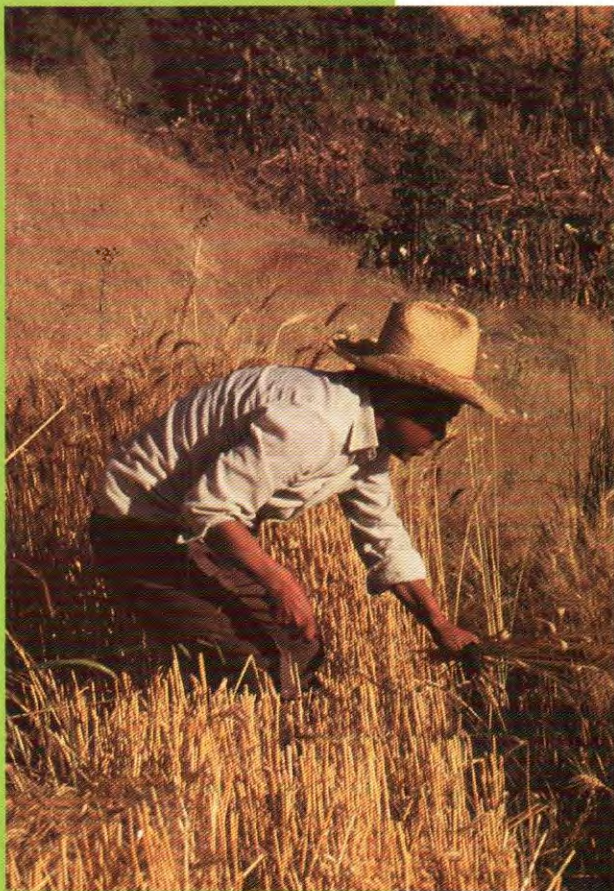


In coming decades wheat will overtake rice as the world's number-one food crop, providing sustenance for hundreds of millions of developing country inhabitants. Nitrogen fertilizer is essential to produce enough grain from today's limited land resources. But how can farmers in the developing world limit environmental hazards—such as water-contaminating nitrates or nitrogen trace gases—arising from intensive use of fertilizers?



Feeding the World without Fouling the Planet

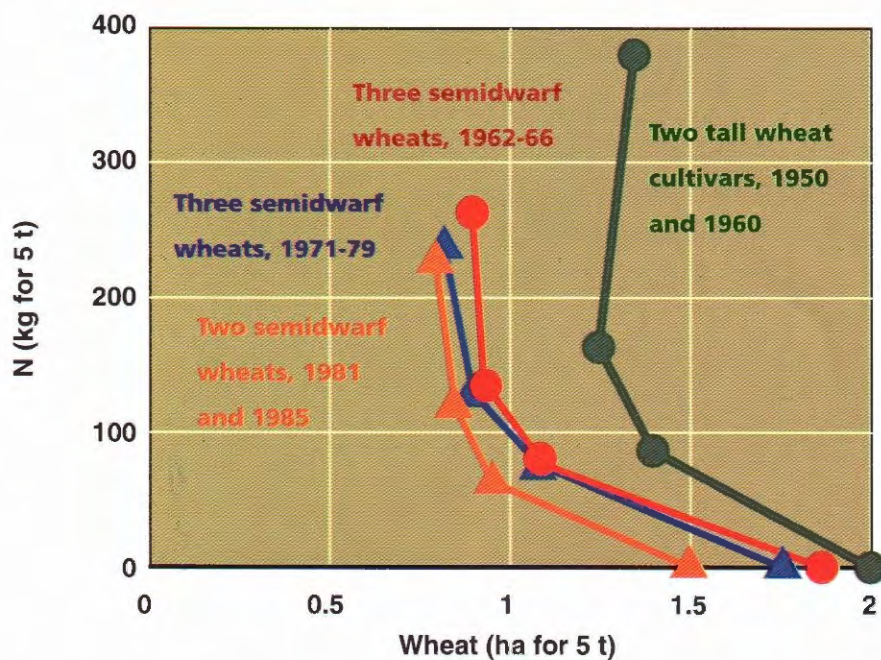
SUSTAINING WHEAT YIELDS AND FARM PROFITS WHILE REDUCING GREENHOUSE GASES

Researchers from CIMMYT and Stanford University have recently developed practices that allow wheat farmers in the Yaqui Valley, Sonora, Mexico, to reduce nitrogen applications from 250 to 180 kilograms per hectare, without sacrificing yield or grain quality. Farmers save from US\$55 to US\$76 per hectare in fertilizer and nitrogen—a gain in profits of as much as 17%. The practices involve careful timing of fertilizer applications to reduce nitrogen trace gas emissions and increase nitrogen absorption by plants. Though based on elegant science (an article on the work was recently published in *Science**), the techniques are simple and have already been adopted by many farmers in the Yaqui Valley, a region typical of the highly productive, irrigated areas that account for 40% of developing world wheat output.

* Matson, P.A., R. Naylor, and I. Ortiz-Monasterio. 1998. Integration of environmental, agronomic, and economic aspects of fertilizer management. *Science* 280:112-114.



International Maize and Wheat
Improvement Center



The practices described complement current CIMMYT-derived wheat varieties, which produce more grain per unit of applied fertilizer than the older varieties they have replaced.

“Technologies that lessen the impact of nitrogen on the ecosystem have to maintain yields and make economic sense to farmers. Otherwise they won’t be adopted.”

Pamela Matson

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