Comparison of Feeding Wet Distillers Grains in a Bunk or on the Ground to Cattle Grazing Native Sandhills Winter Range

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Comparison of Feeding Wet Distillers Grains in a Bunk or on the Ground to Cattle Grazing Native Sandhills Winter Range

Jacqueline A. Musgrave  
L. Aaron Stalker  
Matt C. Stockton  
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Two experiments determined the effects of feeding wet distillers grains with solubles (WDGS), either on the ground or in a bunk, to cattle grazing native Sandhills winter range. In Exp. 1, frequency of supplementation had no effect on cow body weight (BW) or body condition score (BCS). BCS and BW of cows fed in a bunk were improved compared to cows fed on the ground. In Exp. 2, steers fed in a bunk had greater average daily gain than steers fed on the ground. Feeding WDGS on the ground resulted in 13–20% waste and cost between $0.03 and $0.045 per day.

Introduction

Growth of the ethanol industry in Nebraska and surrounding states has increased the availability of distillers co-products for livestock feed. Distillers grains plus solubles are high in protein, energy, and phosphorous, making them an excellent supplement in many grazing situations (2008 Nebraska Beef Report, pp. 25-27). In a summary of 14 grazing trials, supplementation of dried distillers grains with solubles (DDGS) increased final BW and ADG (2009 Nebraska Beef Report, pp. 37-39).

Wet distillers grains with solubles (WDGS) have not been widely used in grazing applications. This is due, in part, to potential inefficiencies in delivery of WDGS to grazing cattle. Feeding WDGS on the ground may result in higher waste levels when compared to feeding it in a bunk, but may increase its use in practical grazing situations and increase profitability compared to bunk feeding. Therefore, the objective of this study was to compare feeding WDGS to grazing cattle in a bunk or on the ground.

Procedure

Two experiments were conducted at the University of Nebraska Gudmundsen Sandhills Laboratory (GSL) near Whitman, Neb. Cattle grazed native upland Sandhills winter range. For both experiments, wet distillers grains were obtained from an ethanol production facility (Standard Ethanol, LLC, Madrid, Neb.) and transported about 111 miles to GSL. The distillers grains were purchased in September and stored in a bunker fashioned from large round bales of meadow hay arranged in a “U” shape and covered with plastic until initiation of the experiment.

In Exp. 1, 120 March-calving cows (1182 ± 118 lb BW) were stratified by age and assigned randomly to one of eight pastures. Pastures were then assigned randomly to treatment. Treatments were arranged as a 2 X 2 factorial in a completely randomized design as follows: WDGS fed on the ground, either three or six days/week; or WDGS fed in a bunk either three or six days/week. The experiment was conducted for 90 days from Dec. 1, 2007, to March 1, 2008. Cows were supplemented with the daily equivalent of 1.0 lb/cow (DM basis) WDGS, delivered on Monday, Wednesday, and Friday to cattle in the three days/week treatment and on Monday through Saturday to cattle in the six days/week treatment. Cattle continuously grazed the same pasture throughout the experiment. Cow BW and BCS were measured upon initiation and completion of the 60-day feeding period. Weights were taken on a single day and cows were not limit fed prior to weighing.

In Exp. 2, 63 March-born steer calves (443 ± 60 lb BW) were assigned to one of two feeding treatments: WDGS fed in a bunk or on the ground. There were four pastures, and pasture served as the experimental unit. Steers in Exp. 2 were supplemented with the daily equivalent of 2.25 lb/steer (DM basis) delivered five days/week. The experiment was conducted for 62 days from Oct. 14, 2008, to Dec. 15, 2008. Steers continuously grazed the same pasture throughout the experiment. Steer BW was recorded on two consecutive days at the initiation and completion of the feeding period. Calves were not limit fed prior to weighing.

