8th GLOBAL NITROGEN CONFERENCE

3rd – 7th MAY 2020 | BERLIN, GERMANY

Draft program, as of 10 March 2020

SUSTAINABLE DEVELOPMENT GOALS

Umwelt Bundesamt

Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

The 8th International Nitrogen Initiative Conference

INI2020 will be held in Berlin, 3 – 7 May 2020

Reactive nitrogen compounds are a key resource for food production in the light of a growing world population. At the same time, human activities through multiple processes result in losses of reactive nitrogen to all environmental media. The increased abundance of reactive nitrogen in the biosphere leads to numerous effects on the environment, human health, climate and biodiversity. Pressure on the planet's resources and ecology is steadily increasing. The amount of reactive nitrogen compounds emitted into the environment is far too high and already exceeds the "safe operating space" for future life on our planet. Most of the UN Sustainable Development Goals (SDG) are closely interlinked with the nitrogen cycle. This demonstrates the crucial importance of solutions for this complex problem, which must fit the framework conditions in the respective region. Meeting these goals in parallel is dependent on spreading knowledge on effective nitrogen management, increasing the efficiency of nitrogen use in food production and decreasing unwanted nitrogen emissions to the biosphere. The recent resolution of the fourth session of the UN Environment Assembly (UNEA-4) on sustainable nitrogen management recognizes the multiple pollution threats resulting from anthropogenic reactive nitrogen, including air pollution, with adverse effects on the terrestrial, freshwater and marine environments. The resolution supports the exploration of options through which the SDGs could be achieved, including the sharing of assessment methodologies and relevant best practices.

The 8th conference of the International Nitrogen Initiative (INI 2020) will be the meeting point for scientists from all over the world who are dealing with reactive nitrogen compounds in agriculture, industry, traffic, soil, water and air. It will be the place to exchange results, ideas and visions to improve future holistic management of reactive nitrogen in order to further reduce hunger and poverty and at the same time avoid further hazards for human health, biodiversity and environmental media. It will be a perfect opportunity to engage with important policy makers and other relevant stakeholders. A joint conference declaration based on the latest scientific knowledge might stimulate further policy action towards effective integrated nitrogen management.

INI conferences are held every three years on different continents. After the first conference in the Netherlands in 1998, INI 2020 is the first time it will be coming back to Europe: To Germany, the place where about 100 years ago scientists Fritz Haber and Carl Bosch invented industrial ammonia fixation, a major source of today's reactive nitrogen circulating through the biosphere.

- At INI 2020, scientists and delegates are invited to present findings on
- Sustainable agriculture, food and nutrition systems, in relation to effective nitrogen management,
- threats for health, environment and biodiversity and solutions to combat these nitrogen-driven effects,
- Observations of global challenges, nitrogen fluxes and interactions between different drivers and pressure,
- closing the nitrogen cycle through innovations for sustainable N management and
- Integrated nitrogen science and policy approaches.

INI 2020 is hosted by Germany' Federal Environment Agency (Umweltbundesamt – UBA) with the support of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. Co-organizer is the International Nitrogen Initiative.

Welcome to Berlin!

It is our great pleasure to host the 8th Global Nitrogen Conference of the International Nitrogen Initiative in 2020 (INI2020) in Berlin. As President of the German Environment Agency, I would like to invite you very warmly to join the conference under the overarching theme – “Nitrogen and the United Nations Sustainable Development Goals”.

The theme of the INI2020 highlights the relevance of a sustainable nitrogen management within the UN Agenda 2030 process which the Sustainable Development Goals (SDGs) are the heart of. An urgent call for action.

While an increasing supply of nitrogen is a prerequisite for combating hunger in some parts of the world, we simultaneously have to reduce nitrogen emissions significantly to sustain diverse ecosystems on land and below water (in rivers, lakes and oceans), to improve and preserve human health and to tackle climate change. Recognizing these direct linkages, the 4th United Nations Environment Assembly agreed on a resolution on Sustainable Nitrogen Management just recently.

In order to further substantiate and advance these high level processes the global “reactive nitrogen – community” is asked to enhance the understanding of the impacts of reactive nitrogen, its interdependencies with other environmental phenomena and related tipping points. Additionally, it will be crucial to further develop integrated N-mitigation measurement portfolios and to cultivate scenarios leading to appropriate amounts of reactive nitrogen within the system. This will help to inform policies, to push innovative industries, refine education and will ultimately contribute to a transformation towards a more sustainable consumption and production.

The German Environment Agency is convinced that an integrated approach, connecting the different environmental endpoints and nitrogen emitting sectors, illustrates synergies and trade-offs and thereby is most beneficial for the solution of the various problems related to excess nitrogen emissions.

In this spirit, INI2020 is a unique opportunity to bring together scientific and political representatives of the large global “reactive nitrogen – community” in a country where Prof. Fritz Haber and Dr. Carl Bosch invented the industrial ammonia synthesis more than a century ago. I am confident that the conference will offer an excellent experience for all attendees and it will be an excellent opportunity to exchange knowledge and experiences that will help find sustainable solutions for reactive nitrogen management on the international and national level.

It is now on you to complete the multifaceted conference outline with your research and visions in the form of lectures, poster presentations and contributions to discussions.

We look forward to learning from you at INI2020 in Berlin!

