FIELD EXPERIMENT HISTORY

Title: **Corn - Soybean Response to Tillage and Rotation**

Experiment: 09CS **Trial ID:** 6675 **Year:** 2022

Personnel: Joe Lauer, Thierno Diallo, Kent Kohn,

Location: Arlington, WI **County:** Columbia

Supported By: HATCH

Site Information

Field: 334 **Previous Crop:** See factors **Soil Type:**

Soil Test Date: 12/7 /22 **pH** 6.5 **OM (%)** 3.1 **P (ppm)** 11 **K (ppm)** 77

Plot Management

Tillage Operations: Field Cultivator 2x

Fertilizer:		**Analysis:**	**Rate lbs/A:**	**Date:**
	Preplant :	N/A	N/A	N/A
	Starter :	N/A	N/A	N/A
	Post plant :	32-0-0	CC: 593 CS: 500	6/20/22 6/20/22
	Manure:	N/A	N/A	N/A

Herbicide: 06-May-22 Medal II EC @ 24 oz/acre
22-Jun-22 Roundup PowerMAX @ 30 oz/acre

Insecticide: See Seed Treatments

Hybrid: C: Jung 53DP511
S: NK22C4E3

Irrigation: No

Planting Date: C: 5/17/22
S: 5/17/22

Row Width: 30"

Planting Depth: 1.5"

Target Plant Density: Corn: 32500 Plants/A
Soybean: 140000 Plants/A

Planting Method: JD 1700 with RTK

Harvest Date: C: 10/31/22
S: 10/4 & 10/18/22

Harvest Method: MF 8XP plot combine

Notes:

Experimental Design

Design: RCB split-split-plot

Replications: 4

Plot Size Seeded: MP: 30' x 70'

Experiment Size: 2.7 A

Harvest Plot Size: 5' x 31'

Factors/Treatments:

Tillage:

1) NT
2) CT

Rotation: 2022 Treatments

1) CCCCCSSSSS-5S
2) CCCCCSSSSS-4S
3) CCCCCSSSSS-3S
4) CCCCCSSSSS-2S
5) CCCCCSSSSS-1S
6) CCCCCSSSSS-5C
7) CCCCCSSSSS-4C
8) CCCCCSSSSS-3C
9) CCCCCSSSSS-2C
10) CCCCCSSSSS-1C
11) CC
12) CS-S
13) CS-C
14) SS-S

Density:

1) 25000
2) 35000
3) 45000

Results: Table 2209-07 & 2209-08

Table2209-07. Corn/Soybean Rotation and Tillage Study - Corn.
Arlington, WI - 2022.

Tillage	Rotation	Density	Yield	Moisture	Test weight	Lodged			Harvest density	AGI $6.09/bu
						Total	Stalk	Root		
			bu/A	%	lbs/bu	%	%	%	plants/A	$/A
Conv			212	20.9	55.4	7.4	1.9	5.6	33595	1220
Notill			173	22.1	54.0	1.4	0.7	0.7	31429	992
	1C		241	21.0	55.4	0.5	0.3	0.1	35000	1384
	2C		191	21.4	54.8	5.8	1.6	4.3	31667	1097
	3C		176	21.9	54.7	6.7	1.7	5.0	33500	1012
	4C		168	21.8	54.4	6.0	3.0	3.1	30833	966
	5C		177	22.2	54.2	4.6	0.9	3.6	32375	1012
	CS		228	21.1	54.3	1.9	1.0	1.0	34375	1309
	CC		167	21.1	55.0	5.4	0.5	4.9	29833	961
		25K	183	21.4	54.9	2.8	0.7	2.1	23857	1050
		35K	196	21.7	54.5	4.8	1.5	3.3	32554	1123
		45K	199	21.4	54.7	5.6	1.6	4.0	41125	1146
Conv	1C		245	20.8	55.9	0.5	0.2	0.2	34583	1407
Conv	2C		209	20.7	55.4	10.4	2.5	7.9	33083	1206
Conv	3C		199	21.0	55.6	11.1	2.8	8.4	33917	1144
Conv	4C		203	21.4	55.5	10.7	4.5	6.1	33000	1164
Conv	5C		198	21.3	54.7	8.7	1.4	7.3	32167	1136
Conv	CS		235	20.6	55.2	2.2	0.8	1.3	34250	1354
Conv	CC		196	20.6	55.3	8.4	0.7	7.7	34167	1128
Notill	1C		237	21.3	54.9	0.4	0.4	0.0	35417	1361
Notill	2C		173	22.1	54.2	1.3	0.6	0.6	30250	989
Notill	3C		154	22.8	53.9	2.3	0.6	1.7	33083	879
Notill	4C		134	22.2	53.3	1.4	1.4	0.0	28667	767
Notill	5C		155	23.1	53.7	0.4	0.4	0.0	32583	888
Notill	CS		221	21.7	53.5	1.6	1.1	0.6	34500	1265
Notill	CC		139	21.6	54.7	2.4	0.3	2.1	25500	795
Conv		25K	200	20.9	55.7	5.2	1.3	3.9	24571	1153
Conv		35K	213	21.1	54.7	7.6	1.8	5.8	33786	1225
Conv		45K	223	20.7	55.6	9.5	2.5	7.1	42429	1282
Notill		25K	165	22.0	54.1	0.5	0.1	0.4	23143	947
Notill		35K	178	22.3	54.2	2.1	1.2	0.9	31321	1020
Notill		45K	176	22.1	53.8	1.6	0.7	0.9	39821	1009
	1C	25K	224	21.1	55.8	0.0	0.0	0.0	26000	1289
	1C	35K	245	21.4	55.0	1.1	0.7	0.4	35375	1407
	1C	45K	253	20.7	55.4	0.3	0.3	0.0	43625	1456
	2C	25K	181	21.7	54.8	2.5	0.0	2.5	24375	1040
	2C	35K	196	21.3	55.0	8.4	2.9	5.6	31500	1127
	2C	45K	196	21.2	54.7	6.5	1.8	4.8	39125	1125
	3C	25K	178	21.0	55.2	5.4	1.0	4.4	25875	1023
	3C	35K	177	22.6	54.1	2.4	0.0	2.4	33375	1012
	3C	45K	174	22.0	54.9	12.3	4.0	8.3	41250	1000

