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NEWS RELEASE

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Corn Yield Stability Varies with Rotations, Fertility

Research shows type of cropping system and fertility affect corn yield stability.

MADISON, WI, July 20, 2009 -- Understanding temporal variability in crop yields has implications for sustainable crop production, particularly since greater fluxes in crop yields are projected with global climate change.

Many long-term cropping system studies have compared average crop yields; this study looked at stability of yields and whether cropping systems and manure applications affected crop yields differently in poor- and high- yielding years.

K.K. Grover et al. investigated the effects of long-term cropping systems on corn grain yields, yield trends, and yield stability over the last 16 years of a long-term fertility and cropping systems experiment at the Pennsylvania State University.

This study suggests that on average in a productive Central Pennsylvania soil, the yield of corn rotated with alfalfa, red clover, and timothy is modestly higher and less variable than corn grown exclusively. Further, when dairy manure is applied to meet crop nitrogen requirements, continuous corn can perform equally well to the rotated in high-yielding years, but performs poorly in low-yielding years such as dry summers and wet springs.

When synthetic fertilizers or phosphorus-based manure are applied, however, continuous corn may yield less than rotated corn in low- and high-yielding years. Further research is needed to evaluate the economic returns of these cropping systems.

The research was funded by the Department of Crop and Soil Sciences, Pennsylvania State University, University Park, PA. Results are published in the July-August 2009 issue of *Agronomy Journal*.

The full article is available for no charge for 30 days following the date of this summary. View the abstract at http://agron.scijournals.org/cgi/content/abstract/101/4/940.

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