

Update

July - September 2016 (No 28)

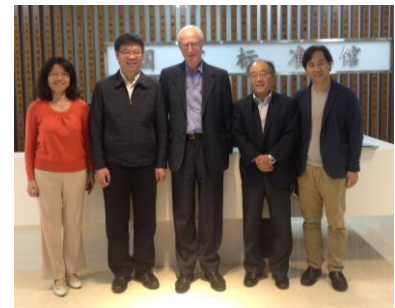
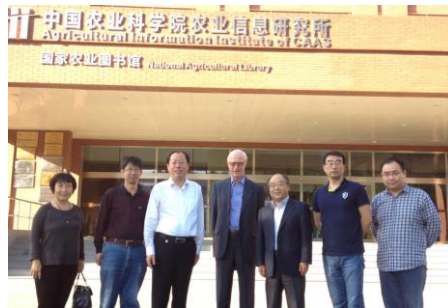
Work in Progress

SAIN is developing the UK China Knowledge Sharing and Mutual Learning Platform

Funded by British Government's Prosperity Fund, SAIN is developing the UK China Knowledge Sharing and Mutual Learning Platform (KSMLP) on Agriculture, Food and Environment.

The proposed of the Platform is to (i) promote cross-disciplinary collaboration; (ii) enhance communication and engagement amongst existing initiatives and stakeholders to maximise synergies and support policy development, and (iii) foster new cooperative partnerships.

As part of the process to establish the Platform, Prof David Norse, SAIN Governing Board member, and Dr Yuelai Lu, head of SAIN Secretariat (UK) carried out mapping study and stakeholder consultation in the UK and China in September. They held consultation meetings with research institutes, government department, as well as business organisations, including Chinese Academy of Agricultural Sciences (CAAS), Chinese Rural Technology Development Centre, Centre of Environment Development of Ministry of Environment Protection, CCICED, State Institute of standardization of AQSIQ, UNEP-China Ecosystem Management Centre, CERN, Innovate UK, RCUK, Defra, UKTI, Dfid, CBBC, Rothamsted Research, DIT. Based on the mapping study and stakeholder consultation, the business plan for the Knowledge Sharing and Mutual Learning Platform (KSMLP) will be developed.



SAIN in media

China Daily, China's official English newspaper, reported SAIN and other relevant UK China agricultural cooperative projects on 12 August,

The report said a milestone was reached in 2008 when an agreement on agricultural collaboration was signed between the Chinese Ministry of Agriculture and the UK's Department for Environment, Food and Rural Affairs.

In the same year, the China-UK Sustainable Agriculture Innovation Network was established.

Existing projects cover areas such as efficient use of agricultural resources, making farming resilient to climate change and reducing water and air pollution. Some results have already been reported to China's National Development and Reform Commission.

The full article is at: http://europe.chinadaily.com.cn/epaper/2016-08/12/content_26444353.htm

UK-China Sustainable Agriculture Innovation Network (SAIN)

News from SAIN partners

- N-Circle project opened social media accounts, please follow the project twitter N-Circle @ResearchNCircle, and Chinese weibo 中英农业氮素管理中心 N-Circle at: http://www.weibo.com/u/6016737681?is_all=1 to know the latest news.

- The websites of N-Circle and CINGAg are online, for more information about the two projects, please visit:

N-CIRCLE: Virtual Joint Centre for Closed-Loop Cycling of Nitrogen in Chinese Agriculture:

<http://www.abdn.ac.uk/ncircle/>

The UK-China Virtual Joint Centre for Improved Nitrogen Agronomy (CINAg):

<http://www.rothamsted.ac.uk/international/international-partnerships/china/cinag>

- Experimentation for the UK-China Joint Centre for Improved Nitrogen Agronomy (CINAg) is ongoing at RRes North Wyke, CEH Bush and Bangor University, see photo below from Bangor University. Members of the UK CINAg project team have met with members of the UK N-Circle project team to discuss complimentary field experiments to quantify the nitrogen use efficiencies of acidified digestate and slurry fractions (solid and liquid).



- A new Bangor-China Scholarship Council PhD Studentship has been awarded. The PhD student, Ma Yan, will start her studies at Bangor University in October 2016, assessing the efficacy and stability of existing and new biological nitrification inhibitors in soil, and their ability to improve nitrogen use efficiency and reduce N losses. She will be co-supervised by Dave Chadwick (Bangor Univ), Laura Cardenas and Tony Hooper (RRes) and Prof Chen Qing (CAU).
- Prof Dave Chadwick of Bangor University, co-chair of SAIN Working Group on nutrient management was invited to give a keynote at the Livestock Waste 2016 Conference in NUI, Galway, Ireland, presenting on: Manure management: Greenhouse Gas emissions and mitigation. Professor Chen Qing of China Agricultural University was one of the co-authors. The pdfs of the presentations can be viewed at: https://drive.google.com/folderview?id=0BySDK8V_jysUZEY2ZHU0ZEVpQ3c&usp=sharing