Prof. Dr. Dirk Messner – President of the German Environment Agency

INI meets Berlin

It is our great pleasure to invite you to attend the 8th Conference of the International Nitrogen Initiative (INI2020) in Berlin from May 3-7, 2020. Since 1998, these international nitrogen conferences have been a unique platform to highlight nitrogen’s role as an essential resource and a major environmental threat. They provide a forum and catalyst for interdisciplinary nitrogen research, bringing together scientists from a range of disciplines – from atmospheric science to economics, plant biology to policy analysis. They have also been an important opportunity to engage with other important stakeholders, including civil society, national governments, international organizations and fertilizer companies among others.

Previous conference declarations as well as INI-sponsored Nitrogen assessment reports across national and regional scales have contributed significantly to increasing calls for international action. These efforts culminated in the adoption of an intergovernmental resolution on sustainable nitrogen management at the UN Environment Assembly in March

2019 – a watershed moment in global nitrogen governance. It is therefore very fitting that German Environment Agency is the main organizer of INI2020, with the support of the Federal Ministry of the Environment, Nature Conservation and Nuclear Safety. This is the first time a government body have taken an organizing role, and a reflection of nitrogen’s increasing importance to policy-makers.

The overarching theme of INI-2020 is the Sustainable Development Goals – the 17 UN-sanctioned targets for social, environmental and economic outcomes to be achieved by 2030 – with nitrogen central to 16 of them. How humanity manages its relationship with nitrogen over the coming decade will be critical in determining whether we meet these goals. Some, like ending hunger and poverty, will require better access to nitrogen. Others, like protecting life on land and water and climate action, will require reducing nitrogen pollution. All will benefit from better nitrogen management and more effective policies. And while we are confident INI2020 will mark an important step in advancing nitrogen science and policy further, its success will depend on you – your work, your ideas, and ultimately, your participation. So we hope you can join us in Berlin. Herzlich willkommen!

We look forward to seeing you in Berlin,

N. Raghuram (Chair of the International Nitrogen Initiative)

David R. Kanter (Vice-Chair of the International Nitrogen Initiative)

Monday, 4 May 2020

Time (h) / room	Aurora Borealis	Birch	Yew	Copenhagen	Stockholm	Pine
8.00 a.m.	Registration					
11.00 a.m.	**Opening Session with invited Key-Notes and Statements** **Nitrogen matters!** Nandula Raghuram, David Kanter (INI) **Nitrogen: of planetary importance for Earth resilience** Johann Rockström **Nitrogen and SDG in Africa** Belay Begashaw (SDG Africa) **Nitrogen in the EU** Daniel Calleja (EU-Kommission) **Nitrogen and Livestock** Henning Steinfeld (FAO) **INMS Project introduction and overview** Mark Sutton (INMS) **Statement of the CLRTAP on Nitrogen** Anna Engleryd (CLRTAP)	No program during the Opening Session	No program during the Opening Session	No program during the Opening Session	No program during the Opening Session	No program during the Opening Session
12.30 p.m.	**PANEL-DISCUSSION**					
1.00 p.m.	Lunch					
2.00 p.m.	**Special Session: Nitrogen Use Efficiency and Sustainable Nutrient Management** **KEY-NOTE**, invited **Improving genetical controlled crop nitrogen use efficiency** Guohua Xu **Effect of conservation agriculture and integrated soil fertility management on urea nitrogen use efficiency in contrasting agro-ecological regions in Kenya** Eunice Annah Mutuku **Coffee plants have low NUE** Felipe Santinato **Nitrogen use efficiency in a deciduous tree cropping system** Peter Quin **Optimising Nitrogen release in an agrofo-restry system** Adejoke Olukemi Akinyele	**Closing the N cycle: Innovations for sustainable N management (technologies and nutrient recovery)** **Catalytic Conversion of Nitrogen Oxide to Ammonia** Tetsuya Nanba **Alternative fertilizers from nutrient-rich wastes for organic crops** Beatriz Góme-Muñoz **Recovery of gaseous ammonia released from livestock farms by recyclable adsorbent** Tohru Kawamoto **Ground level and aerial sensors to detect crop N status and adjust fertilizer application** María Dolores Raya-Sereno **Innovative explorations of subsurface redox conditions for future targeted N regulation** Birgitte Hansen	**Optimizing the efficiency of nitrogen use in crop production** **Thirty-years long-term rice-rice-rape rotation optimizes 1,2-benzenediol concentration in rhizosphere paddy soil and improves nitrogen use efficiency and rice growth** Xinhua He **Information on Seasonal and Varietal Differences Provide Opportunities for Improving Nitrogen Use efficiency and Nitrogen Management in Irrigated Paddy Rice in Kenya** Gweyi-Onyango **Sustainable nitrogen management in rice cultivation under stress prone areas in Asia** Yam Kanta Gaihre **Rice genotypes for higher nitrogen use efficiency in lowlands** Dinesh Kumar **Ozone tolerant wheat cultivars could improve nitrogen use efficiency and limit nitrogen pollution** Clare Brewster	**Responsible consumption and production and feedbacks in the N cycle** **Sustainable food systems from a nitrogen perspective** Adrian Leip **The groundwater diet: trade-offs and benefits of healthy dietary choices in the context of nitrate pollution** Martine Hoogsteen **Developing systemic indicators to understand the contrasted evolution the agro-food of world countries (1961-2013)** Luis Lassaletta **Evidence-based Nitrogen Indexes for Sustainable Agro-food Systems** Xia Liang **Nitrogen and phosphorus hotspots in Dutch diets** Reina E Vellinga **Assessing future nitrogen fertilizer demand and use for the shared socioeconomic pathways** J M Mogollon	**Closing the N cycle: Innovations for sustainable N management (Optimization of the nutrient Cycle an N-Flows)** **Optimizing nitrogen flows in the food systems in China for achieving Sustainable Development Goals** Lin Ma **Trade-offs between soil carbon sequestration and reactive nitrogen losses under straw return in global agroecosystems** Longlong Xia **Balancing nitrogen inputs for China's green agricultural development** Liu Xuejun **Sustainable Nitrogen Cycling: Using Human Bio-solids in Cropping Systems to Manage Soil N** Nimesha Fernando **The Circular Economy for Organics as a new paradigm for improving NUE from organic soil amendments** Johannes Biala **Measuring N2O and N2 fluxes to elucidate the impact of pH management on N2O emissions** Lisa Pfülb	No program
4.00 p.m.	Coffee Break					

