

## FIELD EXPERIMENT HISTORY

**Title:** Multi-factor effects for continuous and rotated corn  
**Experiment:** 19Systems **Trial ID:** 5747 **Year:** 2013  
**Personnel:** J.G. Lauer, T. Diallo and K.D. Kohn  
**Location:** Arlington, WI **County:** Columbia  
**Supported By:** HATCH

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### Site Information

**Field:** ARS:336 **Previous Crop:** See factors **Soil Type:** Plano Silt Loam  
**Soil Test:** **Date:** 11/4 /13 **pH:** 5.9 **OM (%)** 3.3 **P (ppm)** 17 **K (ppm)** 147

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### Plot Management

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

#### **Fertilizer:**

	<u>Analysis:</u>	<u>Rate lbs/A:</u>	<u>Date:</u>
<b>Preplant :</b>	N/A	N/A	N/A
<b>Starter :</b>	N/A	N/A	N/A
<b>Post plant :</b>	28-0-0	160 & 210	6 /18/13
<b>Manure:</b>	N/A	N/A	N/A

#### **Herbicide:**

Dual II Mag: 24 oz/A 4/29/13  
 Dual II Mag: 28 oz/A 6/8/13  
 Roundup: 36 oz/A 6/17/13  
 Roundup: 28 oz/A 7/2/13

#### **Insecticide:**

None

#### **Hybrid:**

C: (Must be RR)  
 1) G2: 5H-399(RR) + Insecticide  
 2) SS: Dekalb DKC53-78RIB(GENSS)  
 S: Pioneer 92Y30

#### **Irrigation:**

None

#### **Planting Date:**

C & S: 6/4/13

#### **Planting Depth:**

C:1.5

#### **Row Width:**

30"

#### **Target Plant Density:**

See Factors

#### **Planting Method:**

JD1700 planter with RTK

#### **Harvest Date:**

C: 11/4/13  
S: 10/28/13

#### **Harvest Method:**

C: Kincaid plot combine  
S: Almaco plot combine #2

#### **Notes:**

Establishment year

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### Experimental Design

**Design:** Fracrep split-split-plot

**Replications:** 1

**Plot Size Seeded:** MP: 10' x 35'

**Experiment Size:** 1.2

**Harvest Plot Size:** 5' x 31'

**Harvest Plant Density:** See Factors

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

##### Tillage:

1) No-Till  
2) Conventional

##### Rotation:

1) CC  
2) CS (odd years  
corn in plots >100)

##### Nitrogen Rate:

1-160 lbs/A  
2-210 lbs/A

##### Fungicide:

1) UTC  
2) Priaxor 8.0 oz/A

##### Plant Density:

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

##### Genotype:

1-G2 5H-399(RR)  
2-Dekalb DKC53-78RIB(GENSS)

