In 2005, China initiated an ambitious nationwide fertilizer education program ("Soil Testing and Fertilizer Recommendation Project (STFRP)") to combat its fertilizer overuse problem. This study evaluates the effectiveness of STFRP in fertilizer reduction at the national level. Currently China’s fertilizer application intensity is three times of the level of the United States. This has caused widespread soil acidification, significant surface and ground water pollution and excessive greenhouse gas (GHG) emissions. In response, the Chinese government started STFRP, which offers field-specific soil tests and recommendations on fertilizer application rates and timing. Counties enrolled in this program increased from less than 10% in 2005 to more than 90% of all counties in 2009, with total investment over 1.3 billion U.S. dollars till 2016. However, there has been no systematic evaluation of the effectiveness and impacts of this nationwide program on fertilizer usage.

We use a nationally representative rural household survey data from 2003 to 2009, employ a difference-in-difference design and exploit the gradual enrollments of households into STFRP to contrast fertilizer expenditures of early-enrollers versus late-enrollers. Our results show that STFRP reduces fertilizer expenditure by about 9% (4 yuan/mu) on average. In addition, we find that STFRP is only effective for wheat and rice but not for corn, and it is more effective in major grain production regions.

To our knowledge, this study is the first rigorous evaluation of STFRP using nationally representative data. The lessons from our analysis will be valuable for China’s future outreach efforts promoting sustainable agriculture development, as well as for other countries considering similar nutrient management policies.

As many developing countries stride to transition from substance or traditional agriculture to modern agriculture, it is challenging to steer the growth onto a sustainable path. Using China’s nationwide fertilizer education program evaluation as an example, our paper showcases that education and outreach could be a key part of solving this sustainable agriculture puzzle.