

## THE ANALYSIS OF NITROGEN AND PLANT POPULATION INTERACTIONS

Bill Tjentland and Gregg Carlson.  
South Dakota State University, Brookings SD

### Abstract

Nitrogen and plant population are significant factors for corn production. Accurate nitrogen fertilizer and seeding rate recommendations are essential for optimizing profitability for the farmer and minimizing nitrogen losses. Research and development of yield response curves provide important information that can be used to understand the relationships between these inputs (nitrogen fertilizer and corn seeds) and output (grain yield). Over the varying levels of inputs, yield response functions can be expressed as the second-order polynomial developed from regression. Using Microsoft Excel's<sup>®</sup> matrix manipulation capability, given the cost of inputs (nitrogen fertilizer and corn seeds) and the value of output (price of corn), the optimum nitrogen and plant population levels may be determined simultaneously.

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**John E. Sawyer  
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