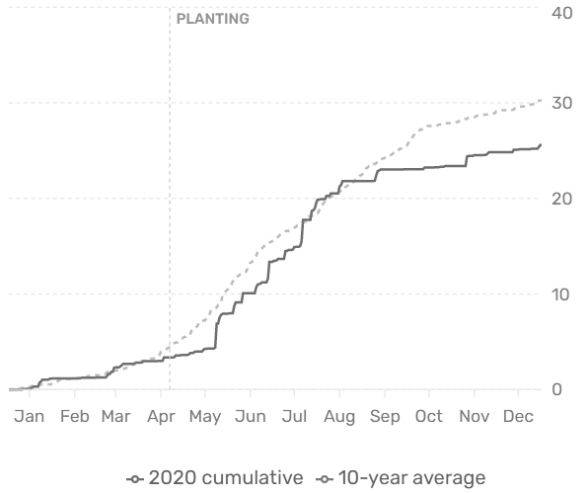
Impact of Instinct® II Inhibitor with UAN Applications

Study ID: 0620059202001
County: Fillmore
Soil Type: Butler silt loam 0-1% slope; Crete silt loam 0-1% slope
Planting Date: 4/21/20
Harvest Date: 9/30/20
Seeding Rate: 33,000
Row Spacing (in): 30
Hybrid: Mycogen® 12G38 RA
Reps: 11
Previous Crop: Corn
Tillage: Ridge-Till
Herbicides: ***Pre:*** 1 qt/ac atrazine and 1 qt/ac TripleFLEX® on 4/9/20 ***Post:*** 1 pt/ac atrazine and 3.6 pts/ac Halex® GT on 6/4/20
Seed Treatment: None
Foliar Insecticides: None
Foliar Fungicides: 8 oz/ac Delaro® on 8/11/20
Irrigation: Pivot, Total: 4.5"
Rainfall (in):



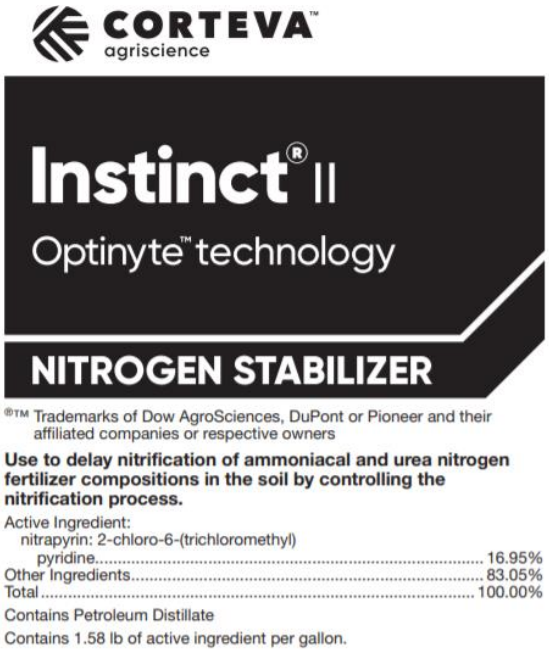
Introduction: The goal of this study was to evaluate Instinct® II nitrification inhibitor applied with UAN to increase nitrogen availability and decrease nitrogen loss to the environment.

Check: 115 lbs/ac N applied as 32% UAN on April 1, 2020.

Instinct® II: 115 lb/ac N applied as 32% UAN with 32 oz/ac Instinct® II. Instinct® II is a nitrapyrin inhibitor by Corteva Agriscience™ with known efficacy in inhibiting nitrification.

Both treatments also received 70 lb/ac N applied as 32% UAN on June 10, 2020, with no inhibitor.

Soil samples were taken for ammonium-N and nitrate-N. The first set of samples was taken on May 11, 2020, to a 1' depth. A second set of soil samples was taken on June 8, 2020, a 1', 2', and 3' sample depths. Samples were collected from within the fertilizer band. Ear leaf tissue samples were collected at VT on July 13, 2020, and analyzed for N%. Stand count, yield, and net return were evaluated.



roduct information from: https://s3-us-west-.amazonaws.com/agrian-cg-fs1-roduction/pdfs/Instinct_II_Label1i.pdf

Results:

