

# Economic and growth performance of Boer-type goats when fed corn dried distillers grains with soluble and corn gluten feed as substitute for soybean meal

R.E. Brown, A.R. Crane, J.L. Lattimer, and C.K. Jones



Department of Animal Sciences and Industry, Kansas State University, Manhattan

## Introduction

- Global goat population has increased by 34% in the past 10 years; the US population alone has increased by 211% in the past 15 years (NASS, 2002 and 2017).
- This increase in production creates an increased need for economical goat diets; however, information on the impact of different ingredients on goat growth performance is limited.
- The impact of different nutrients on production is crucial to formulating the most cost-effective diets for production goats.

## Objective

To establish the growth and economic incentive for replacing soybean meal with corn dried distiller's grains with solubles and corn gluten feed in Boer-type goats.

## Materials and Methods

- This experiment occurred in the main building, at the Kansas State University Sheep and Meat Goat Center in Manhattan.
- Seventy-five Boer-type goats were used (average BW of 26.9±0.2 kg and approx. 70 d of age)
- Goats were randomly assigned to a diet
- 25 pens were used (three goats/pen) in a completely randomized design
- Diets were formulated to be isonitrogenous and isocaloric (Table 1) but varied in protein source (either soybean meal (SBM), corn dried distiller's grains with solubles (DDGS), or corn gluten feed (CGF))
  - Treatment 1: 100% Soybean Meal
  - Treatment 2: 100% DDGS/ 0% CGF
  - Treatment 3: 66% DDGS/ 33% CGF
  - Treatment 4: 33% DDGS/ 66% CGF
  - Treatment 5: 0% DDGS/ 100% CGF
- Pen was used as the experimental unit
- Goats were fed one of the five diets for 35 days. Both goats and feeders were weighed weekly to determine ADG, ADFI, and G:F (Table 2)
- ADG, ADFI, G:F, and final BW were analyzed using feed costs to determine cost per goat, cost per ton of feed, and cost per kg of gain (Figures 1 and 2)
- Data were analyzed using the GLIMMEX procedure of SAS (v. 94, Cary, NC) and were considered significant if  $P < 0.05$ .



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Photograph Credit: Taylor Belle Matherly

## Results

Table 1: Treatment Formulations

	Tmt. 1	Tmt. 2	Tmt. 3	Tmt. 4	Tmt. 5
Corn Gluten Feed	0.00%	0.00%	12.63%	25.26%	37.88%
Corn DDGS	0.00%	20.24%	13.49%	6.75%	0.00%
Soybean Meal, 48%	15.01%	0.00%	0.00%	0.00%	0.00%
Corn	42.67%	11.49%	13.65%	15.81%	17.96%
Soybean Hulls	35.74%	62.17%	54.16%	46.15%	38.14%
Molasses	2.50%	2.50%	2.50%	2.50%	2.50%
AmCl	1.00%	1.00%	1.00%	1.00%	1.00%
Limestone	1.58%	1.23%	1.48%	1.73%	1.98%
Salt	0.50%	0.50%	0.50%	0.50%	0.50%
Se Selenite	0.00%	0.00%	0.00%	0.01%	0.01%
Vit A 30,000	0.01%	0.01%	0.01%	0.01%	0.01%
Vit D 30,000	0.00%	0.00%	0.00%	0.00%	0.00%
Vit E 20,000	0.00%	0.00%	0.00%	0.00%	0.00%
Cu Sulfate	0.01%	0.01%	0.01%	0.01%	0.01%
Mono Calcium	0.96%	0.83%	0.55%	0.28%	0.00%

Table 2: Effect of Treatment on ADG, FI, & F:G

	Tmt. 1	Tmt. 2	Tmt. 3	Tmt. 4	Tmt. 5	P-value
BW	71.0	71.0	68.9	69.1	69.4	0.999
ADG	0.33	0.32	0.29	0.29	0.28	0.723
ADFI	2.38	2.45	2.25	2.37	2.51	0.210
G:F	7.2	8.0	8.6	8.8	9.7	0.796

