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Feeding Modified Distillers Grains With Solubles and Wet Corn Gluten Feed (Synergy) to Adapt Cattle to Finishing Diets

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Summary

An experiment with 236 steers and eight pens per treatment (14 or 15 steers/pen) evaluated two grain adaptation treatments. Treatments included adapting steers by decreasing alfalfa (CON) or decreasing a combination of distillers grains and corn gluten feed (SYNERGY) followed by feeding a common finishing diet to slaughter. Performance and carcass traits did not differ between adaptation systems. A combination of MDGS and SYNERGY can be used to adapt beef cattle to feedlot diets with efficacy of the traditional, forage-based method.

Introduction

Results of metabolism and feedlot research using wet corn gluten feed (Sweet Bran®; Cargill Corn Milling, Blair, Neb.) indicated decreasing Sweet Bran instead of forage was a viable method for adapting feedlot cattle to feedlot finishing diets (*2009 Nebraska Beef Cattle Report,* pp. 53-58). Using distillers grains in a similar comparison did not give as favorable results in metabolism studies (*2010 Nebraska Beef Cattle Report,* pp. 72-73) and has not been evaluated in the feedlot. However, ADM is combining modified distillers grains with solubles (MDGS) and wet corn gluten feed (WCGF) as a feed product (Golden Synergy, ADM, Columbus, Neb.). When steers were adapted with Golden Synergy, rumen pH and intakes were favorable compared to use of forage (*2011 Nebraska Beef Cattle Report,* pp. 57-59).

Our objective was to evaluate feedlot performance when comparing a combination of MDGS and WCGF to forage for adapting cattle to finishing diets.

Procedure

Two hundred and thirty-six yearling crossbred steers (BW = 945 ± 1.32 lb) were used to evaluate two different adaptation strategies. A randomized complete block design was used with four weight blocks. Before the trial began, steers were limit fed at 2% of their BW for five days to avoid variation in gut fill, and weighed on two consecutive days. All animals were implanted with Revalor®-S at the beginning of the study. The heavy block consisted of one replication of 30 steers, the medium-heavy block consisted of one replication of 30 steers, the medium-light block consisted of two replications of 30 steers and two replications of 28 steers, and the light block consisted of two replications of 28 steers. Steers were assigned randomly to a pen within block, and pens were assigned randomly to one of the two treatments (8 pens/treatment; 14 or 15 steers/pen).

The treatments consisted of decreasing concentrations of a blend of MDGS and WCGF (SYNERGY) in the diet throughout the 24-day adaptation period compared with decreasing concentrations of forage (CON). In both treatments, corn increased in the diet until steers were adapted to a common finishing diet. The SYNERGY steers were fed decreasing levels of the MDGS and WCGF combination (87.5 to 35%), whereas CON animals were fed the traditional grain adaptation diets with decreasing forage from 45 to 7.5%. Four adaptation diets (Table 1) were used to increase corn with diets fed 5, 5, 7, and 7 days, respectively. The common finishing diet was fed for 120 days after the 24-day adaptation period and consisted of 35% of the blend of MDGS and WCGF, 52.5% DRC, 7.5% alfalfa hay, and 5% supplement. Cattle were fed once daily at 0800. All diets provided 320 to 360 mg/steer of Monensin, 90 mg/steer of Tylosin, and 150 mg/steer of thiamine daily.

Final live weights collected before slaughter were shrunk 4% to account for gut fill in order to calculate dressing percentage. Final live weights were calculated from carcass weight adjusted to 63% dressing percentage. Steers were slaughtered at a commercial packing plant (Greater Omaha Pack, Omaha, Neb.) and HCW was collected on the day of slaughter. After a 48- hour chill, longissimus muscle (LM) area, 12th rib fat depth, and USDA marbling scores were recorded. A calculated USDA YG was determined from HCW, fat depth (FT), LM area, and an assumed constant value for KPH of 2.5% using the equation: 2.50 + (2.5*FT, in) – (0.32*LM area, in^2) + (0.2*KPH, %) + (0.0038*HCW).