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**Results: Table 1319-01**

**Table: 1319-01 . Multi-factor effects for continuous and rotated corn  
Arlington, WI - 2013.**

Genotype	N Tillage	Plant rate	Plant density	Rotation	Fungicide	Grain yield	Grain moisture	Test weight	Lodged			Harvest density	Return \$4.04/bu
									Total	Stalk	Root		
		lbs/A	plants/A			bu/A	%	lbs	%	%	%	plants/A	\$
					Priaxor	175	31.0	47.8	0.1	0.1	0.0	34047	612
					UTC	177	30.7	47.8	0.2	0.1	0.1	34539	620
				CC		176	30.9	47.7	0.2	0.1	0.1	34494	616
				CC	Priaxor	175	30.8	47.7	0.0	0.0	0.0	34125	613
				CC	UTC	177	31.0	47.7	0.3	0.1	0.2	34863	620
				CS		175	30.7	47.9	0.1	0.1	0.0	34092	615
				CS	Priaxor	174	31.1	47.8	0.2	0.2	0.0	33968	611
				CS	UTC	177	30.4	48.0	0.0	0.0	0.0	34216	620
		34K				170	30.3	47.7	0.2	0.1	0.1	30945	597
		34K			Priaxor	169	31.1	47.7	0.2	0.2	0.0	30750	593
		34K			UTC	171	29.6	47.8	0.2	0.0	0.2	31141	602
		34K		CC		169	30.6	47.7	0.2	0.0	0.2	30925	593
		34K		CS		171	30.0	47.8	0.2	0.2	0.0	30966	602
		42K				181	31.3	47.8	0.1	0.1	0.0	37640	634
		42K			Priaxor	180	30.9	47.8	0.0	0.0	0.0	37343	631
		42K			UTC	183	31.8	47.8	0.2	0.2	0.0	37938	637
		42K		CC		183	31.2	47.7	0.2	0.2	0.0	38063	640
		42K		CS		180	31.4	47.9	0.0	0.0	0.0	37218	628
	160					171	31.4	47.8	0.3	0.2	0.1	34028	599
	160				Priaxor	168	31.8	47.8	0.2	0.2	0.0	32875	587
	160				UTC	175	30.9	47.8	0.3	0.1	0.2	35181	611
	160			CC		174	31.5	47.8	0.3	0.1	0.2	34550	607
	160			CS		169	31.2	47.9	0.2	0.2	0.0	33506	591
	160	34K				166	30.5	47.8	0.4	0.2	0.2	30619	582
	160	42K				177	32.2	47.8	0.2	0.2	0.0	37438	617
	210					180	30.3	47.8	0.0	0.0	0.0	34558	632
	210				Priaxor	181	30.1	47.7	0.0	0.0	0.0	35218	636
	210				UTC	179	30.4	47.8	0.0	0.0	0.0	33897	628
	210			CC		178	30.3	47.6	0.0	0.0	0.0	34438	625
	210			CS		182	30.3	47.9	0.0	0.0	0.0	34678	639
	210	34K				174	30.1	47.6	0.0	0.0	0.0	31272	613
	210	42K				186	30.4	47.9	0.0	0.0	0.0	37843	652

continue

**Table: 1319-01 . Multi-factor effects for continuous and rotated corn**(continued) **Arlington, WI - 2013.**

Genotype	Tillage	N rate lbs/A	Plant density plants/A	Rotation	Fungicide	Grain yield bu/A	Grain moisture %	Test weight lbs	Lodged			Harvest density plants/A	Return \$4.04/bu \$
									Total	Stalk	Root		
CT						185	28.0	47.9	0.2	0.1	0.1	35024	656
CT					Priaxor	185	28.5	47.9	0.2	0.2	0.0	34793	657
CT					UTC	184	27.5	47.9	0.2	0.0	0.2	35255	656
CT				CC		185	28.1	47.7	0.2	0.0	0.2	34874	657
CT				CS		184	27.9	48.1	0.3	0.2	0.1	35174	655
CT			34K			177	27.3	47.9	0.4	0.2	0.2	31817	631
CT			42K			192	28.7	47.9	0.0	0.0	0.0	38231	681
CT	160					182	28.2	48.0	0.4	0.2	0.2	34755	645
CT	210					188	27.8	47.8	0.0	0.0	0.0	35293	668
NT						167	33.6	47.7	0.1	0.1	0.0	33562	575
NT					Priaxor	164	33.5	47.6	0.0	0.0	0.0	33300	567
NT					UTC	169	33.8	47.7	0.1	0.1	0.0	33824	584
NT				CC		167	33.7	47.7	0.2	0.2	0.0	34114	575
NT				CS		167	33.6	47.6	0.0	0.0	0.0	33009	575
NT			34K			163	33.4	47.6	0.0	0.0	0.0	30074	564
NT			42K			170	33.9	47.7	0.2	0.2	0.0	37050	587
NT	160					161	34.5	47.7	0.2	0.2	0.0	33302	553
NT	210					172	32.8	47.7	0.0	0.0	0.0	33822	597
RR						158	30.3	47.1	0.1	0.1	0.0	33681	554
RR					Priaxor	155	30.3	46.9	0.2	0.2	0.0	33313	546
RR					UTC	160	30.4	47.3	0.0	0.0	0.0	34050	562
RR				CC		159	30.4	47.1	0.0	0.0	0.0	33863	560
RR				CS		156	30.3	47.1	0.2	0.2	0.0	33500	549
RR			34K			152	29.8	47.1	0.2	0.2	0.0	30113	535
RR			42K			164	30.8	47.1	0.0	0.0	0.0	37250	573
RR		160				149	31.0	47.0	0.2	0.2	0.0	33050	521
RR		210				166	29.6	47.2	0.0	0.0	0.0	34313	587
RR	CT					164	27.0	47.5	0.2	0.2	0.0	34874	587
RR	NT					151	33.7	46.7	0.0	0.0	0.0	32489	521
SS						194	31.3	48.5	0.2	0.1	0.1	34904	677
SS					Priaxor	194	31.7	48.6	0.0	0.0	0.0	34781	677
SS					UTC	193	30.9	48.4	0.4	0.1	0.2	35028	677
SS				CC		192	31.4	48.3	0.3	0.2	0.2	35125	672
SS				CS		195	31.2	48.6	0.1	0.0	0.1	34684	682
SS			34K			188	30.8	48.4	0.2	0.0	0.2	31778	660
SS			42K			199	31.8	48.5	0.2	0.2	0.0	38031	695
SS		160				194	31.7	48.7	0.4	0.2	0.2	35006	677
SS		210				193	31.0	48.3	0.0	0.0	0.0	34803	677
SS	CT					205	29.0	48.4	0.3	0.0	0.3	35174	725
SS	NT					182	33.6	48.6	0.1	0.1	0.0	34634	629

