

# Sustainability of food production in India from the viewpoint of nitrogen flow

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This study focuses on nitrogen flow around farmland and human to analyze environmental impact of food production and consumption. Nitrogen fertilizer has contributed to support increasing population in India. However, nitrogen not absorbed in crops is a factor of various environmental pollutions. For example, groundwater pollution, eutrophication of rivers and wetlands, and outbreaks of red tide are becoming severe problems. Seen from food consumption, without appropriate treatment systems, nitrogen absorbed in crops can also be cause of environmental problem though humans and their excrement. Concentration of population and increase in protein consumption along with economic development would be strong factors of nitrogen pollution in urban area. For these reasons, nitrogen flow is a helpful index to examine environmental pollutions caused by food production and consumption.

This study concludes that nitrogen fertilizer would be input more to meet food demand. However, since consumption of rice and wheat per person did not increase (it even decreased) and feed demand grew slowly, the nitrogen balance on farmland will not be deteriorated largely in future. On the other hand, remarkable nitrogen pollution by concentration of population is observed in city districts. The government has to improve the urban sewage treatment system. It can be said that the challenges and responsibility of the government will become larger.