4.30 p.m.	**Opening Session continued; Plenary Session with invited lectures: 1. Nutrition and Lifecycles & 6. Closing the N Cycle: Innovations for sustainable N Management** **Nitrogen and German Policy** Svenja Schulze (Federal Minister for the Environment) **Scientific basis for reactive nitrogen in Germany** Dirk Messner (President of German Environment Agency) **Vision for future N management** David Kanter **Digital Agriculture and Nitrogen: Science, Implementation, and Polic** Harold van Es	No program during the Plenary Session	No program during the Plenary Session	No program during the Plenary Session	No program during the Plenary Session	No program during the Plenary Session
6.00 p.m.	End of first day					

Tuesday, 5 May 2020

Time (h) / room	Aurora Borealis	Birch	Yew	Copenhagen	Stockholm	Pine
9.00 a.m.	**Plenary session with invited lectures: 2a.) Livestock production and nitrogen & 2b.) Optimizing the efficiency of nitrogen use in crop production** **Ecologic intensification - new approaches to increase nitrogen use efficiency in dairy farming** Friedhelm Taube **Nitrogen in livestock systems including regional characteristics and inequalities** Henning Steinfeld **New Trends in Nitrogen Management: Africa Perspective** Dr. Vincent O. Aduramigba-Modupe **Improving plant NUE: From phenotype to genotype** Raghuram Nandula **Nitrogen in India** Tapan Adhya **The Nitric Acid Climate Action Group: Climate-friendly Transformation of the Global Fertilizer Industry** Malte Plewa	No program during the Plenary Session	No program during the Plenary Session	No program during the Plenary Session	No program during the Plenary Session	No program during the Plenary Session
10.30 a.m.	**PANEL-DISCUSSION**					
11.00 a.m.	Coffee Break					
11.30 a.m.	**Special Session: Nitrogen Use Efficiency and Sustainable Nutrient Management** **Modelling nitrogen use efficiency by world poultry production systems in 2050 under contrasting production and dietary scenarios** Fernando Estellés Barber **Nitrogen use efficiency indicators designed for the diversity of global dairy production systems** Cameron Gourley **Indoor breeding or full-grazing dairy management? A farm system analysis of Nitrogen Use Efficiency** Philipp Löw **A simple and easy-to-communicate framework for analyzing Nitrogen Use Efficiency (NUE) in agriculture and food systems** Lars Stoumann Jensen **Nitrogen use efficiency in global animal production systems 1970 - 2015** K.W. van der Hoek	No program	**Livestock production and nitrogen emissions** **Influence of soil properties on N2O and CO2 emissions from excreta deposited onto tropical pastures in Kenya** Zhu Yuhao **A novel method for reducing greenhouse gas and ammonia emissions from livestock slurry storage - with sulfuric acid modified vermiculite cover** Yue Wang **Sources of nitrous oxide from intensively managed pastures** Johannes Friedl **Effect of nitrogen-reduced diet on NH_3 and N2O emissions of dairy cows on pasture** Christof Ammann **N2O emission patterns from a temperate high-intensity grassland** Arne Poyda	**Biogeochemical N Cycle (ammonia / deposition)** **Satellite monitoring of ammonia:from point sources to long-term trends** Martin Van Damme **Modelling Atmospheric Ammonia using Agricultural Emissions with Improved Spatial Variability and Temporal Dynamics** Xinrui Ge **Top-down estimation of NH_3 emissions and related deposition in LOTOS-EUROS using an Ensemble-Kalman approach.** Shelley van der Graaf **Standing on the shoulders of giants - Research infrastructures as modular platforms for reactive nitrogen deposition monitoring** Frederik Schrader **Improving Global Estimates of Nitrogen Deposition through Model-Measurement Fusion Approaches** Joshua Fu **Modelling Nitrogen Deposition in Germany from 2000-2015** Martijn Schaap	**Biogeochemical N Cycle (N Budget)** **The global nitrogen cycle from 1965 to 2010** Benjamin Leon Bodirsky **Regional nitrogen fluxes: an analysis for Latin America** Felipe Siqueira Pacheco **Unpacking 50 years of European nitrogen budgets: Why are yields and efficiencies so different?** Rasmus Einarsson **Surface Nitrogen Budgets for Cropland and Pastureland on a Global Grid - Opportunities and Challenges** Katrin Kaltenegger **How well can we simulate continental-scale N losses for croplands in Africa?** Kathrin Fuchs	**Climate feedbacks (incl. N2O-emissions)** **Effect of crop residue management on N2O emissions in European cropping systems** Marco Carozzi **N2O emissions from an alpine grassland: vital contribution of the freezing season** Xuejun Liu **Global assessment of cropland-N2O emissions using multiple bottom-up approaches** FENG ZHOU **The Global N2O Database - Open & collaborative science for addressing epic N2O issues** Chris Dorich **Increased nitrous oxide emissions by application of organic amendments may largely offset the carbon benefits** Minghua Zhou **Impact of nitrogen additions on greenhouse gases emissions at different stages of plant residue decomposition** Muhammad Sanaullah
1.00 p.m.	Lunch					