continue

Table 2209-07. Corn/Soybean Rotation and Tillage Study - Corn.
(continued) **Arlington, WI - 2022.**

Tillage	Rotation	Density	Yield	Moisture	Test weight	Lodged			Harvest density	AGI $6.09/bu
						Total	Stalk	Root		
			bu/A	%	lbs/bu	%	%	%	plants/A	$/A
	4C	25K	157	22.0	55.0	4.8	2.5	2.3	22750	900
	4C	35K	172	22.2	54.2	8.7	4.6	4.0	30125	988
	4C	45K	175	21.1	53.9	4.6	1.7	2.9	39625	1009
	5C	25K	170	21.9	53.9	2.2	0.5	1.7	22000	972
	5C	35K	177	22.4	53.8	6.2	1.1	5.0	32500	1013
	5C	45K	183	22.3	55.1	5.3	1.1	4.2	42625	1051
	CS	25K	216	21.4	54.3	1.5	1.0	0.5	25750	1242
	CS	35K	231	20.7	54.6	2.2	0.7	1.5	34750	1330
	CS	45K	236	21.4	54.1	2.0	1.2	0.8	42625	1357
	CC	25K	153	21.0	55.3	3.5	0.0	3.5	20250	881
	CC	35K	171	21.3	54.7	4.8	0.4	4.4	30250	981
	CC	45K	178	21.1	55.0	7.8	1.1	6.8	39000	1022
Conv	1C	25K	227	20.9	56.0	0.0	0.0	0.0	25750	1306
Conv	1C	35K	248	20.7	55.0	1.5	0.7	0.7	35500	1429
Conv	1C	45K	258	20.7	56.8	0.0	0.0	0.0	42500	1487
Conv	2C	25K	199	20.9	55.5	5.0	0.0	5.0	25000	1144
Conv	2C	35K	211	20.5	55.4	13.1	3.9	9.2	33500	1214
Conv	2C	45K	219	20.6	55.3	13.1	3.6	9.5	40750	1260
Conv	3C	25K	192	20.4	57.0	10.9	2.0	8.9	26250	1106
Conv	3C	35K	200	21.8	54.4	1.4	0.0	1.4	33500	1146
Conv	3C	45K	205	20.7	55.4	21.2	6.3	14.9	42000	1180
Conv	4C	25K	188	21.7	55.6	9.6	5.0	4.6	22250	1078
Conv	4C	35K	204	21.9	54.9	13.2	5.1	8.0	35000	1169
Conv	4C	45K	216	20.5	55.9	9.3	3.4	5.8	41750	1244
Conv	5C	25K	194	21.4	55.0	4.5	1.0	3.4	24750	1111
Conv	5C	35K	193	21.6	53.6	11.6	1.5	10.1	30250	1107
Conv	5C	45K	207	21.1	55.7	10.1	1.7	8.4	41500	1191
Conv	CS	25K	221	20.5	54.8	2.0	1.0	1.0	25500	1273
Conv	CS	35K	239	20.5	55.9	4.5	1.4	3.0	34000	1379
Conv	CS	45K	245	20.9	55.0	0.0	0.0	0.0	43250	1409
Conv	CC	25K	183	20.7	56.3	4.2	0.0	4.2	22500	1052
Conv	CC	35K	196	20.7	54.1	7.9	0.0	7.9	34750	1129
Conv	CC	45K	209	20.5	55.3	13.1	2.2	10.9	45250	1203
Notill	1C	25K	222	21.3	55.7	0.0	0.0	0.0	26250	1272
Notill	1C	35K	242	22.1	55.1	0.7	0.7	0.0	35250	1386
Notill	1C	45K	247	20.7	54.1	0.6	0.6	0.0	44750	1424
Notill	2C	25K	164	22.5	54.1	0.0	0.0	0.0	23750	937
Notill	2C	35K	181	22.1	54.5	3.8	1.9	1.9	29500	1039
Notill	2C	45K	173	21.7	54.1	0.0	0.0	0.0	37500	991
Notill	3C	25K	164	21.7	53.5	0.0	0.0	0.0	25500	940
Notill	3C	35K	154	23.5	53.8	3.4	0.0	3.4	33250	879
Notill	3C	45K	144	23.2	54.4	3.4	1.7	1.7	40500	820
Notill	4C	25K	126	22.3	54.5	0.0	0.0	0.0	23250	722
Notill	4C	35K	141	22.4	53.4	4.2	4.2	0.0	25250	807
Notill	4C	45K	135	21.8	52.0	0.0	0.0	0.0	37500	773

