

Impact of Removing 20% Distillers Grains after One-third or Two-thirds of the Feeding Period on Performance of Finishing Yearlings

Sofia Suarez Lorences
 Braden C. Troyer
 Mitch M. Norman
 Pablo L. Loza
 Rick Stock
 James C. MacDonald
 Galen E. Erickson

Summary with Implications

A finishing study evaluated the effect of removing modified distillers grains plus solubles after one-third or two-thirds of the feeding period on performance and carcass characteristics of yearling steers. Treatment diets included 20% modified distillers for the entire feeding period; 20% modified distillers for two-thirds of the feeding period and then 0%; and 20% modified distillers for one-third of the feeding period, then 0%. Removing modified distillers from the diet decreased average daily gain, final body weight and dry matter intake and tended to increase feed conversion. Cattle fed 20% modified distillers throughout the entire feeding period had greatest hot carcass weight and longissimus muscle area. There was no difference in marbling score, backfat and percent of abscessed livers. Removal of modified distillers negatively impacted performance and impact depended on length of the feeding period without distillers inclusion. These data suggest running out of distillers during the feeding period will have negative consequences on gain and conversions.

Introduction

Disruption in distillers grains plus solubles supply may force producers to lower inclusion while cattle are on feed. It is not clear what impact complete removal of distillers may have on performance and carcass characteristics.

There is no previous research that evaluates distillers grains removal. Some

Table 1. Dietary treatment composition for cattle fed 20% MDGS and then stepped down to 0% MDGS for those treatments (% of the diet DM)

	20% MDGS	Transition	0% MDGS
High-moisture corn	36	42	48
Dry-rolled corn	24	28	32
Corn silage	15	15	15
Modified distillers grains ¹	20	10	0
Supplement ^{2,3}	5	5	5

¹MDGS was replaced with HMC-DRC blend when removed

²Urea was added to the supplement at 1.4% of the diet DM when MDGS was removed

³Supplement provided 90 mg/steer daily of Tylan (Elanco Animal Health) and formulated for 30 g/ton of DM for Rumensin (Elanco Animal Health)

experiments have evaluated the effect of phase feeding to meet cattle's protein requirements throughout the feeding period. These experiments suggest that dry matter intake may decrease when using phase-feeding regimens, although average daily gain has not been reported to decrease. More research is needed to evaluate the impact of removing distillers grains from the finishing diet, not just lowering distillers inclusion.

The objective of this study was to evaluate the impact of modified distillers grains plus solubles (MDGS) removal from 20% to 0% on day 43 and day 79 on yearling finishing performance compared to feeding 20% in the entire feeding period.

Procedure

An experiment was conducted at the Eastern Nebraska Research, Extension and Education Center to evaluate the impact of MDGS removal from 20% of diet dry matter to 0% on day 43 and day 79 on yearling finishing performance and carcass characteristics compared to feeding 20% for the entire feeding period. Crossbred yearling steers (n = 210; initial BW 947 ± 49 lb) were used in a randomized block design with three body weight (BW) blocks. Steers were stratified by weight and assigned randomly to pen. Cattle were limit-fed for five days to equalize gut fill and weighed on two

consecutive days at the beginning of the experiment to establish initial BW. Cattle were implanted with Revalor-200 (Merck Animal Health) on day -1. Treatments included feeding 20% MDGS (DM basis) during the entire feeding period (124 d); 20% MDGS until day 79 and then 0% MDGS until the end of the feeding period; or 20% MDGS until day 43 and then 0% MDGS until the end of the feeding period. A total of 21 pens (10 steers/pen) were used with 7 pens/treatment. Cattle were fed a 60:40 blend of high-moisture and dry-rolled corn, with 15% corn silage, 20% MDGS and 5% supplement (Table 1). Distillers were replaced with the corn blend and urea (1.4% of the diet DM) when removed. Cattle were stepped down to 10% MDGS for 4 days before the complete removal of MDGS. At the end of the feeding period, cattle were harvested at a commercial abattoir. Hot carcass weight and liver abscesses were recorded at harvest and marbling score, longissimus muscle area and yield grade, were recorded after a 48-hour chill.

Data were analyzed using the Mixed procedure of SAS. Pen was the experimental unit and treatment was a fixed effect.

Results

Cattle with MDGS removed on either d 79 or d 43 had lower ($P < 0.05$) final BW, DMI, and ADG (Table 2). Cattle with

Table 2. Carcass adjusted performance of cattle fed 20% MDGS during 124 d, 79 d, or 43 d of the 124-day feeding period.

	124 d	79 d	43 d	SEM	F-test	Lin	Quad
Initial BW, lb	963	962	962	0.7	0.29	0.16	0.48
Final BW ¹ , lb	1596 ^a	1557 ^b	1528 ^c	11.7	< 0.01	<0.01	0.89
DMI, lb/d	31.9 ^a	30.8 ^b	29.9 ^c	0.30	< 0.01	<0.01	0.99
ADG, lb	5.11 ^a	4.79 ^b	4.57 ^b	0.093	< 0.01	<0.01	0.90
F:G ²	6.49	6.61	6.73	-	0.36	0.025	0.78
HCW, lb	1006 ^a	981 ^b	963 ^b	7.3	< 0.01	<0.01	0.89
LM area ³ , in	14.3 ^a	14.0 ^b	13.9 ^b	0.12	0.02	<0.01	0.49
Fat, in	0.72	0.67	0.68	0.028	0.39	0.25	0.46
Marbling ⁴	607	604	578	15.7	0.35	0.20	0.52
Liver abscess, %	38	41	46	-	0.59		
A+ abscess, %	26	14	21	-	0.85		

^{a-c}Within a row, means without a common superscript differ ($P < 0.05$)

¹ Calculated from hot carcass weight, adjusted to a common 63% dressing percentage

² Analyzed as G:F, the reciprocal of F:G

³ LM area = longissimus muscle (ribeye) area

⁴ Marbling score 400 = Small00, 500 = Modest00, 600 = Moderate00.

MDGS removed on d 43 had 4% poorer Feed:Gain ($P < 0.05$) than cattle fed 20% MDGS throughout the entire feeding period. Cattle fed 20% MDGS throughout the entire feeding period had the greatest ($P < 0.05$) HCW and LM area. There were no differences ($P \geq 0.35$) in backfat and marbling scores among treatments. In addition, no differences ($P = 0.59$) were observed in percent of abscessed livers, although 38% of steers fed 20% MDGS continuously had liver abscesses compared with 46% for steers with MDGS removed on d 43. Based on the results of this study, removing MDGS from finishing diets on either day 43 or day 79 of the feeding period had a negative impact on cattle performance compared with feeding 20% MDGS continuously throughout the entire finishing period.

Conclusion

Removing MDGS from finishing diets has a negative impact on performance and carcass characteristics compared with feeding 20% MDGS continuously throughout the entire finishing period. These changes in performance may relate to MDGS having greater energy than corn/urea used to replace it when removed. Due to pen number limitations, a corn control was not included to compare energy values like previous research.

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Sofia Suarez Lorences, graduate student

Braden C. Troyer, research technician

Mitch M. Norman, research technician

Pablo L. Loza, assistant professor

Rick Stock, research professor

James C. MacDonald, professor

Galen E. Erickson, professor