



PLANET UNDER PRESSURE

2012 MARCH 26-29
LONDON

Nitrogen: too much of a good thing

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The Louis Bolk Institute

- Independent, international research, advice and concept development
- For sustainable agriculture, health care and nutrition
- Using the natural source of knowledge; respecting the integrity of life
- Known for its participatory research and systems approach ('making systems work')
- Acknowledged for its implementation skills and practical solutions
- Results lead to healthy and sustainable growth of humans, animals, plants and soil.

Nitrogen: too much of a good thing

Convenors: **Jan Willem Erisman**, Louis Bolk Institute; **Jim Galloway**, University of Virginia; **Mercedes Bustamante**, Universidade de Brasilia; **Eric Davidson**, The Woods Hole Research Center; **Lex Bouwman**, Netherlands Environmental Assessment Institute

- Nitrogen positively contributes to food and energy security.
- Human activity has doubled the level of Nr in circulation, largely as a result of fertilizer application, fossil-fuel burning and widespread cultivation of N-fixing crops, and increased livestock and manure production.
- This caused problems on climate change, human health and ecosystem services.
- A better understanding is an essential component for developing policies to achieve sustainability.



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Nitrogen: too much of a good thing

Jan Willem Erisman and Jim Galloway

Eric Davidson, Lex Bouwman, Mercedes Bustamante

- Oral presentations
- Poster session: Nitrogen (28)
Monday 26 March, from 17.30 – 19.30.

LOUIS BOLK
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Programme

Are Reactive Nitrogen Concentrations In Air, Soil And Water Useful Indicators For Too Much Nitrogen?

Mr. K.W. Van der Hoek¹; ¹*RIVM, Bilthoven, The Netherlands*

N₂ fixation by natural stands of tree and shrub legumes in Botswana: implications for climate change scenario

Dr. F. Pule-Meulenberg^{1, 3}; **Prof. F.D. Dakora²**; *Tshwane Uni of Technology, South Africa*

Latin America and the modern N cycle: a cross-road

Prof. M. Bustamante¹; **Prof. A. Austin²**; **Dr. N. Ascarrunz³**; **Dr. M. Forti⁴**; **Prof. M. Gavito⁵**; ¹*Universidade de Brasília, Brazil*

Overuse of nitrogen: insights from the Chinese experience

Prof. D.N. Norse¹; **Prof. D.S. Powlson²**; **Prof. F.S. Zhang³**; **Dr. W.F. Zhang³**; **Prof. J.K. Huang⁴**; **Dr. D.C. Chadwick²**; **Dr. Y.L. Lu⁵**; ¹*University College London, UK* ²*Rothamsted research, UK*

Analysis of international trade of reactive nitrogen as food and fertilizer

Ms. A.M. Leach¹; **Prof. J.N. Galloway¹**; **Mr. J. Kitzes²**; **Dr. J-W. Erisman³**; **Dr. A. Bleeker³**; ¹*University of Virginia, USA* ²*University of California, Berkeley, USA*

Scenarios of improved agriculture efficiencies and diet modification consistent with representative concentration pathways (RCPs) of nitrous oxide

Dr. E.A. Davidson¹; ¹*Woods Hole Research Center, USA*

Priorities for a new global treaty on nitrogen

Prof. M.A. Sutton¹; **Prof. O. Oenema²**; **Prof. M. Bekunda⁷**; **Prof. F.S. Zhang⁴**; **Prof. D. Fowler¹**; **Dr. R. Kilaparti⁶**; ¹*Centre for Ecology and Hydrology (CEH), UK*

Posters – Session 1

E.Z.	Du	Poster session	Nitrogen deposition to coastal regions in China:	<p> Rapidly increasing industrialization and	duez@pku.edu.cn
J.W.	Erismán	Poster session	Two N-visualisation tools for communication	<p> </p>	erisman@ecn.nl
M.J.	Ibarrola Rivas	Poster session	Nitrogen Footprint of Food	<p>In the last 50 years, the use of global	m.j.ibarrola.rivas@rug.nl
L.	Jones	Poster session	Ecosystem Services: Valuing the bad and the	<p> </p>	LJ@ceh.ac.uk
D-P.	Bebber	Poster session	Simulated nitrogen deposition affects wood	<p>Anthropogenic nitrogen (N) deposition	dbebber@earthwatch.org.uk
A.M.	Leach	Poster session	How we made a personal nitrogen footprint	<p>The negative impacts of excess reactive	aml4x@virginia.edu
A.	Leip	Poster session	The Impact of Livestock Production in Europe	<p>Agriculture is recognised as a major driver	adrian.leip@jrc.ec.europa.eu
J.	Liu	Poster session	A High-resolution Assessment on Global	<p>Crop production is the single largest cause	water21water@yahoo.com
C.	LIU	Poster session	Regional N balance in typical agro-ecosystems	<p>To diagnose illnesses that threaten the	g.chen.liu@gmail.com
M.	Lucero	Poster session	Microbiomes and Metagenomic Breakthroughs	<p> </p>	malucero@nmsu.edu
J.	Mahnkopf	Poster session	Impact of tile drainage systems on emissions	<p>Introduction To implement	mahnkopf@igb-berlin.de
K.E.	Altieri	Poster session	The marine bio-atmospheric nitrogen cycle:	<p>Emission of anthropogenic N to the	kaltieri@princeton.edu
S.	Munzi	Poster session	The role of lichens in understanding and	<p>Lichens are widely known as good	silvana.munzi@gmail.com
U.	Skiba	Poster session	The effect of agricultural intensification on	<p> </p>	ums@ceh.ac.uk
P.A.	Souza	Poster session	Temporal and spatial variation of atmospheric	<p> </p>	pasouza@vm.uff.br
A.M.	Tirmizi	Poster session	Consequences of nitrification on humans	<p>Due to the dramatic increase in food	dragoninja98@gmail.com
A.R.	Townsend	Poster session	Interactions of anthropogenic nitrogen and	<p>Intensive development of agriculture,	Alan.Townsend@Colorado.EDU
M.	Van Damme	Poster session	Local To Global Distributions Of Atmospheric	<p>Satellite sounders operating in the infrared	mvdamme1@ulb.ac.be
R.S.	Ward	Poster session	The nitrate time bomb, or things are going to	<p>The developed world has benefitted	rswa@bgs.ac.uk
H.J.	Westhoek	Poster session	The effect of reducing meat and dairy	<p>In this contribution, the link between food	henk.westhoek@pbl.nl
R.J.	Wichink Kruit	Poster session	Including bi-directional surface-atmosphere	<p>Because nitrogen fixation in agriculture is	hugo.deniervandergon@tno.nl
M.	Asai	Poster session	Understanding farm-based networks in the	<p>Danish agricultural production has become	asai@life.ku.dk
A.	Bleeker	Poster session	How changing consumption patterns can	<p>Several major recent assessments in	a.bleeker@ecn.nl
B.L.	Bodirsky	Poster session	Can we return into planetary boundaries? The	<p>Reactive nitrogen (Nr) is not only an	bodirsky@pik-potsdam.de
C.	Branquinho	Poster session	Searching for universal ecological indicators of	<p> </p>	cmbranquinho@fc.ul.pt
M.L.	Cayuela	Poster session	Anaerobic Digestion and Subsequent Pyrolysis	<p></p>	mlcayuela@cebas.csic.es
P.	Cellier	Poster session	French assessment on livestock breeding and	<p>Livestock consumes a large fraction of	cellier@grignon.inra.fr
W.	de Vries	Poster session	Impacts of global scale nitrogen use on global	<p> </p>	wim.devries@wur.nl