

Benchmarking soybean production systems

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Overview of project objectives

Soybean production is expected to rise to satisfy the increasing global demand for food, biodiesel and livestock feed. Thus, it is crucial to reduce the yield gap — the difference between the attainable crop yield, as determined by the interactive effects of weather, soils, and genetics, and the actual crop yield attained by a producer. This project aims to identify the factors that prevent most producers from attaining high yields accomplished by other producers. Once those factors are identified, both producers and their university research specialists can focus on how to close the yield gap.

Key results

The gap between yield potential and producer average yield is 20-30 percent depending upon the region. The research team's approach combined farmer survey data and a spatial framework, which allowed them to identify yield limiting factors across millions of soybean acres in the North Central region.

Benefit to farmers

The "benchmark data" helped identify key management factors across the region that can be used by individual producers to increase soybean yield on their farms and do that with an input-use efficiency that will improve bottom-line net profit. The team found that planting date, tillage, foliar fungicide and/or insecticide, and maturity group are most important factors explaining the yield gaps.

Links:

[Benchmarking soybean production systems in the North Central U.S.](#) *USB National Soybean Checkoff Research Database*

[Sifting and Winnowing: Analysis of Farmer Field Data for Soybean in the U.S. North-Central Region](#) *Field Crops Research, 2018*

[Sifting and Winnowing: Analysis of Farmer Field Data for Soybean in the U.S. North Central Region](#) *Extension Bulletin, 2018*

[Key Management Practices that Explain Yield Gaps across the North-Central U.S.](#) *Extension Bulletin, 2017*

[Assessing causes of yield gaps in agricultural areas with diversity in climate and soils](#) *Agricultural & Forest Meteorology, 2017*