

RESEARCH FOR RESULTS



University of Illinois Nitrogen Trials 2017-03 Nutrient Use Efficiency

OVERVIEW: This document features results from the 2017 University of Illinois Nitrogen Management Study. The SoilBiotics treatment was either a preplant applied **4 - Ultra Boost** treated urea compared to other products and a control, or a sidedress applied UAN plus **3 - Growth Boost** vs. other products and a control.

LOCATIONS: University of Illinois Crop Sciences Research and Education Center, Champaign, IL. (**CU**)
University of Illinois Crop Physiology Laboratory Research Plots, Harrisburg, IL (**HA**)

HYBRID: Croplan 6640 VT Triple PRO. Previous crop: Soybeans.

PLANTING DATE: (**CU**) 5/30/17 (**HA**) 5/9/17

HARVEST DATE: Various

POPULATION: 34,000 plants/acre. Plots were arranged using an RCBD with six replications.

ROWS: 30"

PLOT SIZE: 37.5 ft long by 4 rows wide

SOIL TYPE: Silty clay loam

SOIL %OM, CEC and pH: (**CU**) OM 4.1% - CEC 32.0 - pH 5.2; (**HA**) OM 2.2% - CEC 12.0 – pH 7.2

SOIL P and K LEVELS: (**CU**) P = 33 ppm - K = 236 ppm; (**HA**) P = 26 ppm – K = 120ppm.
Both sites (Melich 3 extraction)

TILLAGE: Conventional: Fall Chisel Plow & Spring Field Cultivator (2 passes)

WEED TREATMENT: Preplant: Harness Extra, Postemergence: Roundup, Status (BASF), AMS (**CU**).
Preplant: Lumax EZ, Postemergence: Armezon, Roundup, AMS (**HA**).

FERTILIZER: Both locations, 140 lbs of N (**No Applied N = Control**),

TREATMENTS: Nutrisphere: 2qt/ton urea
Agrotain: 3qt/ton urea
4 - Ultra Boost: 1 gal per ton urea (preplant broadcast)
3 - Growth Boost 2qt/acre 50/50 Split N treatment (UAN Y-drop)
Hydra-Hume: 10 lbs per 60lbs of N from urea

This section features some of the results for Nutrient Use Efficiency (yield efficiency, recovery efficiency, and physiological efficiency).

Treatment	Yield Efficiency bu lb ⁻¹	Recovery Efficiency %	Physiological Efficiency bu lb ⁻¹
Champaign			
Upfront N (Urea)	0.51	53	0.99
+ Agrotain	0.52	60	0.97
+ Nutrisphere	0.46	48	0.95
+ Hydra-Hume	0.44	49	1.10
+ Ultra Boost	0.56	57	0.99
Harrisburg			
50/50 Split N			
UAN Broadcasted	0.37	43	0.96
UAN Y-dropped	0.38	38	1.06
+ Agrotain	0.39	47	0.90
+ Nutrisphere	0.40	46	0.96
+ Hydra-Hume	0.39	41	1.07
+ Growth Boost	0.42	44	1.18

Summary: **4 - Ultra Boost** treated urea applied as upfront N in Champaign had highest Yield Efficiency and **3 - Growth Boost** treated UAN applied as 50/50 Split N with urea treatment in Harrisburg had highest Yield Efficiency and Physiological Efficiency versus other treatments.