

Dried Distillers Grains Supplementation of Calves Grazing Corn Residue

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Summary

Dried distillers grains (DDGS) were fed to weanling steer calves grazing nonirrigated corn residue to determine daily gain response and residue intake response to increasing levels of DDGS (from 1.5 to 6.5 lb/day in 1 lb increments). The DDGS was fed individually using Calan electronic gates. Daily gain increased from 0.9 (1.5 lb DDGS) to 1.8 (6.5 lb DDGS) lb/day. Forage intake decreased from 11.3 (1.5 lb DDGS) to 8.3 (6.5 lb DDGS) lb/day. Results provide information for selecting a DDGS supplementation level to achieve a target gain.

Introduction

Due to their high energy (108% TDN) and high protein content (30.1%) dried distillers grains (DDGS) fit well as a protein and (or) energy supplement in many grazing situations. Corn residues are a relatively inexpensive feed resource, but are low in protein and energy, especially for growing calves, backgrounded for entry into the feedlot or for summer pasture, or for replacement heifers. Beef producers often target a specific ADG so it is important to know the amount of DDGS to supplement to calves grazing corn residues in order to achieve a desired level of daily gain. The objectives of our experiment were to determine the effects on ADG of incremental DDGS supplementation to calves grazing corn residue, and predict the effect of supplementation on forage intake.

Procedure

One hundred and twenty steers (512 ± 37 lb) were stratified by weight and assigned randomly to incremental levels of DDGS treatments. Steers were limit fed a 47.5% alfalfa, 47.5% WCGF 5% supplement diet for five days at the beginning and end of the trial and weighed for three consecutive days to minimize variation due to gut fill. Treatments included 1.5, 2.5, 3.5, 4.5, 5.5, and 6.5 lb DDGS/head daily adjusted to a percentage of body weight (.29, .49, .69, .88, 1.08, and 1.27 % respectively.) The DDGS contained 12.4% fat and 30.1% CP. Calves were weighed on consecutive days biweekly to adjust the amount of DDGS offered. Minerals and vitamins were added to the DDGS supplements to meet NRC requirements.

All steers were individually fed supplement using Calan electronic gates. Thirty calves were selected as a control group and fed a diet of 70.9% brome hay, and 29.1% sorghum silage with DDGS treatments assigned randomly within the group. Diet intake was directly measured for individual steers in the control group. Ninety calves grazed 90 acres of corn

residue for 95 days. Grazing calves were gathered every morning at 6:30 and allowed three hours to consume supplement, then returned to the field for grazing.

Corn residue samples were collected biweekly using two ruminally cannulated heifers and IVDMD was determined.

Results

Average daily gain increased ($P < .001$) with increasing levels of DDGS, with grazing calves ranging from .9 to 1.8 lbs/day (Figure 1). Some calves fed the two highest levels of DDGS (5.5 and 6.5 lb/day) did not consume all of the DDGS offered. Actual DDGS intakes are used in Figure 1 to determine ADG response to level of DDGS. The quadratic effect of DDGS levels on ADG suggests that gains didn't increase much above 1.1% of body weight of DDGS (Figure 2). Because there were some refusals of DDGS at the highest level of feeding (6.5 lb/day), we suggest a practical limit of 1.1% BW of DDGS supplementation (5.5 lb/day). Obviously, the amount (lb/day) would be greater for larger calves.

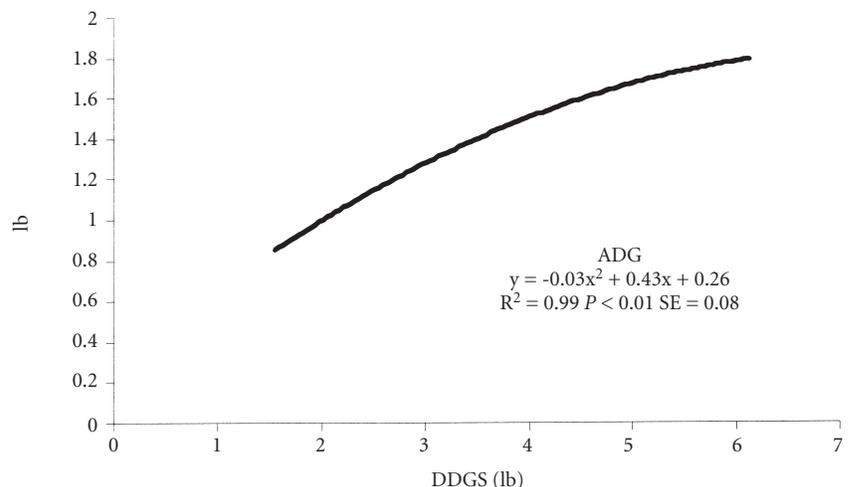


Figure 1. Grazing cattle average daily gain and predicted forage dry matter intake response due to increased levels of DDGS.

