

# Update

*April - June 2014 (No 19)*

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## Work in Progress

Two more papers were published at international journal by SAIN project teams:

**Greenhouse gas mitigation in Chinese agriculture: Distinguishing technical and economic potentials, *Global Environmental Change* 26 (2014) 53–62**

**Abstract**

China is now the world's biggest emitter of greenhouse gases with 7467 million tons (Mt) carbon dioxide equivalent (CO<sub>2</sub>e) in 2005, with agriculture accounting for 11% of this total. As elsewhere, agricultural emissions mitigation policy in China faces a range of challenges due to the biophysical complexity, heterogeneity of farming systems, and social-economic barriers. Existing research has contributed to improving our understanding of the technical potential of mitigation measures in this sector (i.e. what works). But for policy purposes it is important to convert these measures into a feasible economic potential, which provides a perspective on whether agricultural emissions reduction (measures) are low cost relative to mitigation measures and overall potential offered by other sectors of the economy. We develop a bottom-up marginal abatement cost curve (MACC) representing the cost of mitigation measures applicable in addition to business-as-usual agricultural practices. The MACC demonstrates that while the sector offers a maximum technical potential of 402 Mt CO<sub>2</sub>e in 2020, a reduction of 135 Mt CO<sub>2</sub>e is potentially available at zero or negative cost (i.e. a cost saving), and 176 MtCO<sub>2</sub>e (approximately 44% of the total) can be abated at a threshold carbon price  $\leq$  ¥ 100 (approximately €12) per tCO<sub>2</sub>e. Our findings highlight the important cost-effectiveness of nitrogen fertilizer and manure best management practices, and animal breeding practices. We outline the assumptions underlying MACC construction and discuss some scientific, socioeconomic and institutional barriers to realizing the indicated levels of mitigation.

**From rhetoric to reality: farmer perspectives on the economic potential of biochar in China, *International Journal of Agricultural Sustainability*, DOI: 10.1080/14735903.2014.927711**

**Abstract**

Biochar has garnered much attention for its potential to improve farming productivity and sustainability by amending soil, enhancing crop yields, improving fertilizer use efficiency and sequestering carbon. However, few publications consider farmer perspectives on whether biochar is attractive as an agricultural input. This paper therefore investigates the micro-economics and social suitability of biochar in four contrasting Chinese agricultural systems, using linear optimization models and qualitative contextual data. Results demonstrate that commercially produced biochar is uneconomic as an independent farming input, whilst farm-produced biochar shows promise in just one of four case-study sites. This suggests that biochar research in China should shift away from on-farm production and application of pure biochar, towards combined biochar-inorganic fertilizer products.

## UK-China Sustainable Agriculture Innovation Network (SAIN)

### Prof Dominic Moran is appointed as co-chair of SAIN working group on climate change mitigation and adaptation

Prof Dominic Moran has been recently appointed as co-chair of SAIN working group on climate change mitigation and adaptation, to replace Prof Pete Smith of University of Aberdeen who led the working group in the last five years. Prof Smith's excellent leadership and commitment to the working group is highly appreciated. Prof Smith will continue to be a member of this working group.



Prof Moran is an agricultural economist at SRUC Edinburgh. He specialises in applied cost-benefit analysis of environmental and agri environmental policy. He specialises in non-market valuation methods applied to animal health and welfare, public preferences for policy reform, and the use of benefits transfer. His recent research has focussed on the economics of greenhouse gas mitigation and the behavioural challenges for implementing mitigation and adaptation measures in farming. Noteworthy studies have included the development of mitigation cost curves for the UK, France and China. He is currently engaged in research as part of two EU FP7 projects (AnimalChange and Smartsoils) as well as leading related research themes for the Scottish Government (RESAS) and Defra.

More details about Prof Moran can be found at: <http://www.sruc.ac.uk/dmoran>

### Conference announcement

**The 4<sup>th</sup> International Conference on Carbon Sequestration and Climate Change Mitigation in Agriculture** will be held on 21-24 September 2014, in Yangling, Shaanxi Province, China.

#### *The topics of the conference*

- Greenhouse gas emission and mitigation across soils and ecosystems
- Long-term experiments on soil carbon dynamics
- Anthropology and carbon sequestration
- Nutrient management and carbon sequestration
- New instrumental and analytical techniques in carbon and nitrogen studies

Please contact Prof Jianbin Zhou ([jbzhou@nwsuaf.edu.cn](mailto:jbzhou@nwsuaf.edu.cn)) for further details.

**The 3rd Asian Conference on Plant-Microbe Symbiosis and Nitrogen Fixation (3APMNF)** will be held in 28-31 October, 2014, in Chengdu, China.

The sessions of the conference include:

- Bioresource and Genomics
- Plant-Microbe interaction
- Plant Nutrition Associated with Microbial Symbiosis
- Nitrogen Fixation and Nitrogen Cycles
- Legume and Rhizobial Symbiosis
- Biological Control
- Applications for Sustainable Agriculture and Environments
- Entrepreneur: Current R & D of Diverse Inoculation Technologies and Multifunctional Inoculants

For more details please visit: <http://www.bnfchengdu2014.com/>

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

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