

FIELD EXPERIMENT HISTORY

Expt. Number: 9591 Year: 1995
Title: 4-Year Corn/Soybean/Wheat Rotation Study
Personnel: E.S. Oplinger, J.G. Lauer, J.M. Gaska, M.J. Martinka and K.D. Hudelson
Location: Arlington Research Station, Arlington, WI
Supported by: Loveland Industries, HATCH Project 1890

FIELD INFORMATION

Field: 334E
Soil Type: Plano Silt Loam
Soil Test Results: Test Date: 7/95 pH: 6.4 P (ppm): 33 K (ppm): 230 OM (%): 3.5
Fertilizer Applied: Soybean : None
Corn: 150 lb/a nitrogen
Tillage Operations: No-till or
Fall chisel plowed and Spring field cultivated(2x) and cultimulched
Previous Crop: Corn and soybean
Previous Herbicide: Basagran, Pinnacle, Poast, Pursuit, Buctril, and Accent
Irrigation: None

EXPERIMENTAL PROCEDURE

Exp. Design: RCB Split-Split Plot
Replicates: 4
Variables: A: Tillage, B: Rotation Sequence, C: Corn - Coulter, Soybean - Inoculum

| | <u>Corn</u> | <u>Soybean</u> |
|-------------------|----------------------|------------------|
| Area Planted: | 7.5' x 35' | 7.5' x 35' |
| Area Harvested: | 5' x 31' | 5' x 31' |
| Row Spacing: | 30" | 7.5" |
| Hybrid/Variety: | P3769 | NK S19-90 |
| Planting Date: | 5/12/95 | 5/8/95 |
| Planting Equip: | JD Maxemerge Planter | Tye Notill Drill |
| Harvesting Date: | Oct. 4, 1995 | Sept. 27, 1995 |
| Harvesting Equip: | Almaco plot combines | |

| | <u>Date</u> | <u>Material</u> | <u>Plots</u> | <u>Rate</u> |
|---------------|-------------|-----------------|--------------|----------------|
| Herbicides: | May 26 | Dual | Soybean+Corn | 3 pt/a |
| | May 26 | Banvel | Corn | 1 pt/a |
| | June 14 | Pursuit | Soybean | 4 oz/a |
| | June 14 | Pinnacle | Soybean | 0.25 oz/a |
| | June 14 | 28% UAN | Soybean | 2 qt/a |
| | June 14 | NIS | Soybean | 0.5% |
| Insecticides: | 5/12/95 | Counter | Corn only | 8 oz/1000' row |

Results: Table D-3 and D-4.

Table D-3. 4-Year Corn/Soybean/Wheat Rotation Study. Arlington, WI Experiment 9591.

| Tillage | Rotation | Coulter | | |
|---------|----------|---------|---------|------------|
| | | Type | Moist % | Yield bu/a |
| Conv | | | 19.7 | 125.5 |
| No-Till | | | 21.2 | 62.6 |
| | cccCccc | | 21.2 | 94.7 |
| | wwwCcsc | | 20.4 | 89.1 |
| | cswCccc | | 19.2 | 127.6 |
| | wcsCccs | | 19.9 | 112.7 |
| | cwsCcsc | | 20.1 | 105.2 |
| | wscCsc | | 20.3 | 123.1 |
| | cswCccc | | 20.3 | 106.0 |
| | scsCscs | | 20.2 | 103.3 |
| Conv | cccCccc | | 21.2 | 94.7 |
| No-Till | cccCccc | | - | - |
| Conv | wwwCcsc | | 20.2 | 113.4 |
| No-Till | wwwCcsc | | 20.9 | 24.3 |
| Conv | cswCccc | | 19.2 | 127.6 |
| No-Till | cswCccc | | - | - |
| Conv | wcsCccs | | 19.1 | 143.8 |
| No-Till | wcsCccs | | 20.7 | 77.1 |
| Conv | cwsCcsc | | 18.9 | 145.9 |
| No-Till | cwsCcsc | | 21.4 | 58.7 |
| Conv | wscCsc | | 20.3 | 123.1 |
| No-Till | wscCsc | | - | - |
| Conv | cswCccc | | 19.9 | 120.2 |
| No-Till | cswCccc | | 22.8 | 20.6 |
| Conv | scsCscs | | 19.0 | 133.7 |
| No-Till | scsCscs | | 21.4 | 72.9 |
| | | Bubble | 20.3 | 107.5 |
| | | Fluted | 20.0 | 106.3 |
| Conv | | Bubble | 19.8 | 126.2 |
| No-Till | | Bubble | 21.6 | 59.3 |
| Conv | | Fluted | 19.6 | 124.8 |
| No-Till | | Fluted | 20.9 | 65.4 |
| | cccCccc | Bubble | 20.9 | 94.4 |
| | wwwCcsc | Bubble | 20.7 | 86.3 |
| | cswCccc | Bubble | 19.1 | 125.3 |
| | wcsCccs | Bubble | 20.4 | 117.2 |
| | cwsCcsc | Bubble | 20.4 | 104.3 |
| | wscCsc | Bubble | 20.6 | 119.4 |
| | cswCccc | Bubble | 19.6 | 124.5 |
| | scsCscs | Bubble | 20.3 | 103.0 |
| | cccCccc | Fluted | 21.5 | 95.1 |
| | wwwCcsc | Fluted | 20.0 | 92.5 |
| | cswCccc | Fluted | 19.4 | 130.0 |
| | wcsCccs | Fluted | 19.4 | 108.7 |
| | cwsCcsc | Fluted | 19.8 | 106.0 |
| | wscCsc | Fluted | 20.0 | 126.9 |
| | cswCccc | Fluted | 20.9 | 92.2 |
| | scsCscs | Fluted | 20.1 | 103.5 |