continue



## FIELD EXPERIMENT HISTORY

**Title:** Multi-factor effects for continuous corn  
**Experiment:** 19Systems **Trial ID:** 5763 **Year:** 2013  
**Personnel:** J.G. Lauer, T. Diallo and K.D. Kohn  
**Location:** Arlington, WI **County:** Columbia  
**Supported By:** HATCH

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### Site Information

**Field:** ARS336 **Previous Crop:** See factors **Soil Type:** Plano Silt Loam  
**Soil Test:** **Date:** 11/04/13 **pH:** 5.9 **OM (%)** 3.3 **P (ppm)** 17 **K (ppm)** 147

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### Plot Management

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

#### **Fertilizer:**

	<u>Analysis:</u>	<u>Rate lbs/A:</u>	<u>Date:</u>
<b>Preplant :</b>	N/A	N/A	N/A
<b>Starter :</b>	N/A	N/A	N/A
<b>Post plant :</b>	28-0-0	160 & 210	6 /18/13
<b>Manure:</b>	N/A	N/A	N/A

#### **Herbicide:**

Dual II Mag: 24 oz/A 4/29/13  
 Dual II Mag: 28 oz/A 6/8/13  
 Roundup: 36 oz/A 6/17/13  
 Roundup: 28 oz/A 7/2/13

#### **Insecticide:**

None

#### **Hybrid:**

C: (Must be RR)  
 1) G2: 5H-399(RR) + Insecticide  
 2) SS: Dekalb DKC53-78RIB(GENSS)  
 S: Pioneer 92Y30

#### **Irrigation:**

None

#### **Planting Date:**

C: 6/04/13

#### **Planting Depth:**

C:1.5

#### **Row Width:**

30"