2.00 p.m.	**Special Session: Nitrogen Use Efficiency and Sustainable Nutrient Management** **KEY-NOTE** **Nitrogen indicators for characterizing farm performance in European case studies** Miguel Quemada **Nitrogen use efficiency and residual effect of enhanced efficiency nitrogen fertilizers in irrigated maize** Yash Dang **Nitrous Oxide Emission, Nitrate Leaching, and Nitrogen-use Efficiency Affected by Tillage and Green Manure in Arable Soil** Hyun Ho Lee **Is Early Sowing of winter cereals as effective as Catch Crops in Increasing Nitrogen Use Efficiency in Cropping Systems?** Iris Vogeler **The challenge to improve nitrogen-use efficiency in broadacre dryland farming of Western Australia** Andreas Neuhaus	Workshop / Forum	**Livestock production and nitrogen emissions** **High animal comfort and low emissions in a new housing system for pigs - conceptual study and first results from pilot farms and laboratory experiments** Helmut Döhler **Long-term measurement of ammonia and nitrous oxide emissions from Australian feedlots** Mei Bai **Effects of lime application management on nitrous oxide emission and nitrogen use efficiency: An example from an Irish intensive grassland system** Ognjen Zurovec **Nitrogen use efficiency of different slurry management in alpine/pre-alpine grassland** Michael Dannenmann	**Biogeochemical N Cycle (N2O / denitrification / water)** **Hydrological N export from tropical forests in the Congo Basin** Simon Baumgartner **Integrated control and Modelling of Denitrification in Agricultural Soils at various scales (DASIM) - first data sets for model evaluation** Reinhard Well **Terrestrial denitrification and nitrous oxide emissions: global estimates and uncertainties** David Pelster **Quantifying landscape-level annual nitrous oxide fluxes in the Tibetan Plateau** Lei Ma **The use of nitrogen compounds from organic waste** Daniel Pleissner **Managing reactive nitrogen in agricultural systems under future conditions in Austria** Bano Mehdi	**Biogeochemical N Cycle (N Fluxes)** **The N-C cascade in an agricultural landscape (Orgeval basin, France): budget and modelling of current situation and alternative scenarios** Josette Garnier **Characteristics of village-scale nitrogen flow in China during 1997-2017** Yanhua Wang **Are German Forest Soils a Source or Sink for reactive Nitrogen? Model-aided Evaluation of Large-Scale Ground-based Observations** Stefan Fleck **Mitigating Reactive Nitrogen Loss and Associated Environmental Damage: Opportunities from Changes in Food Production and Consumption Practices in China** Yixin Guo **More reactive nitrogen emissions to the air than water in dryland Australia** Yi Sun	**Climate feedbacks (incl. N2O-emissions)** **Global cropland N2O emissions: from soil to fork (1986-2015)** Eduardo Aguilera **Drip fertigation significantly reduce N2O and CO2 emission in sunken solar greenhouse vegetable production** Yiming Zhao **Nitrogen deposition effects on drought-induced changes in carbon exchange at European FLUXNET forests sites.** Shelley van der Graaf **Food security and greenhouse gas emissions for cereals in sub-Saharan Africa towards** Martin van Ittersum **Long-term trajectories of the carbon footprint of nitrogen use in Mediterranean agriculture (Spain, 1860-2016)** Eduardo Aguilera
3.30 p.m.	Coffee Break					
4.00 p.m.	**Closing the N cycle: Innovations for sustainable N management (better Management of dairy and crop systems)** **Field scale management and environmental drivers of N2O emissions from pasture based dairy systems** Daniele De Rosa **Nature based solutions for sustainable agriculture** Jan Willem Erisman **Improving crop yields at lower greenhouse gas emissions with water-saving ground cover rice production systems** Zhisheng Yao **Decoupled aquaponics - Innovative food production systems for a sustainable nitrogen management** Hendrik Monsees **Reducing ammonia volatilization and nitrous oxide emissions from agricultural soils** Craig Drury **Soil Nitrogen Storage and Availability to Crops are Increased by Conservation Agriculture Practices in Rice-based Cropping Systems in the Eastern Gangetic Plains** Md. Khairul Alam	No program	**Optimizing the efficiency of nitrogen use in crop production (fertilizer and water application)** **Impact of banding enhanced efficiency nitrogen fertilizers on nitrogen use efficiency in agriculture** Chelsea Janke **Coating of micro and secondary nutrients onto prilled urea enhances the nitrogen use efficiency in cereals** Vijay Pooniya **Plastic film mulching under organic farming: Increasing maize yield and nitrogen use efficiency** Jeong Gu Lee **Allelopathic crop residue mulches improve nitrogen use efficiency and productivity of wheat** Sardar Alam Cheema **Optimizing Water and Nitrogen Use Efficiency (WUE & NUE) with Airjection® Irrigation** D. Goorahoo	**Special Session: Nitrogen Use Efficiency and Sustainable Nutrient Management** **Assessment of required increases in nitrogen use efficiencies in agriculture to comply with water and air quality objectives in EU27** Wim de Vries **Changed crop type and crop rotation as a measure to increase N use efficiency and achieve reduction targets for N leaching** Tommy Dalgaard **Increasing nitrogen use efficiency by new designed cropping systems in an intensive agricultural region of China** Chong Zhang **Nitrogen Use Efficiencies in Cropping Systems: Pakistan vs Global Trends** Ahmad Naeem Shahzad **Developing an economic, environmental and agronomic case for the increased use of composts in Sri Lanka** David Rowlings	**Livestock production and nitrogen Balance and nutrient Cycle** **Integrated Nitrogen Balance in Livestock Sector: Case Study of Latvia** Inga Grinfelde **Evaluation of nitrogen balance on new system in Hokkaido dairy farming** Juri Motoki **KringloopWijzer: a tool for the monitoring of the agronomic and environmental performances of grassland-based dairy farms** Jouke Oenema **Nutrient cycle count as indicator for system circularity** Hein ten Berge **An integrated approach to nutrient management on dairy farms** Shabtai Bittman	**Optimizing the efficiency of nitrogen use in crop production (mineral fertilizers)** **Stabilized Urea - Innovative fertilization strategies for the 21st century** Oliver Spott **Release dynamics and crop recovery of Controlled Release Fertilizers (CRF)** Cristina Martinez **Reducing reactive nitrogen losses in rice through fertilizer and varietal interventions** Arti Bhatia **Sustainable plant nutrition and nitrogen** Tom Bruulsema **Slow but sure: the potential for slow-release nitrogen fertilizers to increase crop productivity and reduce environmental damage in Nepal** Naba Raj Pandit
7.00 p.m.	Conference Dinner					

