FIELD EXPERIMENT HISTORY

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

Experiment: 09CS **Trial ID** 6526 **Year** 2021

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 11/12/18 **pH** 6.5 **OM (%)** 3.1 **P (ppm)** 15 **K (ppm)** 108

Plot Management

		Analysis:	Rate lbs/A:	Date:
Tillage Operations:				
Fertilizer:	**Preplant :**	N/A	N/A	N/A
	Starter :	N/A	N/A	N/A
	Post plant :	32-0-0	CC: 593 CS: 500	6/08/21 6/08/21
	Manure:	N/A	N/A	N/A

Herbicide: Moccasin II Plus @ 24 oz/acre 4/27/21
Durango DMA @ 36 oz/acre 4/27/21
Durango DMA @ 36 oz/acre 6/9/21

Insecticide: See Seed Treatments

Hybrid: C:Jung 56SS538RIB
S: NK Brand S24-A5X

Irrigation: No

Planting Date: C: 5/13/21
S: 5/5/21

Row Width: 30"

Planting Depth: 1.5"

Target Plant Density: Corn: 32500 Plants/A
Soybean: 160000 Plants/A

Planting Method: JD 1700 with RTK

Harvest Date: C: 10/14/21
S: 10/16/21

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: 2020 Treatments

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

Density:

1) 25000
2) 35000
3) 45000

Results: Table 2109-07 & 2109-08

Table2109-07: Corn/Soybean Rotation and Tillage Study - Corn.
Arlington, WI - 2021.

Tillage	Rotation	Density	Yield	Moisture	Test weight	Lodged			Harvest density	AGI $5.22/bu
						Total	Stalk	Root		
			bu/A	%	lbs/bu	%	%	%	plants/A	$/A
Conv			217	30.2	53.7	2.2	2.1	0.1	33869	1022
Notill			222	31.8	53.4	0.9	0.9	0.0	34536	1034
	1C		252	27.4	53.6	2.3	2.3	0.0	35333	1198
	2C		208	31.4	53.6	1.0	1.0	0.0	34125	972
	3C		193	32.1	53.3	1.0	1.0	0.0	33792	899
	4C		210	32.3	53.6	1.1	1.0	0.1	32500	976
	5C		212	32.8	53.8	2.5	2.4	0.1	34000	983
	C		257	29.0	53.4	1.1	1.1	0.0	35167	1215
	CC		205	32.1	53.6	1.6	1.5	0.1	34500	953
		25K	211	30.9	53.5	0.5	0.5	0.1	25732	988
		35K	222	31.2	53.5	1.4	1.3	0.1	34196	1040
		45K	225	30.9	53.7	2.6	2.6	0.0	42679	1057
Conv	1C		246	27.0	54.2	4.0	4.0	0.0	34000	1171
Conv	2C		197	30.6	53.8	1.0	1.0	0.0	34333	925
Conv	3C		198	31.4	53.4	2.0	2.0	0.0	34000	924
Conv	4C		214	30.9	53.6	2.0	1.7	0.3	33000	1002
Conv	5C		209	31.8	53.7	3.1	2.9	0.2	33917	977
Conv	C		257	28.0	53.7	0.6	0.6	0.0	34583	1220
Conv	CC		200	31.5	53.8	2.6	2.3	0.3	33250	935
Notill	1C		258	27.9	53.0	0.7	0.7	0.0	36667	1224
Notill	2C		219	32.2	53.4	1.0	1.0	0.0	33917	1019
Notill	3C		188	32.8	53.1	0.0	0.0	0.0	33583	874
Notill	4C		205	33.7	53.7	0.3	0.3	0.0	32000	951
Notill	5C		214	33.8	54.0	1.9	1.9	0.0	34083	989
Notill	C		257	30.0	53.1	1.5	1.5	0.0	35750	1210
Notill	CC		209	32.6	53.4	0.6	0.6	0.0	35750	972
Conv		25K	210	30.0	53.7	0.5	0.4	0.1	25929	990
Conv		35K	219	30.5	53.6	1.5	1.4	0.1	33929	1029
Conv		45K	223	30.0	53.9	4.6	4.5	0.1	41750	1047
Notill		25K	211	31.8	53.3	0.6	0.6	0.0	25536	986
Notill		35K	225	32.0	53.4	1.3	1.3	0.0	34464	1051
Notill		45K	228	31.7	53.4	0.7	0.7	0.0	43607	1066
	1C	25K	232	28.1	53.2	0.0	0.0	0.0	26375	1101
	1C	35K	256	27.6	53.5	2.8	2.8	0.0	34250	1215
	1C	45K	268	26.6	54.1	4.2	4.2	0.0	45375	1277
	2C	25K	198	31.4	53.9	1.0	1.0	0.0	25000	927
	2C	35K	216	31.7	53.5	0.4	0.4	0.0	35750	1007
	2C	45K	210	31.0	53.3	1.8	1.8	0.0	41625	983
	3C	25K	194	30.9	53.0	0.0	0.0	0.0	25750	908
	3C	35K	192	32.5	53.1	0.0	0.0	0.0	34500	895
	3C	45K	192	32.7	53.6	3.0	3.0	0.0	41125	894