#### **Target Plant Density:**

See Factors

#### **Planting Method:**

JD1700 planter with RTK

#### **Harvest Date:**

C: 11/04/13

#### **Harvest Method:**

C: Kincaid plot combine  
 S: Almaco plot combine #2

**Notes:** Establishment year, no Liebig Mix used.

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### Experimental Design

**Design:** Fracrep split-split-plot

**Replications:** 1

**Plot Size Seeded:** MP: 10' x 35'

**Experiment Size:** 0.5 A

**Harvest Plot Size:** 5' x 31'

**Harvest Plant Density:** See Factors

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

##### Tillage:

- 1) No-Till
- 2) Conventional

##### Fungicide:

- 1) UTC
- 2) Priaxor 8.0 oz/A

##### Nitrogen Rate:

- 1-160 lbs/A
- 2-210 lbs/A

##### Liebig's Mix:

- 1) UTC
- 2) 0 lb/A

##### Plant Density:

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

##### Genotype:

- 1-G2 5H-399(RR)
  - 2-Dekalb DKC53-78RIB(GENSS)
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**Results: Table 1319-02**

**Table: 1319-02 . Multi-factor effects for continuous corn  
Arlington, WI - 2013**

Genotype	Tillage	N rate lbs/A	Plant Density plants/A	*Fertilizer	Fungicide	Grain yield bu/A	Grain moisture %	Test weight lbs	Lodged			Harvest density plants/A	Return \$4.04/bu \$
									Total	Stalk	Root		
					Priaxor	175	31.7	48.0	0.3	0.1	0.1	33083	611
					UTC	168	32.1	48.3	0.2	0.2	0.0	33625	585
				None		176	31.8	48.2	0.2	0.1	0.0	32979	612
				None	Priaxor	179	31.4	47.9	0.3	0.3	0.0	32781	626
				None	UTC	172	32.2	48.5	0.0	0.0	0.0	33177	598
					UTC	168	32.0	48.1	0.3	0.2	0.1	33729	584
					UTC	171	31.9	48.1	0.3	0.0	0.3	33385	595
					UTC	165	32.1	48.0	0.4	0.3	0.0	34073	572
			34K			174	31.7	48.1	0.2	0.0	0.1	30417	606
			34K		Priaxor	182	31.3	48.0	0.3	0.0	0.3	30385	635
			34K		UTC	166	32.1	48.3	0.0	0.0	0.0	30448	577
			34K	None		175	31.1	48.1	0.0	0.0	0.0	29625	614
			34K	UTC		172	32.3	48.2	0.3	0.0	0.3	31208	598
			42K			169	32.1	48.1	0.3	0.3	0.0	36292	590
			42K		Priaxor	168	32.1	48.0	0.3	0.3	0.0	35781	586
			42K		UTC	171	32.2	48.2	0.4	0.4	0.0	36802	593
			42K	None		176	32.5	48.2	0.3	0.3	0.0	36333	610
			42K	UTC		163	31.7	48.0	0.3	0.3	0.0	36250	569
		160				173	32.4	48.1	0.2	0.0	0.1	33417	600
		160			Priaxor	179	32.4	48.0	0.3	0.0	0.3	32760	622
		160			UTC	166	32.3	48.3	0.0	0.0	0.0	34073	578
		160		None		176	32.7	48.3	0.0	0.0	0.0	32375	611
		160		UTC		169	32.0	47.9	0.3	0.0	0.3	34458	588
		160	34K			171	32.2	48.2	0.3	0.0	0.3	30208	596
		160	42K			174	32.6	48.1	0.0	0.0	0.0	36625	604
		210				171	31.5	48.1	0.3	0.3	0.0	33292	596
		210			Priaxor	171	31.0	48.0	0.3	0.3	0.0	33406	600
		210			UTC	170	32.0	48.2	0.4	0.4	0.0	33177	592
		210		None		175	31.0	48.1	0.3	0.3	0.0	33583	612
		210		UTC		166	32.0	48.2	0.3	0.3	0.0	33000	579
		210	34K			176	31.3	48.1	0.0	0.0	0.0	30625	616
		210	42K			165	31.7	48.2	0.6	0.6	0.0	35958	576
	CT					182	28.8	48.4	0.4	0.3	0.1	33833	644
	CT				Priaxor	187	29.0	48.2	0.6	0.3	0.3	33542	661
	CT				UTC	177	28.6	48.5	0.3	0.3	0.0	34125	627

continue

**Table: 1319-02 . Multi-factor effects for continuous corn**

(continued)

