Corn Planted After Spring-grazed or Non-grazed Rye Cover Crop

Study ID: 078155201706
County: Saunders
Soil Type: Filbert silt loam 0-1% slope; Yutan silty clay loam 2-6% slopes; Tomek silt loam 0-2% slope
Harvest Date: 10/23/17
Population: 33,048
Row Spacing (in): 30
Hybrid: P0589AM/RR2/LL and Curry 725-59AM planted on 5/7-5/8; A6499 replanted on 5/12
Reps: 3
Previous Crop: Soybean
Tillage: No-Till
Herbicides: 37 oz/ac Roundup PowerMax®, 33.1 oz/ac AMS, 2.6 oz/ac Laudis®, 11.2 oz/ac Atrazine 4L, and 18.5 oz/ac MSO
Foliar Insecticides: 2.5 oz/ac Baythroid® XL and 9.2 oz/ac Capture® LFR®
Foliar Fungicides: 2.7 oz/ac Trivapro®

Fertilizer: 40 lb/ac 11-52-0, 15.6 gal/ac 32% UAN, 3.8 gal/ac 10-18-4, 0.3 gal/ac Zinc chelate, 1 gal/ac CoRoN®-Ag, 0.2 gal/ac Nutrisphere-N®, 0.2 gal/ac Boron, 0.4 gal/ac Magnesium, 0.3 gal/ac Pro-Manganese® 5
Irrigation: Pivot, Total: 2.4-3.4"
Rainfall (in):

Introduction: This study tested the effects of grazed and un-grazed rye cover crop on corn yield, as well as the addition of an ionophore supplement (monensin at 1,600 g/ton) on the weight gain of calves. The study consisted of four treatments: grazed rye cover crop with ionophore supplement, grazed rye cover crop without ionophore supplement, un-grazed rye cover crop, and a check with no cover crop. The field was divided into three blocks and treatments were randomly assigned with each block. Elbon cereal rye cover crop was planted on 10/28/16 at a rate of 70 lb/acre. Calves were stocked at a rate of 2 hd/acre on 4/3/17 and were pulled on 4/29/17. Rye cover crop was terminated at corn planting with glyphosate herbicide.

Results:

	----------Corn----------		----------Cover Crop---------		---------Cattle--------	
	Early Season Stand Count (plants/ac)	**Harvest Stand Count (plants/ac)**	**Ground Cover at Corn Planting (%)**	**Biomass at Planting (ton/ac DM)**	**Average Daily Gain (lb/d)**	**Cattle Weight Gain (lb/ac)**
Check	31,074 A	31,667 A	92.33 A	N/A	N/A	N/A
Cover Crop - Rye	33,074 A	32,778 A	94.57 A	1.64 B	N/A	N/A
Cover Crop - Grazed	30,889 A	31,222 A	66.67 B	0.25 A	3.41 A	152 A
Cover Crop - Grazed with Ionophore Supplement	32,000 A	33,889 A	73.13 B	0.26 A	2.88 A	128 A
P-Value	0.2135	0.512	0.0077	<0.01	0.258	0.35

*Values with the same letter are not significantly different at a 90% confidence level.
† Bushels per acre corrected to 15% moisture.

