

FIELD EXPERIMENT HISTORY

Title: Tillage in Corn and Soybean Production Systems
Experiment: 17Tillage **Trial ID** 3198 **Year:** 2008
Personnel: J. G. Lauer, J.M. Gaska, K. D. Kohn and T. H. Diallo
Location: Arlington, WI **County:** Columbia
Supported By: HATCH

Site Information

Field: 396 **Previous Crop:** Corn / Soybean **Soil Type:** Plano Silt Loam
Soil Test: **Date:** 4 /17/07 **pH:** 6.7 **OM (%)** 2.7 **P (ppm)** 10 **K (ppm)** 88

Plot Management

Tillage Operations: See Factors

	<u>Analysis:</u>	<u>Rate lbs/A:</u>	<u>Date:</u>
Fertilizer:			
Preplant :	9-23-30	200	Fall 2007
Starter :	9-23-30	200	5/8/2008
Post plant :	28-0-0	210	6/12/2008
Manure:	N/A	N/A	N/A
Herbicide: Honcho 24 oz/A		Insecticide: none	
Irrigation: None		Hybrid/Variety: Corn: Dekalb DKC5020 Soybean: Kaltenberg KB248	
Planting Date: Corn: 4/21/08 Soybean: 5/6/08		Row Width: 30"	
Planting Method: Kinze 2000 Interplant planter		Planting Depth: Corn: 1.5" Soybean: 1"	
Harvest Date: Corn: 10/13/08 Soybean: 10/23/08		Harvest Method: C: MF 8 XP Plot Harvester S: Almaco plot combine	

Experimental Design

Design: RCB split split plot **Replications:** 4
Plot Size Seeded 10' x 50' **Experiment Size:** 4.5 Acres
Harvest Plot Size: 5' x 46'

Factors/Treatments:

Rotation:

Continuous Corn
 Corn / Soybean
 Soybean / Corn

Tillage For All Rotation:

1-CP: Fall chisel plow +1 spring field cultivator
 2-T1: Fall Strip-Till, knife 9in., Full Berm
 3-T2: Fall Strip-Till, knife 9in., No Berm
 4-T3: Fall Strip-Till, knife 6in., Full Berm
 5-T4: Fall Strip-Till, knife 6in., No Berm
 6- NT

Starter Fertilizer Timing

Fall
 Spring

Results: Tables C-53 and C-54.

**Table C-53. Tillage, Rotation, and Fertilizer in Corn and Soybean Production Systems - Corn.
Arlington, WI - 2008.**

Rotation	Tillage	Fertilizer	Yield bu/A	Moisture %	Test weight lbs/bu	Grower return \$/A	Lodged			Harvest plants/A	Grain Composition			Ethanol	
							Total %	Root %	Stalk %		Oil %	Starch %	Protein %	per bu gallons	per A gallons
		Fall	183	25.4	53	600	0	0	0	30500	3.3	61.4	6.6	2.94	537
		Spring	175	25.1	52	576	0	0	0	31167	3.3	61.4	6.6	2.93	513
	CP		191	22.0	54	641	0	0	0	30688	3.3	61.5	6.6	2.95	565
	NT		163	28.5	51	525	0	0	0	30313	3.3	61.4	6.6	2.91	475
	T1		180	23.9	53	594	0	0	0	31750	3.3	61.3	6.6	2.93	527
	T2		188	25.7	53	615	0	0	0	31063	3.3	61.5	6.5	2.94	552
	T3		184	25.8	53	601	0	0	0	30500	3.3	61.5	6.6	2.93	538
	T4		168	25.5	53	552	0	0	0	30688	3.3	61.5	6.6	2.93	494
	CP	Fall	198	22.1	54	663	0	0	0	31125	3.3	61.6	6.5	2.96	587
	CP	Spring	185	21.9	53	618	0	0	0	30250	3.3	61.4	6.6	2.95	544
	NT	Fall	171	29.2	52	546	0	0	0	29125	3.3	61.4	6.7	2.91	497
	NT	Spring	156	27.8	51	504	0	0	0	31500	3.3	61.4	6.6	2.90	454
	T1	Fall	175	23.8	54	579	1	1	0	31250	3.3	61.2	6.8	2.93	514
	T1	Spring	184	24.1	53	608	0	0	0	32250	3.3	61.5	6.4	2.94	540
	T2	Fall	198	25.7	53	649	0	0	0	30500	3.3	61.5	6.5	2.94	583
	T2	Spring	177	25.8	52	581	0	0	0	31625	3.3	61.4	6.5	2.94	521
	T3	Fall	180	25.7	53	587	0	0	0	30375	3.3	61.5	6.6	2.94	527
	T3	Spring	188	25.9	52	614	0	0	0	30625	3.3	61.5	6.6	2.93	549
	T4	Fall	175	25.6	53	575	0	0	0	30625	3.3	61.4	6.5	2.94	516
	T4	Spring	161	25.3	52	529	0	0	0	30750	3.3	61.5	6.6	2.93	472
CC			161	27.4	52	520	0	0	0	29688	3.3	61.5	6.5	2.92	470
SC			197	23.1	54	656	0	0	0	31979	3.3	61.4	6.6	2.94	581
CC		Fall	169	27.7	52	548	1	0	0	29750	3.3	61.5	6.5	2.93	496
CC		Spring	152	27.1	51	493	0	0	0	29625	3.3	61.4	6.6	2.92	443
SC		Fall	196	23.0	54	652	0	0	0	31250	3.3	61.3	6.7	2.94	578
SC		Spring	198	23.2	53	659	0	0	0	32708	3.3	61.4	6.6	2.94	584