continue

Table 2209-07. Corn/Soybean Rotation and Tillage Study - Corn.

(continued) **Arlington, WI - 2022.**

Tillage	Rotation	Density	Yield	Moisture	Test weight	Lodged			Harvest density	AGI $6.09/bu
						Total	Stalk	Root		
			bu/A	%	lbs/bu	%	%	%	plants/A	$/A
Notill	5C	25K	146	22.5	52.8	0.0	0.0	0.0	19250	833
Notill	5C	35K	161	23.2	54.0	0.8	0.8	0.0	34750	919
Notill	5C	45K	160	23.6	54.5	0.6	0.6	0.0	43750	911
Notill	CS	25K	211	22.2	53.9	1.0	1.0	0.0	26000	1211
Notill	CS	35K	223	20.9	53.4	0.0	0.0	0.0	35500	1280
Notill	CS	45K	228	22.0	53.2	4.0	2.3	1.7	42000	1304
Notill	CC	25K	124	21.3	54.2	2.8	0.0	2.8	18000	711
Notill	CC	35K	145	21.9	55.4	1.7	0.8	0.8	25750	832
Notill	CC	45K	147	21.7	54.6	2.6	0.0	2.6	32750	841
Mean			193	21.5	54.7	4.4	1.3	3.1	32512	1106
Probability(%)										
Tillage (T)			0.2	1.6	1.9	3.5	9.0	3.2	3.8	0.2
Rotation (R)			0.0	6.4	14.6	5.5	8.3	4.3	0.0	0.0
Density (D)			0.0	37.4	33.3	6.3	24.8	15.4	0.0	0.0
T x R			0.0	73.6	62.3	14.0	40.6	19.5	0.1	0.0
T x D			2.8	71.5	6.6	34.9	62.6	35.8	66.0	2.6
R x D			18.6	26.7	75.3	26.2	36.3	78.8	79.8	16.2
T x R x D			84.0	89.7	23.1	25.3	83.6	32.9	5.8	84.4
LSD(0.10)										
Tillage (T)			8	0.6	1	3.9	1	3	1431	48
Rotation (R)			11	0.7	NS	4	1	3	1868	64
Density (D)			4	NS	NS	2	NS	NS	1171	24
T x R			16	NS	NS	NS	NS	NS	2647	91
T x D			7	NS	1	NS	NS	NS	NS	39
R x D			NS	NS	NS	NS	NS	NS	NS	NS
T x R x D			NS	NS	NS	NS	NS	NS	4424	NS

Table 2209-08. Corn/Soybean Rotation and Tillage Study - Soybean.
Arlington, WI - 2022

Tillage	Rotation	Yield	Moisture	AGI $13.85/bu
		bu/A	%	$/A
Conv		70.2	12.2	956
Notill		64.9	13.6	882
	1S	75.4	12.5	1027
	2S	68.3	12.2	930
	3S	67.2	12.5	915
	4S	63.9	12.7	870
	5S	64.4	12.4	878
	SC	67.4	15.8	914
	SS	66.0	12.0	900
Conv	1S	78.6	12.4	1070
Conv	2S	72.2	11.9	983
Conv	3S	68.0	11.9	926
Conv	4S	68.3	12.2	930
Conv	5S	66.8	12.1	910
Conv	SC	68.3	12.6	931
Conv	SS	69.0	12.0	940
Notill	1S	72.3	12.6	984
Notill	2S	64.4	12.6	876
Notill	3S	66.3	13.0	903
Notill	4S	59.5	13.1	810
Notill	5S	62.1	12.8	845
Notill	SC	66.4	18.9	897
Notill	SS	63.1	11.9	859
Mean		67.5	12.9	919
Probability(%)				
Tillage (T)		0.8	0.2	0.8
Rotation (R)		0.0	0.0	0.0
T x R		21.3	0.0	25.5
LSD(0.10)				
Tillage (T)		2.0	0.3	27
Rotation (R)		2.7	0.5	36
T x R		NS	0.7	NS