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Supplementing Modified Wet Distillers Grains with Solubles to Long Yearling Steers Grazing Native Range

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Summary

Modified wet distillers grains with solubles (MDGS) were supplemented on the ground to yearling steers with access to native range during summer grazing. Supplemented steers had greater ADG than non-supplemented steers, and were heavier entering the feedlot. Supplemented steers also required 24 fewer days in the feedlot to reach a constant end point, compared to non-supplemented steers. Energy calculations suggest 1.0 lb of MDGS replaced 0.65 lb of summer range.

Introduction

Yearling production systems capitalize on the use of the animal to harvest forage, as opposed to more intensive systems that require harvested forages and longer grain feeding. Yearling production systems are further segregated into: short yearlings, which are received in the fall, backgrounded during the winter, then re-enter the feedlot in the spring; or long yearlings, which are received in the fall and backgrounded for approximately one year, at which time they re-enter the feedlot. Co-products of the corn dry milling industry fit well into forage production systems, because distillers grains provide a highly fermentable fiber source that does not negatively impact forage digestion (*2004 Nebraska Beef Cattle Report*, pp. 22-24), and also supply additional UIP to meet metabolizable protein deficiencies common to lighter weight cattle grazing forage.

The objective of the current research was to determine effects of supplementing modified wet distillers grains with solubles (MDGS) on the ground to long yearling steers while grazing native Sandhills range.

Procedure

Two hundred forty long yearling steers (BW = 505 ± 14 lb) were backgrounded on cornstalk residue from late fall to mid-spring (145 days) in 2007 and 2008. While grazing cornstalks, calves were supplemented 5.0 lb/steer daily of Sweet Bran® (Cargill, Blair, Neb.) each year. Following backgrounding, steers were allowed to graze smooth bromegrass pastures for approximately 21 days. Before grazing smooth bromegrass pastures, calves were weighed, stratified by BW, and assigned randomly to summer grazing treatments. After grazing brome, steers were relocated to graze Sandhills range at the University of Nebraska Barta Brothers Ranch near Rose, Neb. Summer grazing treatments included: grazing native range with no supplementation (CON), and grazing native range with MDGS supplementation at 0.6% BW (SUPP). Weights were projected using ADG for determination of summer grazing supplementation. Modified wet distillers grains with solubles were fed daily on the ground with a tractor and feed wagon, allowing steers to be distributed to different locations within each pasture at the time of feeding. Steers grazed Sandhills range for an average of 136 days before entering the feedlot in late September each year. Steers were limit fed at 1.8% BW (DM basis) for five days before smooth-bromegrass grazing and after summer grazing; initial and final BW for summer were the mean of weights taken on two consecutive days. Upon re-entry in the feedlot, steers were targeted to harvest at a constant backfat depth of 5 inches.

Data were analyzed using the Mixed Procedure of SAS (SAS Institute, Cary N.C.) as a completely randomized design; feedlot pen was the experimental unit. Summer grazing treatment was considered a fixed effect, with animal nested within summer grazing treatment and residual as random effects.

Results

At the time of summer treatment assignment, BW was not different between SUPP and CON steers ($P = 0.36$); however, SUPP steers had 0.68 lb greater ($P < 0.01$) ADG during summer grazing than CON steers (Table 1). Consequently, SUPP steers were 103 lb heavier ($P < 0.01$) than CON steers at feedlot entry. When taken to a constant end point, SUPP steers required 24 fewer ($P < 0.01$) days on feed during the finishing phase, compared to CON steers.

Using summer performance data, *in vitro* dry matter digestibility of the native Sandhills range from the two previous years, and NRC energy equations, it was determined that 0.65 lb grass was saved for every 1.0 lb MDGS fed (DM basis). Based on previous research (*2010 Nebraska Beef Cattle Report,* pp. 17-18), loss of MDGS fed on the ground was estimated at 15%, which was accounted for when estimating forage replacement. Also, based on visual appraisal, feeding MDGS on the ground did not have a negative impact on native range.

