

**Iowa Beef Industry Council Checkoff Research Program
Final Report Review**

Project Title: Performance and economics of fall grazing cover crops compared to a traditional dry lot system of fall-calving cow-calf pairs

Investigators: Erika Lundy-Woolfolk Beth Reynolds Dr. Dan Loy

Primary Institution: Iowa State University

Award Amount: \$43,784

Reviewer: Dr. James Russell

Date: June 14, 2022

Project Objectives:

- Evaluate cow and calf performance including average daily gain, weaning weights, and pregnancy rates when grazing a brassica, oat, and vetch mix of cover crops.
- Determine economic value of fall grazing cover crops compared to the traditional dry lot management of the ISU Beef Teaching fall herd.
- Educate cattlemen on beef management practices for fall grazing cover crops through hosting a field day, developing a fact sheet, and various media outlets.

Final Report Summary

Nontechnical Summary:

Title: Performance and economics of fall grazing cover crops compared to a traditional dry lot system of fall-calving cow-calf pairs

Lead Project Director:

Erika Lundy-Woolfolk, SW IA Field Specialist, 154 Public Sq., Suite C, Greenfield, IA 50849, Phone: 641-743-8412 Email: ellundy@iastate.edu

Feed costs account for approximately 60% of the total cost of production for a cow-calf herd. For fall-calving herds, feed availability and feed quality are sometimes inadequate to meet the nutrient requirements of lactating females through the fall and winter months and can be expensive. Cover crops provide an opportunity to reduce dependence on stored feed and reduce feed costs. However, limited data is available on cover crop utilization by cattle including cow and calf performance and economics when grazing cover crops. Thus, the objective of this study, Performance and economics of fall grazing cover crops compared to a traditional dry lot system of fall-calving cow-calf pairs, was to evaluate cow and calf performance while strip grazing a cover crop mix consisting of radishes, turnips, oats, and common vetch (CC) compared to a traditional, dry lot management system (CON) of the Iowa State University Beef Teaching Farm fall-calving herd. The study was repeated for 3 consecutive years to account for weather variation. Each growing season presented a unique situation. With a targeted seeding date of August 1st each year, yields ranged from 2,750 – 4,830 lbs. of dry matter per acre, averaging 3,952 lbs. The greatest yield was observed in 2019 while the lowest yield occurred in 2020 with drought conditions restricting growth. Growth in 2021 was intermediate, but peak yield occurred after grazing began due to a delayed killing frost. Turnout dates ranged from early-November to mid-

December, and fall pairs grazed for an average of 32 days, ranging from 17 – 45 days. Despite fluctuation in cow body weights between treatments over the years, calves on CC had equal to or greater average daily gain and final body weights compared to calves on CON. Over the 3 years, CC calves gained an average of 0.36 lbs. more per head per day than their CON counterparts. This advantage is likely a reflection of CC dams producing a higher quality milk due to the high-quality forage diet and the ability of calves to graze alongside their dam. An economic analysis of the 3-year project revealed a 29% average reduction in calf cost of gain of cow-calf pairs grazing cover crops (\$1.11/lbs. of gain) compared to cow-calf pairs fed in a dry lot setting (\$1.57/lb. of gain). Compared to the standardized dry lot in this scenario, this efficiency boost emphasizes the value of extending the grazing season, especially in times of high feed costs. Contact Iowa Beef Center specialists that led this study, Erika Lundy-Woolfolk (ellundy@iastate.edu) or Beth Reynolds (bethr@iastate.edu), if interested in discussing results further

Impacts:

- This 3-year study demonstrates a \$0.46/lb. calf cost of gain advantage when grazing cover crops compared to feeding fall-calving pairs in a dry lot setting in the fall.
- An excess of 1,067 direct contacts with cattlemen and women or industry stakeholders were impacted by attending a field day, meeting or presentation related to this study.
 - An estimated 85% of respondents to evaluations at these presentations indicated that they planned on increasing grazing days on their farm and 60% indicated that they intend to implement or improve utilization of cool season annual forages into their operation.

