# Using the PSNT and Nitrogen Crediting to Improve Corn Nitrogen Recommendations. (S04-bundy160436-Oral)

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### Abstract:

Excess N use in crop production can lead to environmental problems and reduced economic returns. The presidedress soil nitrate test (PSNT) and N crediting for organic N inputs can improve the accuracy of corn N recommendations, but these techniques are often not used due to producer concerns about their reliability. This study compared using the PSNT and standard N crediting for legumes and manure for identifying optimum N rates and quantifying economic returns in 101 N response field experiments with corn (Zea mays L.) during 1989-1999. The accuracy of PSNT recommendations was highest for sites with average or above average May-June air temperatures and high soil yield potential. The frequency of excess N recommendations from the PSNT increased from 16 to 59% when May-June temperatures were >0.56 degrees C below average likely due to slower organic N mineralization. Use of N recommendations based on the PSNT or book value N credits (BVNC) lowered N rates by 90 to 102 kg/ha in systems with recent manure or legume N inputs and increased average economic returns for all cropping systems by 19 dollars/ha compared with unadjusted N recommendations. Economic gains using PSNT- or BVNC-based recommendations were generally highest in the first year following organic N inputs with an average gain of 34 dollars/ha for both methods. Conversely, economic gains were higher using the PSNT (40 dollars/ha) than the BVNC (2 dollars/ha) 1 to 3 yr after the organic N additions. Results from this work confirm that adjusting N application rates using the PSNT or BVNC is more profitable than not making these adjustments. This finding is in contrast to the common perception that complete crediting of organic N sources increases economic risk.

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