continued

Table C-53. Tillage, Rotation, and Fertilizer in Corn and Soybean Production Systems - Corn.**(continued) Arlington, WI - 2008.**

Rotation	Tillage	Fertilizer	Yield bu/A	Moisture %	Test weight lbs/bu	Grower return \$/A	Lodged			Harvest plants/A	Grain Composition			Ethanol	
							Total %	Root %	Stalk %		Oil %	Starch %	Protein %	per bu gallons	per A gallons
CC	CP		180	23.6	53	598	0	0	0	30250	3.3	61.7	6.4	2.96	533
CC	NT		149	32.2	50	468	0	0	0	28375	3.3	61.5	6.6	2.89	431
CC	T1		162	25.8	52	528	1	1	0	31500	3.3	61.3	6.5	2.93	473
CC	T2		169	27.7	52	546	0	0	0	29750	3.3	61.4	6.6	2.93	494
CC	T3		169	27.2	52	548	0	0	0	30000	3.3	61.5	6.6	2.92	495
CC	T4		135	28.1	51	433	1	1	0	28250	3.3	61.4	6.7	2.92	393
SC	CP		203	20.5	55	684	0	0	0	31125	3.3	61.2	6.7	2.95	598
SC	NT		178	24.8	53	582	0	0	0	32250	3.3	61.2	6.7	2.92	519
SC	T1		198	22.1	54	659	0	0	0	32000	3.3	61.4	6.7	2.94	581
SC	T2		207	23.8	53	684	0	0	0	32375	3.3	61.5	6.5	2.95	610
SC	T3		198	24.4	53	654	0	0	0	31000	3.3	61.5	6.6	2.94	582
SC	T4		201	22.9	54	670	0	0	0	33125	3.3	61.5	6.5	2.95	594
CC	CP	Fall	193	23.7	54	641	1	0	0	32000	3.3	62.0	6.3	2.96	572
CC	CP	Spring	167	23.5	53	555	0	0	0	28500	3.3	61.5	6.4	2.95	494
CC	NT	Fall	157	33.0	51	490	0	0	0	27000	3.3	61.5	6.6	2.90	454
CC	NT	Spring	141	31.5	50	446	0	0	0	29750	3.2	61.5	6.6	2.88	407
CC	T1	Fall	165	26.7	53	537	2	2	0	31000	3.3	61.1	6.7	2.92	484
CC	T1	Spring	158	24.8	52	519	0	0	0	32000	3.2	61.5	6.4	2.93	462
CC	T2	Fall	189	27.0	53	614	0	0	0	29250	3.3	61.5	6.5	2.93	554
CC	T2	Spring	148	28.4	52	478	1	0	0	30250	3.3	61.3	6.6	2.92	433
CC	T3	Fall	170	28.3	52	548	0	0	0	30500	3.3	61.7	6.4	2.94	500
CC	T3	Spring	168	26.0	52	548	1	1	0	29500	3.3	61.3	6.7	2.91	489
CC	T4	Fall	142	27.8	52	457	1	1	0	28750	3.3	61.4	6.7	2.92	414
CC	T4	Spring	128	28.3	51	410	1	1	0	27750	3.3	61.5	6.6	2.91	372
SC	CP	Fall	203	20.6	55	685	0	0	0	30250	3.3	61.2	6.7	2.96	601
SC	CP	Spring	202	20.4	54	682	0	0	0	32000	3.3	61.2	6.7	2.94	594
SC	NT	Fall	185	25.5	53	603	0	0	0	31250	3.3	61.3	6.7	2.92	539
SC	NT	Spring	171	24.1	52	562	0	0	0	33250	3.3	61.2	6.7	2.92	500
SC	T1	Fall	185	21.0	54	621	0	0	0	31500	3.3	61.3	6.8	2.94	545
SC	T1	Spring	210	23.3	53	698	0	0	0	32500	3.3	61.5	6.5	2.94	618

continued

Table C-53. Tillage, Rotation, and Fertilizer in Corn and Soybean Production Systems - Corn.**(continued) Arlington, WI - 2008.**