All data were analyzed using the MIXED procedures of SAS (SAS Inst., Inc., Cary, N.C.) as a randomized complete block design with pen as the experimental unit. Live performance data were analyzed not only for the entire feeding period, but also for the adaptation period. Blocks were considered a random variable in the model.

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Table 1. Adaptation and finishing diets using a combination of WCGF and MDGS (ADM Golden Synergy) compared to forage during the adaptation period.

	Adaptation				
Ingredients, % DM	STEP 1	STEP 2	STEP 3	STEP 4	Finishing
Control					
ADM Golden Synergy	35.0	35.0	35.0	35.0	35.0
Dry-rolled corn	15.0	25.0	35.0	45.0	52.50
Alfalfa	45.0	35.0	25.0	15.0	7.50
Supplement	5.00	5.00	5.00	5.00	5.00
CO-PRODUCT					
ADM Golden Synergy	87.5	74.375	61.25	48.125	35.0
Dry-rolled corn	0.00	13.125	26.25	39.375	52.5
Alfalfa	7.50	7.50	7.50	7.50	7.50
Supplement	5.00	5.00	5.00	5.00	5.00

Table 2. Growth performance during first 34 days while being adapted to finishing diet.

	Treatments[1]		
Live Performance	CON	SYNERGY	*P*-value
Initial BW, lb	945	945	1
Adaptation BW, lb	1088	1095	0.22
DMI, lb/day	24.8	23.9	<0.01
ADG, lb	4.05	4.23	0.28
F:G	6.10	5.65	0.04

[1]CON= Control treatment with traditional adaptation using roughage, SYNERGY = treatment utilizing a combination of modified distillers grains with solubles and wet corn gluten feed.

Table 3. Overall performance and carcass characteristics for steers adapted with forage (CON) or byproduct (SYNERGY).

	Treatment[1]		
	CON	SYNERGY	*P*-value
Initial BW, lb	945	945	1.0
Final BW[2], lb	1474	1463	0.31
DMI, lb/day	25.2	24.9	0.20
ADG, lb	3.66	3.59	0.35
F:G	6.90	6.90	0.84
Carcass weight, lb	927	923	0.35
Dressing percentage[3], %	62.2	61.7	0.04
Marbling score[4]	660	636	0.17
LM area, in^2	13.65	13.63	0.86
Fat depth, in	0.64	0.64	0.79
USDA YG[5]	3.76	3.73	0.66

[1]CON= Control treatment with traditional adaptation using roughage, SYNERGY = treatment utilizing a combination of modified distillers grains with solubles and wet corn gluten feed.
[2] Final BW based on carcass weight and 63% dressing percentage.
[3]Dressing percentage = carcass weight/average live weight (4% shrink).
[4]USDA marbling score where 450 = slight50, 500 = small0, and 550 = small50.
[5]USDA calculated YG = 2.50 + (2.5*FT, in) – (0.32*LM area, in^2) + (0.2*KPH, %) + (0.0038*HCW).

Results

Intakes were greater ($P < 0.01$) for the CON treatment than for SYNERGY during adaptation when evaluated after 34 days (24-day adaptation; Table 2). No differences were observed for ADG ($P = 0.28$) between treatments, resulting in a lower F:G ($P = 0.04$) for steers adapted with the SYNERGY treatment compared with CON during the first 34 days.

Over the entire feeding period, DMI, ADG, and F:G were not different ($P > 0.20$) between steers adapted with CON or steers adapted with SYNERGY (Table 3). Final BW calculated from carcass weight was not impacted by adaptation treatment ($P = 0.31$). Likewise, final BW measured live (shrunk 4%) was not different ($P = 0.63$) between treatments. The only difference ($P = 0.04$) detected for carcass characteristics was dressing percentage (62.2 vs. 61.7 for CON and SYNERGY treatments, respectively). These results suggest that decreasing inclusion of a combination of distillers grains and gluten feed adapted cattle to a high-concentrate diet similar to using forage in a traditional adaptation method.

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