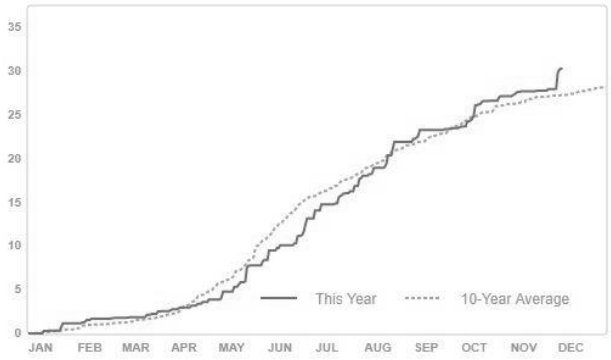
Corn Planted Following Dormant and Interseeded Cover Crop, Dormant Seeded Cover Crop, and No Cover Crop Check

Study ID: 0815121201801
County: Merrick
Soil Type: Kenesaw silt loam 1-6% slopes; Valentine-Thurman soils 0-17% slopes; Thurman loamy fine sand 0-2% slope; Thurman loamy fine sand 2-6% slopes; Kenesaw silt loam 0-1% slope
Planting Date: 5/17/18
Harvest Date: 10/6/18
Population: 35,000
Row Spacing (in): 30
Hybrid: Pioneer® 0157 AMXT
Reps: 6
Previous Crop: Corn
Tillage: Strip-Till
Herbicides: ***Pre:*** 32 oz/ac glyphosate on 5/10/18
Post: 32 oz/ac glyphosate and 5 oz/ac Status® on 6/1/18
Seed Treatment: Herculex® XTRA, Poncho® 1250 + VOTiVO®, AcreMax® Xtreme
Foliar Insecticides: None
Foliar Fungicides: None
Fertilizer: Average of 78.6 lb/ac variable rate 11-52-0 and average of 78.4 lb/ac variable rate 0-0-60 preplant; 5 gal/ac 32% UAN, 5 gal/ac 12-0-0-26, and 5 gal/ac 10-34-0 on 5/17/18; numerous fertigation applications from V4 to brown silk, totaling 200 lb/ac of N
Irrigation: Pivot, Total: 8.82”
Rainfall (in):



Soil Health Soil Test (Jan. 2017 – 18 samples, averaged over study area):

CO_2-C	Total Nitrogen	Organic Nitrogen	Total Organic Carbon	Nitrate	Ammonium	Organic C:N	Soil Health Score
ppm							
19.51	11.83	9.47	129.50	1.71	0.56	13.84	5.49

Standard Soil Test (Jan. 2017 - 31 samples, averaged over study area):

OM%	pH	CEC (meq/100 g)	Nitrate	Phosphorus	Potassium	Magnesium	Sulfur	Sodium	Sol Salts (S/m)
			ppm						
1.094	5.57	9.41	7.07	34.55	207.1	121.03	17.1	21.77	0.11

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. This study examined three treatments: 1) dormant seeded cover crops and interseeding cover crops at V4 to V6, 2) a dormant (post-harvest) cover crop seeding, and 3) a no cover crop check.

In the fall of 2017, both the dormant seeded treatment strips and the dormant and interseeded treatment strips had a cover crop mix. The mix consisted of 40 lb/ac Elbon cereal rye, 1 lb/ac rapeseed/canola, 3 lb/ac winter oats, and 6 lb/ac hairy vetch. The cover crop was terminated on May 10 with glyphosate.

During the 2018 growing season, the interseeded cover crop treatment strips were planted with a cover crop mix on June 26 using a Hiniker interseeder (Figure 1). The interseeding mix consisted of 6 lb/ac

cowpea, 6 lb/ac soybean, 0.5 lb/ac crimson clover, 5 lb/ac sunhemp, 2 lb/ac hairy vetch, 3 lb/ac buckwheat, 0.5 lb/ac chicory, 0.5 lb/ac flax, 0.5 lb/ac rapeseed/canola, 6 lb/ac Elbon cereal rye, and 6 lb/ac spring oats.

Figure 1. Hiniker twin row interseeder used to establish cover crops. Images from Hiniker (https://www.hiniker.com/ag_products%20new/sp_cover-crop-seeders.html).

The 2018 corn crop was harvested on October 6 and evaluated for yield and moisture. Spatial yield data is shown in Figure 2.

