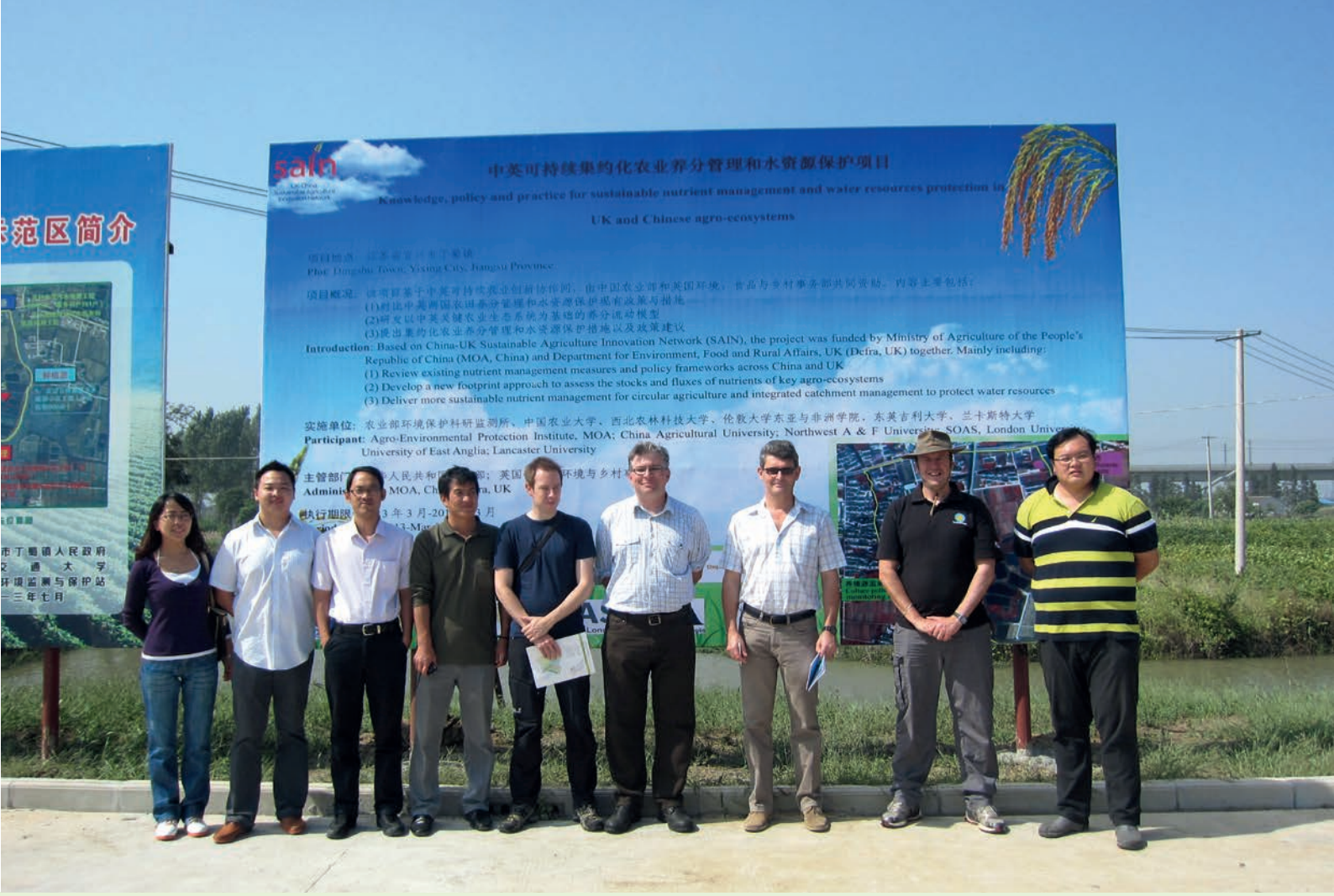


PPM-Nutrients: Knowledge, policy and practice for sustainable nutrient management and water resources protection in UK and Chinese agro-ecosystems

sain
UK-China
Sustainable Agriculture
Innovation Network

Issues to be addressed

Nutrient management in agro-ecosystems faces potential scarcity of new resources (for phosphorus, P) and growing calls to mitigate the environmental impacts associated with nutrient losses from agricultural land (for nitrogen, N, and P). Such losses are a major constituent of diffuse water pollution from agriculture (DWPA), and can pose significant threats to natural ecosystems and to human health via public water supply.

