FIELD EXPERIMENT HISTORY

Title: **Tillage in Corn and Soybean Production Systems**

Experiment: 17Tillage **Trial ID:** 6545 **Year:** 2021

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:** 11/12/18 **pH** 6.9 **OM (%)** 3.7 **P (ppm)** 60 **K (ppm)** 186

Plot Management

Tillage Operations: See Factors

		Analysis:	Product Rate lbs/A:	Date:
Fertilizer:	**Preplant :**	N/A	N/A	N/A
	Starter :	N/A	N/A	N/A
	Post plant :	32-0-0	CC:593 CS: 500	6/07/21 6/07/21
	Manure:	N/A	N/A	N/A

Herbicide: Moccasin II @ 24 oz/A 4/27/21
Durango DMA @ 36 oz/A 4/27/21
Durango DMA @ 36 oz/A 4/27/21 6/15/21

Hybrid/Variety: C: Dekalb DKC54-64SSRIB
S: Asgrow AG20X9

Irrigation: NO

Row Width: 30"

Planting Date: C: 5/11/21
S: 5/18/21

Planting Depth: C: 1.5"
S: 1"

Planting Method: JD1700 w RTK

Harvest Method: C: MF 8XP plot combine
S: Almaco plot combine

Target Plant Density: 35000 **Plants/Acre**

Harvest Date: C: 10/13/21
S: 10/20/21

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:

Rotation

1) CC
2) CS

Tillage:

1) Rotational tillage: NT since 2016.
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: Spring 1-13-wave coulter with trash whippers on planter.

Density:

1) S1 - 35000 ppa
2) S2 - 45000 ppa

Results: Tables 2117-01 & 2117-02

Table:2117- 01 .Tillage in Corn and Soybean Production Systems - Corn Arlington, WI - 2021.

Rotation	Tillage	Fungicide	Yield	Moisture	Test weight	Lodged			Harvest density	AGI $5.22/bu
						Total	Stalk	Root		
			bu/A	%	lbs/bu	%	%	%	plants/A	$/A
CC			183	30.3	50.6	6.5	4.1	2.4	37188	856
CS			184	26.3	49.6	5.4	4.8	0.6	37813	878
	NT		184	28.1	50.0	5.8	4.8	1.1	36563	871
	RT		166	29.6	49.7	2.8	2.6	0.2	36813	780
	T1		180	28.1	49.6	7.2	4.1	3.1	38625	854
	T2		193	27.5	50.4	5.2	3.4	1.9	36688	918
	T3		194	28.7	50.6	7.1	6.6	0.5	37688	918
	T4		182	28.0	50.3	7.4	5.0	2.4	38625	861
		35000	183	28.0	50.2	5.2	4.0	1.2	33563	868
		45000	183	28.7	50.0	6.7	4.8	1.9	41438	865
CC	NT		176	30.1	50.3	6.1	4.0	2.2	37250	825
CC	RT		164	32.0	50.5	1.8	1.4	0.4	35750	764
CC	T1		185	29.5	50.2	9.1	4.8	4.3	36625	873
CC	T2		196	29.5	50.9	5.9	2.2	3.7	37125	924
CC	T3		196	30.6	50.7	6.2	5.3	1.0	37625	920
CC	T4		177	30.3	50.9	9.7	6.7	3.0	38750	831
CS	NT		192	26.1	49.8	5.5	5.5	0.0	35875	916
CS	RT		167	27.1	48.9	3.8	3.8	0.0	37875	795
CS	T1		175	26.8	48.9	5.3	3.4	1.9	40625	835
CS	T2		190	25.6	49.9	4.5	4.5	0.0	36250	911
CS	T3		192	26.8	50.4	8.0	8.0	0.0	37750	916
CS	T4		186	25.6	49.7	5.2	3.4	1.8	38500	892
CC		35000	186	29.9	50.7	5.9	3.9	2.0	33458	873
CC		45000	179	30.8	50.4	7.1	4.2	2.9	40917	840
CS		35000	181	26.1	49.6	4.5	4.1	0.3	33667	864
CS		45000	187	26.6	49.6	6.3	5.4	0.9	41958	891
	NT	35000	185	27.8	50.2	5.8	5.1	0.7	32750	879
	NT	45000	182	28.4	49.8	5.9	4.5	1.5	40375	862
	RT	35000	168	29.0	49.6	4.3	3.9	0.4	33875	794
	RT	45000	163	30.2	49.8	1.3	1.3	0.0	39750	765
	T1	35000	174	27.6	49.5	3.6	2.2	1.4	35375	826
	T1	45000	187	28.7	49.6	10.9	6.1	4.8	41875	882
	T2	35000	197	27.7	50.6	2.0	0.4	1.6	31375	934
	T2	45000	190	27.4	50.2	8.4	6.3	2.1	42000	902
	T3	35000	195	28.4	50.8	6.4	6.1	0.4	33625	924
	T3	45000	193	29.0	50.3	7.7	7.1	0.6	41750	912
	T4	35000	180	27.5	50.2	9.0	6.6	2.5	34375	853
	T4	45000	184	28.4	50.4	5.9	3.5	2.3	42875	870
CC	NT	35000	180	29.6	50.6	6.9	5.5	1.4	33500	845
CC	NT	45000	172	30.6	49.9	5.3	2.4	2.9	41000	806
CC	RT	35000	175	31.1	50.3	2.1	1.4	0.7	33000	817
CC	RT	45000	153	33.0	50.7	1.4	1.4	0.0	38500	711

