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Wet distillers grain and solubles vs. wet corn gluten feed for newly received and growing cattle

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Wet Distillers Grain and Solubles vs. Wet Corn Gluten Feed for Newly Received and Growing Cattle

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Introduction

In many instances, due in part to price per unit of energy and proximity to production, Kansas beef producers have the opportunity to incorporate grain-processing byproducts such as wet distillers grains with solubles (WDGS) and wet corn gluten feed (WCGF) into diets for newly received and growing cattle. Although a number of previous studies have compared these two byproducts for use in finishing diets, little information is available for receiving and growing cattle diets. Therefore, the objective of this study was to compare the performance outcomes of newly arrived and growing calves fed either WDGS or WCGF relative to a standard corn-based diet.

Experimental Procedures

All procedures were approved by the Kansas State University Institutional Animal Care and Use Committee. Over a 9-day period (May 15 through 23, 2012), 280 steers and bulls (30% bulls; 518 lb initial body weight) were assembled through sale-barn market facilities in Tennessee and transported to the Kansas State University Beef Stocker Unit. Upon arrival, all calves were weighed, ear-tagged, mass medicated with Draxxin (Pfizer Animal Health, Whitehouse Station, NJ) (1.1 mL/100 lb), and palpated for sex (bull or steer). Calves were then given free-choice access to long-stem prairie hay and water overnight. The following day, calves were vaccinated against clostridial and respiratory diseases and dewormed, and bulls were surgically castrated. Cattle within each load (3 total) were then randomly assigned to 1 of 3 treatments for a total of 24 pens. Castrated bulls were distributed equally among the eight pens within each load. Experimental treatments consisted of a feeding a diet that contained no corn byproducts (Control) or diets containing either 30% WCGF or 30% WDGS on a dry matter basis (Table 1). Feed bunks were checked twice daily, and feed was delivered in amounts sufficient to result in clean feed bunks in both morning and afternoon. Calves were fed their respective diets at approximately 7:00 a.m. and 3:00 p.m. daily for 58 days. Calves then were fed a common diet for an additional 14 days to equalize gut fill, after which time cattle were weighed to determine a final body weight. Daily dry matter intake, gains, and feed efficiencies were determined for each pen of calves. Growth performance and feed intake data were analyzed as a randomized complete block design. Health data were analyzed using Pearson's chi-square.

Results and Discussion

Growth performance is shown in Table 2. Feeding WDGS during the receiving period increased dry matter intake but did not improve growth performance compared with cattle fed the Control and WCGF diets. Feeding WDGS during the growing period

¹ Corn Belt Livestock Services, Cedar Rapids, IA.

provided for increased ADG and improved feed efficiency compared with cattle fed the Control or WCGF diets. First-time treatments for bovine respiratory disease decreased in calves fed WDGS.

Implications

Replacing corn, molasses, and a portion of a protein supplement with 30% WCGF or 30% WDGS on a dry matter basis to receiving and growing cattle results in similar or improved growth performance. Because WCGF and WDGS are usually priced lower than corn, diets are less costly, thus decreasing cost of gain.

Table 1. Composition of diets fed to highly stressed crossbred steers during the receiving and growing period

Item	Control	Corn gluten feed	Wet distillers grains
Ingredient, % of diet dry matter			
Cracked corn	47.14	28.57	28.57
Wet corn gluten feed	-	30.00	-
Wet distillers grains + solubles	-	-	30.00
Alfalfa hay	17.50	17.50	17.50
Prairie hay	17.50	17.50	17.50
Supplement	12.86	6.43	6.43
Molasses	5.00	-	6.32
Nutrient concentration			
Dry matter, %	85.90	76.1	60.3
Crude protein, %	14.07	14.96	17.14
Calcium, %	0.62	0.63	0.65
Phosphorous, %	0.43	0.49	0.44
Potassium, %	1.17	1.19	1.09
NEm, Mcal/100 lb	77.19	78.79	81.79
NEg, Mcal/100 lb	48.43	49.93	52.03

Table 2. Growth performance of crossbred steers fed diets containing corn (Control), wet corn gluten feed (WCGF), or wet distillers grains with solubles (WDGS) during the receiving and growing periods

Item	Control	WCGF	WDGS	SEM
Initial weight, lb	516	517	516	4.624
28-day weight, lb	630	637	635	6.892
72-day weight, lb	744 ^a	746 ^a	771 ^b	14.07
Average daily gain, lb				
Day 0–28	4.01	4.25	4.16	0.177
Day 0–72	3.16 ^a	3.18 ^a	3.53 ^b	0.129
Dry matter intake, lb/day				
Day 0–28	12.21 ^a	12.58 ^a	13.61 ^b	0.3361
Day 0–72	16.29	15.67	15.97	0.376
Gain:feed, lb/lb				
Day 0–28	0.330	0.338	0.307	0.013
Day 0–72	0.19 ^a	0.20 ^a	0.22 ^b	0.0070
First-time treatments for bovine respiratory disease, % of calves	12.77	13.33	4.40	—

^{a,b} Means within a row without a common superscript are different, $P < 0.05$.