

MANAGEMENT PRACTICES – 2014 AREA IV SCD/ARS RESEARCH FARM

AREA-F FIELD OPERATIONS, NW ¼ Section 17 T138N R81W

FIELD F1 This area has been excluded from the total acreage leased by AREA IV SCDs since 1987.

FIELD F2, OVERLAND WINTER WHEAT

Previous crop – Glenn spring wheat

09/25/13 Field seeded w/Bourgault drill @ 1.3 million seeds/ac + 70 lb/ac 11-52-0.
05/13/14 Contractor broadcast liquid N (28-0-0) @ 100 lb N/ac.
06/06/14 Contractor sprayed field w/Widematch @ 13 oz/ac + Everest @ 0.6 oz/ac + Propimax @ 2 oz/ac + 2,4-D LV6 @ 11 oz/ac + Linkage @ 1.5 qt/100 gal. + Sedate (drift control).
08/12/14 Field swathed w/20 ft. Versatile swather.
08/13/14 Field harvested w/JD 6620 combine and pickup head.
09/05/14 Contractor sprayed field w/Durango @ 32 oz/ac + Weedmaster @ 12 oz/ac + Ntense @ 1.5 qt/100 gal.
09/24/14 Contractor sprayed field w/Durango @ 32 oz/ac + Banvel @ 6 oz/ac + Ntense @ 1.5 qt/100 gal.

FIELD F3, PIONEER P63M80 SUNFLOWERS

Previous crop – Overland winter wheat

05/22/14 Contractor broadcast urea @ 80 lb N/ac.
06/02/14 Sprayed field w/Spartan Charge @ 4 oz/ac + Barbarian Max @ 32 oz/ac + Ntense @ 1.5 qt/100 gal.
06/03/14 Field seeded w/JD MaxEmerge II planter @ 24,000 seeds/ac.
07/09/14 Sprayed field w/Arrow 2EC @ 6.6 oz/ac + Express @ 0.5 oz/ac + Trophy Gold @ 1.5 qt/100 gal.
08/20/14 Contractor sprayed field by air w/Lambdastar @ 4.7 oz/ac + Trophy Gold @ 2.3 oz/ac.
10/27/14 Field harvested w/JD 6620 combine and row head.

FIELD F4, GLENN SPRING WHEAT

Previous crop – Pioneer P63 M80 sunflowers

05/13/14 Combined last year's sunflowers w/JD6620 (avg. yield 550 lb/ac)
05/21/14 Contractor broadcast liquid N (28-0-0) @ 80 lb N/ac.
05/23/14 Field seeded w/Bourgault drill @ 1.3 million seeds/ac + 70 lb/ac 11-52-0.
06/12/14 Contractor sprayed field w/Widematch @ 16 oz/ac + Everest @ 1.0 oz/ac + 2,4-D LV6 @ 10 oz/ac + Propimax @ 1.4 oz/ac + Linkage @ 1.5 qt/100 gal.
09/17/14 Field harvested w/JD6620 and straight head.
09/24/14 Contractor sprayed field w/Durango @ 32 oz/ac + Banvel @ 6 oz/ac + Ntense @ 1.5 qt/100 gal.

FIELD F5, GLENN SPRING WHEAT

Previous crop – Koma buckwheat

05/21/14 Contractor broadcast liquid N (28-0-0) @ 80 lb N/ac.
05/22/14 Field seeded w/Bourgault drill @ 1.3 million seeds/ac + 70 lb/ac 11-52-0.
06/21/14 Contractor sprayed field w/Widematch @ 16 oz/ac + Axial @ 16 oz/ac + Audit @ 0.3 oz/ac + Propimax @ 3 oz/ac.
09/16/14 Field harvested w/JD 6620 combine and straight head.
10/08/14 Contractor sprayed field w/Durango @ 32 oz/ac + Banvel @ 5 oz/ac + Ntense @ 1.5 qt/100 gal.

FIELD F6, GLENN SPRING WHEAT

Previous crop – Croplan 460E sunflowers
05/15/14 Combined last year's sunflowers w/JD6620 (avg. yield 550 lb/ac)
05/21/14 Contractor broadcast liquid N (28-0-0) @ 80 lb N/ac.
05/23/14 Field seeded w/Bourgault drill @ 1.3 million seeds/ac + 70 lb/ac 11-52-0.
06/21/14 Contractor sprayed field w/Widematch @ 16 oz/ac + Axial @ 16 oz/ac + Audit @ 0.3 oz/ac + Propimax @ 3 oz/ac.
09/15/14 Field harvested w/JD 6620 combine and straight head.
10/08/14 Contractor sprayed field w/Durango @ 32 oz/ac + Banvel @ 5 oz/ac + Ntense @ 1.5 qt/100 gal.

