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Natural Resources Research Update

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Title: Corn stover removal reduces grain yield on marginal soils

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Text: Crop residues such as corn stover (residue left after grain is harvested) are viewed as an abundant and inexpensive source of biomass that can be removed from fields to produce bioenergy. Assumptions include that with minimum or no-tillage farming methods, there will be no deleterious production or environment effects. Corn grown under no-till management in eastern Nebraska had significantly reduced corn grain yields after five years when approximately half the available corn stover was removed each year. Even with the use of no-tillage management, on marginal soils, the use of crop residues for bioenergy may decrease crop productivity. At the same time, switchgrass grown on this same site produced sufficient biomass to produce similar amounts of ethanol to the amount produced by using both the corn grain and approximately half of the corn stover. Producers may be able to produce a perennial crop such as switchgrass on these marginal soils for ethanol production and at the same time maintain or even possibly improve soil quality.

Varvel, G.E., K.P. Vogel, R.B. Mitchell, R.F. Follett, and J.M. Kimble. 2008. Comparison of corn and switchgrass on marginal soils for bioenergy. Biomass & Bioenergy. 32:18-21.