Wednesday, 6 May 2020

Time (h) / room	Aurora Borealis	Birch	Yew	Copenhagen	Stockholm	Pine
9.30 a.m.	**Plenary Session with invited lectures: Reduction of nitrogen in wastewater to ensure clean water and sanitation; Threats for terrestrial biodiversity – understanding of nutrient cycles and biosphere-atmosphere interaction; Threats for aquatic biodiversity by nitrogen flows – understanding of nutrient cycles** **The history and future perspectives of Baltic Sea Eutrophication** Maren Voss **Nitrogen and water pollution in China** Chaoqing Yu **Interrelationships between soil organisms – biology of the Nitrogen circle** Sophie Zechmeister-Boltenstern **How increased nitrogen availability has influenced biodiversity of terrestrial ecosystems** Carly Stevens **Effects of reactive Nitrogen on Biodiversity – insights from the IPBES Global Assessment** Josef Settele	No program during the Plenary Session	No program during the Plenary Session	No program during the Plenary Session	No program during the Plenary Session	No program during the Plenary Session
10.30 a.m.	Coffee Break					
11.30 a.m.	**Optimizing the efficiency of nitrogen use in crop production (crop production & nitrogen emissions)** **The land-use change and corresponding intensive management affect the magnitude, patterns, and sources of soil-borne N2O and N2 emission in typical agricultural soils of Eastern-China** Zhijun Wei **Winter N2O accumulation in sub-boreal grassland soil depends on clover and pH** Erin Byers **Mitigation of N2O emissions by soil pH management (MAGGE-pH): growing evidence** Peter Dörsch **Mitigation of nitrous oxide emissions from horticultural crops and implications for the Montreal Protocol** Ian Porter	**Optimizing the efficiency of nitrogen use in crop production (crop production & nitrogen emissions)** **Low nitrate leaching determined by threshold for cover crop biomass** Chiara De Notaris **Does targeted and reduced fertigation enhance nitrogen supply into ‚Conference' pears?** Ben Colpaert **Reducing N runoff during irrigated cotton production** Graeme Schwenke **Ammonia volatilization and nitrous oxide emissions from organic fertilizers applied to arable soils in the North China Plain - possible trade-offs and mitigation approaches** Marco Roelcke	**Nitrification & Inhibitors; microbes** **The efficacy of 3,4-dimethylpyrazole phosphate on N2O emissions is linked to niche differentiation of ammonia oxidizing archaea and bacteria across four arable soils** Xiaoping Fan **The interactions between nitrification inhibitors, N2O emissions and ammonia oxidizers in a Chinese typical arable soil** Rui Liu **Long-term organic and inorganic fertilization alters temperature sensitivity of potential N2O emissions and associated microbes** Peiyuan Cui **Soil nitrogen transformations and nitrous oxide emissions as affected by time of manure application and a nitrification inhibitor** Kari Wolf **Biological nitrïŸ¬ cation inhibitors can inhibit N nitrification but had no direct effects on denitrification in both alkaline and acidic soils** Ting Lan	**Threats for terr. Biodiversity** **Critical Nitrogen Loads in nitrogen-sensitive Forest Associations - Results from Baden-Württemberg, south-western Germany** Marina Roth **Mapping potential future developments of forests due to climatic change and nitrogen deposition** Winfried Schröder **Dose-effect Relations for Habitat types and Nitrogen deposition** Wieger Wamelink **Nitrogen budget and critical load estimate in a semi-arid grazed ecosystem** Claire Delon **Improving calculation of critical loads with denitrification experiments** Cornelius Oertel	**Threats for aquat. Biodiversity (groundwater)** **Statistical empirical nitrate leaching model (NLES5) based on a large database of measured annual nitrate leaching results.** Christen Børgesen **Excessive N inputs elevate nitrate concentrations of shallow and deep well groundwater along the Indus River floodplain aquifer in Pakistan** Muhammad Riaz **High-resolution simulation of nitrate leaching from agricultural land across Germany** Claas Nendel **A concept for estimation of the nitrate retention on the hectare scale with integrated use of geophysics, hydrology and geochemistry** Esben Auken **Mapping nitrate concentrations in upper groundwater using Random Forest.** Job Spijker	**Optimizing the efficiency of nitrogen use in crop production (conventional management)** **Optimising nitrogen and irrigation management in Australian cotton - plant growth response** Jon Baird **N source and tillage management: Effect on nitrous oxide emissions and barley yields in a rainfed Mediterranean area** Guillermo Guardia **Impact of fertigation intensity on N emissions** Dirk Wallace **Effect of irrigation frequency and water quality on N losses from vertisols** Shahar Baram **Mining soil nitrogen threatens Australian wheat** Shu Kee Lam
1.00 p.m.	Lunch					