AREA-G FIELD OPERATIONS, SW ¼ Section 8 T138N R81W

FIELD G1, PIONEER CORN 8107, FORMER TREE PLOT

06/02/14 Sprayed field w/Barbarian Max @ 32 oz/ac + Ntense @ 1.5 qt/100 gal.
06/04/14 Field planted w/JD 1750 MaxEmerge XP planter @ 24,500 seeds/ac.
06/16/14 Sprayed field w/Roundup Weather Max @ 32 oz/ac + N-tense @ 1 qt/100 gal.
07/09/14 Field sprayed w/Roundup Weather Max @ 32 oz/ac + Ntense @ 1 qt/100 gal.
11/06/14 Attempted harvest, but corn was too wet.

FIELD G1, GLENN SPRING WHEAT

Previous crop – Glenn Spring wheat
05/13/14 Contractor broadcast liquid N (28-0-0) @ 100 lb N/ac.
05/21/14 Field seeded w/Bourgault drill @ 1.3 million seeds/ac + 70 lb/ac 11-52-0.
06/12/14 Contractor sprayed field w/Widematch @ 16 oz/ac + Everest @ 1.0 oz/ac + 2,4-D LV6 @ 10 oz/ac + Propimax @ 1.4 oz/ac + Linkage @ 1.5 qt/100 gal.
09/08/14 Field harvested w/JD 6620 combine and straight head.
09/24/14 Contractor sprayed field w/Durango @ 32 oz/ac + Banvel @ 6 oz/ac + Ntense @ 1.5 qt/100 gal.

FIELD G2, GLENN SPRING WHEAT

Previous crop – Pioneer P63 M80 sunflowers
05/12/14 Combined last year's sunflowers w/JD6620 (avg. yield 550 lb/ac)
05/21/14 Contractor broadcast liquid N (28-0-0) @ 80 lb N/ac.
05/21/14 Field seeded w/Bourgault drill @ 1.3 million seeds/ac + 70 lb/ac 11-52-0.
06/12/14 Contractor sprayed field w/Widematch @ 16 oz/ac + Everest @ 1.0 oz/ac + 2,4-D LV6 @ 10 oz/ac + Propimax @ 1.4 oz/ac + Linkage @ 1.5 qt/100 gal.
09/08/14 Field harvested w/JD6620 and straight head.
09/24/14 Contractor sprayed field w/Durango @ 32 oz/ac + Banvel @ 6 oz/ac + Ntense @ 1.5 qt/100 gal.

FIELD G3, GLENN SPRING WHEAT

Previous management – Fallow
05/13/14 Contractor broadcast liquid N (28-0-0) @ 100 lb N/ac.
05/16/14 Field seeded w/Bourgault drill @ 1.3 million seeds/ac + 70 lb/ac 11-52-0.
06/12/14 Contractor sprayed field w/Widematch @ 16 oz/ac + Everest @ 1.0 oz/ac + 2,4-D LV6 @ 10 oz/ac + Propimax @ 1.4 oz/ac + Linkage @ 1.5 qt/100 gal.
09/04/14 Harvested field w/JD6620 combine and straight head.
09/05/14 Contractor sprayed field w/Durango @ 32 oz/ac + Weedmaster @ 12 oz/ac + Ntense @ 1.5 qt/100 gal.
09/24/14 Contractor sprayed field w/Durango @ 32 oz/ac + Banvel @ 6 oz/ac + Ntense @ 1.5 qt/100 gal

FIELD G4, FALLOW

- Previous crop – Glenn spring wheat
- 06/16/14 Sprayed field w/Roundup Weather Max @ 32 oz/ac + Brash @ 16 oz/ac + N-tense @ 1 qt/100 gal.
- 07/28/14 Contractor sprayed field w/Durango @ 5 oz/ac + Ntense @ 1.5 qt/100 gal.
- 09/05/14 Contractor sprayed field w/Durango @ 32 oz/ac + Weedmaster @ 12 oz/ac + Ntense @ 1.5 qt/100 gal.

AREA-H FIELD OPERATIONS, NE ¼ Section 18 T138N R81W

FIELD H1, ALFALFA (Establishment) w/LEGGETT OATS (Nurse crop)

- Previous crop – Winter wheat varieties
- 06/02/14 Contractor sprayed field w/Durango @ 32 oz/ac + Ntense @ 1.5 qt/100 gal.
- 06/10/14 Field seeded w/JD 750 drill @ 30 lb/ac oats + 11 lb/ac alfalfa.
- 09/24/14 Field swathed w/20 ft. Versatile swather.
- 09/29/14 Oats harvested w/JD 6620 combine and pickup head.

FIELD H2, VEGAS DRY PEAS

- Previous crop – Roughrider winter wheat
- 05/06/14 Field seeded w/JD 750 @ 150 lb/ac + 50 lb/ac 11-52-0.
- 08/22/14 Field harvested w/JD 4420 combine and flex head.

