

# Grazing Fall-Seeded Cover Crops with Fall-Calving Cow-Calf Pairs

## RFR-A18120

Erika Lundy, beef field specialist  
Rebecca Vittetoe, agronomy field specialist  
Iowa State University Extension and Outreach

### Introduction

Establishing cover crops following grain production is beneficial to protecting Iowa's environment by reducing soil erosion and protecting water quality. Cover crops also provide an additional forage resource to extend the grazing season.

To date, most of the research from a livestock perspective has focused on spring grazing of overwintering cover crops. Spring grazing of cover crops can be a challenge due to a narrow window of opportunity based on weather implications hindering spring growth and competition in getting the cash crop established in a timely manner. Fall cover crop grazing can reduce reliance on and cost of stored feed while protecting the soil and improving water quality. The objective of this project is to evaluate the effectiveness of fall-grazing an oat-cereal rye cover crop mix by beef cattle to promote a sustainable crop and a livestock system that increases farming efficiency while also improving water quality and protecting soil resources.

### Materials and Methods

A cereal rye and oat cover crop mix was seeded at 1 bushel/acre per species at the ISU McNay Farm, Lucas County, in late August in three different fields. In Field A, the mix was drilled behind corn silage August 22, 2018. For Fields B and C, the mix was aerially seeded August 24, 2018, into standing corn (harvested 10/17/18) and standing soybean (harvested 10/27/18), respectively.

Forage samples were collected November 8, 2018, prior to grazing to benchmark the forage biomass yield and nutritional quality. Within each field, three treatments were applied: grazed cover crop, ungrazed cover crop, and no cover crop. Treatments allowed data to be collected for compaction comparison of grazing by measuring the soil's bulk density. Soil samples were collected prior to cattle turnout to serve as a baseline, and will be collected again in the spring prior to spring grazing and post grazing to evaluate any soil compaction impact due to cattle grazing (data not presented). Although this report is focused on fall-grazing of cover crops, the same fields are utilized for a spring-grazing cover crop project. The number of fall-calving cow-calf pairs and days grazed were monitored. During grazing, cattle had access to adjacent pasture for water source.

### Results and Discussion

Fall forage yield can be found in Table 1. Based on forage yield, interseeding into standing cash crop appeared to hinder cover crop growth. Several factors could have impacted forage yield, including excessive fall moisture and competition from the growing cash crop. Additionally, chickweed pressure in Field B limited cover crop emergence and growth. Rust presence found in Field A stunted oat growth once the forage reached approximately 12-16 in. tall. Although not ideal for collecting research data, these factors are real-world situations facing Iowa's farmers and offer great talking points when discussing the challenges and successes of integrating cover crops for forage. Nutritional quality of the cover crop mix can be found in Table 2.

Grazing days and stocking rates are reported in Table 3. Two of the fields at the McNay

Farm offered short-term grazing for fall-calving cow-calf pairs, which ultimately translated into some hay-cost savings.

The research conducted in fall 2018 will be coupled with data anticipated to be collected in fall 2019, allowing for data to be collected behind both corn and soybean crops at the farm. Results from both years will be compiled to provide a more comprehensive benchmark for Iowa livestock producers and row crop farmers. Successful fall-grazing of cover crops by beef cattle contributes to a

significant feed savings, thus creating further incentive for cover crops adoption across the state and aid in more efficient use of resources further improving both cattle and crop enterprise profitability.

### Acknowledgements

The authors wish to thank the Iowa Nutrient Research Center for funding the project and the ISU McNay Farm staff, Brad Evans, Gary Thompson, and Logan Wallace, for help with data collection and study management.

**Table 1. Fall forage yield of a cereal rye and oat cover crop mix (lb dry matter/acre) established at the Iowa State University McNay Research Farm during fall 2018.**

Field A <sup>1</sup>	Field B <sup>2</sup>	Field C <sup>3</sup>
1,675	-	728

<sup>1</sup>Drilled behind corn silage 8/22/18, 18.7% DM.

<sup>2</sup>Estimated to be less than 100 lb DM/acre. Aerially seeded into corn 8/24/18, 14.6% DM.

<sup>3</sup>Aerially seeded into soybeans 8/24/18, 17.5% DM.

**Table 2. Nutritional value of a cereal rye and oat cover crop mix (dry matter basis) established at the Iowa State University McNay Research Farm during fall 2018.**

	DM <sup>1</sup> , %	CP <sup>2</sup> , %	ADF <sup>3</sup> , %	NDF <sup>4</sup> , %	TDN <sup>5</sup> , %
Field A	14.6	21.8	28.8	36.3	60.1
Field C	17.5	27.0	30.1	36.3	65.5

<sup>1</sup>Dry matter.

<sup>2</sup>Crude protein.

<sup>3</sup>Acid detergent fiber.

<sup>4</sup>Neutral detergent fiber.

<sup>5</sup>Total digestible nutrients (calculated).

**Table 3. Fall grazing days of a cereal rye and oat cover crop mix and cow-calf pair stocking rate in fall-grazing cover crop trials established at the Iowa State University McNay Research Farm during fall 2018<sup>1</sup>.**

	Stocking rate (hd/acre)	Days grazed	Cattle turnout	Cattle removal
Field A	1.8 <sup>1</sup>	7	10/29/18	11/5/18
Field C	1.3 <sup>1</sup>	8	11/8/18	11/16/18

<sup>1</sup>Cow-calf pairs also had access to adjacent pasture for water source.