

FIELD EXPERIMENT HISTORY

Title: Tillage in Corn and Soybean Production Systems
Experiment: 17Tillage **Trial ID:** 5955 **Year:** 2015
Personnel: J. G. Lauer, T. H. Diallo, K. D. Kohn
Location: Arlington, WI **County:** Columbia
Supported By: HATCH

Site Information

Field: 396 **Previous Crop:** Corn / Soybean **Soil Type:** Plano Silt Loam
Soil Test: **Date:** 11/11/14 **pH:** 6.4 **OM (%)** 2.9 **P (ppm)** 19 **K (ppm)** 94

Plot Management

Tillage Operations: See Factors

	<u>Analysis:</u>	<u>Rate lbs/A:</u>	<u>Date:</u>
Fertilizer:			
Preplant :	N/A	N/A	N/A
Starter :	N/A	N/A	N/A
Post plant :	28-0-0	CC: 190 CS: 160	6 /9 /15
Manure:	N/A	N/A	N/A
Herbicide:	C: Radar LV 16 oz/A 5/15/15 Hornet WDG 4 oz/A 5/15/15 Dual II Magnum 24 oz/A 5/15/15 S: Roundup PowerMax 28 oz/A 6/4/15	Insecticide: N/A	
		Hybrid/Variety: C: Dekalb DKC48-12 RIB(GENSS) S: Pioneer 92Y30	
Irrigation:	NO		
Planting Date:	C: 5/14/15 S: 5/22/15	Row Width: 30"	
Planting Method:	JD1700 w RTK	Planting Depth: C: 1.5" S: 1"	
Target Plant Density:	See Factors Plants/Acre		
Harvest Date:	C: 11/2/15 S: 10/19/15	Harvest Method: C: MF 8XP plot combine S: Almaco plot combine	
Notes:			

Experimental Design

Design: RCB Split-plot **Replications:** 4
Plot Size Seeded: 10' x 50' **Experiment Size:** 3.6 A
Harvest Plot Size: 5' x 46'
Factors/Treatments:

<u>Rotation</u>	<u>Tillage For All Rotations:</u>	<u>Plant density (plants/A):</u>
Continuous Corn	1) CP: Fall chisel plow +2 spring field cultivator	1) 34000
Corn / Soybean	2) T1: Fall Strip-Till, knife 9in., Full Berm	2) 40000
Soybean / Corn	3) T2: Fall Strip-Till, knife 9in., No Berm	
	4) T3: Fall Strip-Till, knife 6in., Full Berm	
	5) T4: Fall Strip-Till, knife, No Berm	
	6) NT: Spring 1-13 wave coultter	

Results: Tables 1517-01,1517-02 & 1517-03

**Table:1517- 01 .Tillage, Rotation and Date of Planting in Corn and Soybean
Production Systems - Corn. Arlington, WI - 2015.**

