

FIELD EXPERIMENT HISTORY

Title: Using SuperU for split-applications of N

Experiment: 12Fertilizer **Trial ID:** 5952 **Year:** 2015
Personnel: Joe Lauer, Thierno Diallo, Kent Kohn
Location: Arlington, WI **County:** Columbia
Supported By: HATCH, WI Fertilizer Research Council, CSCAP

Site Information

Field: ARS397 **Previous Crop:** Soybean **Soil Type:** Silt Loam
Soil Test: Date: 11/16/15 **pH:** 6.0 **OM (%)** 2.9 **P (ppm)** 26 **K (ppm)** 84

Plot Management

Tillage Operations: No-Till

Fertilizer:		<u>Analysis</u>	<u>Rate</u>	<u>Date</u>	
	Preplant	N/A	N/A	N/A	
	Starter	N/A	N/A	N/A	
	Post plant	See factors	See factors	See factors	
	Manure:	N/A	N/A	N/A	
Herbicide:	Dual II Magnum	24 oz/A	5/28/15		Insecticide: N/A
	Hornet	4 oz/A	5/28/15		
	Laudis	3 oz/A	6/10/15		Hybrid: Pioneer P 9910 AM1 (RR)
	Roundup PMax	24 oz/A	6/10/15		Dekalb DKC48-12 (SS)
Irrigation:	None				
Planting Date:	5/19/15	Planting Depth:	1.5"	Row Width:	30"
Target Plant Density:	35000 plants per acre	Planting Method:	RTK, JD1700		
Harvest Date:	10/30/15	Harvest Method:	MF 8XP Combine		

Notes:

Experimental Design RCB

Plot Size Seeded: 10' x 25'	Replications: 4
Harvest Plot Size: 5' x 21'	Experiment Size: 1.2 A
	Harvest Plant Density: 34378 plants per acre

Factors/Treatments:

<u>Hybrid:</u>	<u>N rate (lb N/A):</u>	<u>N fertilizer (%)</u>	
		Urea	Agrotain
1) RR (Plant only at ARL)	1) 130	1) 0	0
2) SS (Plant at all locations)	2) 160	2) 100	0
	3) 190	3) 75	25
		4) 50	50
		5) 25	75
		6) 0	100

Results: Table 1512-01 & 1512-02

**Table 1512 - 01. Nitrogen Use Efficiency in Wisconsin soils.
Arlington, 2015**

Hybrid	Nitrogen Rate lb/A	SuperU:Urea Ratio %	Grain yield bu/A	Grain moisture %	Test weight lb/bu	Harvest density plants/A	*AGI \$3.67 \$/A	Dry matter yield				Crude Protein		
								Stover T/A	Cob T/A	Grain T/A	Total T/A	Stover %	Cob %	Grain %
DKC48-12 (SS)			243	22.48	54.22	32923	802	3.00	0.60	5.59	9.20	3.86	2.06	8.01
P 9910 (RR)			232	21.83	55.68	32709	770	2.90	0.69	5.66	9.25	3.83	2.06	7.86
	0	(130)	197	22.63	54.41	33215	650	2.38	0.48	4.42	7.28	3.50	2.06	7.56
	0	(160)	191	22.13	54.39	32522	631	2.58	0.55	4.60	7.73	3.49	2.06	7.33
	0	(190)	200	22.52	54.47	32126	658	2.52	0.52	4.57	7.61	3.63	2.06	7.75
	130	0_100	238	22.33	54.54	33066	785	3.10	0.66	5.74	9.50	4.15	2.06	8.14
	130	100_0	238	21.58	55.24	33264	790	3.24	0.69	6.05	9.97	3.73	2.06	8.08
	130	25_75	247	21.65	55.18	32472	818	3.00	0.67	5.91	9.59	3.60	2.06	8.05