**Arlington, WI - 2013.**

Genotype	Tillage	N	Plant	*Fertilizer	Fungicide	Grain yield	Grain moisture	Test weight	Lodged			Harvest density	Return \$/bu
		rate	Density						Total	Stalk	Root		
		lbs/A	plants/A			bu/A	%	lbs	%	%	%	plants/A	\$
	CT			None		189	29.0	48.5	0.3	0.3	0.0	32656	666
	CT			UTC		175	28.5	48.2	0.6	0.3	0.3	35010	621
	CT		34K			183	29.0	48.5	0.3	0.0	0.3	30510	645
	CT		42K			181	28.5	48.2	0.6	0.6	0.0	37156	642
	CT	160				182	29.1	48.3	0.3	0.0	0.3	33385	642
	CT	210				182	28.5	48.4	0.6	0.6	0.0	34281	646
	NT					161	35.0	47.9	0.0	0.0	0.0	32875	552
	NT				Priaxor	163	34.4	47.7	0.0	0.0	0.0	32625	560
	NT				UTC	159	35.7	48.0	0.1	0.1	0.0	33125	543
	NT			None		163	34.6	47.8	0.0	0.0	0.0	33302	557
	NT			UTC		160	35.5	47.9	0.0	0.0	0.0	32448	546
	NT		34K			165	34.4	47.8	0.0	0.0	0.0	30323	566
	NT		42K			158	35.7	48.0	0.0	0.0	0.0	35427	537
	NT	160				164	35.7	47.9	0.0	0.0	0.0	33448	558
	NT	210				159	34.4	47.8	0.0	0.0	0.0	32302	546
RR						153	31.3	47.3	0.3	0.4	0.0	32229	535
RR					Priaxor	154	31.2	47.1	0.3	0.4	-0.1	31760	539
RR					UTC	152	31.4	47.5	0.4	0.3	0.0	32698	530
RR				None		155	30.8	47.3	0.3	0.3	0.0	31625	544
RR				UTC		151	31.9	47.3	0.3	0.4	-0.1	32833	525
RR			34K			157	31.1	47.2	0.0	0.0	-0.1	29583	551
RR			42K			148	31.6	47.4	0.7	0.7	0.0	34875	518
RR		160				156	31.9	47.3	0.0	0.0	-0.1	32083	544
RR		210				149	30.7	47.4	0.7	0.7	0.0	32375	525
RR	CT					164	27.2	47.7	0.6	0.7	-0.1	33135	586
RR	NT					141	35.4	46.9	0.0	0.0	0.0	31323	483
SS						190	32.5	48.9	0.2	0.0	0.2	34479	661
SS					Priaxor	196	32.1	48.9	0.3	-0.1	0.4	34406	682
SS					UTC	185	32.8	49.0	0.0	0.0	0.0	34552	640
SS				None		196	32.9	49.0	0.0	0.0	0.0	34333	680
SS				UTC		185	32.1	48.8	0.4	0.0	0.4	34625	642
SS			34K			190	32.4	49.1	0.4	0.0	0.4	31250	661
SS			42K			191	32.6	48.8	0.0	0.0	0.0	37708	661
SS		160				189	32.8	48.9	0.4	0.0	0.4	34750	655
SS		210				192	32.2	48.9	0.0	0.0	0.0	34208	667
SS	CT					200	30.3	49.0	0.3	-0.1	0.4	34531	701
SS	NT					181	34.7	48.8	0.0	0.0	0.0	34427	621
Mean						172	31.9	48.1	0.2	0.2	0.1	33354	598

continue

**Table: 1319-02 . Multi-factor effects for continuous corn**

(continued)