Rotation	Tillage	Planting		Moisture	Test	Lodged			Harvest	AGI
		Density	Yield			Total	Root	Stalk		
		plants/A	bu/A	%	lbs/bu	%	%	%	plants/A	\$/A
CC			170	21.0	54.9	1	1	0	30250	525
CS			174	20.2	55.1	1	1	0	34271	542
	CP		177	20.3	55.5	2	2	0	33625	550
	NT		159	20.9	54.4	1	1	0	30625	494
	T1		172	20.7	54.8	1	1	0	31375	535
	T2		175	20.3	55.3	1	1	0	32500	544
	T3		185	20.8	54.8	0	0	0	33688	573
	T4		163	20.7	55.1	1	1	0	31750	505
		34000	172	20.6	55.1	1	1	0	31646	534
		40000	172	20.7	54.9	1	1	0	32875	534
CC	CP		182	20.7	55.5	1	1	0	32125	564
CC	NT		148	21.1	54.6	0	0	0	27625	458
CC	T1		170	21.1	54.7	0	0	0	29625	528
CC	T2		176	20.8	55.2	1	1	0	31125	545
CC	T3		189	21.0	54.6	0	0	0	33125	586
CC	T4		153	21.5	54.8	2	2	0	27875	471
CS	CP		172	20.0	55.5	3	3	0	35125	536
CS	NT		170	20.7	54.3	2	2	0	33625	529
CS	T1		174	20.2	54.8	1	1	0	33125	543
CS	T2		174	19.8	55.5	0	0	0	33875	544
CS	T3		180	20.7	55.0	0	0	0	34250	560
CS	T4		173	19.9	55.4	0	0	0	35625	539
CC		34000	173	21.0	55.1	1	1	0	30083	536
CC		40000	166	21.1	54.6	0	0	0	30417	515
CS		34000	171	20.2	55.0	1	1	0	33208	531
CS		40000	177	20.3	55.2	2	1	0	35333	552
	CP	34000	175	20.2	55.6	1	1	0	32375	545
	CP	40000	179	20.5	55.3	3	3	0	34875	555
	NT	34000	164	20.8	54.2	1	1	0	30875	509
	NT	40000	154	21.0	54.6	1	1	0	30375	478
	T1	34000	168	20.5	55.0	0	0	0	31375	521
	T1	40000	177	20.8	54.5	1	1	0	31375	550
	T2	34000	181	20.7	55.3	0	0	0	31000	563
	T2	40000	168	19.9	55.4	1	1	0	34000	526
	T3	34000	183	20.7	54.9	0	0	0	32875	568
	T3	40000	186	20.9	54.7	0	0	0	34500	578
	T4	34000	159	20.5	55.3	2	2	0	31375	495
	T4	40000	166	20.9	55.0	0	0	0	32125	515

continue

Table:1517- 01 .Tillage, Rotation and Date of Planting in Corn and Soybean
 (continued) **Production Systems - Corn. Arlington, WI - 2015.**

Rotation	Tillage	Planting		Moisture %	Test weight lbs/bu	Lodged			Harvest density plants/A	*AGI \$3.44/bu \$/A
		Density plants/A	Yield bu/A			Total %	Root %	Stalk %		
CC	CP	34000	184	20.5	55.8	1	1	0	31750	573
CC	CP	40000	179	20.8	55.1	1	1	0	32500	556
CC	NT	34000	157	21.1	54.4	0	0	0	29000	487
CC	NT	40000	139	21.1	54.7	0	0	0	26250	429
CC	T1	34000	171	20.8	55.2	0	0	0	31250	532
CC	T1	40000	170	21.4	54.2	1	1	0	28000	525
CC	T2	34000	182	21.2	55.5	1	1	0	30250	565
CC	T2	40000	169	20.5	55.0	1	1	0	32000	524
CC	T3	34000	189	21.0	54.9	0	0	0	31500	586
CC	T3	40000	189	20.9	54.4	0	0	0	34750	585
CC	T4	34000	153	21.3	55.1	3	3	0	26750	472
CC	T4	40000	153	21.7	54.6	0	0	0	29000	470
CS	CP	34000	165	19.9	55.4	1	1	0	33000	516
CS	CP	40000	178	20.1	55.5	6	5	1	37250	555
CS	NT	34000	171	20.5	54.1	2	2	0	32750	531
CS	NT	40000	170	20.8	54.5	1	1	0	34500	527
CS	T1	34000	164	20.3	54.8	1	1	0	31500	510
CS	T1	40000	185	20.2	54.9	2	2	0	34750	575
CS	T2	34000	180	20.2	55.2	0	0	0	31750	561
CS	T2	40000	168	19.4	55.8	1	1	0	36000	527
CS	T3	34000	177	20.4	55.0	1	1	0	34250	551
CS	T3	40000	184	21.0	55.1	0	0	0	34250	570
CS	T4	34000	166	19.7	55.5	1	1	0	36000	518
CS	T4	40000	179	20.0	55.3	0	0	0	35250	559
Mean			172	20.6	55.0	1	1	0	32260	534
Probability (%)										
Rotation (R)			65.0	6.2	49.3	43.9	46.5	39.1	12.6	58.0
Tillage (T)			4.1	50.9	16.2	34.7	38.2	43.5	29.6	3.6
Plant Density (PD)			97.7	58.2	44.9	90.8	99.7	32.4	17.7	100.0
R x T			22.9	51.0	93.6	27.0	26.9	43.5	32.4	20.8
R x PD			9.9	95.4	8.4	28.9	31.1	32.4	32.2	9.1
T x PD			50.2	25.5	85.2	33.6	34.4	43.2	84.3	51.6
R x T x PD			97.7	73.4	93.6	62.6	66.6	43.2	52.3	97.2
LSD (0.10)										
Rotation (R)			NS	0.7	NS	NS	NS	NS	NS	NS
Tillage (T)			14	NS	NS	NS	NS	NS	NS	43
Plant Density (PD)			NS	NS	NS	NS	NS	NS	NS	NS
R x T			NS	NS	NS	NS	NS	NS	NS	NS
R x PD			14	NS	0.5	NS	NS	NS	NS	45
T x PD			NS	NS	NS	NS	NS	NS	NS	NS
R x T x PD			NS	NS	NS	NS	NS	NS	NS	NS