New Publications

SAIN Policy Brief No. 14

Mitigation of diffuse water pollution from agriculture in England and China, and the scope for policy transfer

Laurence Smith¹, Alex Inman¹, Xin Lai², Haifang Zhang², Zhiwen Wang², Meng Fanqiao³, Zhou Jianbin⁴, Sean Burke⁵, Clive Rahn⁶, Giuseppina Siciliano¹, Ben Surridge⁷

¹Centre for Development, Environment and Policy, SOAS, University of London, ²Agro-Environmental Protection Institute, Ministry of Agriculture, Tianjin, ³College of Resources and Environmental Sciences, China Agricultural University, Beijing, ⁴College of Natural Resources and Environment, Northwest A&F University, Yangling, ⁵British Geological Survey, Environmental Science Centre, Keyworth, ⁶Warwick Crop Centre, University of Warwick, Wellesbourne, Warwick, ⁷Lancaster Environment Centre, Lancaster University.

Key message

- To mitigate diffuse water pollution from agriculture (DWPA) in China, the right mix of complementary policy approaches is needed (Figure 1 and list below).
- The public agricultural extension service is relatively well resourced and is the primary means available to mitigate DWPA. The extension service needs re-orientation and re-skilling to help farmers maintain and increase agricultural productivity whilst balancing this with environmental protection. A new ethos of input use efficiency and environmental stewardship of natural resources is needed, based on 2-way knowledge exchange with farmers.
- Four policies to achieve this are:
 1. A **'reference level' of enforceable regulation for all large commercial farms** is needed. This can be transposed from existing laws with appropriate variation by farming system and region. Intensive livestock units have the greatest potential to cause significant pollution and take first priority. Resources for monitoring and enforcement of regulation are limited, but as land transfer and farm consolidation continue in accord with local needs, regulations for use of manure and chemical fertiliser in arable systems can be developed for large farms.
 2. For small farms monitoring and enforcement of regulations is difficult. Simple, locally well-adapted guidelines are needed. Adoption by farmers must be achieved through **an accredited advisory and voluntary approach developed by the public agricultural extension service** and its wider agricultural knowledge and innovation systems partners.
 3. **Targeted incentive payment schemes** should be used strategically to protect water resources from DWPA in key locations. For example, payments for retirement, or low intensity use, of vulnerable land adjacent to watercourses or in aquifer recharge zones used for water supply.
 4. To support these approaches more **applied research is needed to build an accessible and comprehensive knowledgebase**. This should span, for example, from methods for public participation, through design of regulation and incentive payments, to design and costing of farm best management practices and estimation of modelling coefficients empirically derived for conditions in China.
- None of these approaches are completely absent from China and attempts at international policy transfer or 'lesson-drawing' must consider what can be better developed rather than what could commence. Innovation in farmer participation, advice provision, design of incentive schemes, data sharing and applied research are leading examples.

Click [here](#) to read the full article

N-Circle project team published two papers in international journals

Global Environmental Change 41 (2016) 26–32

Reducing China's fertilizer use by increasing farm size

Xiaotang Ju^a, Baojing Gu^{b,c,*}, Yiyun Wu^c, James N. Galloway^d

^a College of Resources and Environmental Sciences, China Agricultural University, ^b Department of Land Management, Zhejiang University, ^c Policy Simulation Laboratory, Zhejiang University, ^d Department of Environmental Sciences, University of Virginia, United States

Abstract

The excessive use of fertilizer has resulted in serious environmental degradation and a high health cost in China. Much research has focused on the technological innovation to improve fertilizer use efficiency in crop production, but the socioeconomic constraints are at present poorly understood. Here, we find that fertilizer use on a per-area basis sharply decreased with the increase of farm size; surprisingly, the crop yield is higher in large-scale farms compared to that in smallholder farms in China. High labor cost suggests a low machinery level in smallholder farms, which inhibit the application of precise fertilization technologies and management based on scientific knowledge. Meanwhile, the dependence of income from cropland is lower for smallholder farmers who have part-time jobs in urban areas compared to the professional farmers in large-scale farms. Therefore, compared to smallholder farms, large-scale farms are generally more sensitive to the increase of fertilizer price and would reduce their fertilizer use if withdrawing fertilizer subsidies that used to be considered as the key driver of fertilizer overuse. Considering the dominance of smallholder farms in China, increasing farm size should be integrated into the actions such as improving technological innovation and providing better information transfer to achieve the goal of no increase in Chinese fertilizer use.

