

## **PREDICTING FERTILIZER NITROGEN RESPONSE IN CORN FOLLOWING ALFALFA**

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### **Abstract**

Correct prediction and application of alfalfa N credits to first-year corn can reduce fertilizer N costs for growers, reduce over-application of N, and reduce the potential for water contamination. For decades, researchers have found that first-year corn following alfalfa often requires no fertilizer N to maximize grain yield. However, a review and analysis of nearly all the research on this topic in North America and Spain (442 site-years of research) indicates that corn following alfalfa can respond to N fertilizer around 30% of the time. This body of research covers a wider range of weather, soil, and crop management conditions than any single study, and may contain clues for predicting fertilizer N requirements that have been missed by others. After developing this database, we analyzed the data using statistical meta-analysis techniques to determine factors (soil type, tillage, alfalfa stand age and density, precipitation, etc.) that relate to fertilizer N response of first-year corn following alfalfa. We then validated these predictors using our independent set of data from 35 recent site-years of on-farm research conducted in Minnesota and Wisconsin from 2009 to 2011. Findings from this meta-analysis will be presented.

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