	130	50_50	245	22.27	55.24	33908	809	3.33	0.72	6.28	10.33	3.96	2.06	7.97
	130	75_25	242	22.05	55.46	32967	801	2.76	0.62	5.58	8.96	3.61	2.06	7.68
	160	0_100	246	22.30	55.57	33809	812	3.23	0.73	6.26	10.22	3.94	2.06	8.35
	160	100_0	242	22.03	55.10	31928	799	3.11	0.68	5.79	9.58	3.84	2.06	8.10
	160	25_75	253	22.15	55.19	32967	837	2.66	0.61	5.44	8.71	4.14	2.06	7.83
	160	50_50	247	22.44	55.26	33066	816	2.95	0.67	5.80	9.42	3.87	2.06	8.01
	160	75_25	245	22.15	54.50	32126	811	2.58	0.57	5.01	8.16	3.84	2.06	7.72
	190	0_100	258	22.15	54.33	33611	854	3.40	0.77	6.55	10.73	3.92	2.06	8.40
	190	100_0	236	21.99	54.73	32423	781	3.04	0.66	5.61	9.31	3.72	2.06	8.06
	190	25_75	254	22.03	55.15	32324	840	3.02	0.69	6.01	9.72	4.09	2.06	7.29
	190	50_50	254	22.25	55.01	32472	838	3.23	0.72	5.95	9.90	4.17	2.06	8.27
	190	75_25	246	22.08	55.31	32423	815	2.97	0.67	5.70	9.34	4.03	2.06	8.24
DKC48-12 (SS)	0	(130)	210	23.35	53.42	33957	690	2.53	0.48	4.55	7.56	3.57	2.06	7.63
DKC48-12 (SS)	0	(160)	188	23.04	52.98	32472	618	2.32	0.50	4.51	7.33	3.33	2.06	7.49
DKC48-12 (SS)	0	(190)	198	23.19	53.71	30888	649	2.26	0.43	4.17	6.86	3.37	2.06	7.76
DKC48-12 (SS)	130	0_100	250	22.67	53.75	33462	823	3.25	0.58	5.46	9.28	4.14	2.06	8.29
DKC48-12 (SS)	130	100_0	247	21.81	55.31	33363	817	3.50	0.69	6.36	10.55	3.77	2.06	8.27
DKC48-12 (SS)	130	25_75	250	22.11	53.95	34254	827	3.17	0.69	6.30	10.16	3.62	2.06	8.16
DKC48-12 (SS)	130	50_50	245	22.51	54.44	33561	809	3.18	0.63	5.84	9.64	4.05	2.06	8.16
DKC48-12 (SS)	130	75_25	246	22.32	54.39	32373	814	2.87	0.63	5.76	9.26	3.61	2.06	7.65
DKC48-12 (SS)	160	0_100	251	22.35	56.06	34749	828	3.19	0.65	5.95	9.78	3.75	2.06	8.39
DKC48-12 (SS)	160	100_0	255	22.04	54.72	31482	844	2.90	0.57	5.23	8.70	3.71	2.06	8.11
DKC48-12 (SS)	160	25_75	254	22.53	54.28	33462	837	2.63	0.54	5.18	8.35	4.10	2.06	7.88
DKC48-12 (SS)	160	50_50	255	22.66	54.43	33858	841	2.95	0.61	5.67	9.23	4.03	2.06	8.29
DKC48-12 (SS)	160	75_25	248	22.41	54.16	32670	818	2.69	0.54	5.09	8.31	4.04	2.06	8.02
DKC48-12 (SS)	190	0_100	262	22.40	52.72	33363	864	3.78	0.77	6.84	11.38	3.93	2.06	8.52
DKC48-12 (SS)	190	100_0	244	22.14	54.04	32373	808	3.11	0.63	5.82	9.56	3.70	2.06	8.04
DKC48-12 (SS)	190	25_75	260	22.40	54.27	32373	859	3.11	0.66	5.96	9.73	4.30	2.06	6.52
DKC48-12 (SS)	190	50_50	260	22.44	54.58	31581	857	3.46	0.66	6.13	10.24	4.36	2.06	8.69
DKC48-12 (SS)	190	75_25	250	22.18	54.77	32373	827	3.12	0.64	5.86	9.62	4.19	2.06	8.35

