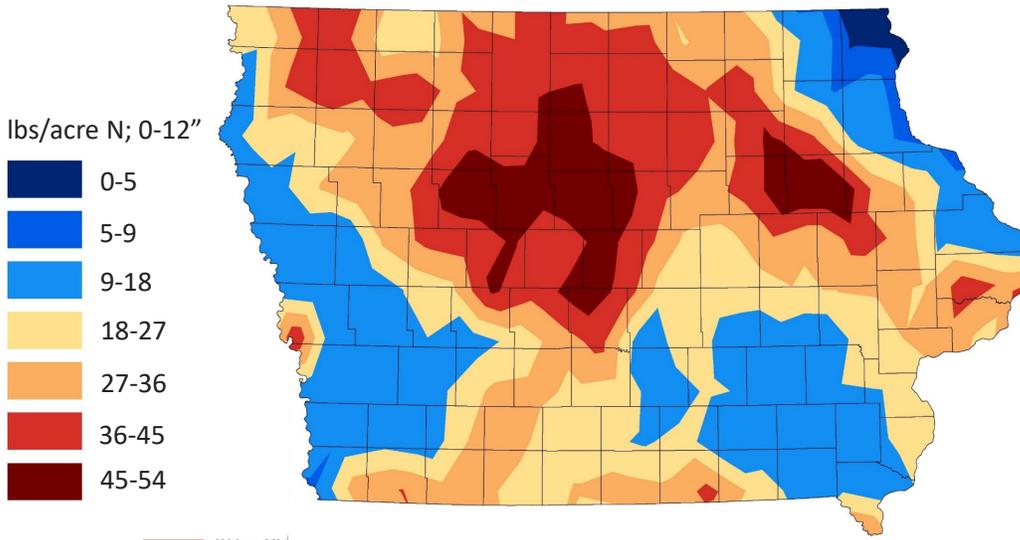


Soil Nitrate, September 2021



**The soil retains more nitrogen (N) during a drought.**

Iowa State University (ISU) predictive models indicate in 2021, many areas of Iowa have more N than an average fall.

ISU predicted soil nitrate levels as of September 2021, courtesy of Dr. Sotirios Archontoulis, Associate Professor of Agronomy, ISU.

Updates available at <https://crops.extension.iastate.edu/facts/news>.

A little more than half a pound of N is removed in each bushel of corn harvested.

**“For a farmer that applies 200 pounds of nitrogen an acre and has 200 bushels per acre corn yield, in this example, there could be nearly 100 pounds of nitrogen still residing in the soil.”**

**Michael Castellano**  
ISU professor of agronomy

### NITROGEN MANAGEMENT RECOMMENDATIONS

Fall N application decisions impact farmers’ profitability and the environment.

- Verify soil nitrate levels with a soil test before fall applications
- All fall N applications should have a nitrification inhibitor
- Take advantage of residual soil nitrate and consider split applications
- Plant a cover crop, which can easily retain more than 25 lbs. of N an acre<sup>1</sup>



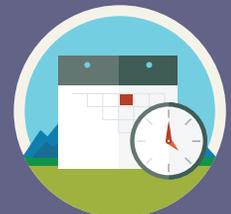
RIGHT RATE



RIGHT PLACE



RIGHT SOURCE



RIGHT TIME

### WHY ARE EXPERTS SOUNDING THE ALARM?

The 2012 drought was followed by a wetter-than-usual spring in 2013, resulting in nearly a 300% increase in the nitrate load to the Gulf of Mexico and flow-weighted N concentrations in Iowa watersheds increased by more than 80%.

**4R Plus encourages farmers to work with their ag retailer, CCA and/or agronomist to determine fall fertilizer needs and cover crop recommendations to protect profitability and Iowa’s water quality.**

1. Martinez-Feria, R. A., Dietzel, R., Liebman, M., Helmers, M. J., & Archontoulis, S. V. (2016). Rye cover crop effects on maize: A system-level analysis. *Field Crops Research*, 196, 145-159.