**Arlington, WI - 2013.**

	N	Plant	Grain	Grain	Test	Lodged			Harvest	Return		
						Tillage	rate	Density			*Fertilizer	Fungicide
	lbs/A	plants/A	bu/A	%	lbs	%	%	%	plants/A	\$		
<b>Probability(%)</b>												
Fungicide			27.9	47.3	10.1	75.1	74.1	39.8	59.2	23.0		
Genotype			0.0	9.3	0.0	56.5	2.9	13.1	4.0	0.0		
Genotype*Fungicide			49.2	73.7	19.7	43.9	71.2	11.6	70.8	45.4		
Genotype*None			56.5	17.3	73.3	36.3	97.5	16.6	66.5	65.4		
Genotype*Nrate			48.8	66.6	70.2	3.4	5.4	16.6	69.4	48.6		
Genotype*PD			47.9	82.2	20.4	3.4	5.4	16.6	58.2	46.9		
Genotype*Tillage			73.8	1.0	8.6	57.9	2.7	11.6	42.2	59.6		
None			22.0	79.1	45.3	45.8	81.4	35.5	47.0	20.4		
None*Fungicide			92.2	65.1	6.6	54.2	10.5	42.0	89.0	90.1		
Nrate			75.8	19.2	86.5	53.7	8.3	35.5	90.3	85.9		
Nrate*Fungicide			38.5	41.9	82.0	47.2	75.3	42.0	46.8	41.8		
Nrate*None			91.5	23.3	22.5	51.4	98.2	31.6	21.6	82.5		
Nrate*PD			28.9	98.1	65.5	5.8	5.5	31.6	60.9	27.8		
PD			49.9	55.2	82.5	53.7	8.3	35.5	0.0	45.6		
PD*Fungicide			17.1	58.9	52.4	47.2	75.3	42.0	65.1	14.7		
PD*None			46.9	13.7	30.0	51.4	98.2	31.6	43.4	57.0		
Tillage			0.3	0.0	0.7	9.8	9.0	39.8	34.7	0.0		
Tillage*Fungicide			62.6	20.0	89.2	51.4	98.2	31.6	96.8	69.9		
Tillage*None			42.0	34.5	16.3	47.2	75.3	42.0	14.1	44.7		
Tillage*Nrate			68.9	61.1	49.1	54.2	10.5	42.0	34.0	73.3		
Tillage*PD			64.5	19.7	24.5	54.2	10.5	42.0	46.8	55.6		
<b>LSD(0.10)</b>												
Fungicide			NS	NS	NS	NS	NS	NS	NS	NS		
Genotype			11	NS	0.3	NS	0.3	NS	1763	37		
Genotype*Fungicide			NS	NS	NS	NS	NS	NS	NS	NS		
Genotype*None			NS	NS	NS	NS	NS	NS	NS	NS		
Genotype*Nrate			NS	NS	0.4	0.6	0.4	NS	NS	NS		
Genotype*PD			NS	NS	0.4	0.6	0.4	NS	NS	NS		
Genotype*Tillage			NS	1.6	0.4	0.6	0.4	NS	NS	NS		
None			NS	NS	NS	NS	NS	NS	NS	NS		
None*Fungicide			NS	NS	0.4	NS	0.4	NS	NS	NS		
Nrate			NS	NS	NS	NS	0.3	NS	NS	NS		
Nrate*Fungicide			NS	NS	NS	NS	0.4	NS	NS	NS		
Nrate*None			NS	NS	NS	NS	0.4	NS	NS	NS		
Nrate*PD			NS	NS	NS	0.6	0.4	NS	NS	NS		
PD			NS	NS	NS	NS	0.3	NS	1763	NS		
PD*Fungicide			NS	NS	NS	NS	NS	NS	NS	NS		
PD*None			NS	NS	NS	NS	NS	NS	NS	NS		
Tillage			11	1.1	0.3	0.4	0.3	NS	NS	36		
Tillage*Fungicide			NS	NS	NS	NS	NS	NS	NS	NS		
Tillage*None			NS	NS	NS	NS	NS	NS	NS	NS		
Tillage*Nrate			NS	NS	NS	NS	NS	NS	NS	NS		
Tillage*PD			NS	NS	NS	NS	NS	NS	NS	NS		

\*Establishment year, no Liebig Mix was used.