A meta-analysis of 12 pasture grazing experiments (*2009 Nebraska Beef Cattle Report*, pp. 37-39) where dried distillers grains with solubles (DDGS) was fed in a bunk, found a quadratic response to DDGS for ADG

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($y = -0.0124x^2 + 0.1866x + 1.507$; Linear < 0.01; Quadratic = 0.17). Figure 1 shows the meta-analysis quadratic response to ADG when supplementing DDGS, with the ADG for CON and SUPP steers from the current experiment included. These data suggest response to MDGS may exceed that of DDGS for ADG during grazing. Recall, these results were based on two years of data; however, the experiment will be replicated one more year to provide additional power. Supplementing MDGS on the ground at 0.6% BW (DM basis) to long yearling steers grazing native range increased ADG during summer grazing.

A simple economic analysis was conducted on data from cattle performance. The MDGS was priced at $0.06/lb DM and $0.10/animal was charged daily for feeding the MDGS (above routine animal care). The grass saved (0.65 lb/lb MDGS) was priced at $0.04/lb (equals $27/AUM). Based on these prices, the cost of gain for the additional 103 lb gained by supplementing MDGS was $0.36/lb.

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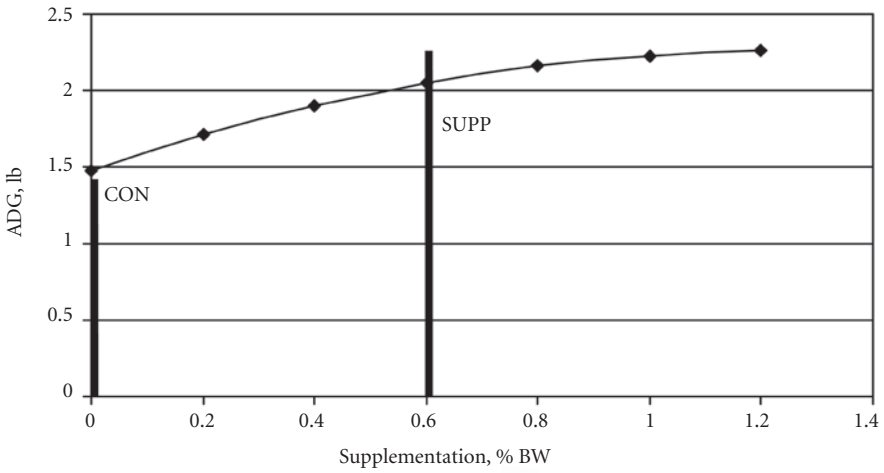
Table 1. Effects of supplementing modified wet distillers grains (MDGS) during summer grazing on performance of long yearling steers.

Item	CON[1]	SUPP[2]	*P*-value
Initial BW[3], lb	505	504	0.79
Spring BW[4], lb	747	750	0.36
Summer BW[5], lb	929	1032	<0.01
Summer ADG[6], lb	1.39	2.07	<0.01
Feedlot BW[7], lb	1409	1412	0.85
Feedlot DMI[8], lb	30.0	30.1	0.75
Feedlot ADG[9], lb	3.83	3.77	0.47
Feedlot GF[10]	0.128	0.125	0.21
Feedlot DOF[11], day	125	101	<0.01
HCW, lb	887	890	0.84
REA, sq. in	13.38	13.70	0.19
BF, in	0.50	0.52	0.49
MARB	590	546	0.01
CYG	3.33	2.97	0.06

[1]CON = cattle grazing native range with no supplementation.
[2]SUPP = cattle grazing native range with MDGS supplementation at 0.6% BW.
[3]Initial BW = weight taken during first fall.
[4]Spring BW = weight taken after grazing corn stalks.
[5]Summer BW = weight taken after grazing summer pastures.
[6]Summer ADG = gain attained when grazing summer pastures.
[7]Feedlot BW = carcass adjusted final body weight.
[8]Feedlot DMI = intake during feedlot finishing phase.
[9]ADG = gain during feedlot finishing phase.
[10]Feedlot GF = feed efficiency during feedlot finishing phase.
[11]Feedlot DOF = days required to finish CON and SUPP cattle to constant back fat depth during feedlot finishing phase.



[1]▬ = response to gain from current trial with MDGS; [2] ◆ = quadratic response to gain from previous research with DDGS.

Figure 1. Effect of supplementing modified wet distillers grains during summer grazing[1] on ADG compared to meta-analysis[2].