FIELD H3 WEST, JERRY & OVERLAND WINTER WHEAT

- Previous crop – Tradition barley
- 09/24/13 Field seeded with Bourgault drill @ 1.3 million seeds/ac + 70 lb/ac 11-52-0.
- 05/13/14 Contractor broadcast liquid N (28-0-0) @ 100 lb N/ac.
- 06/06/14 Contractor sprayed field w/Widematch @ 13 oz/ac + Everest @ 0.6 oz/ac + Propimax @ 2 oz/ac + 2,4-D LV6 @ 11 oz/ac + Linkage @ 1.5 qt/100 gal. + Sedate (drift control).
- 08/11/14 Field swathed w/20 ft. Versatile swather.
- 08/14/14 Field harvested w/JD 6620 combine and pickup head.
- 09/05/14 Contractor sprayed field w/Durango @ 32 oz/ac + Weedmaster @ 12 oz/ac + Ntense @ 1.5 qt/100 gal.
- 09/24/14 Contractor sprayed field w/Durango @ 32 oz/ac + Banvel @ 6 oz/ac + Ntense @ 1.5 qt/100 gal.

FIELD H3 EAST, PIONEER P63M980 SUNFLOWERS

- Previous crop – Glenn spring wheat
- 05/22/14 Contractor broadcast urea @ 80 lb N/ac.
- 06/02/14 Sprayed field w/Spartan Charge @ 4 oz/ac + Barbarian Max @ 32 oz/ac + Ntense @ 1.5 qt/100 gal.
- 06/04/14 Field seeded w/JD 1750 MaxEmerge XP planter @ 24,500 seeds/ac.
- 07/09/14 Sprayed field w/Arrow 2EC @ 6.6 oz/ac + Express @ 0.5 oz/ac + Trophy Gold @ 1.5 qt/100 gal.
- 08/20/14 Contractor sprayed field by air w/Lambdastar @ 4.7 oz/ac + Trophy Gold @ 2.3 oz/ac.
- 10/28/14 Field harvested w/JD 6620 combine and row head.

FIELD H3 SOUTH ("waterhole"), Flooded

Previously – Flooded

FIELD H4, SOIL QUALITY MANAGEMENT

See 'Management Strategies for Soil Quality'

FIELD H4, JERRY WINTER WHEAT

Previous crop – Glenn spring wheat
09/24/13 Field seeded with Bourgault drill @ 1.3 million seeds/ac + 70 lb/ac 11-52-0.
05/13/14 Contractor broadcast liquid N (28-0-0) @ 100 lb N/ac.
06/06/14 Contractor sprayed field w/Widematch @ 13 oz/ac + Everest @ 0.6 oz/ac + Propimax @ 2 oz/ac + 2,4-D LV6 @ 11 oz/ac + Linkage @ 1.5 qt/100 gal. + Sedate (drift control).
08/11/14 Field swathed w/20 ft. Versatile swather.
08/14/14 Field harvested w/JD 6620 combine and pickup head.
09/24/14 Contractor sprayed field w/Durango @ 32 oz/ac + Banvel @ 6 oz/ac + Ntense @ 1.5 qt/100 gal.

FIELD H4, PIONEER P8107 CORN

Previous crop – CDC Meadow dry peas
05/22/14 Contractor broadcast urea @ 80 lb N/ac.
06/02/14 Field seeded w/JD 1750 MaxEmerge XP planter @ 24,500 seeds/ac.
07/15/14 Contractor sprayed field w/Barbarian Max @ 24 oz/ac + Ntense @ 1 qt/100 gal.
Field not harvested because of high moisture.

FIELD H4, PIONEER 90Y50 SOYBEANS

Previous crop – Croplan 229VT2 corn
06/04/14 Field seeded w/JD 1750 MaxEmerge XP planter @ 175,000 seeds/ac.
07/28/14 Sprayed field w/Barbarian Max @ 24 oz/ac + N-tense @ 1 qt/100 gal.
11/07/14 Field harvested w/JD 4420 combine and all crop head.

FIELD H4, GLENN SPRING WHEAT

Previous crop – Soybean varieties
05/21/14 Contractor broadcast liquid N (28-0-0) @ 80 lb N/ac.
05/20/14 Field seeded w/Bourgault drill @ 1.3 million seeds/ac + 70 lb/ac 11-52-0.
06/12/14 Contractor sprayed field w/Widematch @ 16 oz/ac + Everest @ 1.0 oz/ac + 2,4-D LV6 @ 10 oz/ac + Propimax @ 1.4 oz/ac + Linkage @ 1.5 qt/100 gal.
09/17/14 Field harvested w/JD 6620 combine and straight head.
09/24/14 Contractor sprayed field w/Durango @ 32 oz/ac + Banvel @ 6 oz/ac + Ntense @ 1.5 qt/100 gal.