Click [here](#) to read full article

Environmental Pollution 218 (2016) 86-94

PM_{2.5} pollution is substantially affected by ammonia emissions in China

Yiyun Wu^a, Baojing Gu^{a,b,*}, Jan Willem Erisman^{c,d}, Stefan Reis^{e,f}, Yuanyuan Fang^g,
Xuehe Lu^h, Xiuming Zhang^{a,i}

^a Policy Simulation Laboratory, Zhejiang University, Hangzhou, ^b Department of Land Management, Zhejiang University, Hangzhou, ^c Louis Bolk Institute, The Netherlands, ^d VU Amsterdam, The Netherlands, ^e NERC Centre for Ecology & Hydrology, United Kingdom, ^f University of Exeter Medical School, United Kingdom, ^g Department of Global Ecology, USA, ^h Jiangsu Provincial Key Laboratory of Geographic Information Science and Technology, International Institute for Earth System Science, Nanjing University, Nanjing, ⁱ College of Life Sciences, Zhejiang University, Hangzhou

Abstract

Urban air quality in China has been declining substantially in recent years due to severe haze episodes. The reduction of sulfur dioxide (SO₂) and nitrogen oxide (NO_x) emissions since 2013 does not yet appear to yield substantial benefits for haze mitigation. As the reductions of those key precursors to secondary aerosol formation appears not to sufficient, other crucial factors need to be considered for the design of effective air pollution control strategies. Here we argue that ammonia (NH₃) plays a - so far - underestimated role in the formation of secondary inorganic aerosols, a main component of urban fine particulate matter (PM_{2.5}) concentrations in China. By analyzing in situ concentration data observed in major cities alongside gridded emission data obtained from remote sensing and inventories, we find that emissions of NH₃ have a more robust association with the spatiotemporal variation of PM_{2.5} levels than emissions of SO₂ and NO_x. As a consequence, we argue that urban PM_{2.5} pollution in China in many locations is substantially affected by NH₃ emissions. We highlight that more efforts should be directed to the reduction of NH₃ emissions that help mitigate PM_{2.5} pollution more efficiently than other PM_{2.5} precursors. Such efforts will yield substantial co-benefits by improving nitrogen use efficiency in farming systems. As a consequence,

UK-China Sustainable Agriculture Innovation Network (SAIN)

such integrated strategies would not only improve urban air quality, but also contribute to China's food-security goals, prevent further biodiversity loss, reduce greenhouse gas emissions and lead to economic savings.

Click [here](#) to read full article

Forthcoming Event

UK-China Yangling Agritech Innovation Event, 5-6 November 2016

The China Rural Technology Development Centre of the Ministry of Science and Technology (MOST) and the Foreign Affairs Office of the International Cooperation Bureau of Yangling Agricultural Hi-tech Industries Demonstration Zone, China's largest agritech science park have invited the Science and Innovation Section of British Embassy Beijing and the Agritech Centres of Innovate UK to organise with them a series of events to facilitate UK China collaborations on agritech innovations at 23rd China Yangling Agricultural Hi-Tech Fair (CAF) on 5-6 Nov 2016. This fair normally attracts an audience of 1.5 million visitors and hosts over 1700 industry exhibitors. The purpose of these events is to showcase the UK science and innovation capabilities in agri-tech and to map out the key areas for future collaboration while providing partnering opportunities for the industrial and academic stakeholders in both the UK and China. The UK China Sustainable Agriculture Innovation Network (SAIN) will launch public consultation on the development of the first UK-China Knowledge Sharing and Mutual Learning Platform on Agriculture, Food and Environment. The events are expected to have a large audience of Chinese industry leaders, academics and government officials.

The key activities will include:

- UK China Policy Roundtable on Agritech Innovation (5 November)
- UK China Agritech Innovation Forum (6 November 2016)
- China-UK Agritech Business Partnering Event (6 November 2016)
- UK Themed Exhibition (5 - 9 November 2016)

Please contact Helena Ou (Helena.Ou@fco.gov.uk) at British Embassy for further information.

Funding Opportunity – ATCNN Call for Proposals

The Agri-Tech in China: Newton Network+ (ATCNN) will support a range of activities to develop innovative solutions for some of the critical challenges impacting China's agri-tech and agri-food sectors. We particularly seek to enable translation of UK excellence in satellite imaging, remote sensing, smart sensors, robotics and data-intensive science into new solutions for productivity and sustainability in rural China.

Applications are currently invited for: **Pathfinder** and **Proof of Concept Awards**. The next application **deadline** is: **12:00 (GMT), 31 October 2016**.

The call is open to applications from UK partners only, but we encourage Chinese organisations interested in this to make contact with their UK networks and be proactive in jointly developing concepts for proposals.

Further information regarding each scheme can be found under the Call Documents section on the website: www.rothamsted.ac.uk/china/ATCNN

For more information about SAIN, please visit: <http://www.sainonline.org/English.html>

If you have any further enquiries, please contact Yuelai Lu at: y.lu@uea.ac.uk