

Update

April - June 2016 (No 27)

The UK China Virtual Joint Centre of Nitrogen in Agriculture kicked off in Beijing



The UK and Chinese scientists got together in Beijing from the 24th-27th April for the kick-off meeting for a new joint virtual centre to investigate and tackle the problem of nitrogen use in Chinese agriculture.

Under the leadership of Professors Pete Smith (University of Aberdeen), Hongbin Liu (Institute of Agricultural Resources and Regional Planning, Beijing) and Xiaotang Ju (China Agricultural University, Beijing), the project brings together the expertise of academics from nine leading Chinese institutions alongside UK partners from the Universities of Aberdeen, Cambridge and East Anglia, Scotland's Rural College (SRUC), and ADAS.

The kick-off meeting was an opportunity to start engaging with senior officials from the Chinese Ministry of Agriculture, the Chinese Academy of Agricultural Sciences, and colleagues from the British Embassy in Beijing. It allowed for UK-based and China-based partners to meet and discuss the overall scope of the project, and to make detailed plans for the joint work to take place over the coming 3 years. The project is split into eight work packages with each covering a different aspect of agricultural Nitrogen use. In addition to work package meetings, two field sites in Beijing, where agricultural experiments are to be carried out, were visited.

The project is funded by around £3 million from the Newton Fund via BBSRC and NERC and around £4 million from sources in China.

The project is working in partnership with the UK China Sustainable Agriculture Innovation network (SAIN).

For further information about this project, please visit SAIN website at:
<http://www.sainonline.org/pages/Projects/SAIN-N-Circle-cropped.pdf>

UK-China Sustainable Agriculture Innovation Network (SAIN)

Agri-Tech in China Network+ held need assessment workshop in Beijing



The Agri-Tech in China Network+ need assessment workshop was held on 28-29th April in China Agricultural University in Beijing. The purpose of the workshop was to bring together Chinese and UK researchers, policy makers, and companies in the agricultural sector, as well as farming communities to participate to discuss key challenges facing China's agricultural sector, and UK agri-tech capabilities and solutions to address these challenges. The themes discussed at the workshop included sustainable intensification, pest and disease management, climate smart agriculture, water management, and socio-economic impacts and reforms. The output of this workshop will form the basis of the Newton Agritech Network+ programmes and funding calls over the next 3 years.

The Agri-Tech in China Network+ is funded by Newton Fund and forms part of the Agri-Tech in China Programme implemented by STFC. The Network+ adds value to the Programme by facilitating knowledge sharing and the creation of new partnerships and will play a strategic role in ensuring that research is aligned with user needs.

The aims of the Network+ include:

- To ensure that the Agri-Tech in China Newton projects and the associated institutes are networked with other activities, existing or planned (e.g. the RCUK Global Food Security programme, ESRC Nexus Network, Agri-Tech Catalyst, Satellite Applications Catapult)
- To develop a multi-disciplinary community focused on addressing agri-tech development issues in China
- To deliver scoping and proof of concept studies to test and de-risk ideas

The Agri-Tech in China Network+ is working in partnership with the UK China Sustainable Agriculture Innovation network (SAIN).



New Publications

Yongli Lu, Zhujun Chen, Tingting Kang, Xiaojia Zhang, Jessica Bellarby, Jianbin Zhou (2016):

Land-use changes from arable crop to kiwi-orchard increased nutrient surpluses and accumulation in soils, *Agriculture, Ecosystems and Environment* 223 (2016) 270–277.

[doi:10.1016/j.agee.2016.03.019](https://doi.org/10.1016/j.agee.2016.03.019)

Abstract

The potential environmental risk associated to nutrient surpluses after changing arable crops to kiwi-orchards was assessed in the Yujiahe catchment of Shaanxi, China. This was achieved by surveying 242 kiwi-orchards and 21 croplands and determining their nutrient inputs and outputs as well as the soil nutrient status for the over 2 years. The total inputs of nitrogen (N), phosphorus (P) and potassium (K) from fertilizers, manures, deposition, and irrigation in kiwi-orchards were 1201, 268 and 615 kg ha⁻¹ yr⁻¹, respectively, which were higher than the rates of 425, 59 and 109 kg ha⁻¹ yr⁻¹ in wheat-maize fields. The mean annual apparent nutrient surpluses in kiwi-orchards were 1081 kg N ha⁻¹ yr⁻¹, 237 kg P ha⁻¹ yr⁻¹ and 491 kg K ha⁻¹ yr⁻¹. Within comparison to the croplands, the soil organic matter (SOM) and total N (TN) in the topsoil (0–20 cm) increased in kiwi-orchards, and soil pH decreased. The average contents of Olsen-P, and available K in 0–20 cm soils of the orchards were 86 mg kg⁻¹, and 360 mg kg⁻¹, which were higher than recommended levels. The nitrate-N accumulation in the 0–100 cm and 0–200 cm soil layers in kiwi-orchards were 466 and 793 kg N ha⁻¹, respectively. The high proportion of nitrate-N in deeper soil profiles of kiwi-orchards poses a great risk for nitrate leaching and subsequent ground water pollution. It is concluded that changing arable crops to kiwi-orchards increased the environmental burden of the catchment due to excessive fertilizer application in kiwi-orchards.

This paper is an output of SAIN project **Knowledge, policy and practice for sustainable nutrient management and water resources protection in UK and Chinese agro-ecosystems**, funded by the UK's Department for Environment, Food and Rural Affairs (Defra) and Chinese Ministry of Agriculture.

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

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