FIELD H5, PIONEER 8107 CORN

Previous year – Alfalfa, 4th yr
05/21/14 Contractor sprayed field w/Durango @ 32 oz/ac + Banvel @ 4 oz/ac + Ntense @ 1.5 qt/100 gal.
05/22/14 Contractor broadcast urea @ 80 lb N/ac (middle strip).
06/02/14 Contractor sprayed field w/Durango @ 32 oz/ac + Banvel @ 5 oz/ac + Ntense @ 1.5 qt/100 gal.
06/12/14 Field planted w/JD 1750 MaxEmerge XP planter @ 24,500 seeds/ac.
07/15/14 Contractor sprayed field w/Barbarian Max @ 24 oz/ac + Ntense @ 1 qt/100 gal.
Crop not harvested because of high moisture.

AREA-I FIELD OPERATIONS, NE ¼ Section 20 T138N R81W

FIELD I1, GLENN SPRING WHEAT (CONTINUOUS SPRING WHEAT 30 YRS).

Previous crop – Glenn spring wheat
05/13/14 Contractor broadcast liquid N (28-0-0) @ 100 lb N/ac.
05/20/14 Field seeded w/Bourgault drill @ 1.3 million seeds/ac (treated w/Raxil MD) + 70 lb/ac 11-52-0.
06/21/14 Contractor sprayed field w/Widematch @ 16 oz/ac + Axial @ 16 oz/ac + Audit @ 0.3 oz/ac + Propimax @ 3 oz/ac.
09/22/14 Field harvested w/JD 6620 combine and straight head.
10/08/14 Contractor sprayed field w/Durango @ 32 oz/ac + Banvel @ 5 oz/ac + Ntense @ 1.5 qt/100 gal.

FIELD I2, KOMA BUCKWHEAT (NORTH HALF)

Previous crop – Croplan 2738 corn
05/22/14 Contractor broadcast urea @ 80 lb N/ac.
06/17/14 Field seeded w/Bourgault @ 70 lb/ac + 70 lb/ac 11-52-0.
06/16/14 Sprayed field w/Roundup Weather Max @ 32 oz/ac + N-tense @ 1 qt/100 gal.
09/22/14 Field swathed w/20 ft. Versatile swather.
10/10/14 Field harvested w/JD 6620 combine and pickup head.

FIELD I2, CAMELINA RESEARCH, cont. (SOUTH HALF)

Previous crop – Camelina research

FIELD I3, PIONEER P8107 CORN

Previous crop – Glenn spring wheat
05/22/14 Contractor broadcast urea @ 80 lb N/ac.
05/30/14 Field seeded w/JD 1750 MaxEmerge XP planter @ 24,500 seeds/ac.
06/02/14 Sprayed field w/Barbarian Max @ 32 oz/ac + Ntense @ 1.5 qt/100 gal.
07/09/14 Field sprayed w/Roundup Weather Max @ 32 oz/ac + Ntense @ 1 qt/100 gal.
11/05/14 Field harvested w/JD 6620 combine and all-crop head.

FIELD I4, PIONEER P63M80 SUNFLOWERS

Previous crop – Overland winter wheat
05/22/14 Contractor broadcast urea @ 80 lb N/ac.
06/02/14 Sprayed field w/Spartan Charge @ 4 oz/ac + Barbarian Max @ 32 oz/ac + Ntense @ 1.5 qt/100 gal.
06/03/14 Field seeded w/JD 1750 MaxEmerge XP planter @ 24,500 seeds/ac.
07/09/14 Sprayed field w/Arrow 2EC @ 6.6 oz/ac + Express @ 0.5 oz/ac + Trophy Gold @ 1.5 qt/100 gal.

08/20/14 Contractor sprayed field by air w/Lambdastar @ 4.7 oz/ac + Trophy Gold @ 2.3 oz/ac.
10/24/14 Field harvested w/JD 6620 combine and row head.

FIELD I5, GLENN SPRING WHEAT

Previous crop – Croplan 460E sunflowers

05/13/14 Contractor broadcast liquid N (28-0-0) @ 100 lb N/ac.
05/19/14 Field seeded w/Bourgault drill @ 1.3 million seeds/ac (treated w/Raxil MD) + 70 lb/ac 11-52-0.
06/12/14 Contractor sprayed field w/Widematch @ 16 oz/ac + Everest @ 1.0 oz/ac + 2,4-D LV6 @ 10 oz/ac + Propimax @ 1.4 oz/ac + Linkage @ 1.5 qt/100 gal.
09/19/14 Field harvested w/JD6620 combine and straight head.
09/24/14 Contractor sprayed field w/Durango @ 32 oz/ac + Banvel @ 6 oz/ac + Ntense @ 1.5 qt/100 gal.

