

## FIELD EXPERIMENT HISTORY

**Title:** Corn - Soybean Response to Tillage and Rotation  
**Experiment:** 19Systems **Trial ID:** 3645 **Year:** 2012  
**Personnel:** J.G. Lauer, K.D. Kohn, and T. Diallo  
**Location:** Arlington, WI **County:** Columbia  
**Supported By:** HATCH

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### Site Information

**Field:** 336 **Previous Crop:** See factors **Soil Type:** Plano Silt Loam  
**Soil Test:** **Date:** 11/06/12 **pH:** 5.5 **OM (%)** 3.7 **P (ppm)** 24 **K (ppm)** 157

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### Plot Management

**Tillage Operations:** 1-No-Till & 2-Conventional Tillage

<b>Fertilizer:</b>	<u>Analysis:</u>	<u>Rate lbs/A:</u>	<u>Date:</u>
Preplant :	N/A	N/A	N/A
Starter :	N/A	N/A	N/A
Post plant :	28-0-0	160 & 210	6 /13/12
Manure:	N/A	N/A	N/A

<b>Herbicide:</b>	2.4-D: 16 oz/A 4/6/12 Roundup: 42 oz/A 4/06/12 Dual II Mag: 24oz/A 5/21/12 Roundup: 22 oz/A 6/19/12	<b>Insecticide:</b> <b>Hybrid:</b> C: (Must be RR) 1) RR: DeKalb DKC55-08(RR) + Insecticide 2) SS: DeKalb DKC55-09(GENSS) S: Pioneer 92Y30
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**Irrigation:**  
**Planting Date:** C: 5/17/12 **Planting Depth:** C:1.5 **Row Width:** 30"  
**Target Plant Density:** See Factors **Planting Method:** Kinze 2000 Interplant planter  
**Harvest Date:** C:10/04/12 **Harvest Method:** C: Kincaid plot combine  
**Notes:**

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### Experimental Design

**Design:** RCB split-split-plot **Replications:** 4  
**Plot Size Seeded:** MP: 10' x 35' **Experiment Size:** 2.7 A  
**Harvest Plot Size:** 5' x 31' **Harvest Plant Density:** See Treatments

#### **Factors/Treatments:**

<u>Tillage:</u>	<u>Rotation:</u>	<u>Nitrogen Rate:</u>
1) No-Till	1) CC	1-160 lbs/A
2) Conventional	2) CS (odd years corn in plots >100)	2-210 lbs/A

#### Liebig's Mix:

1) UTC  
2) 600 lb/A

#### Plant Density:

1-32000 Plants/A  
2-42000 Plants/A

#### Genotype:

1-Dekalb DKC55-08 (RR)  
2-Dekalb DKC55-09 (SS)

