Effects of Nitrogen Fertility Levels on Grain Yield and Protein Content of "High Protein" Spring Wheat Varieties at Minot

Variety	N Fertility Level	Days to Head	NDVI	Plant Height	Lodging	Test Weight	Grain Protein	Grain Yield
	lbs/A[1]	DAP[2]	0-1	inches	0-9[3]	lbs/bu	%	bu/A
Bolles	50	58	0.65	33	0	58.9	14.9	52.0
Bolles	75	58	0.66	32	0	53.5	16.0	51.1
Bolles	100	58	0.68	33	0	57.7	16.8	58.2
Bolles	125	57	0.66	33	0	57.0	16.9	58.5
WB Vantage	50	59	0.58	32	0	57.8	15.4	48.1
WB Vantage	75	59	0.59	31	0	58.2	16.2	47.2
WB Vantage	100	57	0.59	32	0	58.1	16.2	52.0
WB Vantage	125	57	0.59	30	0	57.6	16.5	42.9
ND901CL+	50	56	0.60	35	0	58.2	16.1	54.4
ND901CL+	75	55	0.62	36	0	55.9	16.0	60.9
ND901CL+	100	56	0.61	35	0	57.5	16.4	52.9
ND901CL+	125	56	0.61	35	0	56.5	16.0	52.5
Glenn	50	52	0.55	33	0	60.9	14.8	54.9
Glenn	75	53	0.58	35	0	60.7	14.6	52.9
Glenn	100	53	0.61	34	0	60.2	15.2	62.3
Glenn	125	53	0.60	34	0	60.1	15.7	56.0
SY Soren	50	54	0.58	28	0	60.4	14.8	51.9
SY Soren	75	54	0.57	29	0	60.3	15.1	58.8
SY Soren	100	54	0.64	28	0	60.2	15.1	58.7
SY Soren	125	56	0.62	30	0	59.9	15.5	59.3
Prosper	50	55	0.63	33	0	58.9	13.6	62.5
Prosper	75	57	0.61	33	0	58.7	13.7	57.6
Prosper	100	57	0.67	33	0	59.3	13.6	66.7
Prosper	125	57	0.66	34	0	59.1	13.7	64.5
C.V.%		1.4	4.8	3.8	0	1.9	4.0	8.1
LSD 5%		1	0.05	2	NS	1.8	1.0	7.4

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Effects of Nitrogen Fertility Levels on Grain Yield and Protein Content of "High Protein" Spring Wheat Varieties at Minot Continued

Combined Means—N Fertility Levels

N Fertility Level	Days to Head	NDVI	Plant Height	Lodging	Test Weight	Grain Protein	Grain Yield
lbs/A[1]	DAP[2]	0-1	inches	0-9[3]	lbs/bu	%	bu/A
50	56	0.60	32	0	59.2	14.9	54.0
75	56	0.60	32	0	57.9	15.3	54.7
100	56	0.63	32	0	58.8	15.5	58.5
125	60	0.62	32	0	58.4	15.7	55.6
LSD 5%	NS	NS	NS	NS	NS	0.7	NS

[1] Soil N: Total lbs/A residual N (22 lbs) + applied N (urea) applied mid-row at planting.

[2] DAP = Days after planting.

[3] Lodging: 0 = none, 9 = lying flat on the ground.

NS = no statistical difference between fertility levels.

Planting Date: May 6 *Planting Rate: 1.25 million PLS/A*

Harvest Date: August 17

Tillage: No-till *Previous Crop: Soybean*

Soil Type: Williams Loam

Summary: The main objective of the trial was to limit nitrogen fertilizer inputs to spring wheat varieties that are known to produce high levels of grain protein while maintaining yields with acceptable protein levels. "High protein" varieties Bolles, WB Vantage and ND901CL+ were compared with popular varieties Glenn, SY Soren and Prosper under similar nitrogen fertility levels. As would be expected, NDVI levels (leaf greenest) and protein levels tended to increase with increasing levels of nitrogen, however, lodging and grain yields had no response. Nitrogen release from soybean residue was not taken into account and may explain the lack of yield response in this trial.