2.00 p.m.	**Optimizing the efficiency of nitrogen use in crop production (crop production & nitrogen emissions)** **Quantification and mitigation of ammonia emissions from paddy fields in subtropical central China** Jianlin Shen **Gaseous nitrogen losses from a subtropical sugarcane cropping system** Clemens Scheer **Nitrogen leaching from paddy field with different nitrogen and water managements practices** Niveta Jain **Fate of 15N-nitrogen fertiliser applied in high rainfall zone dairy pastures of southern Australia** Helen Suter **Leaching of dissolved nitrogen and carbon from winter cover crop in Mediterranean Central Chile** Osvaldo Salazar	**Reduction of nitrogen in wastewater to ensure clean water and sanitation** **Assessing nitrogen fluxes: From human food intake over urine and faeces to wastewater treatment and disposal** Ina Koerner **Reducing nitrogen pollution in water systems in China: implications for the Sustainable Development Goals** Mengru Wang **Global Accounting of Reactive Nitrogen in Municipal Solid Waste** David Meng-Chuen Chen **Regional nitrogen soil surface budgets Germany** Uwe Häußermann **The Nitrogen Legacy: Long-term effects of water pollution on human capital** Esha Zaveri	**Nitrification & Inhibitors; microbes** **Aucubin: a biological nitrification inhibitor to reduce N losses from dairy cow urine patches?** Maria Jimena Rodriguez **Urease and nitrification inhibitors to mitigate nitric and nitrous oxide emissions during maize crop season** Jaime Recio **Improving nitrogen use efficiency by increasing crop control of nitrification** Maria Hernandez-Soriano **What factors determine the effectiveness of nitrification inhibitors in agricultural soils?** Maria P. Vilas **Metal-Sulfates as Electron Acceptors Influence Nitrous Oxide Emission and Gene Associated with Denitrifiaction in Arable Soil** Chang Oh Hong	**Threats for terr. Biodiversity** **Nitrogen availability along an elevational transect in a tropical montane forest - Rwenzori, Uganda.** Okello Joseph **Nitrogen oligotrophication in forests: An emerging global trend?** Peter Groffman **Impacts of invasive plants on Nitrogen cycling in a montane tropical grassland** Manaswi Raghurama **Impacts of nitrogen deposition on forest mineral -soil biogeochemical processes, across a trans-European gradient, investigated using a tool kit of stable isotope methods.** Rebecca Hood-Nowotny **Do different forms of nitrogen have a different effect on a sensitive bog vegetation?** Netty van Dijk	**Threats for aquat. Biodiversity (sea)** **Geographical targeted landscape management for reduced N pollution from agriculture** Tommy Dalgaard **The history and future perspectives of Baltic Sea Eutrophication** Maren Voss **Nitrogen impacts on the Wadden Sea and adjacent Elbe Estuary (Europe): ecosystem degradation, recovery and ongoing impacts** Justus van Beusekom **Reducing nutrient pressures on aquatic ecosystems in Europe** Bruna Grizzetti	**Optimizing the efficiency of nitrogen use in crop production (conventional management)** **Effect of catch crops on nitrogen leaching losses following cool season forage crop grazing in New Zealand** Brendon Malcolm **Nitrogen management in direct seeded rice, agronomic, physiological and economical perspectives** Hafeez ur Rehman **Effects of Integrated Nutrient Management on Rice Yield and Soil Active Nitrogen Pool in Paddy-upland Rotation** Xiangyin Xi **Fertigation of Orchards - Spatial Variability in N Usage and Losses** Shahar Baram **Conventional flooding fertigation decreases soil pH and causes large leaching of nitrogen in sunk solar greenhouse vegetable production** Shan Lin
3.30 p.m.	Coffee Break					
4.00 p.m.	**Optimizing the efficiency of nitrogen use in crop production (technological management)** **Sensitivity of hyperspectral bands to N concentration at different growth stages in winter wheat** Jose Luis Pancorbo **Predicting N status in maize with clip sensors: choosing sensor, leaf sampling point, and timing** Jose L Gabriel **In-situ real-time NIR monitoring of nitrogen in irrigated cotton northern NSW, Australia.** Tim Weaver **Prospects of Soybean Inoculant Use in Mozambique** Canon Norris Savala Engoke **The GxExM interaction and effect on nitrogen uptake in Australian cotton.** Tim Weaver	**Health Effects** **Reactive nitrogen compounds and their influence on human health** Rolf Nieder **Particulate organic nitrogen at an agricultural region in South Africa** Pieter Gideon Van Zyl **Projecting future nitrogen pathways and their impacts: the GLOBIOM-GAINS framework** Wilfried Winiwarter **Assessing the impact of global nitrogen scenarios on the health burdens from ambient air pollution in 2050** Shilpa Rao	**Nitrification & Inhibitors; microbes** **Microbial communities and functional genes of nitrogen cycling in the rhizosphere of rice** B. Ramakrishnan **Reduction of N2O emission by biochar and/or 3,4-dimethylpyrazole phosphate (DMPP) is closely linked to soil ammonia oxidizing bacteria and nosZI-N2O reducer populations** Yongchao Liang **Investigating the fate and behaviour of nitrification inhibitors in soil systems** Parvinder Kaur Sidhu	**Optimizing the efficiency of nitrogen use in crop production (organic fertilizer)** **Ecosystem services of partial organic substitution for chemical fertilizer N in a peri-urban zone in China** Quan Tang **Improving organic amendment use in Australian vegetable production** David Riches **Optimizing the management of poultry litter in Australian cotton production** Wendy Quayle **Assessing nitrogen availability in biobased fertilizers: effect of vegetation on mineralization patterns** Hongzhen Luo **Nitrogen-based biodegradable composites can enhance N fertilization efficiency** Amanda S. Giroto	**Threats for aquat. Biodiversity (rivers)** **Precising target NO3 concentrations to limit green algae blooms in Brittany** Durand Patrick **Future seasonal river export of nitrogen to lakes in the Hai He basin** Jing Yang **Modelling Nitrogen inputs to Yangtze River from crop production** Southwest University **Nitrogen, Water and Global Change - an Integrated Modeling Perspective** Carolien Kroeze **Sources of nitrogen in rivers worldwide** Maryna Strokal **Effects of vegetation structure on nutrient outflows from a montane tropical Forest-Grassland mosaic** Manaswi Raghurama	**Optimizing the efficiency of nitrogen use in crop production** **Fertilizer nitrogen use efficiency in irrigated cotton cropping systems** Clemens Scheer **Improving nutrient management recommendation for maize in Africa and India using the Nutrient Expert® Tool** Shamie Zingore **A model for long-term crop nitrogen input requirement** Hein ten Berge **Spatial characterization of reactive N flows in the agro-food system of a semiarid Mediterranean region** Alberto Sanz-Cobeña **Impacts of climate and land management on nitrogen balance of grassland ecosystems in the Pre-Alpine region of Germany** Ralf Kiese
7.00 p.m.	Side Event Harnack Haus					

