

Non-irrigated Corn Planted into Living Cereal Rye Cover Crop

Study ID: 0136109202001

County: Lancaster

Soil Type: Yutan silty clay loam; Judson silt loam;

Aksarben silty clay loam

Planting Date: 4/22/20

Harvest Date: 10/24/20

Seeding Rate: 30,000

Row Spacing (in): 30

Hybrid: Pioneer® P1563AM

Reps: 8

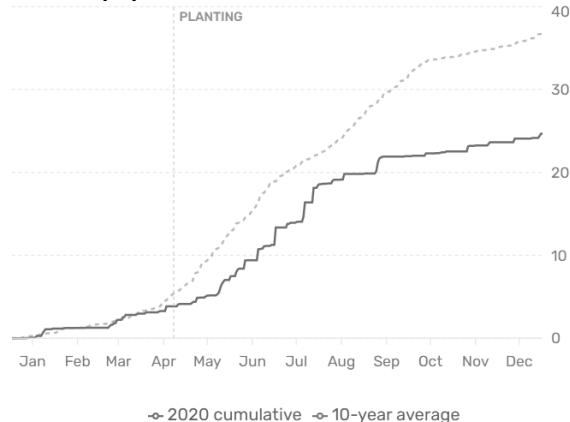
Previous Crop: Soybean

Tillage: No-Till

Fertilizer: 176 lb/ac N as NH₃ applied 11/19/19

Irrigation: None

Rainfall (in):



Introduction: This study evaluate the impact of a rye cover crop. The two treatments were a rye cover crop and a no cover crop control. This is the third year of the study with cover crop strips established in the same location each year. Elbon cereal rye was seeded at 40 lb/ac on November 3, 2019. Corn was planted on April 22, 2020. The cover crop was terminated May 5, 2020, with Roundup® and Bicep® at a height of 6".

Results:

	Corn Yield (bu/ac)†	Marginal Net Return‡ (\$/ac)
Check	197 A*	690.15 A
Cover Crop - Rye	184 B	630.40 B
P-Value	0.0002	<0.0001

†Bushels per acre corrected to 15.5% moisture.

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

‡Marginal net return based on \$3.51/bu corn and \$15/ac cover crop seed and drilling cost.

Summary: Corn yield following the cover crop was 13 bu/ac lower than corn yield following the no cover crop control. Net return for the corn crop was reduced by \$60/ac where the cover crop was used.

Summary of Previous Years

YEAR ONE | In year one (2018), the rye cover crop was drilled at a rate of 40 lb/ac on November 1, 2017, following soybean harvest. Rye was terminated with glyphosate in mid-May at a height of approximately 12". Corn was planted into the strips on April 23, 2018, with 5 gal/ac of 10-34-0 starter fertilizer.

	Moisture (%)	Corn Yield† (bu/ac)	Marginal Net Return‡ (\$/ac)
Check	15.5 B*	213 A	686.95 A
Cover Crop - Rye	15.9 A	208 B	656.99 B
P-Value	<0.0001	0.0099	0.0004

*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, \$7.67/ac rye cover crop seed, and \$6/ac for drilling cover crop.

YEAR TWO | In year two (2019), the rye cover crop was drilled at a rate of 40 lb/ac on November 1, 2018, following corn harvest. The rye was terminated with Roundup® on May 20, 2019, at a height of 14-18" high and 20-40% headed. Soybeans were planted into the strips on May 15, 2019.

	Moisture (%)	Soybean Yield (bu/ac)†	Marginal Net Return‡ (\$/ac)
Check	11.9 A*	60 A	486.68 A
Cover Crop - Rye	11.9 A	58 A	453.71 A
P-Value	0.857	0.391	0.119

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

†Bushels per acre adjusted to 13% moisture.

‡Marginal net return based on \$8.10/bu soybean and \$16/ac rye cover crop seed and drilling cost.

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