continue

Table 2109-07: Corn/Soybean Rotation and Tillage Study - Corn.
(continued) **Arlington, WI - 2021.**

Tillage	Rotation	Density	Yield	Moisture	Test weight	Lodged			Harvest density	AGI $5.22/bu
						Total	Stalk	Root		
			bu/A	%	lbs/bu	%	%	%	plants/A	$/A
	4C	25K	206	31.4	53.8	0.4	0.0	0.4	25125	965
	4C	35K	213	31.9	54.0	1.1	1.1	0.0	31750	995
	4C	45K	209	33.7	53.1	1.9	1.9	0.0	40625	968
	5C	25K	201	33.5	53.9	1.5	1.5	0.0	26000	930
	5C	35K	216	33.4	53.5	2.7	2.7	0.0	33625	999
	5C	45K	218	31.5	54.0	3.3	3.0	0.3	42375	1020
	C	25K	246	29.6	52.7	1.0	1.0	0.0	26625	1160
	C	35K	258	29.3	53.4	1.7	1.7	0.0	36125	1215
	C	45K	268	28.1	54.0	0.6	0.6	0.0	42750	1271
	CC	25K	197	31.4	53.8	0.0	0.0	0.0	25250	923
	CC	35K	205	32.3	53.5	1.2	0.8	0.4	33375	954
	CC	45K	212	32.5	53.7	3.6	3.6	0.0	44875	984
Conv	1C	25K	224	27.9	53.7	0.0	0.0	0.0	25250	1063
Conv	1C	35K	249	27.5	54.3	4.1	4.1	0.0	33750	1183
Conv	1C	45K	265	25.5	54.7	8.0	8.0	0.0	43000	1267
Conv	2C	25K	195	30.1	54.2	0.0	0.0	0.0	25500	916
Conv	2C	35K	201	31.4	53.6	0.7	0.7	0.0	36250	937
Conv	2C	45K	196	30.5	53.7	2.4	2.4	0.0	41250	921
Conv	3C	25K	199	30.2	53.8	0.0	0.0	0.0	25250	934
Conv	3C	35K	192	32.0	52.8	0.0	0.0	0.0	34750	897
Conv	3C	45K	202	32.0	53.6	5.9	5.9	0.0	42000	940
Conv	4C	25K	211	29.5	54.0	0.9	0.0	0.9	26250	996
Conv	4C	35K	221	30.2	54.0	1.4	1.4	0.0	32500	1038
Conv	4C	45K	210	33.2	52.8	3.8	3.8	0.0	40250	971
Conv	5C	25K	196	33.2	53.7	0.9	0.9	0.0	26750	908
Conv	5C	35K	213	32.4	53.4	1.7	1.7	0.0	33500	993
Conv	5C	45K	219	29.9	53.9	6.5	5.9	0.6	41500	1030
Conv	C	25K	249	28.6	52.7	1.9	1.9	0.0	26750	1179
Conv	C	35K	258	28.4	53.8	0.0	0.0	0.0	35250	1220
Conv	C	45K	265	27.1	54.7	0.0	0.0	0.0	41750	1261
Conv	CC	25K	199	30.6	53.8	0.0	0.0	0.0	25750	931
Conv	CC	35K	201	31.7	53.4	2.3	1.6	0.8	31500	936
Conv	CC	45K	202	32.1	54.2	5.3	5.3	0.0	42500	939
Notill	1C	25K	241	28.3	52.8	0.0	0.0	0.0	27500	1139
Notill	1C	35K	263	27.7	52.6	1.5	1.5	0.0	34750	1247
Notill	1C	45K	271	27.7	53.4	0.5	0.5	0.0	47750	1286
Notill	2C	25K	202	32.8	53.7	1.9	1.9	0.0	24500	937
Notill	2C	35K	231	32.1	53.5	0.0	0.0	0.0	35250	1077
Notill	2C	45K	224	31.6	53.0	1.2	1.2	0.0	42000	1044
Notill	3C	25K	189	31.7	52.2	0.0	0.0	0.0	26250	883
Notill	3C	35K	192	33.1	53.5	0.0	0.0	0.0	34250	892
Notill	3C	45K	183	33.5	53.6	0.0	0.0	0.0	40250	848
Notill	4C	25K	202	33.4	53.6	0.0	0.0	0.0	24000	934
Notill	4C	35K	206	33.6	54.0	0.8	0.8	0.0	31000	953
Notill	4C	45K	209	34.2	53.4	0.0	0.0	0.0	41000	966