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**Results: Table C-63**

**Table C - 63. Corn Cropping Systems - Corn.  
Arlington, WI - 2012**

Genotype	N Tillage	Liebig's rate	Plant mix	Plant Density	Rotation	Grain yield	Grain moisture	Test weight	Return \$/bu	Lodged			Harvest density
										Total	Stalk	Root	
	lbs/A			plants/A		bu/A	%	lbs	\$	%	%	%	plants/A
					CC	144	20.1	53	914	4.6	4.6	0.0	31688
					CS	174	16.4	56	1110	11.6	10.3	1.3	36438
				32000		159	18.2	54	1015	5.6	5.2	0.4	30688
				32000	CC	143	19.9	53	904	3.2	3.2	0.0	29250
				32000	CS	176	16.5	56	1125	7.9	7.2	0.7	32125
				42000		159	18.3	54	1010	10.7	9.8	0.9	37438
				42000	CC	146	20.3	53	924	6.0	6.0	0.0	34125
				42000	CS	171	16.3	56	1096	15.3	13.5	1.8	40750
			Liebig			158	18.3	54	1004	11.2	10.3	0.9	33313
			Liebig		CC	144	20.2	53	910	8.1	8.1	0.0	31125
			Liebig		CS	172	16.4	56	1098	14.4	12.5	1.8	35500
			Liebig	32000		157	18.2	54	1000	8.9	8.9	0.0	29750
			Liebig	42000		158	18.4	54	1007	13.5	11.7	1.8	36875
			UTC			160	18.2	54	1020	5.0	4.7	0.4	34813
			UTC		CC	145	19.9	53	918	1.2	1.2	0.0	32250
			UTC		CS	175	16.4	56	1123	8.9	8.1	0.7	37375
			UTC	32000		161	18.2	54	1029	2.2	1.5	0.7	31625
			UTC	42000		159	18.1	54	1012	7.9	7.9	0.0	38000
	160				CC	142	20.1	53	897	6.9	6.9	0.0	32000
	160				CS	170	16.3	56	1086	8.8	8.8	0.0	37125
	160			32000		157	18.1	54	1002	5.5	5.5	0.0	31375
	160			42000		154	18.3	54	981	10.2	10.2	0.0	37750
	160	Liebig				152	18.3	54	967	11.0	11.0	0.0	33750
	160	UTC				159	18.1	55	1016	4.7	4.7	0.0	35375
	210					162	18.3	54	1033	8.4	7.1	1.3	33563
	210				CC	147	20.1	53	931	2.3	2.3	0.0	31375
	210				CS	177	16.4	56	1135	14.4	11.9	2.6	35750
	210			32000		161	18.3	54	1027	5.7	5.0	0.7	30000
	210			42000		163	18.2	54	1039	11.1	9.3	1.8	37125
	210	Liebig				163	18.3	54	1041	11.4	9.6	1.8	32875
	210	UTC				161	18.2	54	1025	5.4	4.6	0.7	34250
CT						169	16.8	56	1080	13.0	11.7	1.3	33938
CT					CC	158	17.8	55	1007	9.3	9.3	0.0	30875
CT					CS	180	15.9	57	1152	16.6	14.1	2.6	37000
CT				32000		168	16.9	56	1074	9.2	8.5	0.7	31000
CT				42000		170	16.7	56	1085	16.7	14.9	1.8	36875
CT		Liebig				169	16.5	56	1083	18.7	16.8	1.8	33500
CT		UTC				168	17.1	56	1076	7.2	6.5	0.7	34375
CT	160					167	16.8	56	1068	11.8	11.8	0.0	33875
CT	210					171	16.8	56	1091	14.2	11.6	2.6	34000

continued

**Table C - 63. Corn Cropping Systems - Corn.**continue **Arlington, WI - 2012**

Genotype	Tillage	N rate	Liebig's mix	Plant Density	Rotation	Grain yield	Grain moisture	Test weight	Return \$/bu	Lodged			Harvest density
										Total %	Stalk %	Root %	
		lbs/A		plants/A		bu/A	%	lbs	\$	%	%	%	plants/A
	NT					149	19.7	53	945	3.3	3.3	0.0	34188
	NT				CC	131	22.4	50	821	0.0	0.0	0.0	32500
	NT				CS	167	16.9	55	1069	6.6	6.6	0.0	35875
	NT			32000		151	19.5	53	955	2.0	2.0	0.0	30375
	NT			42000		147	19.8	53	934	4.7	4.7	0.0	38000
	NT		Liebig			146	20.1	52	924	3.8	3.8	0.0	33125
	NT		UTC			152	19.2	53	965	2.8	2.8	0.0	35250
	NT	160				144	19.6	53	916	4.0	4.0	0.0	35250
	NT	210				154	19.7	53	974	2.6	2.6	0.0	33125
DKC55-08						151	17.9	55	966	10.7	10.7	0.0	32188
DKC55-08					CC	133	19.7	53	842	4.4	4.4	0.0	29375
DKC55-08					CS	170	16.1	56	1090	17.0	17.0	0.0	35000
DKC55-08				32000		147	18.0	54	937	7.7	7.7	0.0	29000
DKC55-08				42000		156	17.9	55	995	13.6	13.6	0.0	35375
DKC55-08			Liebig			144	17.8	55	920	13.4	13.4	0.0	30750
DKC55-08			UTC			159	18.1	55	1011	7.9	7.9	0.0	33625
DKC55-08		160				150	18.2	55	953	9.9	9.9	0.0	33125
DKC55-08		210				153	17.7	55	979	11.4	11.4	0.0	31250
DKC55-08	CT					164	16.7	56	1049	16.2	16.2	0.0	33125
DKC55-08	NT					139	19.2	53	883	5.2	5.2	0.0	31250
DKC55-09						166	18.5	54	1059	5.6	4.3	1.3	35938
DKC55-09					CC	156	20.4	52	986	4.9	4.9	0.0	34000
DKC55-09					CS	177	16.6	56	1131	6.3	3.7	2.6	37875
DKC55-09				32000		172	18.4	54	1092	3.5	2.7	0.7	32375
DKC55-09				42000		161	18.6	54	1025	7.7	5.9	1.8	39500
DKC55-09			Liebig			171	18.8	54	1087	9.0	7.2	1.8	35875
DKC55-09			UTC			162	18.2	54	1030	2.2	1.4	0.7	36000
DKC55-09		160				162	18.2	54	1030	5.8	5.8	0.0	36000
DKC55-09		210				171	18.9	54	1087	5.4	2.8	2.6	35875
DKC55-09	CT					174	16.9	55	1110	9.7	7.2	2.6	34750
DKC55-09	NT					159	20.1	52	1007	1.4	1.4	0.0	37125
Mean						159	18.2	54	1012	8.1	7.5	0.6	34063
<b>Probability(%)</b>													
Genotype						0.1	18.2	1.4	0.1	11.0	5.6	19.1	0.1
Genotype*LiebigMix						0.5	33.7	86.5	0.6	83.0	97.5	56.3	12.5
Genotype*NRate						43.7	16.0	73.2	48.2	75.0	46.7	19.1	31.2
Genotype*PD						1.5	81.2	5.3	1.4	78.0	65.0	56.3	65.8
Genotype*Rotation						3.2	85.7	54.0	3.5	8.3	4.2	19.1	31.2
Genotype*Tillage						15.1	38.5	59.4	17.4	65.5	39.6	19.1	2.7
LiebigMix						46.5	72.5	65.8	45.5	6.0	8.7	56.3	9.8
LiebigMix*PD						59.2	69.2	24.6	58.8	85.4	55.0	19.1	65.8
LiebigMix*Rotation						70.3	64.6	93.3	71.1	82.3	69.0	56.3	65.8