continue

Table:2117- 01 .Tillage in Corn and Soybean Production Systems - Corn
(continued) **Arlington, WI - 2021.**

Rotation	Tillage	Fungicide	Yield	Moisture	Test weight	Lodged			Harvest density	AGI $5.22/bu
						Total	Root	Stalk		
			bu/A	%	lbs/bu	%	%	%	plants/A	$/A
CC	T1	35000	184	29.1	50.6	2.2	1.5	0.7	33500	866
CC	T1	45000	187	29.8	49.9	16.0	8.2	7.8	39750	879
CC	T2	35000	200	29.8	51.2	4.0	0.8	3.2	32000	941
CC	T2	45000	193	29.2	50.7	7.8	3.5	4.3	42250	908
CC	T3	35000	196	30.3	50.9	6.4	5.7	0.7	33750	920
CC	T3	45000	197	30.9	50.5	6.0	4.8	1.2	41500	920
CC	T4	35000	180	29.6	50.8	13.4	8.5	4.9	35000	848
CC	T4	45000	174	31.0	51.0	5.9	4.8	1.1	42500	815
CS	NT	35000	191	26.0	49.9	4.6	4.6	0.0	32000	914
CS	NT	45000	192	26.3	49.7	6.5	6.5	0.0	39750	918
CS	RT	35000	162	26.8	48.9	6.4	6.4	0.0	34750	771
CS	RT	45000	172	27.5	48.8	1.2	1.2	0.0	41000	819
CS	T1	35000	164	26.1	48.5	4.9	2.8	2.1	37250	786
CS	T1	45000	186	27.5	49.4	5.7	4.0	1.7	44000	885
CS	T2	35000	193	25.5	50.0	0.0	0.0	0.0	30750	927
CS	T2	45000	187	25.6	49.8	9.1	9.1	0.0	41750	896
CS	T3	35000	195	26.5	50.7	6.4	6.4	0.0	33500	928
CS	T3	45000	190	27.0	50.1	9.5	9.5	0.0	42000	905
CS	T4	35000	179	25.5	49.6	4.6	4.6	0.0	33750	858
CS	T4	45000	193	25.7	49.8	5.9	2.3	3.6	43250	925
Mean			183	28.3	50.1	5.9	4.4	1.5	37500	867
Probability(%)										
Rotation (R)			90.1	3.0	5.9	66.6	75.1	10.4	37.5	64.3
Tillage (T)			1.6	1.3	3.4	36.4	43.1	9.2	16.8	1.2
Density (D)			97.0	0.5	41.7	27.2	49.5	17.5	0.0	88.5
R x T			60.0	38.4	33.6	65.5	57.4	69.8	11.9	56.1
R X D			13.7	46.0	40.3	82.9	66.8	71.1	43.0	13.2
T x D			76.1	50.7	64.6	13.1	17.0	38.9	15.8	77.6
R x T x D			81.1	70.3	60.4	23.3	50.6	1.4	99.8	80.0
LSD(0.10)										
Rotation (R)			NS	2.4	1	NS	NS	NS	NS	NS
Tillage (T)			14	0.9	1	NS	NS	2	NS	65
Density (D)			NS	0	NS	NS	NS	NS	882	NS
R x T			NS	NS	NS	NS	NS	NS	NS	NS
R X D			NS	NS	NS	NS	NS	NS	NS	NS
T x D			NS	NS	NS	NS	NS	NS	NS	NS
R x T x D			NS	NS	NS	NS	NS	3	NS	NS

Table:2117- 02 .Tillage, Rotation and Planting Density in Corn and Soybean - Soybean . Arlington, WI - 2021

Tillage treatment	Yield	Moisture	*AGI $11.93/bu
	bu/A	%	$/A
NT	55	9.8	644
RT	52	9.9	610
T1	57	9.9	672
T2	59	9.8	692
T3	61	9.8	717
T4	60	9.9	704
Mean	58	9.8	673
Probability(%)			
Tillage (T)	2.1	45.1	2.1
LSD(0.10)			
Tillage (T)	5	NS	55

*AGI - Adjusted Gross Income