continue

Table 1512 - 01. Nitrogen Use Efficiency in Wisconsin soils.**(continued) Arlington, 2015**

Hybrid	Nitrogen Rate lb/A	SuperU:Urea Ratio %	Grain yield bu/A	Grain moisture %	Test weight lb/bu	Harvest density plants/A	*AGI \$3.67 \$/A	Dry matter yield				Crude Protein		
								Stover T/A	Cob T/A	Grain T/A	Total T/A	Stover %	Cob %	Grain %
P 9910 (RR)	0	(130)	184	21.92	55.40	32472	609	2.24	0.47	4.30	7.01	3.43	2.06	7.49
P 9910 (RR)	0	(160)	194	21.21	55.80	32571	644	2.84	0.60	4.68	8.13	3.65	2.06	7.16
P 9910 (RR)	0	(190)	202	21.85	55.23	33363	667	2.77	0.61	4.97	8.36	3.89	2.06	7.73
P 9910 (RR)	130	0_100	226	21.99	55.33	32670	747	2.95	0.74	6.03	9.72	4.15	2.06	8.00
P 9910 (RR)	130	100_0	229	21.34	55.17	33165	762	2.97	0.68	5.74	9.39	3.70	2.06	7.89
P 9910 (RR)	130	25_75	244	21.19	56.40	30690	810	2.84	0.64	5.52	9.01	3.58	2.06	7.94
P 9910 (RR)	130	50_50	244	22.03	56.03	34254	808	3.49	0.81	6.72	11.02	3.87	2.06	7.78
P 9910 (RR)	130	75_25	238	21.78	56.52	33561	789	2.64	0.62	5.39	8.65	3.62	2.06	7.70
P 9910 (RR)	160	0_100	241	22.25	55.08	32868	795	3.27	0.82	6.57	10.66	4.14	2.06	8.31
P 9910 (RR)	160	100_0	228	22.02	55.48	32373	755	3.32	0.78	6.35	10.45	3.96	2.06	8.09
P 9910 (RR)	160	25_75	253	21.76	56.09	32472	837	2.70	0.67	5.69	9.06	4.19	2.06	7.78
P 9910 (RR)	160	50_50	239	22.21	56.10	32274	791	2.95	0.73	5.93	9.61	3.70	2.06	7.73
P 9910 (RR)	160	75_25	243	21.88	54.83	31581	804	2.47	0.59	4.94	8.00	3.64	2.06	7.43
P 9910 (RR)	190	0_100	255	21.90	55.93	33858	844	3.03	0.78	6.26	10.07	3.91	2.06	8.27
P 9910 (RR)	190	100_0	228	21.83	55.42	32472	754	2.97	0.69	5.40	9.05	3.75	2.06	8.08
P 9910 (RR)	190	25_75	248	21.67	56.03	32274	822	2.93	0.73	6.05	9.71	3.88	2.06	8.07
P 9910 (RR)	190	50_50	248	22.05	55.44	33363	820	3.01	0.78	5.77	9.56	3.97	2.06	7.86
P 9910 (RR)	190	75_25	242	21.98	55.85	32472	802	2.82	0.70	5.54	9.06	3.86	2.06	8.13
Mean			238	22.15	54.95	32816	786	2.95	0.65	5.63	9.22	3.85	2.06	7.93
Probability(%)														
Hybrid (H)			10.6	4.3	7.4	57.5	11.6	31.7	2.8	76.9	86.5	62.1	23.5	34.9
N_Treatment (T)			0.0	2.4	44.2	83.0	0.0	0.0	0.0	0.0	0.0	0.6	49.5	27.4
H x T			43.2	9.5	10.2	48.4	36.0	35.6	60.1	37.5	39.9	55.6	54.2	82.8
LSD(0.10)														
Hybrid (H)			NS	0.45	1.27	NS	NS	NS	0.05	NS	NS	NS	NS	NS
N_Treatment (T)			11	0.45	NS	NS	36	0.40	0.10	0.65	1.09	0.35	NS	NS
H x T			NS	0.66	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