	May 11 Soil Sample			June 8 Soil Sample								
	1’			1’			2’			3’		
	NH_4-N	NO_3-N	Total	NH_4-N	NO_3-N	Total	NH_4-N	NO_3-N	Total	NH_4-N	NO_3-N	Total
	lb/ac											
Check	66.8 A*	159.3 A	226.0 A	22.5 A	165.3 A	187.8 A	32.8 A	62.0 A	94.8 A	22.3 A	72.8 A	95.0 A
Instinct® II	10.5 B	53.5 B	63.9 B	20.0 A	61.5 B	81.5 A	12.8 A	15.8 B	28.5 B	15.5 A	15.8 B	31.3 B
P-Value	0.038	0.016	0.010	0.873	0.065	0.117	0.241	0.042	0.083	0.296	0.016	0.032

*Values with the same letter are not significantly different at a 90% confidence level.

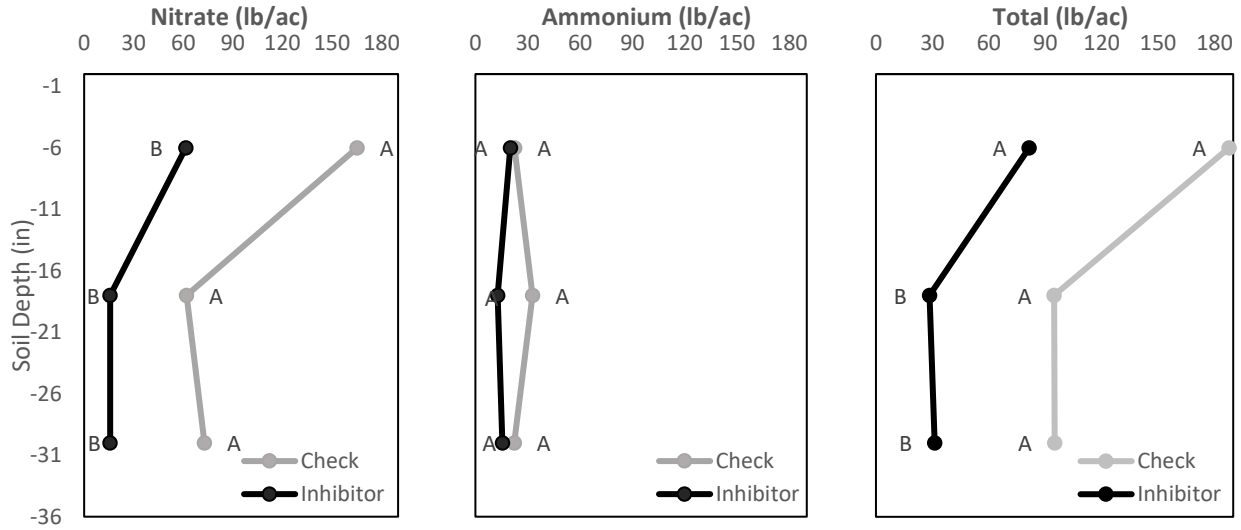


Figure 1. June 8 soil samples at 1’, 2’, and 3’ depths for ammonium (lb/ac), nitrate (lb/ac), and total N (lb/ac) for the check and inhibitor products.

	Stand Count (plants/ac)	VT Foliar N (%)†	Moisture (%)	Yield (bu/ac)††	Marginal Net Return‡ ($/ac)
Check	33,214 A*	3.22 A	19.0 A	213 A	746.24 A
Instinct® II	32,500 A	3.21 A	19.0 A	213 A	739.43 A
P-Value	0.211	0.923	0.530	0.679	0.259

*Values with the same letter are not significantly different at a 90% confidence level.
†Midwest Laboratories sufficient level for in tissue sample is 3.4; Ward Laboratories sufficiency level is 2.71.
††Yield values are from cleaned yield monitor data. Bushels per acre corrected to 15.5% moisture.
‡Marginal net return based on $3.51/bu corn and $9.23/ac for Instinct® II.

Summary:

- The use of the Instinct® II resulted in less soil nitrate and ammonium at the May 11 sampling date. At the June 8 sampling date, Instinct® II resulted in less nitrate at the 1', 2', and 3' depth. There was no difference in ammonium between the two treatments.
- There were no differences in stand count, foliar nitrogen, moisture, yield, or net return between the check and the treatment with Instinct® II.

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Sponsored by: University of Nebraska Lincoln

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