Table D-3. 4-Year Corn/Soybean/Wheat Rotation Study. Arlington, WI Experiment 9591.

| Tillage | Rotation | Coulter | | |
|----------------------|----------|---------|-------|-------|
| | | Type | Moist | Yield |
| | | | % | bu/a |
| Conv | cccCccc | Bubble | 20.9 | 94.4 |
| No-Till | cccCccc | Bubble | - | - |
| Conv | wwwCcsc | Bubble | 20.7 | 116.3 |
| No-Till | wwwCcsc | Bubble | 20.9 | 26.3 |
| Conv | cswCccc | Bubble | 19.1 | 125.3 |
| No-Till | cswCccc | Bubble | - | - |
| Conv | wcsCccs | Bubble | 19.7 | 148.3 |
| No-Till | wcsCccs | Bubble | 21.2 | 75.7 |
| Conv | cwsCcsc | Bubble | 19.2 | 144.2 |
| No-Till | cwsCcsc | Bubble | 22.0 | 51.1 |
| Conv | wscCsc | Bubble | 20.6 | 119.4 |
| No-Till | wscCsc | Bubble | - | - |
| Conv | cswCccc | Bubble | 19.6 | 124.5 |
| No-Till | cswCccc | Bubble | - | - |
| Conv | scsCscs | Bubble | 18.8 | 136.5 |
| No-Till | scsCscs | Bubble | 21.8 | 69.6 |
| Conv | cccCccc | Fluted | 21.5 | 95.1 |
| No-Till | cccCccc | Fluted | - | - |
| Conv | wwwCcsc | Fluted | 19.8 | 110.6 |
| No-Till | wwwCcsc | Fluted | 20.9 | 20.2 |
| Conv | cswCccc | Fluted | 19.4 | 130.0 |
| No-Till | cswCccc | Fluted | - | - |
| Conv | wcsCccs | Fluted | 18.5 | 139.2 |
| No-Till | wcsCccs | Fluted | 20.3 | 78.2 |
| Conv | cwsCcsc | Fluted | 18.7 | 147.6 |
| No-Till | cwsCcsc | Fluted | 21.0 | 64.5 |
| Conv | wscCsc | Fluted | 20.0 | 126.9 |
| No-Till | wscCsc | Fluted | - | - |
| Conv | cswCccc | Fluted | 20.2 | 116.0 |
| No-Till | cswCccc | Fluted | 22.8 | 20.6 |
| Conv | scsCscs | Fluted | 19.3 | 130.9 |
| No-Till | scsCscs | Fluted | 21.0 | 76.2 |
| Mean | | | 20.2 | 106.9 |
| Probability % | | | | |
| Tillage (T) | | | 2.3 | 0.2 |
| Rotation (R) | | | 0.2 | <0.1 |
| T x R | | | >50 | 29.7 |
| Coulter (C) | | | >50 | 40.1 |
| T x C | | | >50 | 15.3 |
| R x C | | | 48.5 | >50 |
| T x R x C | | | 22.8 | >50 |
| CV % | | | 5.6 | 11.6 |