Thursday, 7 May 2020

Time (h) / room	Aurora Borealis	Birch	Yew	Copenhagen	Stockholm	Pine
9.00 a.m.	**Plenary Session:** **Nitrogen air pollution affects human health & Integrated approaches: From science to policy &** **Educational aspects, public awareness, risk communication** **Nitrogen and Air Pollution** Anna Engleryd **Air Pollution Health Effects** Anne Peters **Managing Nitrogen for sustainable agriculture production: Integrating Social and Ecological Perspectives** Xing Zhang **N matters – turning risk communication into agenda setting** Norbert Taubken **Nitrogen Strategy in Germany** State Secretary for the Environment (Schwarz-elühr-Sutter)	No program during the Plenary Session	No program during the Plenary Session	No program during the Plenary Session	No program during the Plenary Session	No program during the Plenary Session
10.30 a.m.	**PANEL-DISCUSSION**					
11.00 a.m.	Coffee Break					
11.30 a.m.	**Educational aspects, public awareness, risk communication (communication)** **Science communication to connect nitrogen cycle and food choice - the use of experiential art installation** Miyuki Oka **A guidance document for nitrogen impact assessment for human health and environment qualities** Hideaki Shibata **Linking Nitrogen Forms, Quantifications, and Epistemologies: A Science-Policy Interface Issue** William San Martin **A revised planetary boundary for agricultural nitrogen use** Lena F. Schulte-Uebbing **A national nitrogen target for Germany** Markus Geupel	**From science to policy (economic issues)** **A reflexive policy approach for designing a Farm-Gate Nitrogen Surplus Tax** Luisa Stuhr **Impact of a CO_2 tax on optimal nitrogen use in agriculture** Andreas Meyer-Aurich **The social cost of nitrogen - with examples fom Germany** Bernd Hansjürgens **More Profit from Nitrogen: A research collaboration between Australian agricultural industries to demonstrate profit and yield improvements from NUE strategies in the context of unregulated N use.** Marguerite White	**Educational aspects, public awareness, risk communication (communication)** **Nitrogen balances in urban areas: purpose and potentials** Wilfried Winiwarter **A scheme to relate nitrogen loads to characteristic plant species of FFH habitat types in Germany** Sonja Winter **Using a detailed farm decision support tool to assess spatially differentiated fertilizing limits in Germany** Christoph Pahmeyer **Governing Nutrient Pollution Beyond Farmers** David Kanter **The political ecology of manure export in Lower Saxony: an ethnographic case study** Friederike Gesing	**Educational aspects, public awareness, risk communication (policy)** **How the Dutch nitrogen policy failed and led to serious nitrogen deposition reduction** Jan Willem Erisman **Comparison of regulatory approaches for determining application limits for mineral nitrogen fertilizer use in Germany** Philipp Löw **Towards a Credit System to Solve Agriculture induced Nitrogen Pollution Globally** Deli Chen **The Dutch story of an Integrated Approach to Nitrogen, all things come and go** Mark Wilmot **Evaluation and comparison of nitrogen mitigation measures across sectors** Malte Oehlmann	**From science to policy (economic issues)** **Monetary Valuation of Reactive Nitrogen - Relevance for Policy and Data Gaps** Astrid Matthey **Socioeconomic barriers of agricultural nitrogen use for sustainable development** Baojing Gu **Costs of regulating ammonia emissions from livestock farms near Natura 2000 areas - Analyses of case farms from Germany, Netherlands and Denmark** Brian Jacobsen **Cost-benefit analysis of reactive nitrogen for Germany** Bettina Schäppi	**Special Session on Nitrogen Footprints** **A Nitrogen Footprint Tool for Communities: A Case Study for Baltimore, MD, USA** Elizabeth Dukes **Towards a practical environmental footprint tool** Allison Leach **Expanding the Nitrogen Footprint Pathway** James N. Galloway **The Nitrogen Footprint for INI2020** Markus Geupel **Trends in the food nitrogen and phosphorus footprints for China, India, and Japan** Azusa Oita
1.00 p.m.	Lunch					