*AGI: Adjusted Gross Income.

Table 1512 - 02. Nitrogen Use Efficiency in Wisconsin soils.

Arlington, 2015

Hybrid	N Rate lb/A	SuperU:Urea Ratio %	Grain yield bu/A	Nitrogen content			Nitrogen uptake				harvest index	Nitrogen recovery efficiency lb/lb	Grain Internal efficiency	Nitrogen Harvest Index	Physiological efficiency	Nitrogen use efficiency lb/A	Agronomic efficiency T/lb	Agronomic efficiency bu/lb
				Stover %	Cob %	Grain %	Stover lb/A	Cob lb/A	Grain lb/A	Total lb/A								
DKC48-12 (SS)			236	0.62	0.33	1.30	37.52	3.98	146.4	188.1	0.61	0.29	1.27	0.78	0.73	0.38	0.0089	0.3312
P 9910 (RR)			239	0.61	0.33	1.26	35.96	4.55	143.2	183.7	0.61	0.25	1.31	0.78	0.83	0.29	0.0081	0.3052
	0	(130)	187	0.56	0.33	1.21	26.92	3.14	107.2	137.3	0.61	--	1.37	0.78	--	--	--	--
	0	(160)	194	0.56	0.33	1.17	29.36	3.64	108.9	141.9	0.59	--	1.39	0.77	--	--	--	--
	0	(190)	193	0.58	0.33	1.24	30.17	3.40	114.8	148.3	0.60	--	1.33	0.78	--	--	--	--
	130	0_100	243	0.66	0.33	1.30	41.80	4.34	149.5	195.6	0.61	0.32	1.25	0.77	0.76	0.45	0.0101	0.3108
	130	100_0	256	0.60	0.33	1.29	39.10	4.53	157.4	201.0	0.61	0.39	1.28	0.78	0.77	0.49	0.0125	0.3143
	130	25_75	250	0.58	0.33	1.29	34.69	4.42	152.3	191.4	0.62	0.35	1.31	0.80	0.83	0.42	0.0114	0.3810
	130	50_50	265	0.63	0.33	1.28	42.20	4.70	160.1	207.0	0.61	0.41	1.28	0.77	0.75	0.54	0.0143	0.3652
	130	75_25	236	0.58	0.33	1.23	32.27	4.12	138.2	174.6	0.62	0.24	1.37	0.79	0.87	0.29	0.0089	0.3459
	160	0_100	265	0.63	0.33	1.34	40.95	4.83	167.4	213.2	0.61	0.37	1.25	0.79	0.83	0.45	0.0104	0.3421
	160	100_0	245	0.61	0.33	1.30	38.38	4.46	150.2	193.1	0.61	0.26	1.27	0.78	0.82	0.32	0.0075	0.3163
	160	25_75	230	0.66	0.33	1.25	35.40	4.01	136.1	175.6	0.62	0.17	1.31	0.78	0.84	0.21	0.0053	0.3882
	160	50_50	245	0.62	0.33	1.28	36.58	4.37	149.3	190.2	0.62	0.25	1.30	0.78	0.97	0.30	0.0075	0.3509
	160	75_25	212	0.61	0.33	1.24	31.84	3.73	124.4	159.9	0.61	0.10	1.33	0.78	0.63	0.11	0.0026	0.3392
	190	0_100	277	0.63	0.33	1.34	42.70	5.09	176.1	223.9	0.61	0.32	1.24	0.79	0.85	0.40	0.0104	0.3092
	190	100_0	237	0.60	0.33	1.29	36.66	4.34	145.0	186.0	0.60	0.16	1.28	0.78	0.73	0.20	0.0055	0.1919
	190	25_75	254	0.65	0.33	1.34	40.20	4.58	160.5	206.9	0.62	0.24	1.23	0.78	0.78	0.31	0.0075	0.2865
	190	50_50	251	0.67	0.33	1.32	43.50	4.75	158.3	206.6	0.60	0.23	1.23	0.77	0.94	0.31	0.0072	0.2848
	190	75_25	241	0.64	0.33	1.32	38.64	4.36	150.9	193.9	0.61	0.19	1.25	0.78	0.30	0.24	0.0059	0.2461
DKC48-12 (SS)	0	(130)	192	0.57	0.33	1.22	29.03	3.14	110.9	143.1	0.61	--	1.35	0.78	--	--	--	--
DKC48-12 (SS)	0	(160)	191	0.53	0.33	1.20	25.08	3.29	110.6	138.9	0.61	--	1.41	0.79	--	--	--	--
DKC48-12 (SS)	0	(190)	176	0.54	0.32	1.24	24.47	2.79	103.9	131.1	0.61	--	1.35	0.79	--	--	--	--
DKC48-12 (SS)	130	0_100	231	0.66	0.33	1.33	43.93	3.80	144.6	192.3	0.59	0.26	1.21	0.76	0.74	0.38	0.0070	0.3017
DKC48-12 (SS)	130	100_0	269	0.60	0.33	1.32	42.26	4.55	168.4	215.2	0.60	0.44	1.25	0.78	0.79	0.55	0.0139	0.2801
DKC48-12 (SS)	130	25_75	266	0.58	0.33	1.31	36.79	4.59	164.5	205.8	0.62	0.41	1.30	0.80	0.87	0.48	0.0135	0.3045
DKC48-12 (SS)	130	50_50	247	0.65	0.33	1.31	40.80	4.16	152.4	197.4	0.60	0.32	1.25	0.77	0.74	0.42	0.0099	0.2691
DKC48-12 (SS)	130	75_25	243	0.58	0.33	1.22	33.24	4.16	142.3	179.7	0.62	0.24	1.37	0.79	0.98	0.28	0.0093	0.2777
DKC48-12 (SS)	160	0_100	252	0.60	0.33	1.34	38.06	4.26	159.8	202.1	0.61	0.31	1.25	0.79	0.77	0.39	0.0090	0.3932
DKC48-12 (SS)	160	100_0	221	0.59	0.33	1.30	34.39	3.76	136.0	174.1	0.60	0.16	1.28	0.78	0.75	0.22	0.0045	0.4201
DKC48-12 (SS)	160	25_75	219	0.66	0.33	1.26	34.71	3.58	130.7	168.9	0.62	0.13	1.31	0.78	0.70	0.19	0.0042	0.4105
DKC48-12 (SS)	160	50_50	240	0.65	0.33	1.33	37.97	4.03	151.3	193.3	0.61	0.25	1.25	0.78	0.71	0.34	0.0072	0.4199
DKC48-12 (SS)	160	75_25	215	0.65	0.33	1.28	34.78	3.54	130.6	169.0	0.61	0.13	1.28	0.77	0.65	0.19	0.0036	0.3741
DKC48-12 (SS)	190	0_100	289	0.63	0.33	1.36	47.67	5.06	186.4	239.1	0.60	0.43	1.21	0.78	0.77	0.57	0.0140	0.3379
DKC48-12 (SS)	190	100_0	246	0.59	0.33	1.29	37.33	4.15	150.0	191.5	0.61	0.24	1.29	0.78	0.77	0.32	0.0087	0.2458
DKC48-12 (SS)	190	25_75	252	0.69	0.33	1.40	43.83	4.33	165.1	216.4	0.61	0.32	1.16	0.76	0.17	0.45	0.0094	0.3295
DKC48-12 (SS)	190	50_50	259	0.70	0.33	1.39	48.44	4.34	171.1	223.9	0.60	0.35	1.17	0.76	0.72	0.49	0.0103	0.3266
DKC48-12 (SS)	190	75_25	248	0.67	0.32	1.34	42.54	4.11	157.6	204.3	0.61	0.28	1.23	0.77	0.77	0.38	0.0089	0.2768

