

## Soybeans Following Winter Terminated and Winter Hardy Cover Crops

**Study ID:** 656127201702

**County:** Nemaha

**Soil Type:** Judson silt loam 0-2% slope; Judson silt loam 2-6% slopes

**Soybean Planting Date:** 4/30/17

**Harvest Date:** 9/20/17

**Population:** 175,000

**Row Spacing (in):** 15

**Variety:** Pioneer 24T19R

**Reps:** 7

**Previous Crop:** Soybean

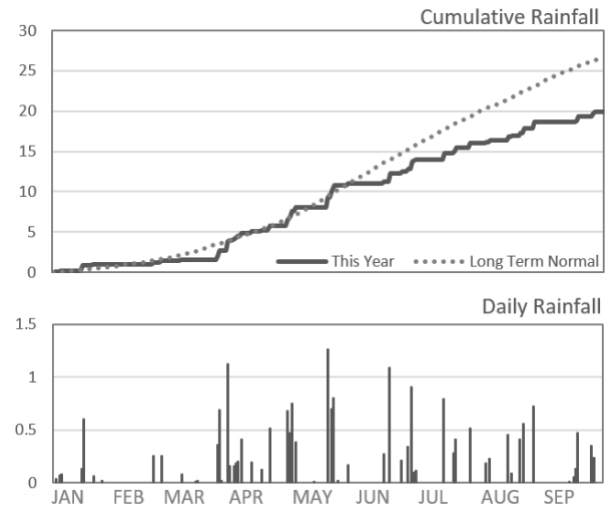
**Tillage:** No-Till

**Herbicides: Pre:** 5 oz/ac Sonic®, 2 oz/ac Blanket® 4F, 14 oz/ac 2,4-D LV, and 3.2 oz/ac ABSORB 100

**Post:** 32 oz/ac Buccaneer® 5 Extra, 16 oz/ac Flexstar®, 6.4 oz/ac Clethodim®, 3.2 oz/ac ABSORB 100, and 10.5 oz/ac Azoxystrobin Xtra

**Irrigation:** None

**Rainfall (in) as measured at field:**



**Introduction:** This study is being conducted on a soil health demonstration farm as part of the Nebraska USDA/Natural Resources Conservation Service's (NRCS) Soil Health Initiative, and involves the farmer, the Nebraska On-Farm Research Network and the USDA/NRCS. The two treatments, the use of winter terminated cover crops and the use of winter hardy cover crops, will be used in this five-year study (2016-2021). The cover crops were drilled on 9/29/16. The winter terminated treatment was a mix of oats, turnips, and common rape seed, whereas the winter hardy treatment consisted of cereal rye, turnips, and common rape seed. This study did not have a non-cover crop control. For uniformity, both cover crop mixes were sprayed with glyphosate on 4/12/17. This terminated the winter hardy treatment and controlled weeds and brassicas, which had overwintered in the winter terminated cover crop treatment. Baseline soil health measures (one per treatment) were collected on 10/19/16. Soil health measurements will be collected every other year while conducting this study.

### Baseline Soil Quality Measurements:

	Average Steady State Infiltration (in/hr)	Bulk Density (g/cm <sup>3</sup> )	Total Pore Space (%)	Water Holding Capacity if all pores filled (inch H <sub>2</sub> O/ft)	Solvita at 24 hr	Estimated Solvita Microbial Activity Rating	Average Soil Health Indicator Score
Sample Site 3 (Winter Terminated)	1.30	1.22	53.8	6.5	2.0	Low	2.44
Sample Site 4 (Winter Hardy)	1.12	1.32	50.2	6.0	2.0	Low	2.59

Nov. 15, 2016



March 2017



April 18, 2017



## Results:

	Soybean Stand Count at Harvest (plants/ac)	Soybean Test Weight (lb/bu)	Soybean Moisture (%)	Soybean Yield (bu/acre) <sup>†</sup>	Marginal Net Return <sup>‡</sup> (\$/ac)
Winter Terminated Cover Crop	102,178 A*	56 A	10.6 A	62 A	518.84 A
Winter Hardy Cover Crop	102,178 A	56 A	10.6 A	61 A	516.42 A
P-Value	1	0.4886	1	0.7345	0.735

\*Values with the same letter are not significantly different at a 90% confidence level.

<sup>†</sup>Bushels per acre corrected to 13% moisture.

<sup>‡</sup>Marginal net return based on \$8.90/bu soybean and \$30.07 cost for cover crop seed and drilling in both treatments.

**Summary:** There were no differences in soybean yield, moisture, test weight, or harvest stand counts when cover crops were winter terminated or winter hardy. The harvest stand counts were notably lower than the planting population.

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