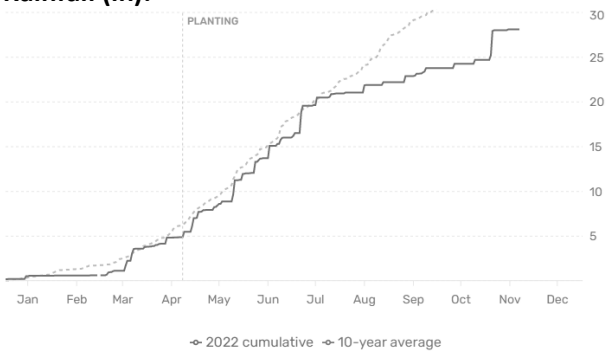
Impact of CENTURO® Inhibitor with Fall Anhydrous Ammonia Application

Study ID: 0416147202203
County: Richardson
Soil Type: Monona silt loam 1-6% slopes; Pohocco silt loam 6-11% slopes, eroded
Planting Date: 4/22/22
Harvest Date: 9/26/22
Seeding Rate: 32,000
Row Spacing (in): 30
Hybrid: Pioneer® P1185AM™
Reps: 4
Previous Crop: Soybean
Tillage: Strip-till
Herbicides: ***Pre:*** 0.825 oz/ac Basis® Blend, 1.4 pt/ac atrazine 4L, 16 oz/ac dicamba ***Post:*** 2.2 qt/ac Keystone® NXT, 24 oz/ac glyphosate, 5.33 oz/ac mesotrione

Foliar Fungicides: 7 oz/ac Veltyma® on 7/13/22
Fertilizer: 175 lb N/ac as anhydrous ammonia on 11/23/21; variable-rate 11-52-0 averaging 32 lb/ac; variable-rate gypsum averaging 124 lb/ac; variable-rate 0-0-60 averaging 124 lb/ac
Irrigation: None
Rainfall (in):



Introduction: CENTURO®, by Koch™ Agronomic Services LLC, contains a product with known efficacy for inhibiting nitrification (product information is provided below). The chemical compound pronitridine in CENTURO® temporarily inhibits populations of the bacteria that convert ammonium to nitrite (*Nitrosomonas*) and nitrite to nitrate (*Nitrobacter*). These compounds protect against both denitrification and leaching by retaining fertilizer N in the ammonium form. Ammonium (NH_4+) is a positively charged ion (cation) that can be held on negatively charged exchange sites in soils (such as in clays and organic matter). In comparison, nitrate (NO_3-), which is negatively charged, can leach through the root zone with rain in well drained soils or be converted to N_2O) or N_2 gases in anaerobic conditions. You can learn more about nitrogen inhibitors at http://cropwatch.unl.edu/2019/nitrogen-inhibitors-improved-fertilizer-use-efficiency.

CENTURO

Active Ingredients:	
Pronitridine (CAS RN 1373256-33-7)	14%
Other ingredients:	86%
Total:	100%

Contains 1.495 pounds of active ingredient per gallon

Product information from: https://kochagronomicservices.com/Solutions/agricultural-nutrient-efficiency/CENTURO/Documents/CENTURO-Specimen-Label.pdf?action=view

The purpose of this study was to evaluate the impact of CENTURO® applied with anhydrous ammonia on crop yield. Anhydrous ammonia was applied at a rate of 175 lb N/ac on November 23, 2021, at 7" depth with strip-till, following a previous crop of soybeans. The study compared no CENTURO® (check) to CENTURO® applied at 5 gal/ton of anhydrous ammonia (recommended rate). The field received variable-rate 11-52-0 fertilizer in the spring, and N contribution from the 11-52-0 in the plot area averaged 4 lb N/ac. The field was planted on April 22, 2022, with corn rows directly on the anhydrous band.

Results:

	Yield (bu/ac)†	Marginal Net Return‡ ($/ac)
Check	243 A*	1,595 A
CENTURO®	242 A	1,578 B
P-Value	0.323	0.074

*Values with the same letter are not significantly different at a 90% confidence level.
†Yield values are from cleaned yield monitor data. Bushels per acre corrected to 15.5% moisture.
‡Marginal net return based on $6.57/bu corn and $10.10/ac for CENTURO®.

Summary:

- Yield was the same for the CENTURO® and check treatments.
- Net return was $18/ac lower for the CENTURO® treatment compared to the check.