These challenges are set within the broader context of meeting a growing global demand for food, of responding to the challenges of climate change, and of maintaining economically viable farm businesses. Addressing these nutrient management and water resource protection challenges requires an interdisciplinary research approach, enhanced scientific knowledge and the means to effect change.

Objectives and activities

To achieve more sustainable management of N and P in agro-ecosystems through developing and exchanging innovation in the fields of knowledge, practice, policy and governance, with focus on specific activities and regional examples that capture key farming systems within both the UK and China:

Objectives & Activities

i. Research and application of 'footprinting' approaches as means to assess the stocks and fluxes of nutrients within examples of key agro-ecosystems in the UK and China.

ii. A strategic assessment of known and developing mitigation practices with the potential to optimise nutrient use within agro-ecosystems and to minimise export of nutrients from agro-ecosystems to connected ecosystems.

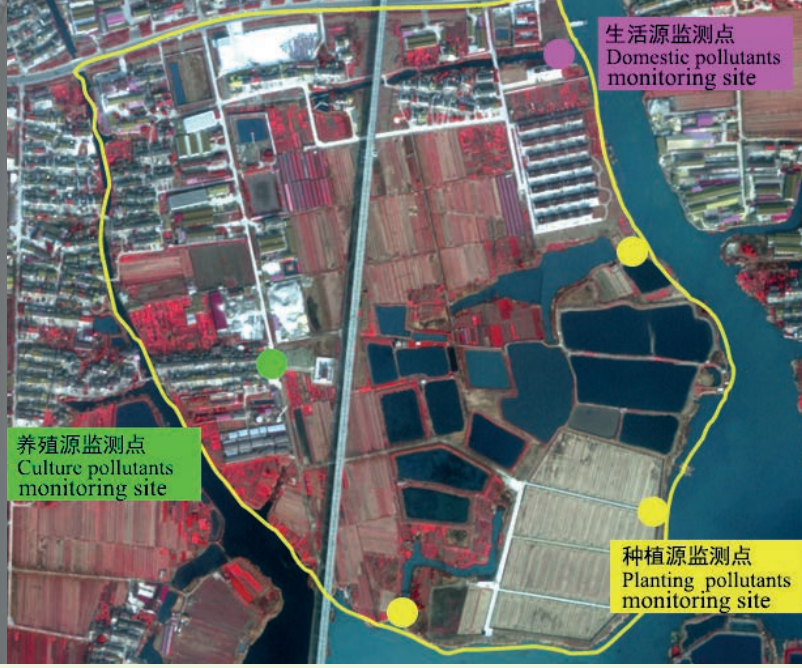
iii. A review of the existing knowledge base, regulation, advisory services and policy making up the DWPA 'mitigation framework' across the UK, EU and China, and suggestions for improvement.

iv. An analysis of the existing evidence base related to nutrient pollution and the effectiveness of current policy and practice, and identification of future evidence requirements to support more sustainable nutrient management.

v. An assessment in the UK and in China of current means and implementation arrangements for delivering more sustainable nutrient management and water resource protection in agro-ecosystems, and of constraints to this.

vi. An assessment of the potential for revised and locally-based capacity and implementation arrangements, capable of assessing needs and adapting and delivering new interventions at a catchment scale through agency collaboration, and with local 'ownership' and support.

vii. The use of existing networking tools to facilitate communication and knowledge exchange between partners, including between the Defra Demonstration Test Catchments (DTC) programme in the UK and comparable platforms in China.



Expected Outputs

i. A SAIN Policy Brief and a refereed journal paper analysing the utility of nutrient 'footprinting' approaches, informed and illustrated by applications in key Chinese and UK agro-ecosystems.

ii. A strategic assessment of leading measures (farm and catchment scale) to improve nutrient management and the mitigation of DWPA in key farming systems within China and the UK.

iii. A SAIN Policy Brief and a refereed journal paper critically reviewing the 'mitigation frameworks' (technology, regulation, advice and policies) for DWPA in the UK and in China.

iv. A working paper identifying future research, monitoring and mitigation priorities for the UK and China in relation to nutrient management and control of DWPA within a range of key agro-ecosystems.

v. A SAIN Policy Brief and a working paper assessing the current means and implementation arrangements for delivering more sustainable nutrient management and water resource protection in key agro-ecosystems in China and the UK.

vi. A SAIN Policy Brief and a refereed journal paper based on the evaluation of three case study assessments in China of the utility of, and potential for, locally based processes of stakeholder deliberation and collaborative adaptive management informed by scientific assessment.

vii. A functional knowledge exchange platform between the UK and Chinese research partners.

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