continue

Table 1512 - 02. Nitrogen Use Efficiency in Wisconsin soils.**(continued) Arlington, 2015**

Hybrid	N Rate lb/A	SuperU:Urea Ratio %	Grain yield bu/A	Nitrogen content			Nitrogen uptake				harvest index	Nitrogen recovery efficiency lb/lb	Grain Internal efficiency	Nitrogen Harvest Index	Physiological efficiency	Nitrogen use efficiency lb/A	Agronomic efficiency T/lb	Agronomic efficiency bu/lb
				Stover %	Cob %	Grain %	Stover lb/A	Cob lb/A	Grain lb/A	Total lb/A								
P 9910 (RR)	0	(130)	182	0.55	0.33	1.20	24.81	3.13	103.6	131.5	0.61	--	1.39	0.79	--	--	--	--
P 9910 (RR)	0	(160)	198	0.58	0.33	1.15	33.64	3.99	107.2	144.9	0.58	--	1.36	0.74	--	--	--	--
P 9910 (RR)	0	(190)	210	0.62	0.33	1.24	35.87	4.02	125.6	165.5	0.59	--	1.31	0.76	--	--	--	--
P 9910 (RR)	130	0_100	255	0.66	0.33	1.28	39.66	4.88	154.3	198.9	0.62	0.39	1.29	0.78	0.78	0.52	0.0133	0.3199
P 9910 (RR)	130	100_0	242	0.59	0.33	1.26	35.93	4.52	146.4	186.9	0.61	0.33	1.32	0.78	0.74	0.43	0.0111	0.3486
P 9910 (RR)	130	25_75	233	0.57	0.33	1.27	32.58	4.25	140.1	176.9	0.61	0.28	1.32	0.79	0.80	0.35	0.0094	0.4576
P 9910 (RR)	130	50_50	284	0.62	0.32	1.24	43.60	5.24	167.7	216.5	0.61	0.49	1.32	0.78	0.77	0.65	0.0186	0.4613
P 9910 (RR)	130	75_25	228	0.58	0.33	1.23	31.29	4.07	134.1	169.5	0.62	0.23	1.37	0.79	0.77	0.29	0.0084	0.4141
P 9910 (RR)	160	0_100	278	0.66	0.33	1.33	43.83	5.39	175.1	224.3	0.62	0.42	1.25	0.78	0.89	0.50	0.0118	0.2910
P 9910 (RR)	160	100_0	269	0.63	0.33	1.29	42.38	5.16	164.5	212.0	0.61	0.36	1.27	0.78	0.90	0.42	0.0105	0.2125
P 9910 (RR)	160	25_75	241	0.67	0.33	1.24	36.09	4.44	141.6	182.2	0.63	0.21	1.32	0.78	0.97	0.23	0.0063	0.3658
P 9910 (RR)	160	50_50	251	0.59	0.32	1.24	35.20	4.71	147.2	187.2	0.62	0.25	1.35	0.79	1.23	0.26	0.0078	0.2819
P 9910 (RR)	160	75_25	209	0.58	0.33	1.19	28.89	3.92	118.1	150.9	0.62	0.07	1.39	0.78	0.60	0.04	0.0016	0.3043
P 9910 (RR)	190	0_100	265	0.63	0.33	1.32	37.74	5.13	165.8	208.7	0.62	0.21	1.27	0.79	0.94	0.23	0.0068	0.2805
P 9910 (RR)	190	100_0	228	0.60	0.33	1.29	35.99	4.52	140.0	180.5	0.60	0.08	1.27	0.78	0.68	0.08	0.0022	0.1379
P 9910 (RR)	190	25_75	256	0.62	0.33	1.29	36.56	4.83	155.9	197.3	0.62	0.16	1.30	0.79	1.38	0.17	0.0057	0.2435
P 9910 (RR)	190	50_50	244	0.64	0.33	1.26	38.56	5.16	145.5	189.2	0.61	0.10	1.30	0.77	1.17	0.12	0.0042	0.2430
P 9910 (RR)	190	75_25	234	0.62	0.33	1.30	34.74	4.62	144.1	183.5	0.61	0.10	1.28	0.79	-0.17	0.09	0.0030	0.2153
Mean			238	0.62	0.33	1.28	36.74	4.27	144.8	185.9	0.61	0.27	1.29	0.78	0.78	0.33	0.0085	0.3182
Probability(%)																		
Hybrid (H)			76.9	62.3	100	2.4	37.4	2.8	50.6	47.6	68.7	26.1	6.2	94.5	25.0	12.2	56.6	32.6
N_Treatment (T)			0.0	0.6	63.5	0.0	0.3	0.0	0.0	0.0	20.6	0.2	0.0	53.5	24.9	0.2	0.0	0.0
H x T			37.5	55.6	37.4	68.1	40.3	62.4	57.5	51.2	28.2	3.6	37.3	25.7	0.6	4.2	1.4	0.0
LSD(0.10)																		
Hybrid (H)			NS	NS	NS	0.02	NS	0.34	NS	NS	NS	NS	0.03	NS	NS	NS	NS	NS
N_Treatment (T)			27	0.06	NS	0.05	7.41	0.65	20.4	27.2	NS	0.13	0.06	NS	NS	0.17	0.0040	0.0610
H x T			NS	NS	NS	NS	NS	NS	NS	NS	NS	0.18	NS	NS	0.47	0.24	0.0058	0.0888

*AGI: Adjusted Gross Income.

FIELD EXPERIMENT HISTORY

Title: Using SuperU for split-applications of N

Experiment: 12Fertilizer **Trial ID:** 5822 **Year:** 2015
Personnel: Joe Lauer, Thierno Diallo, Kent Kohn,
Location: Hancock, WI **County:** Washara
Supported By: HATCH, WI Fertilizer Research Council, CSCAP

Site Information

Field: S25 **Previous Crop:** Rye **Soil Type:** Plainfield Sand
Soil Test: Date: 10/30/14 **pH:** 6.5 **OM (%)** 0.8 **P (ppm)** 104 **K (ppm)** 73

Plot Management

Tillage Operations: Disk

Fertilizer:	Preplant	Analysis	Rate	Date
		0-0-60	100 lbs/A	4 /15/15
	Starter	10-20-20-4S+2Ca+micros	200 lbs/A	5 /6 /15
	Post plant	See factors	See factors	See factors
	Manure:	N/A	N/A	N/A

Herbicide: Prowl H2O 2.0 pt/A 5/8/15 **Insecticide:** N/A
 Mad Dog plus 1.5 pt/A 6/4/15 **Hybrid:** DKC46-36RIB
 Mad Dog plus 2.0 pt/A 6/29/15

Irrigation: Yes

Planting Date: 5/6/15 **Planting Depth:** 1.5" **Row Width:** 30"

Target Plant Density: 32000 plants per acre **Planting Method:** Case IH1225

Harvest Date: 10/12/15 **Harvest Method:** MF 8 XP Combine

Notes: Total Irrigation Amount: 19.6 inches

Experimental Design RCB

Replications: 4
Plot Size Seeded: 10' x 25' **Experiment Size:** 0.5 A
Harvest Plot Size: 5' x 21" **Harvest Plant Density:** 28274 plants per acre

Factors/Treatments:

<u>N rate (lb N/A):</u>	<u>N fertilizer (%)</u>	
	Urea	Agrotain
1) 130	1) 0	0
2) 160	2) 100	0
3) 190	3) 75	25
	4) 50	50
	5) 25	75
	6) 0	100

Results: Table 1512-03 & 1512-04

Table 1512 - 03. Nitrogen Use Efficiency in Wisconsin soils.

