# Are higher yields and environmental stewardship compatible? (A09-cassman124213-Oral)

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## **Abstract:**

Average farm yields are typically about 50% of yield potential. Given concerns for food security and natural resource conservation, a key issue is whether high-yield cropping systems and environmental stewardship are compatible goals. Some argue high-yield systems are inherently prone to negative environmental effects from nutrient losses and pesticide load because increased yields require greater nutrient uptake and reduced pest losses. A team at the University of Nebraska has been investigating an alternative hypothesis--that it is possible to increase input use efficiency and yields while reducing negative environmental effects and improving soil quality through the synergistic effects of intensive crop management. Initial results on irrigated maize suggest that yields approaching the yield potential ceiling can be achieved in tandem with high N fertilizer efficiency and increased carbon sequestration. Knowledge gaps have been identified, however, that will hinder further progress. These include basic understanding of yield potential, which provides the basis for predicting optimal plant population and nutrient requirements, and mechanisms controlling nitrous oxide emissions.

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