, B. Jacobsen, C. Kjeldsen, B. Kronvang, J. E. Olesen, J. K. Schjørring, T. Sigsgaard, L. Stoumann Jensen, H. Vejre, W. de Vries, I. A. Wiborg</i>
S6:	N Monitoring for emission estimates and trends assessment
S6-1	Nitrogen balance and Nitrogen Efficiency as an indicator for N losses to the environment <i>S. Lukin, E. Marchuk, E. Zolkina, Y. Klimkina, S. Tarasov, N. Kozlova</i>
S6-2	DPSIR Approach to Nitrogen Management in an Irrigated Agricultural Land <i>H. Ibrikci, M. Cetin, E. Karnez, H. Sagir, M. Ucan, M. Fink, M. Said Golpinar</i>
S6-3	Soil moisture effects on the codenitrification of N ₂ O and N ₂ from a urea-affected pasture soil <i>T. J. Clough, G. J. Lanigan, C. A. M. de Klein, Md S. Samad, S. E. Morales, D. Rex, L. R. Bakken, C. Johns, L. M. Condron, J. Grant, K. G. Richards</i>
S6-4	Fungal and bacterial contributions to codenitrification emissions of N ₂ O and N ₂ following urea deposition to soil <i>D. Rex, T. J. Clough, K. G. Richards, C. de Klein, S. E. Morales, L. R. Bakken, Md S. Samad, G. J. Lanigan</i>
S6-5	Temporal and spatial variations in groundwater quality resulting from policy-induced reductions in nitrate leaching to the Rabis Creek aquifer, Denmark <i>L. Thorling, S. Jessen, P. K. Engesgaard, S. Müller, J. Leskelä, D. Postma</i>
S6-6	The Automated Cavity Ring Down Spectroscopy Usage for Nitrous Oxide and Ammonia Emissions Measurements from Soil Using Recirculation and Closed Chamber Systems <i>I. Grinfelde, L. Berzina, K. Valujeva</i>



Wednesday 28 June:

Program for the excursion:

8:30	Pick-up at Toldbodgade 6, 8000 Aarhus C
9:00	The new high-tech public waterworks “Truelsbjerg” * Randersvej 440, 8200 Aarhus N, https://goo.gl/maps/Pw4hRzswtdN2
11:00	Bus trip to AU Campus Foulum, Blichers Allé 20, DK-8830 Tjele, http://dca.au.dk/en/about-dca/au-foulum/ Introduction in the bus, to the landscapes around Gudenå and Nørreå
12:00	Sustainable N lunch, AU Campus Foulum (“gæstekantinen”)
13:00	Intro to the Centre for Circular Bioeconomy and N related research
13:30	Foulumgaard Field Research Station
14:45	The Foulum Biogas Research Facilities
15:30	The Green Biorefinery Plant Facilities
16:00	Bus trip back to Aarhus
17:00 (approx.)	Return to the pick-up, Aarhus C

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Tomorrow's waterworks in Aarhus:

Truelsbjerg Waterworks in the northern part of Aarhus sets new technological, architectural and operational standards for waterworks. It has started a trend in new design that has inspired several water utilities in Denmark.

http://www.aarhusvand.dk/en/international/new_solutions/tomorrow/

Presentation by geologist Bo Vægter – Aarhus Vand: Groundwater protection in Aarhus.

High-quality water requires protection. Aarhus Vand supplies drinking water of the best quality merely by filtering and aerating the water on its way to the citizens' taps. However, we can only do this because we think ahead and always take the groundwater into consideration.

http://www.aarhusvand.dk/en/international/new_solutions/high-quality-water-requires-protection2/