2.00 p.m.	**Educational aspects, public awareness, risk communication (communication)** **Nitrogen shares in global environmental impacts and crop production** Hans JM van Grinsven **National nitrogen budgets of Japan in 2000s** Kentaro Hayashi **Integrated evaluation of changes in agriculture in view of climate, biodiversity and water goals** Hans Kros	**Special Session Forests** **Nitrogen impacts on forest mycorrhizas and functions.** Martin Bidartondo **Tree nutrition increasingly imbalanced in European forests** Inken Krueger **Continental-scale forest growth in Europe is driven by management and further modulated by nitrogen deposition** Sophia Etzold **Can forest management practices modulate the impacts of high N atmospheric depositions?** Laurent Saint-André **Nitrogen deposition and leaching in European forests** Elena Vanguelova	**Educational aspects, public awareness, risk communication (policy)** **How Germany's national air pollution control programme contributes to reduced emissions of reactive nitrogen into the atmosphere** Marcel Langner **Nitrogen balance and Water contamination risk assessment - The Castelo de Bode watershed example** Maria Vale **Assessing the revised implementation of the EU Nitrates Directive in Germany: a farm-level modelling approach** Till Kuhn **How Danish farmers have doubled N efficiency already & how to reach ambitious future targets** Wibke Christel	**Educational aspects, public awareness, risk communication (policy)** **Measures and instruments to comply with critical nitrogen surplus (Nitrogen Law)** Andreas Hermann **Agricultural nitrogen reduction requirement to reach groundwater quality targets in North Rhine-Westphalia, Germany** Frank Wendland **The first global nitrogen policy database** David Kanter **The Dutch integrated approach to monitor and calculate nitrogen deposition in Natura 2000 areas** Roy Wichink Kruit **Natura 2000 as a strategic element of Nitrogen reduction policy** Rudolf Uhl	**From science to policy (economic issues)** **Developing a global economic valuation function for nitrogen impacts on coastal and marine ecosystem services** Rute Pinto **Trends in nitrogen induced costs due to impacts on human health, climate and ecosystems in Europe between 1990 and 2015** Wim de Vries **Mitigation potential of agricultural Ammonia in China and associated costs and benefits** Xiuming Zhang **Cost-effective nitrogen load reductions to Danish coastal areas – comparison of three economic models and results** Berit Hasler **Willingness to pay for improvements in surface water quality in Northern Europe: A meta-regression analysis for benefit transfer** S. B. Olsen	**Special Session on Nitrogen Footprints** **Nitrogen-neutrality Fosters More Sustainable Meetings** Xia Liang **Environmental footprint family to address local to planetary sustainability and deliver on the SDGs** Adrian Leip **Campus Nitrogen Footprints: How Institutions can Manage Their Impact** Elizabeth Castner **The N-Footprint of the agricultural research station at Aarhus University in Denmark utilizing an N-Institution calculator** Morten Graversgaard **The nitrogen footprint of Denmark - Applying Danish virtual nitrogen factors to estimate losses from food production** Morten Graversgaard **Input-output analysis of reactive nitrogen flows in industry and industrial nitrogen footprint: the case of Japan** Kiwamu Katagiri
3.30 p.m.	Coffee Break					
4.00 p.m.	**Closing Session**	No program during the Closing Session	No program during the Closing Session	No program during the Closing Session	No program during the Closing Session	No program during the Closing Session
5.30 p.m.	End of the Conference					

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