

Utilizing DDGS as a Supplement for Yearling Heifers Grazing North Dakota Rangelands: Impacts on Animal Performance and Meat Quality

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Introduction

The focus of this research is to establish practical methods for incorporation of distillers dried grains with solubles (DDGS) into yearling livestock production systems. Forage quality is suitable to allow for sufficient gains for yearling cattle in the early summer. However, as the summer months progress forage quality declines because of increased plant maturity, which in turn leads to decreased animal performance. To offset decreasing forage quality and animal performance, supplementation is required. Distillers dried grains with solubles are byproducts of ethanol production, and have been used as a protein and energy supplement in numerous applications. The objective of this study is to determine how supplementation of DDGS will impact performance of yearling heifers grazing native range, subsequent feedlot performance, and meat quality.

Materials and Methods

At CGREC, eighty-two yearling heifers were randomly assigned to either a control treatment (no DDGS) or a supplementation treatment (DDGS at 0.6% body weight). Distillers dried grains with solubles were delivered daily and placed in plastic lined feed bunks. Stocking rates were 1 AU/4 acres, sufficient enough to allow for *ad libitum* (as much as desired) forage access for the 70-day grazing study. The primary grass and forb species found in the pastures included Kentucky bluegrass, blue grama, needle and thread, long-stolon sedge, and western snowberry. At the end of the

grazing portion of the study, yearling heifers were placed into feedlot pens to start a 109-day finishing phase. Feedlot pens coincided with grazing pastures. All heifers received a common corn-based finishing ration daily until reaching market readiness.



Quynn Larson feeding DDGS to heifers at CGREC.

After reaching market weight, heifers were harvested at a commercial facility to allow for collection of carcass characteristics including: quality and yield grade, marbling score, ribeye size, and 10th rib fat. Taste panels, retail shelf-life, and shear force studies are currently underway in order to determine the differences, if any, between meat samples from the DDGS-fed and control heifers.

Results

Final body weight and average daily gain were greater for heifers supplemented with DDGS ($P = 0.03$; Table 1) during the grazing phase of this project. However, no statistical differences in animal performance were observed during the finishing phase ($P = 0.13$). Interestingly, the 25-pound

Table 1. Impacts of DDGS supplementation to heifers grazing North Dakota rangelands on grazing and subsequent feedlot performance ¹				
Item	Treatment		SEM ²	P-value
	DDGS	Control		
<i>Grazing</i>				
Initial body weight (lbs)	699	706	2.3	0.09
Final body weight (lbs)	815	790	5.5	0.03
Average daily gain (lbs)	1.65	1.19	0.05	0.002
<i>Finishing</i>				
Final body weight (lbs)	1272	1251	16.4	0.42
Average daily gain (lbs)	4.20	4.23	0.11	0.83
Dry matter intake (lbs/day)	27.2	28.4	0.44	0.13
Gain to feed ratio	0.16	0.15	0.003	0.28
<i>Carcass-Adjusted Performance³</i>				
Final body weight (lbs)	1273	1254	16.6	0.48
Average daily gain (lbs)	4.21	4.26	0.12	0.78
Gain to feed ratio	0.15	0.15	0.004	0.46
¹ Means presented are least squares means.				
² n = 3. ³ Carcass-adjusted final body weight calculated from hot carcass weight divided by the average dressing percentage of all treatments.				

advantage in body weight of heifers supplemented with DDGS was still present at the end of the finishing phase, which was unexpected as lighter weight cattle would typically experience sufficient compensatory gain to negate the earlier impacts of supplementation. No differences in carcass characteristics were observed ($P = 0.23$; Table 2, page 3). However, producers could benefit by a small increase in marbling score on carcasses from DDGS heifers. This increase could allow carcasses to qualify for Certified Programs resulting in premium returns. At present, results for shelf-life, shear force, and taste-panel portions of this experiment are not available as these studies are still ongoing.

Implications

While supplementation during early summer grazing is not very common, it is necessary when forage quality begins to decline in the late summer months. While the differences between management practices demonstrated here were limited to animal performance while grazing, the subtle differences in carcass quality may prove beneficial to producers. Additional information including shelf-life, shear force, and taste-panel data will be presented at a later date.

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Table 2. Impacts of DDGS supplementation to heifers grazing North Dakota rangelands on carcass characteristics¹

Item	Treatment		SEM ²	P-value
	DDGS	Control		
Hot carcass weight (lbs)	746	734	9.7	0.47
Ribeye area (sq in)	12.5	12.7	0.19	0.50
Backfat (in)	0.50	0.48	0.02	0.56
Marbling score ³	514	470	22.3	0.23
Kidney, pelvic and heart fat (%)	1.85	1.85	0.08	0.99
Quality Grade ⁴	10.6	10.2	0.25	0.28
Yield Grade	3.0	2.8	0.10	0.30
Dress, %	58.3	58.7	0.33	0.52

¹ Means presented are least squares means.

² n = 3.

³ Marbling score based on 400 = Small⁰.

⁴ Quality grade based on Low Choice (Ch⁻) = 10, High Prime (Pr⁺) = 15.