

# Corn and Soybean Grain Yields in a Long-term Tillage and Cropping Systems Study.



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## Background

Crop and soil management practices affect crop development and growth and ultimately the profitability of the farming enterprise. Two cultural practices that vary widely among producers and have a large potential to impact crop growth and profitability are tillage and crop rotation. Although many useful conclusions have been generated from short-term experiments, other critical effects of various practices can only be assessed after a period of consistent application of the practice. Crop productivity, changing pest dynamics, and plant nutrient distribution in the soil are system characteristics that require long-term application of practices to determine the true impact.

## Objective

To evaluate the long-term interaction of primary tillage practice and corn rotation on grain yield and dry matter production under dryland conditions in the western Corn Belt.

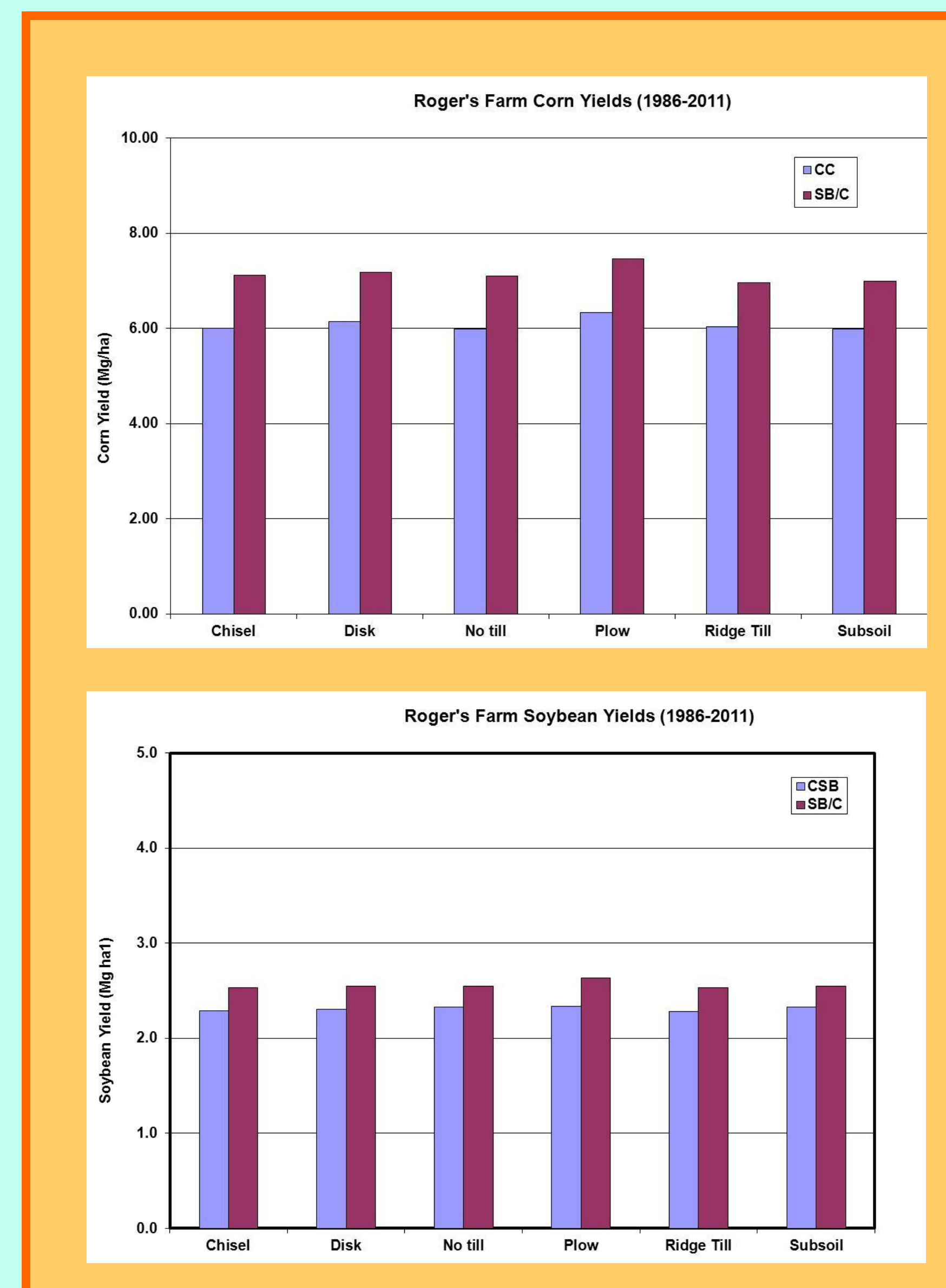
## Methods & Materials

The experiment, initiated in 1986, is a randomized complete block design with factorial treatments arranged in split-plots. The whole plot factor is tillage treatment: moldboard plow, tandem disk, chisel plow, subsoil (rip), ridge-till, and no-till. Sub-plot factor is cropping system: continuous corn, continuous soybean, and both phases of a corn-soybean rotation.

Grain samples have been collected for yield determinations from all plots at maturity since initiation of the experiment.

## Results

- Corn and soybean yields were not significantly different among tillage treatments.
- Corn and soybean yields were significantly greater in the two-year corn/soybean rotation than in the continuous cropping systems.



## Conclusions

- Corn and soybean grain yields have varied from year to year, but over the first 25 years of the study, no differences in grain yields between tillage systems have been obtained.
- Other criteria, such as carbon sequestration, soil quality, erosion control, can be used to select your primary tillage system in this environment.
- Yields of corn and soybean are significantly greater in rotation than in monoculture.

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