

## AGRONOMY JOURNAL

## Using Multiple Soil Nitrogen Tests Marginally Improves Corn Nitrogen Management

Typical soil nitrogen (N) tests used to make fertilizer-N recommendations for corn do not explicitly account for N that becomes available to corn from decomposition of organic matter (mineralization) during the growing season. Using both soil N and N mineralization tests may improve the accuracy of current corn fertilizer-N recommendations.

A recently published article in *Agronomy Journal* reports on a U.S. Midwest regional project that included 49 site-years. Soil N and N mineralization were measured and related to the fertilizer N rate needed to obtain the economically optimum corn yield.

Corn economically optimum N rate was better predicted by soil N tests from soils sampled near the rapid uptake stage of corn (V6 corn development stage) compared with those taken before planting. Including a N mineralization estimate with soil N further improved the prediction of an economically optimum N rate for corn. However, this improvement was insufficient to recommend use of these soil tests alone to improve N management.

Farmers need reliable and accurate tools to help make N management decisions to produce an economically profitable crop while minimizing potential negative environmental effects. Therefore, identifying tools they can use toward this end will continue to be a research priority.



South Dakota Extension Soil Fertility Specialist Jason Clark evaluating corn growth in the fertilizer-nitrogen rate project. Photo by Sadie Vander Wal.

**Adapted from** Clark, J.D., Fernández, F.G., Veum, K.S., Camberato, J.J., Carter, P.R., Ferguson, ... & Shanahan, J.F. (2020). Soil-nitrogen, potentially mineralizable-nitrogen, and field condition information marginally improves corn nitrogen management. *Agronomy Journal*, 112. <https://doi.org/10.1002/agj2.20335>

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## NATURAL SCIENCES EDUCATION

## Classroom Wildlife Research Expands Undergraduate Student Skills

Course-based undergraduate research experiences (CUREs) are becoming more common at colleges and universities. They provide students the opportunities to expand their skill sets, work collaboratively with their classmates, and learn by doing through a research project in the classroom.

In an article recently published in *Natural Sciences Education*, researchers report on a CURE that was created and applied in a wildlife management course at a university in South Texas. Research projects focused on birds, and students were quizzed on bird identification and were asked about their feelings towards their science skills and bird ecology and research.

The researchers found that students improved in their bird identification by 18% on average; however, there was no change in their interest in bird ecology. A majority of the students felt that the course experience helped improve their bird identification and research-related skills, yet barriers to these experiences continue to exist in the form of student engagement.

With the need for future wildlife professionals to have hands-on learning experiences, CUREs provide an opportunity where all students



Janel Ortiz (right) assisting an educator (left) in locating and identifying a bird. Photo by Angelica Arredondo.

can participate. Integrating a research experience into the classroom exposes students to research and develops skills to make them more marketable for future careers or graduate school positions.

**Adapted from** Ortiz, J.L., Conkey, A.A.T., Brennan, L.A., Fedynich, L., & Green, M. (2020). Incorporating research into the undergraduate wildlife management curriculum. *Natural Sciences Education*, 49, e20028. <https://doi.org/10.1002/nse2.20028>

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