Results:

	Moisture (%)	Yield† (bu/ac)	Marginal Net Return‡ ($/ac)
Check	19.1 A*	203 A	654.96 A
Cover Crop – Dormant Seeded	18.8 A	205 A	624.81 AB
Cover Crop – Dormant + Interseeded	18.8 A	209 A	586.09 B
P-Value	0.280	0.674	0.048

*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 $3.23/bu corn. Interseeded cover crop seed cost $37.50/ac. The dormant seeded cover crop seed in 2017 prior to this growing season cost $24/ac. A typical custom rate for the Hiniker interseeder is not available; therefore, both seeding methods (dormant drilled and interseeded) are estimated to be $14.40/ac. The interseeded cover crop treatment this year also was preceded by a dormant seeded cover crop; therefore, both the dormant and interseeded seed and seeding costs were incurred by this treatment this year.

Summary:

There were no yield or moisture differences between the check, dormant and interseeded cover crop treatment, and dormant seeded cover crop treatment. There were differences in net return due to the cost of the cover crop treatment. This study is planned to continue for five or more years.

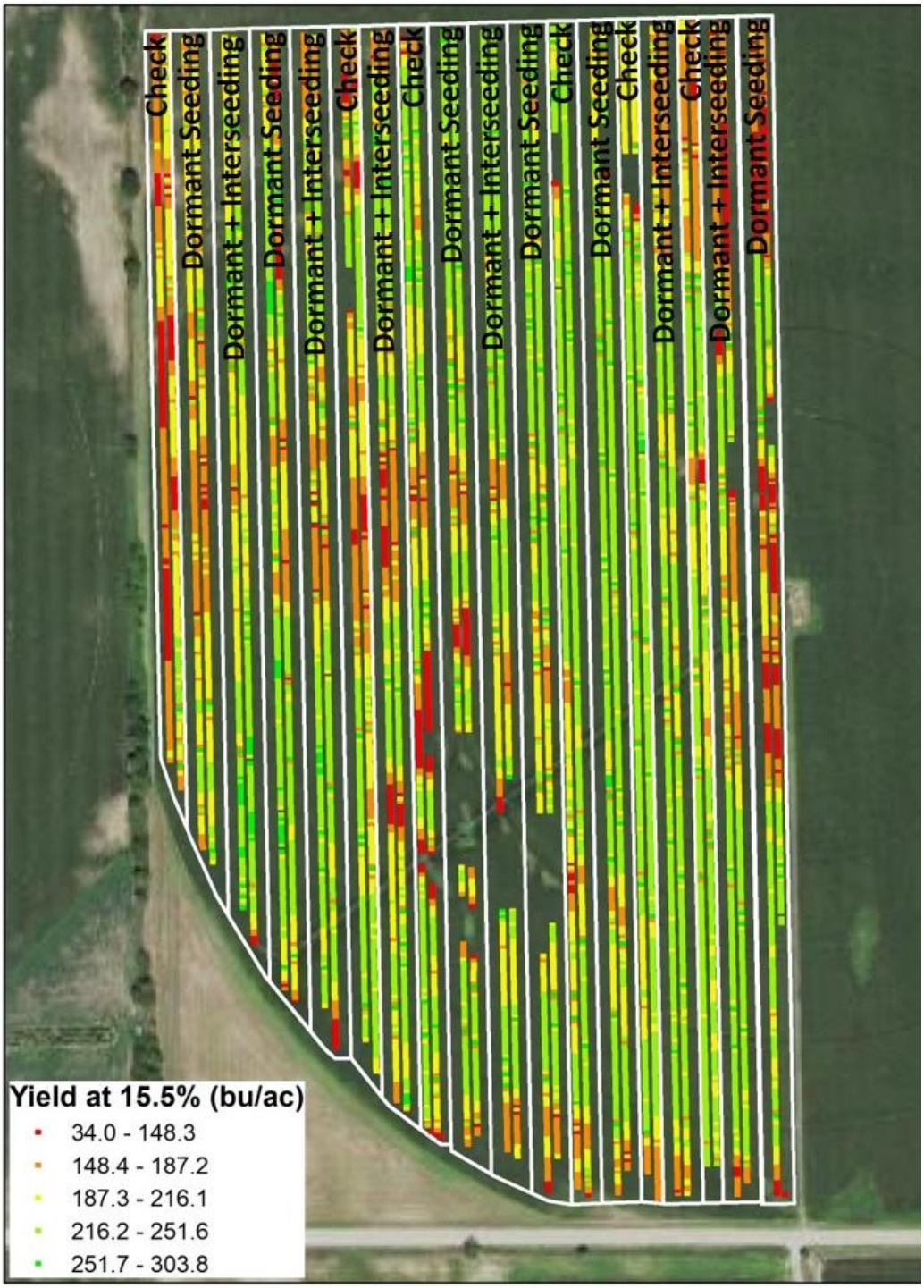


Figure 2. Cleaned yield data from yield monitor for study area with treatment strips overlaid (white outlines).

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