Conclusion:

- Utilizing a fall grown cover crop mix can make a high-quality, affordable feed option for cow-calf pairs in early lactation.
 - Weather will significantly impact forage establishment and the length of the grazing season.
 - A benefit of grazing fall grown cover crops may be heavier calves following the grazing period.

Technology transfer:**Graduate student theses or dissertations:**

None reported

Refereed journal publications:

One manuscript planned

Reviewed abstracts:

None reported

Extension/Outreach publications:

Erika Lundy-Woolfolk, Beth Reynolds, and Dan Loy. 2022. Evaluating the performance and economics of fall grazing cover crops compared to a traditional dry lot system of fall-calving cow-calf pairs. Iowa State University Animal Industry Report. In submission.

Scientific presentations:

None reported

Extension/Outreach presentations:

Denise Schwab and Rebecca Vittetoe. Annual Forages Projects. ISU Extension field day. La Porte City, IA. April 2022. (28 participants)

Denise Schwab. Filling the Grazing Gap with Annual Forages presentation. Eastern Iowa Hay Producers Association annual meeting. Welton, IA. March 2022. (49 participants)

Erika Lundy-Woolfolk. Utilizing Cover Crops as a Forage Resource. Animal Science 426: Beef Systems Management. Ames, IA. Fall 2020, Spring 2021, Fall 2021, Spring 2022. (140 students)

Denise Schwab. Maximizing Grazing Opportunities with Annual Forages. Crop Advantage Series. Waterloo, IA. January 2022. (19 participants)

Denise Schwab. Filling the Grazing Gap with Annual Forages. Cornbelt Cow-Calf Conference. Ottumwa, IA. January 2022. (17 participants)

Dan Loy. Filling the Grazing Gap with Annual Forages. Driftless Region Beef Conference. Driftless, IA. January 2022. (20 participants)

Beth Reynolds and Erika Lundy-Woolfolk. ISU Research Update: Cow-Calf Fall Grazing Cover Crop Project. Winter Grazing Field Day. Ames, IA. January 5, 2022. (27 participants)

Erika Lundy-Woolfolk and Rebecca Vittetoe. Utilizing Cover Crops as a Forage Resource. Cover Crop Innovators by Cover Crop Strategies Magazine. Webinar. November 2021.

Rebecca Vittetoe. Agronomics and Economies with Tillage Management & Cover Crops. Stewardship in Farming and Water Quality with Indigo Ag. September 1, 2021. (85 participants)

Beth Reynolds and Erika Lundy-Woolfolk. ISU Research Update: Fall Grazing Cover Crops. Fencing & Grazing Clinic. Ames, IA. June 17, 2021. (72 participants)

Erika Lundy. Pasture Recovery & Renovation. Greene and Guthrie County Extension Meetings. Jefferson & Guthrie Center, IA. February 9, 2021. (13 participants)

Denise Schwab. Cover Crops and Cattle. Cover Crops Meeting. Durant, IA. March 2020. (29 participants)

Erika Lundy and Denise Schwab. Utilizing Cover Crops as a Forage Resource. ISU Crops TV. Online. December 17, 2020. (538 participants)

Erika Lundy-Woolfolk and Rebecca Vittetoe. Grazing Cover Crops: Lessons Learned. SE Iowa Crop Advantage Series. Moravia, IA. January 2019. (30 participants)

Podcasts:

None reported

Other:

Facebook and Instagram posts. Four posts. 2019 - 2021. (Reach: 4,770. Engagements: 218).

Personnel Support:

Faculty:

None

Extension specialists:

Erika Lundy-Woolfolk, Extension Beef Specialist, Iowa Beef Center, 2% of salary
Beth Reynolds, Extension Beef Specialist, Iowa Beef Center, 2% of salary

Associate scientists:

None

Post-doctoral associates:

None

Technicians:

None

Farm labor:

None

Graduate student:

None reported

Undergraduate student:

Four undergraduate students, Iowa Beef Center, \$2,391

Three undergraduate students, Iowa State University Beef Teaching Farm, \$1,086

Other:

None