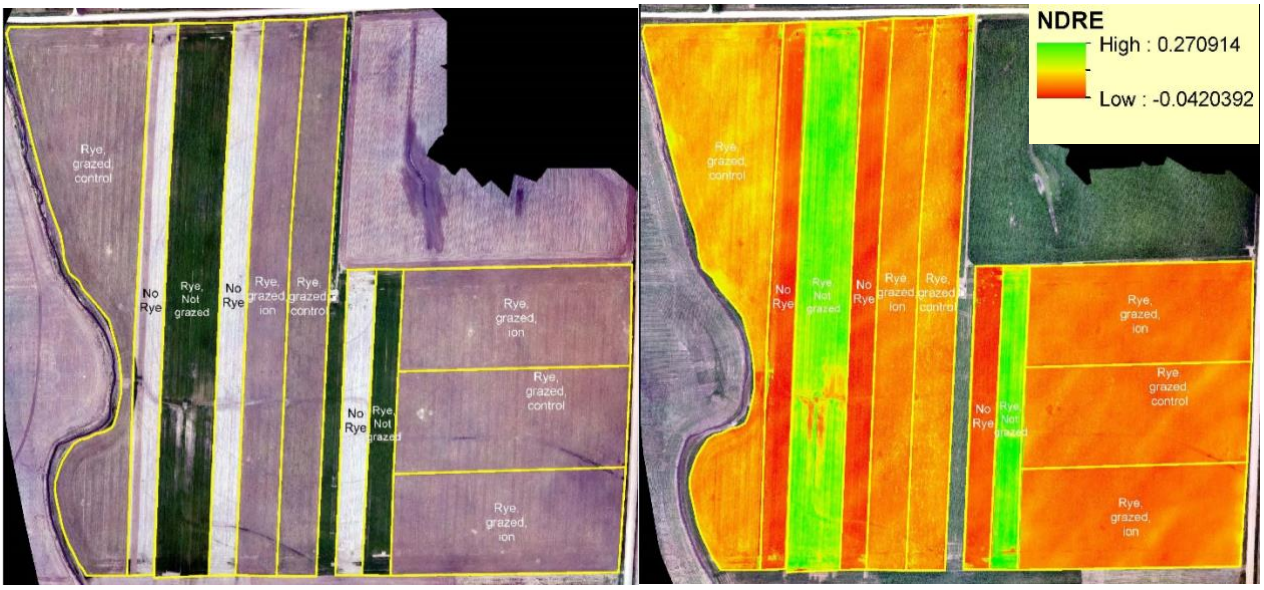

Figure 1. True color (RGB) imagery (left) and normalized difference red edge (NDRE) index imagery (right) of the field area on April 27, 2017.

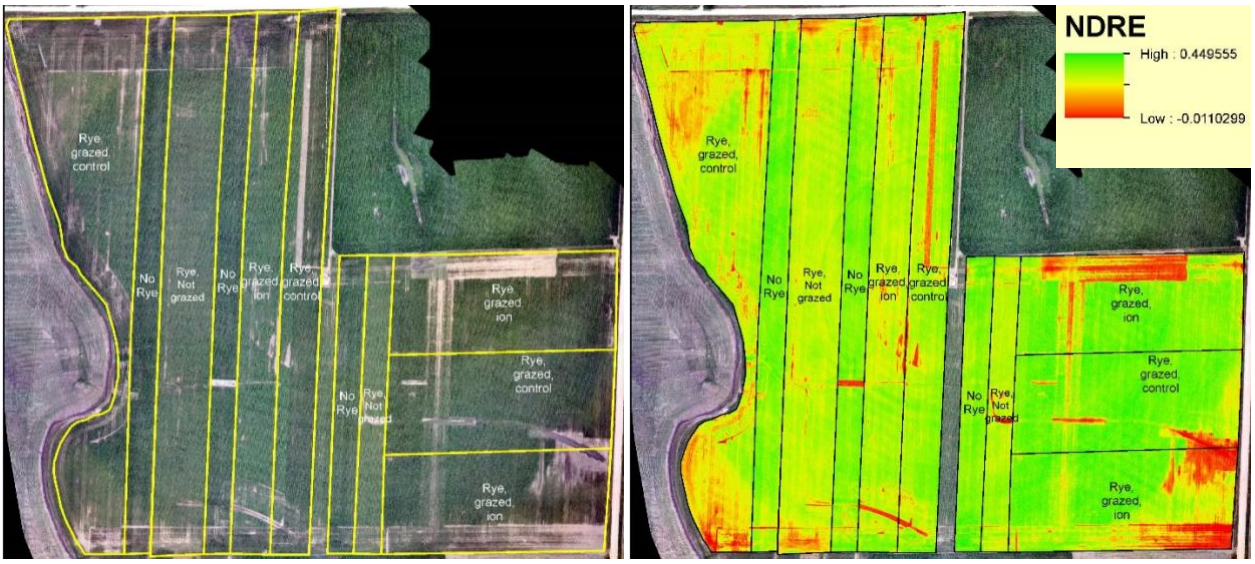

Figure 2. True color (RGB) imagery (left) and normalized difference red edge (NDRE) index imagery (right) of the field area on June 30, 2017.

Summary: No significant difference was observed between grazing treatments for average daily gain or total gain. Significant differences were observed in the amount of ground cover at planting with the grazed treatments having less cover than the rye cover crop or the control. Corn yield was measured by hand harvesting samples from each treatment. Because multiple hybrids were planted in the field, and yield samples for the treatments may have contained different hybrids, yield data is not reported. Planting and grazing the rye with 700 lb steers resulted in returns above cost of establishment ($34.60 seed and seeding plus $19.80/ac fertilizer and application) and cattle care costs ($0.07/hd/d mineral, $0.10/hd/d yardage, $2.64/hd transportation and fencing at $4.40/ac) of $125.56/ac or $62.78/hd when calves were valued at $140/cwt.

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