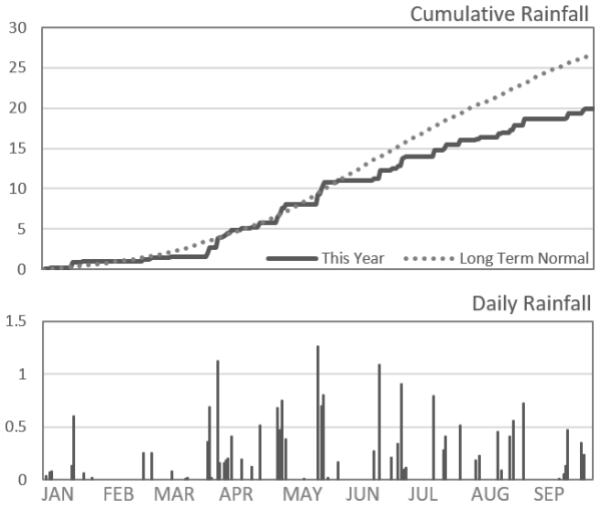
Corn Following Winter Terminated and Winter Hardy Cover Crops

Study ID: 656127201701
County: Nemaha
Soil Type: Judson silt loam 0-2% slope; Judson silt loam 2-6% slopes
Corn Planting Date: 4/11/17
Harvest Date: 9/19/17
Population: 33,000
Row Spacing (in): 30
Hybrid: Pioneer P0636AM
Reps: 7
Previous Crop: Soybean
Tillage: No-Till
Herbicides: ***Pre:*** 64 oz/ac FulTime®, 16 oz/ac Range Star®, and 3.2 oz/ac ABSORB 100 ***Post:*** 32 oz/ac Buccaneer® 5 Extra, 2 oz/ac Bellum™, and 3.2 oz/ac N-Tense™
Seed Treatment: PPST 250
Foliar Fungicides: 8 oz/ac Quilt Xcel®

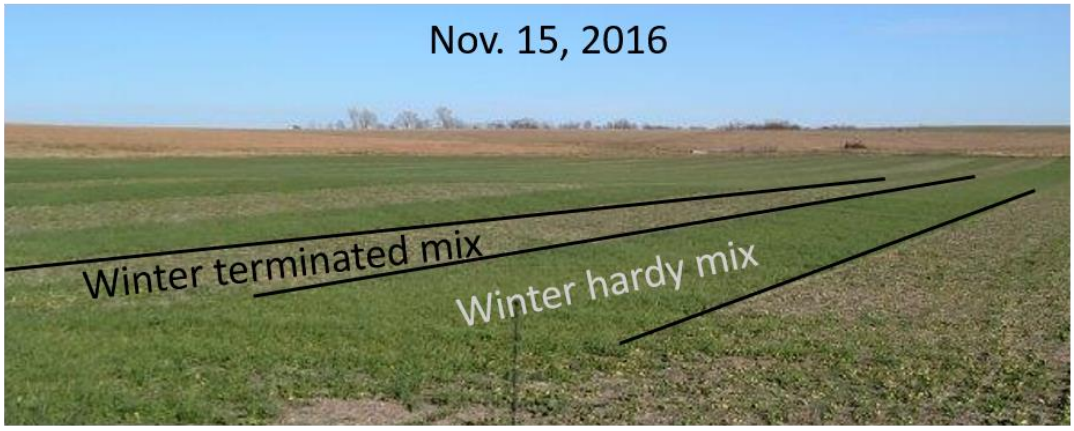
Fertilizer: 12-40-60-10-1-1 dry and 175 lb N/ac as UAN 32% spring pre-plant, and 1 gal/ac NResponse™ foliarly applied
Irrigation: None
Rainfall (in) as measured at field:



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 5-yr 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.

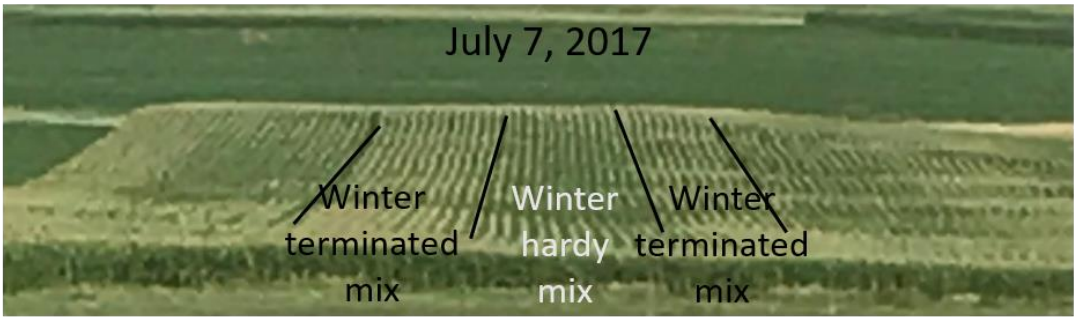
Baseline Soil Quality Measurements:

	Bulk Density (g/cm^3)	Total Pore Space (%)	Water Holding Capacity if all pores filled (inch H_2O/ft)	Solvita at 24 hr	Estimated Solvita Microbial Activity Rating	Average Soil Health Indicator Score
Sample Site 2 (Winter Terminated)	1.25	52.8	6.3	2.0	Low	2.44
Sample Site 1 (Winter Hardy)	1.22	53.9	6.5	2.0	Low	2.59


Nov. 15, 2016
Winter terminated mix
Winter hardy mix


March 2017
Winter terminated mix
Winter hardy mix


April 18, 2017
Winter terminated mix
Winter hardy mix
Winter terminated mix


July 7, 2017
Winter terminated mix
Winter hardy mix
Winter terminated mix

Results:

	Corn Stand Count at Harvest (plants/acre)	Corn Test Weight (lb/bu)	Corn Moisture (%)	Corn Yield (bu/acre)†	Marginal Net Return‡ ($/ac)
Winter Terminated Cover Crop	30,355 A*	54 A	18.0 B	183 A	546.97 A
Winter Hardy Cover Crop	30,023 A	52 B	19.1 A	168 B	498.00 B
P-Value	0.802	0.0209	0.0034	0.0003	0.0003

*Values with the same letter are not significantly different at a 90% confidence level.
†Bushels per acre corrected to 15.5% moisture.
‡Marginal net return based on $3.15/bu corn and $30.07 cost for cover crop seed and drilling in both treatments.

Summary: Corn planted after winter terminated cover crops had a higher yield, higher test weight, and was drier than the winter hardy cover crops. There were no differences in harvest stand counts for the corn following the winter killed and winter hardy cover crops. The corn following the winter hardy mix was three days slower to tassel than the corn following the winter kill mix as shown in the July 7 picture above.

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