continued

**Table C - 63. Corn Cropping Systems - Corn.**continue **Arlington, WI - 2012**

Genotype	Tillage	N rate lbs/A	Liebig's mix	Plant Density plants/A	Rotation	Grain yield bu/A	Grain moisture %	Test weight lbs	Return \$/bu	Lodged			Harvest density plants/A
										Total	Stalk	Root	
NRate						7.9	88.8	67.2	8.2	85.8	80.5	19.1	25.1
NRate*LiebigMix						16.1	98.9	5.9	16.2	96.2	82.1	56.3	88.2
NRate*PD						45.8	65.0	94.1	44.5	91.1	94.4	56.3	65.8
NRate*Rotation						72.8	94.3	25.7	72.2	11.1	22.6	19.1	65.8
PD						82.2	89.8	87.7	82.6	11.2	15.6	56.3	0.0
PD*Rotation						26.9	43.0	40.6	28.4	44.9	56.8	56.3	4.6
Rotation						0.0	0.0	0.0	0.0	3.7	8.2	19.1	0.0
Tillage						0.0	0.0	0.0	0.0	0.8	1.8	19.1	76.7
Tillage*LiebigMix						32.1	8.6	11.8	27.8	10.2	14.4	56.3	46.4
Tillage*NRate						42.2	96.0	7.9	43.2	53.7	84.8	19.1	20.1
Tillage*PD						48.2	47.0	69.1	46.3	43.1	54.8	56.3	31.2
Tillage*Rotation						5.0	0.1	0.0	3.5	89.8	76.8	19.1	12.5
<b>LSD(0.10)</b>													
Genotype						6	NS	0	39	NS	5.4	NS	1489
Genotype*LiebigMix						9	NS	NS	54	NS	NS	NS	NS
Genotype*NRate						NS	NS	NS	NS	NS	NS	NS	NS
Genotype*PD						9	NS	1	54	NS	NS	NS	NS
Genotype*Rotation						9	NS	NS	54	7.5	7.6	NS	NS
Genotype*Tillage						NS	NS	NS	NS	NS	NS	NS	2106
LiebigMix						NS	NS	NS	NS	5.3	5.4	NS	1489
LiebigMix*PD						NS	NS	NS	NS	NS	NS	NS	NS
LiebigMix*Rotation						NS	NS	NS	NS	NS	NS	NS	NS
NRate						6	NS	NS	39	NS	NS	NS	NS
NRate*LiebigMix						NS	NS	1	NS	NS	NS	NS	NS
NRate*PD						NS	NS	NS	NS	NS	NS	NS	NS
NRate*Rotation						NS	NS	NS	NS	NS	NS	NS	NS
PD						NS	NS	NS	NS	NS	NS	NS	1489
PD*Rotation						NS	NS	NS	NS	NS	NS	NS	NS
Rotation						6	0.7	0	39	5.3	5.4	NS	1489
Tillage						6	0.7	0	39	5.3	5.4	NS	NS
Tillage*LiebigMix						NS	1.0	NS	NS	NS	NS	NS	NS
Tillage*NRate						NS	NS	1	NS	NS	NS	NS	NS
Tillage*PD						NS	NS	NS	NS	NS	NS	NS	NS
Tillage*Rotation						9	1.0	1	54	NS	NS	NS	NS