Hancock, 2015

Nitrogen Rate lb/A	SuperU:Urea Ratio %	Grain yield bu/A	Grain moisture %	Test weight lb/bu	Harvest density plants/A	*AGI \$3.67 \$/A	Dry matter yield				Crude Protein		
							Stover T/A	Cob T/A	Grain T/A	Total T/A	Stover %	Cob %	Grain %
0	(130)	112	25.40	54.75	27522	363	1.69	0.29	2.52	4.50	3.09	2.06	5.78
0	(160)	113	25.22	53.15	28116	366	1.75	0.29	2.61	4.66	3.20	2.06	5.96
0	(190)	114	25.78	53.94	27126	368	1.53	0.29	2.37	4.20	3.17	2.06	5.69
130	0_100	127	24.54	53.27	27126	414	1.54	0.33	2.68	4.56	2.96	2.06	6.15
130	100_0	122	24.70	53.81	27423	396	1.69	0.27	2.45	4.41	2.86	2.06	5.62
130	25_75	146	24.09	52.98	27324	476	1.85	0.43	3.72	6.00	3.34	2.06	6.63
130	50_50	134	24.07	53.99	26928	439	1.83	0.31	2.62	4.77	3.03	2.06	5.69
130	75_25	140	24.86	52.62	27324	455	1.74	0.34	2.97	5.05	3.11	2.06	5.82
160	0_100	148	24.93	53.45	25839	481	1.86	0.32	2.79	4.97	3.33	2.06	5.75
160	100_0	120	24.45	53.51	27423	390	1.63	0.29	2.47	4.39	3.31	2.06	5.96
160	25_75	139	24.44	53.71	26334	452	1.96	0.38	3.27	5.60	3.32	2.06	5.95
160	50_50	132	24.14	53.47	26532	432	1.62	0.28	2.42	4.32	3.23	2.06	5.73
160	75_25	114	24.24	54.05	27126	374	1.74	0.33	2.84	4.91	3.15	2.06	5.73
190	0_100	131	23.63	53.25	25839	430	1.88	0.36	3.04	5.27	3.39	2.06	6.13
190	100_0	131	24.97	52.73	27720	425	1.75	0.33	2.80	4.88	3.18	2.06	5.91
190	25_75	158	24.08	53.00	26433	516	1.90	0.35	3.05	5.30	3.27	2.06	6.13
190	50_50	156	24.16	53.54	27225	511	2.60	0.42	3.43	6.44	3.37	2.06	6.38
190	75_25	126	24.17	53.09	26433	410	2.02	0.36	2.97	5.35	3.11	2.06	5.97
Mean		131	24.55	53.46	26989	428	1.81	0.33	2.84	4.98	3.19	2.06	5.94
Probability(%)													
N_Treatment (T)		15.8	2.1	94.9	46.0	13.8	23.0	18.2	26.8	30.9	73.8	73.9	7.0
LSD(0.10)													
N_Treatment (T)		NS	0.90	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.48

*AGI: Adjusted Gross Income.

Weed pressure at emergence and very small plants at harvest.

**Table 1512 - 04. Nitrogen Use Efficiency in Wisconsin soils.
Hancock, 2015**

N Rate lb/A	SuperU:Urea Ratio %	Grain yield bu/A	Nitrogen content			Nitrogen uptake				Nitrogen harvest index	Nitrogen recovery efficiency lb/lb	Grain Internal efficiency	Nitrogen Harvest Index	Nitrogen Physiological use efficiency	Nitrogen use efficiency lb/A	Agronomic efficiency T/lb	Agronomic efficiency bu/lb
			Stover %	Cob %	Grain %	Stover lb/A	Cob lb/A	Grain lb/A	Total lb/A								
0	(130)	106	0.49	0.33	0.92	16.68	1.92	46.7	65.3	0.56	--	1.63	0.71	--	--	--	--
0	(160)	110	0.51	0.33	0.95	18.03	1.93	50.2	70.2	0.56	--	1.59	0.72	--	--	--	--
0	(190)	100	0.51	0.33	0.91	15.42	1.91	43.3	60.7	0.57	--	1.66	0.71	--	--	--	--
130	0_100	113	0.47	0.33	0.98	15.08	2.21	53.8	71.0	0.59	0.05	1.65	0.76	0.64	0.04	0.0013	0.1149
130	100_0	104	0.46	0.33	0.90	15.59	1.81	44.1	61.5	0.56	-0.02	1.69	0.72	0.55	-0.03	-0.0012	0.0723
130	25_75	157	0.53	0.33	1.06	19.97	2.82	79.3	102.1	0.62	0.25	1.55	0.77	0.94	0.28	0.0093	0.2569
130	50_50	111	0.48	0.33	0.91	17.75	2.06	48.0	67.8	0.55	0.01	1.65	0.71	1.00	0.02	0.0008	0.1707
130	75_25	126	0.50	0.33	0.93	17.37	2.25	55.7	75.4	0.59	0.07	1.68	0.74	0.66	0.08	0.0035	0.2122
160	0_100	118	0.53	0.33	0.92	20.15	2.12	52.5	74.8	0.56	0.01	1.61	0.70	0.67	0.03	0.0011	0.2214
160	100_0	104	0.53	0.33	0.95	17.39	1.91	47.4	66.7	0.56	-0.02	1.57	0.71	0.92	-0.02	-0.0009	0.0428
160	25_75	138	0.53	0.33	0.95	21.07	2.48	62.4	86.0	0.58	0.08	1.62	0.73	0.66	0.10	0.0041	0.1616
160	50_50	102	0.52	0.32	0.92	16.72	1.84	44.3	62.8	0.56	-0.04	1.63	0.70	0.72	-0.05	-0.0012	0.1205
160	75_25	120	0.50	0.33	0.92	17.71	2.16	52.1	72.0	0.58	0.01	1.67	0.72	0.86	0.01	0.0014	0.0100
190	0_100	128	0.54	0.33	0.98	20.38	2.39	59.8	82.6	0.57	0.09	1.56	0.72	0.72	0.12	0.0035	0.0925
190	100_0	118	0.51	0.33	0.94	17.86	2.17	53.6	73.6	0.57	0.05	1.62	0.72	-0.85	0.07	0.0022	0.0888
190	25_75	129	0.52	0.33	0.98	20.09	2.32	60.5	82.9	0.57	0.09	1.57	0.73	0.75	0.12	0.0036	0.2328
190	50_50	145	0.54	0.33	1.02	27.43	2.78	70.7	100.9	0.53	0.14	1.46	0.70	0.75	0.21	0.0055	0.2243
190	75_25	126	0.50	0.33	0.95	20.34	2.35	57.5	80.2	0.55	0.07	1.58	0.71	0.77	0.10	0.0031	0.0623
Mean		120	0.51	0.33	0.95	18.61	2.19	54.6	75.4	0.57	0.06	1.61	0.72	0.65	0.07	0.0024	0.1389
Probability(%)																	
N_Treatment (T)		26.8	73.8	47.4	7.0	27.8	17.7	13.0	19.4	0.6	5.6	23.0	0.1	50.9	10.9	17.2	61.6
LSD(0.10)																	
N_Treatment (T)		NS	NS	NS	0.08	NS	NS	NS	NS	0.03	0.13	NS	0.03	NS	NS	NS	NS