*AGI - Adjusted Gross Income

**Table :15 17 - 02 .Tillage , Rotation and Planting Density
in Corn and Soybean - Soybean Arlington, WI - 2015.**

Tillage reatment	Yield bu/A	Moisture %	*AGI \$8.48/bu \$/A
CP	48	11.0	398
NT	46	10.7	377
T1	50	10.6	411
T2	52	10.7	429
T3	51	10.6	419
T4	49	10.7	400
Mean	49	10.7	406
Probability(%)			
Tillage (T)	51.0	1.2	51.0
LSD(0.10)			
Tillage (T)	NS	0.2	NS

*AGI - Adjusted Gross Income

**Table:1517- 03 . Soil Organic and Nitrogen Total content in Corn/Soybean Rotation and Tillage Study.
Arlington, WI - 2015.**

Rotation	Tillage	Soil organic carbon @ 15 cm %	Soil organic carbon @ 30 cm %	Soil organic carbon @ 60 cm %	Soil total nitrogen @ 15 cm %	Soil total nitrogen @ 30 cm %	Soil total nitrogen @ 60 cm %
CC		2.03	1.33	0.75	0.182	0.128	0.083
CS		1.87	1.25	0.72	0.173	0.125	0.082
	CP	1.87	1.04	0.65	0.169	0.108	0.077
	NT	1.94	1.41	0.81	0.171	0.134	0.087
	T1	1.94	1.31	0.72	0.181	0.126	0.083
	T2	2.01	1.44	0.75	0.184	0.138	0.081
	T3	2.05	1.35	0.76	0.184	0.131	0.084
	T4	1.90	1.20	0.69	0.176	0.121	0.081
CC	CP	1.95	1.09	0.70	0.175	0.110	0.080
CC	NT	1.97	1.39	0.75	0.173	0.133	0.083
CC	T1	2.03	1.39	0.76	0.188	0.130	0.085
CC	T2	2.17	1.63	0.80	0.193	0.150	0.082
CC	T3	2.17	1.36	0.76	0.188	0.128	0.085
CC	T4	1.90	1.16	0.71	0.175	0.115	0.083
CS	CP	1.80	0.99	0.61	0.164	0.105	0.075
CS	NT	1.91	1.43	0.88	0.170	0.135	0.092
CS	T1	1.85	1.24	0.67	0.174	0.123	0.081
CS	T2	1.84	1.24	0.70	0.175	0.126	0.079
CS	T3	1.92	1.34	0.77	0.180	0.134	0.084
CS	T4	1.90	1.24	0.68	0.176	0.126	0.079
Mean		1.95	1.29	0.73	0.177	0.126	0.082
Probability (%)							
Rotation (R)		7.7	42.1	55.9	24.2	69.7	69.3
Tillage (T)		24.4	0.2	15.6	20.8	0.5	44.8
R x T		32.6	16.7	38.4	78.4	27.3	67.0
LSD (0.10)							
Rotation (R)		0.14	NS	NS	NS	NS	NS
Tillage (T)		NS	0.16	NS	NS	0.013	NS
R x T		NS	NS	NS	NS	NS	NS