Rotation	Tillage	Fertilizer	Yield bu/A	Moisture %	Test weight lbs/bu	Grower return \$/A	Lodged			Harvest plants/A	Grain Composition			Ethanol	
							Total %	Root %	Stalk %		Oil %	Starch %	Protein %	per bu gallons	per A gallons
SC	T2	Fall	207	24.4	53	684	0	0	0	31750	3.3	61.6	6.6	2.95	611
SC	T2	Spring	206	23.2	53	684	0	0	0	33000	3.3	61.5	6.5	2.95	608
SC	T3	Fall	189	23.1	54	627	1	0	0	30250	3.3	61.3	6.8	2.94	555
SC	T3	Spring	208	25.7	53	681	0	0	0	31750	3.3	61.7	6.4	2.94	610
SC	T4	Fall	209	23.4	54	693	0	0	0	32500	3.3	61.5	6.3	2.96	617
SC	T4	Spring	194	22.3	53	648	0	0	0	33750	3.3	61.5	6.6	2.95	572
Mean			179	25.2	53	588	0	0	0	30833	3.3	61.4	6.6	2.93	525
Probability(%)															
Rotation (R)			4.1	6.1	4.2	2.3	18.2	19.9	-	4.1	62.4	44.9	31.9	11.9	3.7
Tillage (T)			0.3	0.0	0.0	0.1	85.5	66.0	-	83.7	79.5	80.3	97.9	0.0	0.2
Fertilizer (F)			3.0	63.1	0.0	3.3	45.9	62.0	-	15.0	14.2	97.7	36.1	5.3	2.6
R x T			6.9	43.3	36.6	7.0	79.5	66.0	-	30.5	76.3	3.0	35.6	23.6	6.4
R x F			0.7	40.2	90.5	0.7	98.4	62.0	-	8.9	50.0	22.9	24.3	40.5	0.7
T x F			6.8	93.1	84.5	5.2	57.1	35.2	-	43.9	95.2	27.2	12.2	91.4	7.2
R x T x F			49.7	17.9	78.4	42.3	21.1	35.2	-	43.6	91.4	14.9	10.2	63.3	48.8
LSD(0.10)															
Rotation (R)			25	3.5	1	74	NS	NS	-	1564	NS	NS	NS	NS	73
Tillage (T)			12	2.1	1	42	NS	NS	-	NS	NS	NS	NS	0.01	37
Fertilizer (F)			6	NS	0	18	NS	NS	-	NS	NS	NS	NS	0.01	17
R x T			21	NS	NS	68	NS	NS	-	NS	NS	0.3	NS	NS	63
R x F			15	NS	NS	46	NS	NS	-	1266	NS	NS	NS	NS	45
T x F			16	NS	NS	51	NS	NS	-	NS	NS	NS	NS	NS	47
R x T x F			NS	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS

**Table C-54. Tillage and Fertilizer in Corn and Soybean Systems - Soybean
Arlington, WI - 2008.**

Tillage treatment	Fertilizer	Yield bu/A	Moisture %	Grower return \$/A
	Fall	52.5	12.7	448
	Spring	52.6	12.6	448
CP		52.1	12.8	444
NT		53.1	12.5	452
T1		51.3	12.7	437
T2		51.6	12.5	440
T3		55.1	12.7	470
T4		52.2	12.6	444
CP	Fall	51.8	12.8	441
CP	Spring	52.4	12.7	447
NT	Fall	52.8	12.6	450
NT	Spring	53.4	12.5	455
T1	Fall	49.9	12.9	425
T1	Spring	52.6	12.6	449
T2	Fall	51.1	12.6	435
T2	Spring	52.2	12.4	445
T3	Fall	55.9	12.8	476
T3	Spring	54.3	12.6	463
T4	Fall	53.8	12.6	458
T4	Spring	50.6	12.6	431
Mean		52.6	12.6	448
Probability(%)				
Tillage		81.1	25.8	81
Fertilizer (F)		98.7	17.3	99
T x F		93.3	68.7	93
Tillage(T)		NS	NS	NS
Fertilizer (F)		NS	NS	NS
T x F		NS	NS	NS