FIELD I6, JERRY WINTER WHEAT

Previous crop – Glenn spring wheat

09/23/13 Field seeded with Bourgault drill @ 1.3 million seeds/ac + 70 lb/ac 11-52-0.
05/13/14 Contractor broadcast liquid N (28-0-0) @ 100 lb N/ac.
06/06/14 Contractor sprayed field w/Widematch @ 13 oz/ac + Everest @ 0.6 oz/ac + Propimax @ 2 oz/ac + 2,4-D LV6 @ 11 oz/ac + Linkage @ 1.5 qt/100 gal. + Sedate (drift control).
08/12/14 Field swathed w/20 ft. Versatile swather.
08/14/14 Started harvesting field w/JD 6620 combine and pickup head, finished harvesting on 09/04/14.
09/05/14 Contractor sprayed field w/Durango @ 32 oz/ac + Weedmaster @ 12 oz/ac + Ntense @ 1.5 qt/100 gal.
09/24/14 Contractor sprayed field w/Durango @ 32 oz/ac + Banvel @ 6 oz/ac + Ntense @ 1.5 qt/100 gal.

FIELD I7, GLENN SPRING WHEAT

Previous crop – Corn varieties

05/22/14 Contractor broadcast urea @ 80 lb N/ac.
05/27/14 Field seeded w/Bourgault drill @ 1.3 million seeds/ac + 70 lb/ac 11-52-0.
06/21/14 Contractor sprayed field w/Widematch @ 16 oz/ac + Axial @ 16 oz/ac + Audit @ 0.3 oz/ac + Propimax @ 3 oz/ac.
10/08/14 Contractor sprayed field w/Durango @ 32 oz/ac + Banvel @ 5 oz/ac + Ntense @ 1.5 qt/100 gal.
09/23/14 Field harvested w/JD6620 combine and straight head.

Summary of Area IV Research Farm yields.

Field	Crop	Variety	Yield (per ac)	Moisture (%)
F2	Winter wheat	Overland	44.4 bu	12.9
F3	Sunflowers	Pioneer P63 ME980	1856 lb	9.0
F4	Spring wheat	Glenn	47.4 bu	13.7
F5	Spring wheat	Glenn	56.5 bu	13.4
F6	Spring wheat	Glenn	48.4 bu	13.9
G2	Spring wheat	Glenn	50 bu	14.5
G3	Spring wheat	Glenn	55.4 bu	14.5
G4	Fallow		-----	-----
H1	Alfalfa /		-----	-----
	Oats	Leggett	67.2 bu	14.0
H2	Dry peas	Vegas	52.2 bu	14.9
H3 west	Winter wheat	Jerry & Overland	33.3 bu	13.7
H3 east	Sunflowers	Pioneer P63 ME980	1610 lb	9.6
H4 (a)	Winter wheat	Jerry	33.3 bu	13.7
H4 (b)	Corn	Pioneer	61.8 bu	22.0
H4 (c)	Soybeans	Pioneer	40 bu est.	16.5
H4 (d)	Spring wheat	Glenn	51.8 bu	14.2
H5	Corn	Pioneer 8107 HR	pending	-----
I1	Spring wheat	Glenn	42.1 bu	12.9
I2	Buckwheat	Koma	1508 lb	15.5
I3	Corn	Pioneer	99.5 bu	18.6
I4	Sunflowers	Pioneer	1600 lb	9.5
I5	Spring wheat	Glenn	50.5 bu	13.1
I6	Winter wheat	Jerry	31.4 bu	12.1
I7	Spring wheat	Glenn	36.2 bu	13.8

MANAGEMENT STRATEGIES FOR SOIL QUALITY

2014 Crop Summary

Drs. Donald Tanaka (retired), Mark Liebig, and David Archer, ARS

Introduction

The 'Management Strategies for Soil Quality' study was established in 1993 by Dr. Don Tanaka to evaluate long-term impacts of minimum and no-till cropping systems on crop yield, precipitation use, and soil properties. The study was designed with six crop sequences (whole plot) each split by tillage type (split plot). All phases of each crop sequence are present every year, and treatments are replicated three times.

Beginning in 2012, three crop sequences were adjusted to reflect changing cropping practices in the northern Great Plains. Specifically, millet and safflower were replaced with corn and soybean, and rye (partial fallow) was replaced with a full season cover crop mixture (Table 1). Tillage treatments were left unchanged.

Table 1. Changes to crop sequences in Management Strategies for Soil Quality study.