*AGI: Adjusted Gross Income.

Weed pressure at emergence and very small plants at harvest.

FIELD EXPERIMENT HISTORY

Title: Using SuperU for split-applications of N

Experiment: 12Fertilizer **Trial ID:** 5821 **Year:** 2015
Personnel: Joe Lauer, Thierno Diallo, Kent Kohn,
Location: Marshfield, WI **County:** Marathon
Supported By: HATCH, WI Fertilizer Research Council, CSCAP

Site Information

Field: 006 - 15C57 **Previous Crop:** Soybean **Soil Type:** Whithee Silt Loam
Soil Test: Date: 9 /10/14 **pH:** 6.6 **OM (%)** 3.3 **P (ppm)** 51 **K (ppm)** 105

Plot Management

Tillage Operations: Field cultivator

Fertilizer:	<u>Analysis</u>	<u>Rate</u>	<u>Date</u>
Preplant	0-0-60	200 lbs/A	4 /29/15
Starter	N/A	N/A	N/A
Post plant	See factors	See factors	See factors
Manure:	N/A	N/A	N/A

Herbicide: Medal II 1.7 pt/A 5/20/15 **Insecticide:** N/A
Hornet WDG 3.0 oz/A 5/20/15 **Hybrid:** PiP3190 3000GT

Irrigation: N/A

Planting Date: 5/14/15 **Planting Depth:** 1.5" **Row Width:** 30"

Target Plant Density: 35000 plants per acre **Planting Method:** JD 1700 Planter

Harvest Date: 10/16/15 **Harvest Method:** MF 8XP Combine

Notes:

Experimental Design RCB

Replications: 4
Plot Size Seeded: 10' x 25' **Experiment Size:** 0.5 A
Harvest Plot Size: 5' x 21" **Harvest Plant Density:** 32975 plants per acre

Factors/Treatments:

<u>N rate (lb N/A):</u>	<u>N fertilizer (%)</u>	
	Urea	Agrotain
1) 130	1) 0	0
2) 160	2) 100	0
3) 190	3) 75	25
	4) 50	50
	5) 25	75
	6) 0	100

Results: Table 1512-05 & 1512-06

Table 1512 - 05. Nitrogen Use Efficiency in Wisconsin soils.

Marshfield, 2015

Nitrogen Rate lb/A	SuperU:Urea Ratio %	Grain yield bu/A	Grain moisture %	Test weight lb/bu	Harvest density plants/A	*AGI \$3.67 \$/A	Dry matter yield				Crude Protein		
							Stover T/A	Cob T/A	Grain T/A	Total T/A	Stover %	Cob %	Grain %
Arlington, 2015													
0	(130)	122	25.31	48.45	31284	395	2.19	0.41	2.83	5.42	3.70	2.06	4.51
0	(160)	99	25.93	48.10	30888	321	2.10	0.30	2.10	4.50	3.70	2.06	3.71
0	(190)	109	26.06	47.32	31383	352	2.13	0.33	2.08	4.54	3.82	2.06	3.96
130	0_100	177	25.12	47.17	32274	574	3.09	0.49	3.43	7.01	3.70	2.06	4.04
130	100_0	166	26.00	47.95	31680	536	2.59	0.45	3.04	6.08	3.88	2.06	4.08
130	25_75	169	25.30	47.42	31482	547	2.58	0.47	3.35	6.40	3.68	2.06	4.37
130	50_50	170	26.68	47.49	30195	548	2.81	0.50	3.78	7.09	3.69	2.06	4.58
130	75_25	170	25.01	47.91	31185	551	2.23	0.43	2.66	5.33	3.62	2.06	4.43
160	0_100	186	26.53	47.95	32769	599	3.09	0.51	4.05	7.66	3.84	2.06	4.69
160	100_0	177	27.06	47.48	31086	568	3.10	0.54	4.14	7.78	4.06	2.06	5.39
160	25_75	190	26.59	47.18	30987	611	2.73	0.49	3.78	7.00	4.05	2.06	4.45
160	50_50	181	25.96	47.76	31680	585	2.67	0.50	3.45	6.62	3.83	2.06	4.18
160	75_25	188	25.84	47.08	32373	606	2.87	0.60	4.37	7.83	3.78	2.06	4.30
190	0_100	194	26.23	48.51	30888	624	2.69	0.48	3.55	6.72	4.24	2.06	5.36
190	100_0	191	25.44	47.52	31383	620	2.86	0.57	4.15	7.59	4.05	2.06	4.76
190	25_75	204	26.62	47.92	32274	657	2.86	0.55	3.98	7.39	4.11	2.06	4.76
190	50_50	191	26.12	47.21	31284	618	2.90	0.51	3.83	7.24	4.27	2.06	5.09
190	75_25	193	26.44	48.53	31482	621	2.86	0.52	4.00	7.39	3.69	2.06	4.60
Mean		171	26.01	47.72	31477	552	2.69	0.48	3.48	6.64	3.87	2.06	4.51
Probability(%)													
N_Treatment (T)		0.0	93.9	78.2	93.5	0.0	11.2	2.6	0.0	0.4	32.7	53.4	6.2
LSD(0.10)													
N_Treatment (T)		17	NS	NS	NS	59	NS	0.13	0.89	1.55	NS	NS	0.81