Results

In Exp. 1, there were no frequency-by-method interactions (P > 0.10). Frequency had no effect on cow BW (P = 0.55) or BCS (P = 0.27). Body condition score of cows fed in a bunk increased, while that of cows fed on the ground did not change (0.4 vs. 0.0; P = 0.01; Table 1). Cows fed in a bunk lost less BW than cows fed on the ground (20.0 vs. 63.9 lb; P = 0.07; Table 1). Previous research at GSL has demonstrated 0.30 lb/day of supplemental crude protein to be sufficient to maintain BCS of spring-calving cows during the winter (Hollingsworth-Jenkins et al., 1996 Nebraska Beef Report, pp. 14-16). In this experiment, feeding WDGS in a bunk at an equivalent CP level resulted in a slight increase in BCS. This may have been a result of the energy content of WDGS. While better performance was achieved by feeding in a bunk, this experiment demonstrated WDGS is a viable supplement for cows grazing winter range.

(Continued on next page)
In Exp. 2, steers fed in a bunk had higher ADG than steers fed on the ground (0.63 vs. 0.44; \( P = 0.04 \); Table 2). The NRC (1996) was used to retrospectively calculate the WDGS intake difference between treatments. For steers fed in a bunk, a reduction in WDGS intake between 0.31 and 0.45 lb/day would have resulted in a 0.20 lb reduction in ADG. This is the equivalent of 13-20% waste. At $200 (DM basis) per ton for wet distillers grain, the cost of the wasted distillers grains was between $0.03 and $0.045 per day. Because steers in this experiment were gaining BW at a relatively modest rate, even a slight reduction in WDGS intake resulted in a relatively large decrease in ADG. If the steers were being fed to achieve relatively rapid BW increases and waste of WDGS remained constant, then the relative difference in ADG between cattle fed in a bunk versus on the ground would be expected to be less than what was observed in this study.

An economic analysis was conducted on Exp. 2. This analysis was based on the value of the average difference in weight gained between steers fed WDGS in a bunk or on the ground. Calf sale value would have to be less than $0.81/lb to justify not feeding in a bunk, based on bunk feeding cost of about $0.16/day. The cost of $0.16/day was derived from the cost of purchasing a commercial (Werk Weld Inc., Armour, S.D.) feed bunk, assuming full capacity of 40 head. Bunk cost of $973.65 included a one-time delivery charge with a three-year payback period and 60 days of use per year at an interest rate of about 9.5%. Bunk cost for individual producers will vary as will calf value necessary to justify bunk feeding.

In conclusion, frequency of delivery of WDGS did not affect animal performance. An advantage in animal performance to feeding WDGS in a bunk versus on the ground was seen in the current studies.

Table 1. Change in body weight (BW) and body condition score (BCS) of cows fed WDGS on the ground or in a bunk (Exp 1).

<table>
<thead>
<tr>
<th></th>
<th>Bunk</th>
<th>Ground</th>
<th>SEM</th>
<th>( P )-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCS change</td>
<td>0.4</td>
<td>0.0</td>
<td>0.1</td>
<td>0.01</td>
</tr>
<tr>
<td>Body weight change (lb)</td>
<td>-20</td>
<td>-64</td>
<td>12</td>
<td>0.07</td>
</tr>
</tbody>
</table>

Table 2. Performance of steers fed WDGS on the ground or in a bunk (Exp 2).

<table>
<thead>
<tr>
<th></th>
<th>Bunk</th>
<th>Ground</th>
<th>SEM</th>
<th>( P )-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial weight (lb)</td>
<td>440</td>
<td>447</td>
<td>11</td>
<td>0.67</td>
</tr>
<tr>
<td>Final weight (lb)</td>
<td>481</td>
<td>475</td>
<td>11</td>
<td>0.71</td>
</tr>
<tr>
<td>ADG</td>
<td>0.36</td>
<td>0.44</td>
<td>0.07</td>
<td>0.04</td>
</tr>
</tbody>
</table>

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