Sequence	Previous (1993-2011)	Present (beginning 2012)
1	Continuous spring wheat, straw chopped and spread	Unchanged (CSW+)
2	Continuous spring wheat, stubble left in place, straw removed	Unchanged (CSW-)
3	Spring wheat – millet	Spring wheat – soybean (SW-S)
4	Spring wheat – safflower - fallow	Spring wheat – corn – soybean (SW-C-S)
5	Spring wheat – safflower – rye (partial fallow)	Spring wheat – corn – cover crop, full season (SW-C-CC)
6	Spring wheat – fallow	Unchanged (SW-F)

Field Activities

In 2013 it became evident in the minimum tillage plots that long-term use of the undercutter had built up ridges to the point where ponding of water was occurring. Ridges had formed in the middle and along the edges of each plot, as the 15 ft undercutter travels along each half of the 30 ft plot in order to avoid the moisture access tube in the center of the plot. On May 21-22, a small road grader-type blade was used to redistribute soil from these ridges toward the middle of each half of the minimum till plots. On May 29, tillage on these plots was done using a Mulch Master implement. This implement will be used in the future for the minimum tillage treatment.

A spring wheat post-harvest burndown spray application was done on September 24, 2013 using Roundup Weather Max (20 oz/ac) + Brash (16 oz/ac) + surfactant. Because of the cool wet spring conditions no blanket spray application was done before 2014 planting. Cover crop plots and alleyways were sprayed on June 12 with Roundup Weather Max (20 oz/ac) + 2,4-D LV6 (10 oz/ac) + surfactant. Spring wheat was sprayed post-emergent on June 21 with Tacoma (8 oz/a) + Wolfpack (16 oz/a) + Headline (3 oz/ac). Corn, soybean, and fallow plots were sprayed July 2 with Roundup Weather Max (20 oz/a) + surfactant. Soybean plots were sprayed a second time on July 28 with Barbarian Max (24 oz/a).

Table 2. Planting, fertilizer, and harvest documentation for 2014 crop year.

Crop	Planting date	Cultivar/type	Planting rate – seeds/ac	Fertilizer – Urea & 11-52-0	Drill/ Planter	Harvest
Spring wheat	5/29/14	Glenn	1.3 million	60 lb N/ac recrop; 30 lb N/ac fallow + 10 lb P/ac.	JD750	8/27/14 hand harv. 9/18/14 combined
Corn	6/4/14	Pioneer 8107	24,500	90 lb N/ac + 10 lb P/ac	JD 1750	11/6/14 biom. harv. 11/20/14 hand harv.
Soybean	6/4/14	Pioneer 90Y50	180,000	100 lb/ac 11-52-0	JD 1750	10/23/14 biom. harv. 11/3/14 combined
Cover crop	6/12/14	7-way mix	34 lb (total seed)	60 lb N/ac + 10 lb P/ac as 11-52-0	JD750	8/18/14 sampled 8/20/14 swathed

Crop Yield Summary

1. Spring wheat yields were similar across all six rotations, ranging from 41.0 to 45.5 bu/ac. The 2014 season completed the first cycle of the two 3-yr rotations (SW-C-S and SW-C-CC). While spring wheat yields were numerically greater in the 3-yr rotations, differences among treatments were not statistically significant (Fig. 1).
2. Corn yields were adequate for dryland conditions (over 110 bu/ac) despite the shortage of growing degree days. However, test weights were low, ranging from 48.0 to 52.5 lb/bu. Also, the cooler temperatures and high rainfall in August prevented grain from drying down sufficiently for combine harvest (yields were obtained from hand harvesting the plots). Corn yielded significantly higher in the rotation including the full season cover crop mix compared to the 3-yr rotation with soybean (120 vs 111 bu/ac; $P=0.04$) (Fig. 2).
3. Soybean yield in the 2-yr rotation was 10.3 bu/ac greater than soybean yield following corn in the 3-yr rotation ($P<0.01$) (Fig. 2).
4. This year saw the most production of cover crop biomass since the beginning of this new phase of the experiment (3280, 2530, and 2120 lb/ac for 2014, 2013, and 2012, respectively) due mainly from the growth of the cool season species in the mix (Fig. 2).

