Corn Response to Long-term Tillage, Residue and Nitrogen Management. (S03-clapp155344-Poster)

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Abstract:

A tillage, residue, and N management experiment was established in 1980 at the University of Minnesota Research and Outreach Center, Rosemount, MN on a Typic Hapludoll. The experiment consisted of two tillage methods (till and no-till), two types of residue management (returned and harvested) and two N fertilization rates (2 and 20 g N m-2) in a split-split plot design with four replications. Corn was grown every year except during the years 1995 to 1998 when soybean was the crop. Corn response in this study is based on grain and stover yields and N uptake by grain and stover. In most years, tillage resulted in higher yields than no-till; however, this effect was rarely significant. Corn yields with returned residues compared to harvested residues were consistently higher and significant after about 10 years of cropping. Higher N fertilization consistently increased yields; this effect was significant in 12 out of 17 years. N uptake by grain and stover were similarly affected by the different treatments. However, N fertilization

influenced N uptake more than the corn and stover yields; high N fertilization significantly increased N uptake over the years of cropping.

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