Improving Nitrogen Use Efficiency in the Chinese Food Chain to Reduce Air and Water Pollution

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Background

The nitrogen (N) use efficiencies of food production are low in China. This has led to large N losses to air and the aquatic systems, causing air pollution and eutrophication in Chinese rivers and seas.

Objective

To explore nutrient management options to increase N use efficiencies of food production, and to reduce water and air pollution in China.

Methods

Step 1: Quantify current N use efficiencies of food production, and N losses to the air and waters in China in 2013 using the NUFER model.

Step 2: Explore nutrient management options to improve N use efficiencies of food production, and to reduce air and water pollution in China by 2020 and 2050 using scenario analysis.

Scenarios:

- Business As Usual (BAU)
- Zero Fertilizer (ZF) growth from 2020
- Improved Nutrient Management (INM)

Results

- N use efficiency in Chinese food production is low in 2013.
- N losses from food production to the air and waters in China are high in 2013.
- N use efficiencies of food production vary largely among provinces.
- N use efficiencies of food production in China will likely remain low in the future.
- Current policies are not enough to improve N use efficiencies.
- Improved nutrient management is needed to improve N use efficiencies, and to reduce water pollution in China.

Conclusions

- N use efficiency in Chinese food production is low in 2013.
- N losses from food production to the air and waters in China are high in 2013.
- N use efficiencies of food production vary largely among provinces.
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References


Acknowledgements

We acknowledge Wageningen Institute for Environment and Climate Research (WIMEK) of Wageningen University, and Netherlands Organization for Scientific Research (NWO) for financial support. We also acknowledge the Chinese National Basic Research Program (2015CBI50405), President’s International Fellowship Initiative, PIFI of the Chinese Academy of Science (2015VEA025), the Hundred Talent Program of the Chinese Academy of Science for supporting this research.