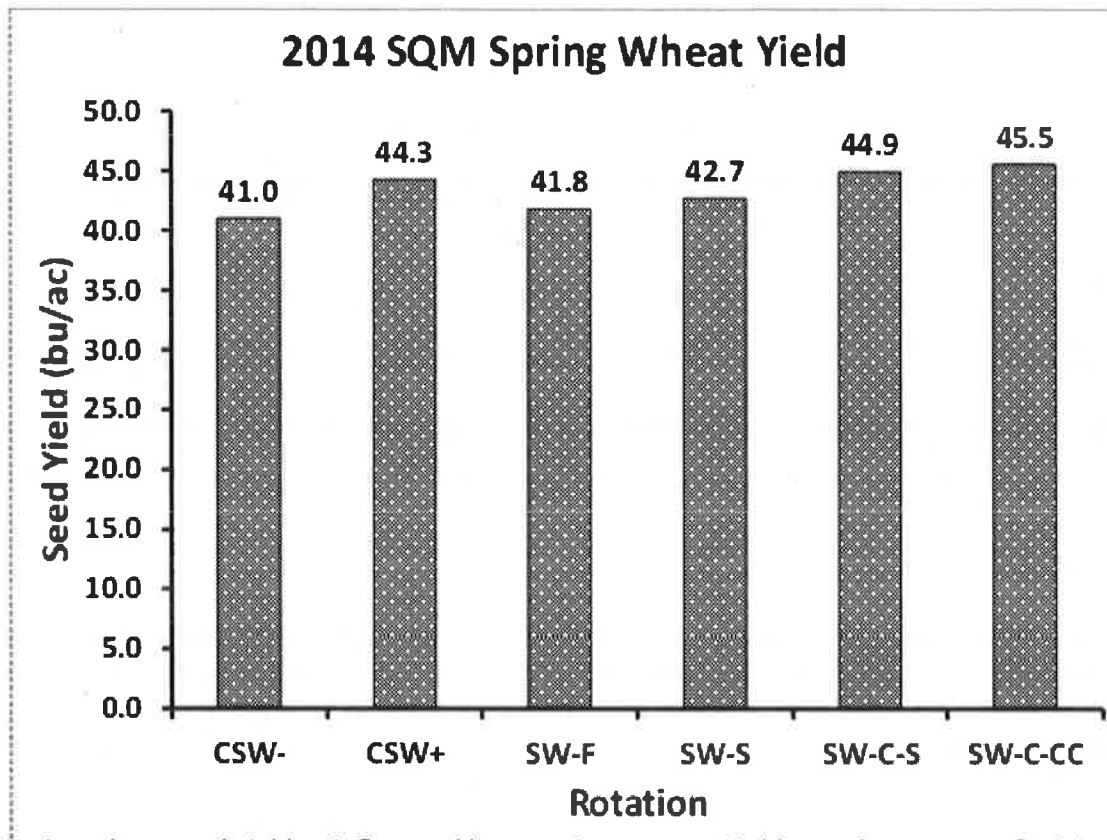


Figure 1. Spring wheat seed yield as influenced by cropping system. Yields are the average of minimum and no-till.

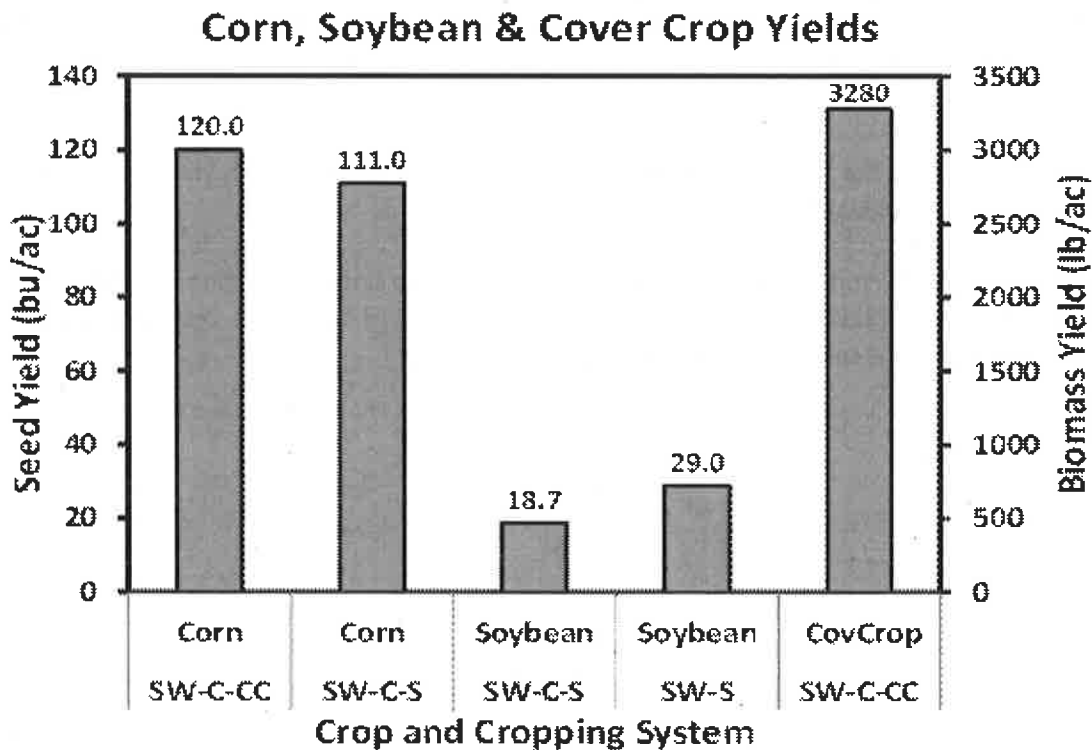


Figure 2. Corn and soybean seed yield and cover crop biomass yield within cropping system. Yields are the average of minimum and no-till.