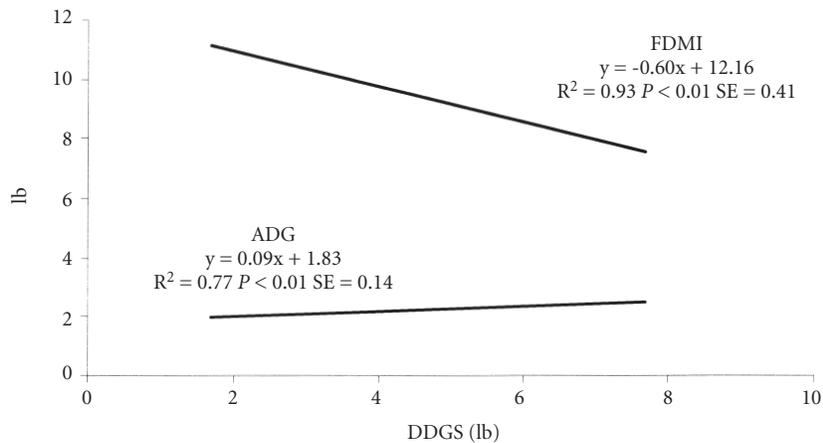


Figure 2. Control cattle group average daily gain and forage dry matter intake response due to increased levels of DDGS.

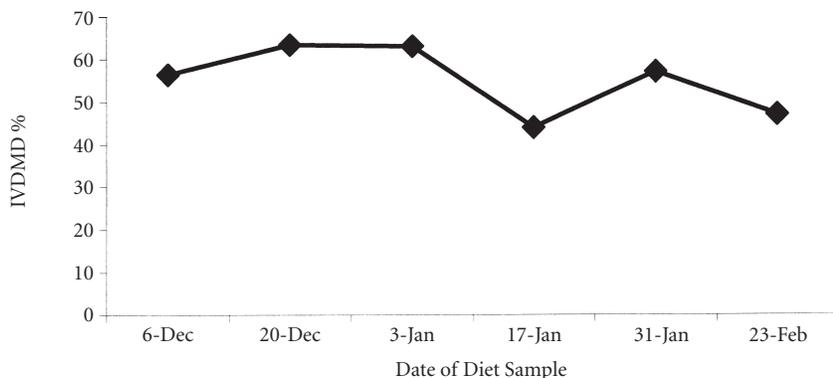


Figure 3. In vitro dry matter digestibility of corn residue over time.

Calves fed hay had ADG ranging from 1.9 to 2.4 lb (Figure 2). Differences in gain were due to differing TDN of corn residue and hay diet (55% and 59% respectively). Forage intake in the hay-fed calves (Figure

2) decreased linearly ($P < .001$) with DDGS supplementation. Values ranged from 11.3 lb at 1.5 lb DDGS supplementation to 8.3 at the high supplementation level. Figure 3 depicts the digestibility of the corn

residue which varied from 56.4% early in the grazing period to 46.9% at the end of the period with an average of 55.1%. Animal selectivity is the logical explanation to an overall decrease in quality with time. The low point fell at 44.0% during a period of snow cover. Intake of the control, hay-fed calves decreased by about 27% as DDGS level increased from 1.5 to 6.5 lb/day. We therefore assume a similar decrease in intake of the corn residue. This could provide a feasible option to extend the stocking rates of corn stalks, while still improving ADG. Theoretically, one could increase stocking rate by 27%.

Figure 1 provides information necessary for a producer to determine the DDGS supplementation level necessary to achieve a targeted gain. For example, if 1.5 ADG is desired, then 4 lb of DDGS would be fed. The calves would consume 73% as much residue. We estimate cornstalk grazing cost at \$.12 per calf daily. With reduced consumption of corn residue (73%) the cost would be \$.09 per day. We estimate delivered price of DDGS to be about \$110 per ton. the 4 lb of DDGS (4.3 lb air dry) would cost \$.24 per day for a total feed cost of \$.33 per day or \$.213 per lb gain at 1.5 lb ADG.

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