continue

Table 2109-07: Corn/Soybean Rotation and Tillage Study - Corn.
(continued) **Arlington, WI - 2021.**

Tillage	Rotation	Density	Yield	Moisture	Test weight	Lodged			Harvest density	AGI $5.22/bu
						Total	Stalk	Root		
			bu/A	%	lbs/bu	%	%	%	plants/A	$/A
Notill	5C	25K	206	33.9	54.1	2.0	2.0	0.0	25250	952
Notill	5C	35K	218	34.4	53.6	3.7	3.7	0.0	33750	1004
Notill	5C	45K	218	33.1	54.2	0.0	0.0	0.0	43250	1010
Notill	C	25K	243	30.6	52.8	0.0	0.0	0.0	26500	1141
Notill	C	35K	258	30.3	53.1	3.4	3.4	0.0	37000	1209
Notill	C	45K	271	29.1	53.4	1.1	1.1	0.0	43750	1281
Notill	CC	25K	196	32.2	53.7	0.0	0.0	0.0	24750	914
Notill	CC	35K	209	32.8	53.5	0.0	0.0	0.0	35250	972
Notill	CC	45K	222	32.9	53.1	1.9	1.9	0.0	47250	1029
Mean			219	31.0	53.6	1.5	1.5	0.1	34202	1028
Probability(%)										
Tillage (T)			35.9	1.8	9.8	9.2	10.9	19.6	30.1	55.5
Rotation (R)			0.0	0.0	60.5	58.4	60.0	66.6	12.7	6.1
Density (D)			0.0	47.9	51.5	0.1	0.1	96.4	0.0	20.1
T x R			6.2	73.4	21.8	47.9	50.0	66.6	39.3	40.0
T x D			38.5	86.2	71.5	0.0	0.0	96.4	15.9	0.0
R x D			0.3	2.0	22.8	52.3	44.1	32.2	20.6	0.1
T x R x D			24.9	76.9	61.0	28.4	32.1	32.2	92.3	0.0
LSD(0.10)										
Tillage (T)			NS	0.8	0	1.3	NS	NS	NS	NS
Rotation (R)			9	1.0	NS	NS	NS	NS	NS	28
Density (D)			3	NS	NS	1	1	NS	970	NS
T x R			13	NS	NS	NS	NS	NS	NS	NS
T x D			NS	NS	NS	1	1.3	NS	NS	43
R x D			11	2	NS	NS	NS	NS	NS	55
T x R x D			NS	NS	NS	NS	NS	NS	NS	17

Table 2109-08. Corn/Soybean Rotation and Tillage Study - Soybean.
Arlington, WI - 2021

Tillage	Rotation	Yield	Moisture	AGI $11.93/bu
		bu/A	%	$/A
Conv		60.5	11.2	708
Notill		62.2	11.1	728
	1S	63.6	11.0	744
	2S	63.6	11.5	744
	3S	61.1	11.1	715
	4S	58.8	11.3	688
	5S	59.3	11.6	694
	S	64.0	10.5	749
	SS	59.3	10.9	693
Conv	1S	64.5	11.2	754
Conv	2S	61.3	11.5	717
Conv	3S	59.6	11.1	698
Conv	4S	55.9	11.3	654
Conv	5S	59.4	11.6	695
Conv	S	64.5	10.6	755
Conv	SS	58.6	11.0	685
Notill	1S	62.7	10.9	734
Notill	2S	65.9	11.4	771
Notill	3S	62.5	11.0	732
Notill	4S	61.7	11.4	721
Notill	5S	59.2	11.6	693
Notill	S	63.6	10.4	744
Notill	SS	59.9	10.7	701
Mean		61.4	11.1	718
Probability(%)				
Tillage (T)		16.0	67.5	16.1
Rotation (R)		0.5	55.3	0.5
T x R		23.0	100.0	23.1
LSD(0.10)				
Tillage (T)		NS	NS	NS
Rotation (R)		2.9	NS	34
T x R		NS	NS	NS