NDSU Hettinger Research Extension Center

Hard Red Spring Wheat - 2014 **Mandan, ND**

Variety	Plant	Plant	Test	Grain	----- Grain Yield -----			Average Yield	
	Height	Lodge	Weight	Protein	2012	2013	2014	2 yr	3 yr
	inches	0-9*	lbs/bu	%	----- Bushels per acre -----				
Advance	34	4	54.4	12.2	--	70.3	76.8	73.6	--
Barlow	36	2	53.3	12.5	71.2	72.4	73.4	72.9	72.3
Brennan	32	2	52.7	12.8	--	--	72.3	--	--
Elgin-ND	36	1	52.4	12.1	69.1	78.1	76.9	77.5	74.7
Faller	36	2	54.4	11.1	64.5	76.9	85.4	81.2	75.6
Forefront	37	2	55.7	11.1	--	78.2	72.9	75.6	--
Glenn	37	1	55.4	12.3	65.4	70.8	69.7	70.3	68.6
LCS Albany	33	2	53.1	10.6	--	--	80.9	--	--
LCS Powerplay	32	2	53.3	11.1	--	--	71.1	--	--
Mott	37	1	54.1	12.2	69.1	75.0	76.0	75.5	73.4
Prevail	35	2	54.3	11.7	--	--	73.9	--	--
Prosper	35	1	54.1	10.8	68.1	71.9	76.1	74.0	72.0
RB07	31	1	53.2	12.6	69.0	72.3	72.2	72.3	71.2
Sabin	36	4	55.1	12.0	77.4	79.7	74.4	77.1	77.2
Select	37	2	55.5	11.5	75.7	70.9	74.7	72.8	73.8
SY Soren	31	1	54.2	12.6	77.1	76.9	72.5	74.7	75.5
SY Rowyn	30	2	53.7	11.2	--	--	74.7	--	--
Velva	34	1	52.0	11.7	70.2	71.9	72.9	72.4	71.7
WB-Digger	35	3	52.2	12.0	--	--	76.7	--	--
SY 605CL	35	2	53.9	12.2	--	--	72.8	--	--
Trial Mean	34	2	53.9	11.8	70.0	74.3	74.8	--	--
C.V. %	4.0	39.7	1.3	5.8	3.1	7.3	6.2	--	--
LSD 10%	2	1	0.8	0.8	2.6	6.5	5.5	--	--

* 0 = no lodging, 9 = 100% lodged.

Planting Date: April 25

Harvest Date: August 29

Previous Crop: Barley

NDSU Hettinger Research Extension Center

Durum Wheat - 2014

Mandan, ND

Variety	Plant	Plant	Test	Grain	----- Grain Yield -----			Average Yield	
	Height	Lodge	Weight	Protein	2012	2013	2014	2 yr	3 yr
	inches	0-9*	lbs/bu	%	----- Bushels per acre -----				
Alkabo	39	4	54.2	10.8	76.9	77.1	74.2	75.7	76.1
Carpio	41	6	54.2	11.0	57.1	84.6	67.6	76.1	69.8
Divide	41	7	54.8	11.0	80.2	79.8	69.3	74.6	76.4
Joppa	41	5	52.3	10.8	82.4	85.3	74.9	80.1	80.9
Mountrail	40	4	52.4	10.6	78.2	80.4	76.0	78.2	78.2
Tioga	42	6	53.6	11.0	82.0	86.4	68.7	77.6	79.0
Trial Mean	41	5	53.6	10.9	75.4	82.1	71.8	--	--
C.V. %	3.2	19.7	1.5	4.4	3.3	4.1	7.4	--	--
LSD 10%	2	1	1.0	0.6	3.0	4.1	6.6	--	--

* 0 = no lodging, 9 = 100% lodged.

Planting Date: April 25

Harvest Date: August 29

Previous Crop: Barley



1st Row: Linda Schuler, John Hendrickson, Nick Saliendra, & Dawn Welch

2nd Row: Clay Erickson, Timothy Faller, Robert Kolberg, Matthew Bingert, Matt Sanderson, Cal Thorson, & Mark Liebig

3rd Row: Audrey Myers, Lori Wanner, Igathinathane Cannaven, David Archer, Mike Eberle, David Toledo, Stephanie Schmidt, & Delmer Schlenker

4th Row: Mary Hatzembuehler, Duane Krein, Jeremy Will, Roland Mihulka, David Clausen, Anand Pothula, & Joon Hee Lee

Absent: Andrew Carrison, Jay Halvorson, Holly Johnson, Scott Kronberg, & Manlu Yu