*AGI: Adjusted Gross Income.

**Table 1512 - 06. Nitrogen Use Efficiency in Wisconsin soils.
Marshfield, 2015**

N Rate lb/A	SuperU:Urea Ratio %	Grain yield bu/A	Nitrogen content			Nitrogen uptake				harvest index	Nitrogen recovery efficiency lb/lb	Grain Internal efficiency	Nitrogen Harvest Index	Physiological efficiency	Nitrogen use efficiency lb/A	Agronomic efficiency T/lb	Agronomic efficiency bu/lb
			Stover %	Cob %	Grain %	Stover lb/A	Cob lb/A	Grain lb/A	Total lb/A								
0	(130)	120	0.59	0.33	0.72	26.03	2.68	44.2	72.9	0.51	--	1.69	0.57	--	--	--	--
0	(160)	89	0.59	0.33	0.59	24.74	2.00	25.0	51.8	0.46	--	1.69	0.48	--	--	--	--
0	(190)	88	0.61	0.33	0.63	26.11	2.21	26.2	54.5	0.46	--	1.61	0.48	--	--	--	--
130	0_100	145	0.59	0.33	0.65	37.38	3.26	45.2	85.8	0.49	0.01	1.74	0.53	0.59	0.10	0.0046	0.4220
130	100_0	128	0.62	0.33	0.65	32.37	3.00	40.2	75.6	0.50	-0.03	1.73	0.53	-0.26	0.02	0.0016	0.3377
130	25_75	142	0.59	0.32	0.70	30.70	3.05	47.6	81.4	0.52	0.03	1.76	0.58	1.14	0.06	0.0040	0.3598
130	50_50	160	0.59	0.33	0.73	33.58	3.29	56.4	93.2	0.53	0.09	1.74	0.60	0.96	0.16	0.0073	0.3705
130	75_25	113	0.58	0.33	0.71	25.69	2.83	37.6	66.2	0.50	-0.05	1.74	0.56	1.06	-0.05	-0.0013	0.3671
160	0_100	171	0.61	0.33	0.75	37.89	3.37	61.7	102.9	0.53	0.23	1.68	0.59	0.71	0.32	0.0122	0.5423
160	100_0	175	0.65	0.33	0.86	40.57	3.57	74.3	118.5	0.53	0.31	1.51	0.61	0.66	0.42	0.0127	0.4865
160	25_75	160	0.65	0.33	0.71	35.49	3.26	53.9	92.7	0.54	0.18	1.73	0.58	0.71	0.26	0.0105	0.5669
160	50_50	146	0.61	0.33	0.67	32.76	3.30	46.2	82.2	0.52	0.13	1.78	0.56	0.72	0.19	0.0084	0.5122
160	75_25	185	0.60	0.33	0.69	34.88	3.93	60.1	98.9	0.56	0.22	1.89	0.61	0.76	0.29	0.0142	0.5525
190	0_100	150	0.68	0.33	0.86	36.35	3.17	61.4	100.9	0.53	0.19	1.50	0.60	0.74	0.24	0.0077	0.4454
190	100_0	176	0.65	0.33	0.76	36.87	3.79	63.6	104.3	0.55	0.20	1.70	0.61	0.77	0.26	0.0109	0.4330
190	25_75	168	0.66	0.33	0.76	37.76	3.63	60.6	102.0	0.54	0.18	1.66	0.60	0.77	0.25	0.0100	0.5017
190	50_50	162	0.68	0.33	0.81	39.56	3.34	62.4	105.3	0.53	0.19	1.55	0.59	0.72	0.27	0.0092	0.4344
190	75_25	169	0.59	0.33	0.74	33.78	3.44	59.0	96.3	0.54	0.17	1.76	0.61	0.83	0.22	0.0101	0.4404
Mean		147	0.62	0.33	0.72	33.47	3.17	51.4	88.1	0.52	0.14	1.69	0.57	0.73	0.20	0.0082	0.4515
Probability(%)																	
N_Treatment (T)		0.0	32.7	47.4	6.2	12.8	2.8	0.4	0.7	0.0	0.0	29.4	0.9	66.8	0.5	0.1	0.4
LSD(0.10)																	
N_Treatment (T)		38	NS	NS	0.13	NS	0.83	19.5	27.8	0.04	0.12	NS	0.06	NS	0.17	0.0054	0.1037

*AGI: Adjusted Gross Income.