

Impact of Early Interseeded Cover Crop on Irrigated Corn

Study ID: 0916185201901

County: York

Soil Type: Hastings silt loam 0-1% slope

Planting Date: 4/18/2019

Harvest Date: 10/11/19

Seeding Rate: 30,000

Row Spacing (in): 36

Variety: Pioneer® P1366AMXT™

Reps: 4

Previous Crop: Corn

Tillage: Ridge-Till

Herbicides: *Pre:* 2.5 oz/ac Corvus® banded with planter *Post:* 22 oz/ac glufosinate one day prior to interseeding cover crop

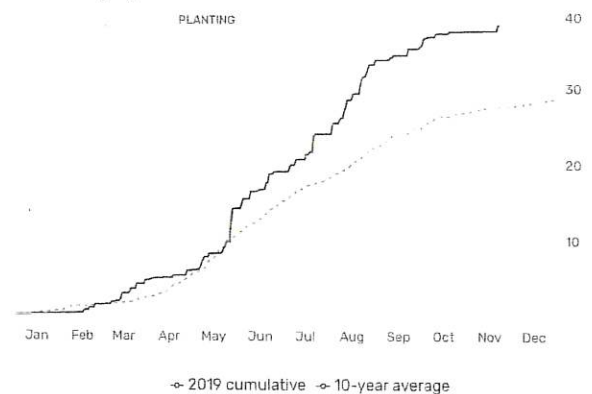
Foliar Insecticides: None

Foliar Fungicides: None

Fertilizer: 195 lb N/ac as NH₃; 4 gal/ac 10-34-0 in-furrow at planting

Irrigation: Pivot, Total: 1.5"

Rainfall (in):



Introduction: This study evaluated the impact of interseeded cover crops on corn yield. There were three treatments: a check with no cover crops interseeded, an interseeded nitrogen cover crop mix, and an interseeded diverse cover crop mix. The nitrogen mix consisted of 4 lb/ac crimson clover, 3 lb/ac red clover, 2 lb/ac yellow sweet clover, 4 lb/ac Winterhawk annual ryegrass, 1.5 lb/ac impact forage collards, and 1.5 lb/ac Trophy rapeseed. The diverse mix consisted of 2 lb/ac red clover, 2.5 lb/ac Hubam white seed clover, 4 lb/ac Winterhawk annual ryegrass, 1 lb/ac purple top turnip, 3 lb/ac golden flax, 0.5 lb/ac phacelia Angelia, and 0.5 lb/ac chicory. Glufosinate was used to burndown any emerged weeds one day prior to interseeding. The cover crop mixes were interseeded by drilling on June 7 when corn was V5-V6. Corn yield, stand counts, and stalk rot were measured. Cover crop species and biomass were also measured by sampling 9 sq ft per treatment.



Figure 1. Interseeding cover crop mixes on June 7, 2019 (left) and cover crop establishment in standing corn on September 6, 2019 (right).

Results:

	Brassica	Rye	Clover	Weeds	Standing Dead Material	Total (not including weeds & dead)
	-----lb dry matter/ac-----					
Crop Crop - Diverse Mix	71 A*	24 A	2 A	95 A	9 A	97 A
Cover Crop - Nitrogen Mix	192 A	17 A	11 A	75 A	11 A	220 A
P-Value	0.586	0.757	0.111	0.549	0.745	0.619

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

	Stalk Rot (%)	Stand Count (plants/ac)	Moisture (%)	Yield (bu/ac)†	Marginal Net Return‡ (\$/ac)
Check	13.75 A	25,500 A	19.4 A	241 A	923.21 A
Crop Crop - Diverse Mix	8.13 A	25,750 A	19.4 A	241 A	883.04 B
Cover Crop - Nitrogen Mix	10.00 A	25,708 A	19.4 A	243 A	890.46 B
P-Value	0.700	0.983	0.192	0.750	0.041

†Yield values are from cleaned yield monitor data. Bushels per acre corrected to 15.5% moisture.

‡Marginal net return based on \$8.10/bu soybean, \$25.58/ac nitrogen mix seed cost, \$23.61/ac diverse mix seed cost, and \$14.40/ac drilling cost.

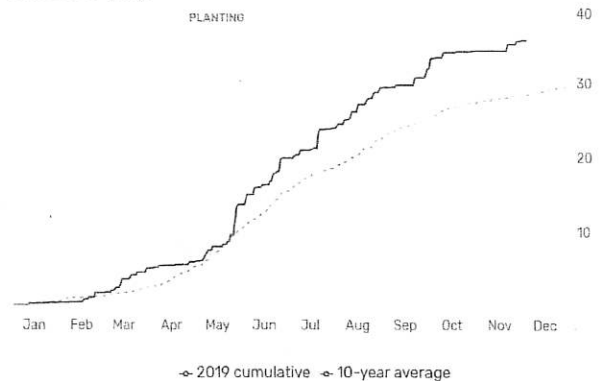
Summary:

- Measured cover crop biomass was variable and had no statistically significant differences between the two cover crop mixes.
- Corn stand count, stalk rot, and yield were not different between the three treatments. Net return was lower for the cover crop treatments due to additional seed costs and drilling costs.

Impact of Early Interseeded Cover Crops on Irrigated Corn

Study ID: 0918185201901
County: York
Soil Type: Hastings silt loam, 0-1% slope; Hastings silt loam, 1-3% slope
Planting Date: 4/24/19
Harvest Date: 10/16/19
Seeding Rate: 34,000
Row Spacing (in): 30
Variety: DEKALB® DKC60-88 VT2
Reps: 6
Previous Crop: Soybean
Tillage: Ridge-Till
Herbicides: *Pre:* Staunch® II on 4/25/2019 *Post:* 3 oz/ac Callisto® and 32 oz/ac Roundup® on 6/10/19
Seed Treatment: Acceleron®

Fertilizer: 28 gal/ac 32% UAN on 4/25/19 and 18 gal/ac 32% UAN on 6/17/19
Irrigation: Pivot
Rainfall (in):



Introduction: This study evaluated the impact of interseeded cover crops on corn yield. The interseeded cover crop treatment was compared to a no cover crop check. The field received 0.40" of rain the night before interseeding. On June 14 the field was cultivated then broadcast interseeded with a high-clearance applicator. The cover crop mixture was 10 lb/ac red clover and 5 lb/ac buckwheat. Corn was at V6 growth stage. A time-lapse camera was installed to monitor cover crop progress. By June 24, seeds had germinated and small seedlings were present; however, seedlings did not survive and by a few days later, no cover crops remained in the field (Figure 1). A possible explanation is that the Callisto® reactivated with rain and impacted the cover crop seedlings.



Figure 1. Broadcast interseeding cover crops with high-clearance applicator on June 14 (left), germinated cover crops on June 24 (middle), and no cover crops remaining in rows on July 3 (right).

Results:

	Harvest Stand Count (plants/ac)	Stalk Rot (%)	Moisture (%)	Yield (bu/ac)†	Marginal Net Return‡ (\$/ac)
Check	32,500 A*	2.08 A	12.5 A	258 A	986.23 A
Cover Crop - Interseeding	30,667 A	1.67 A	12.6 A	256 A	970.75 A
P-Value	0.208	0.849	0.172	0.613	0.211

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

†Yield values are from cleaned yield monitor data. Bushels per acre adjusted to 15.5% moisture.

‡Marginal net return based on \$3.83/bu corn, \$6.67/ac for cover crop seed, and \$3/ac for interseeding.

Summary: There was no impact of interseeding cover crop on corn stand count, stalk rot, grain moisture, yield, or net return.