

### Spring wheat response to liquid nitrogen, Carrington, 2008.

(Greg Endres and Dave Franzen)

The objective of this study was to examine spring wheat performance with several sources and application timings of liquid nitrogen (N), to provide additional information to a database to revise NDSU wheat N recommendations. Experimental design was a randomized complete block with four replications. The field study was conducted at the NDSU Carrington Research Extension Center on a Heimdahl-Emrich loam soil. Spring soil analysis indicated 3.6% organic matter, 7.2 pH, 61 lb/acre nitrate-N and 23 ppm phosphorus. Illinois Soil N Test levels were 344 ppm at 0-6 inch depth and 226 ppm at 6-12 inch depth. Urea-ammonium nitrate (UAN) or Nitramin N Fusion (NNF = Georgia-Pacific 25.3-0-0 urea-polymer) plus water were applied preplant (PP) using stream nozzles on April 23. Rainfall totaling 0.23 inches was received during April 24 to May 10 (NDAWN). 'Glenn' HRS wheat was direct-seeded at 1.6 million seeds/acre in previous wheat ground on April 30. The trial was harvested with a plot combine on August 19.

Plant lodging was not present in trial. Plant height with the untreated check generally was shorter compared to N treatments (Table). Seed yield increased with N compared to the untreated check. Seed yield reached 59.4 bu/acre with UAN at 90 lb N/acre and 58.2 bu/acre with NNF at 120 lb N/acre. Test weight and kernel size generally were less than the untreated check with N at 120 or 150 lb/acre. Protein increased with N at 90 lb/acre or higher compared to the untreated check. Wheat response to NNF was generally similar to UAN.

Nitrogen		Plant height	Wheat			
Rate	Source		Seed yield	Test weight	Kernel weight	Protein
lb N/acre		cm	bu/acre	lb/bu	g/250	%
untreated check		85	44.3	64.5	8.20	12.7
30	UAN	92	52.1	64.5	8.19	13.1
60	UAN	89	54.5	63.9	7.94	13.2
90	UAN	94	59.4	63.8	7.92	14.8
120	UAN	96	58.6	63.3	7.68	15.4
150	UAN	94	58.7	63.1	7.70	15.8
30	Nitramin N Fusion	88	50.5	64.3	8.11	13.2
60	Nitramin N Fusion	90	53.3	64.2	8.08	13.3
90	Nitramin N Fusion	94	57.9	64.1	8.19	14.5
120	Nitramin N Fusion	94	58.2	63.3	7.89	15.1
150	Nitramin N Fusion	93	54.7	63.1	7.70	15.3
mean		92	54.8	63.8	8.00	14.2
C.V. (%)		3.9	6.3	0.7	3.0	4.7
LSD (0.05)		5	5.0	0.7	0.35	1.0