
NITROGEN WORKSHOP SPECIAL ISSUE PAPER

Editorial: Innovations for sustainable use of nitrogen resources

Nitrogen (N) has long been recognized as the main nutrient limiting crop production within agricultural ecosystems. The development of industrial N fixation to produce ammonia through the Haber–Bosch process in 1913 led to the production of affordable mineral fertilizers and formed the foundation of modern agriculture. Global food production increased dramatically during the 20th century and led to environmental problems associated with excess reactive N in water, air and soils.

The first Nitrogen Workshop was held in 1982 in Rothamsted, U.K. as a forum for researchers to exchange ideas and views on methodologies to investigate N transformations in agricultural systems. Over the past 30 years the workshop has become an international event focusing on a wide range of N topics including improving N use efficiency and responding to policies such as the European Union Nitrates and Water Framework Directives.

The 17th International Nitrogen Workshop was held in Wexford, Ireland and focused on innovations for sustainable use of N resources and covered new breakthroughs in science, knowledge transfer and management of N resources. There were a total of 31 oral papers and 196 posters from 804 authors in 31 countries across four continents. The workshop provided a platform to discuss N challenges and solutions for sustainable food production and was divided up into four thematic areas:

- Global perspectives on N and food security;
- A holistic approach to understanding impacts of N on the environment;
- Advances in understanding N-flows and transformations;
- Knowledge transfer research.

Overall the papers in this special issue cover such topics and provide an integration of approaches and research results on the need and methods for improving the sustainable utilization of N to support the continued demand for feeding the growing global population. There are many known approaches to supporting a sustainable agriculture industry, ranging from consumer choice through to implementation of known techniques for improving N use efficiency. This concept will be further developed in the 18th International Nitrogen Workshop (Lisbon 2014) which focuses on ‘The nitrogen challenge: Building a blueprint for nitrogen use efficiency and food security.’

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