Figure 1: Effect on feed cost/goat

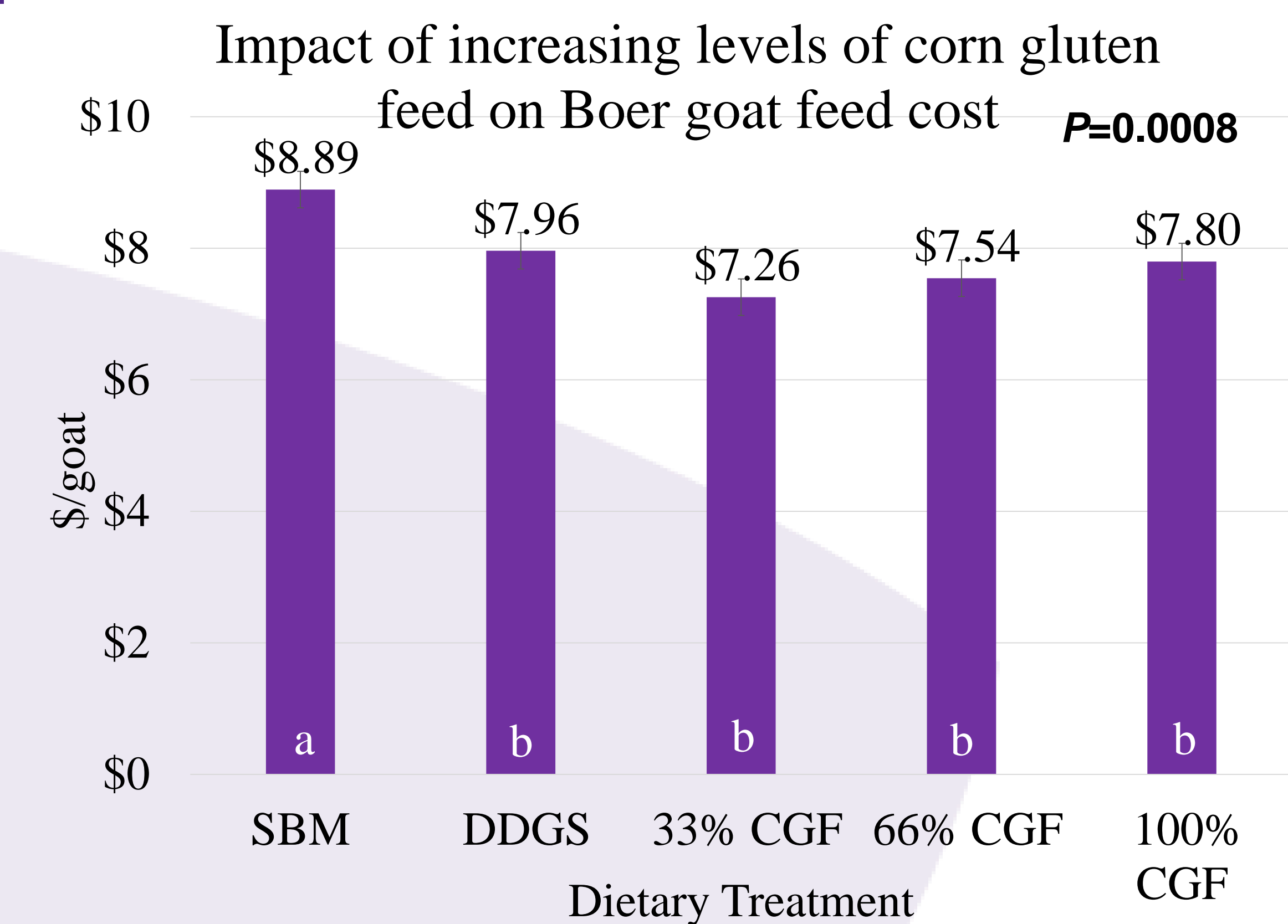
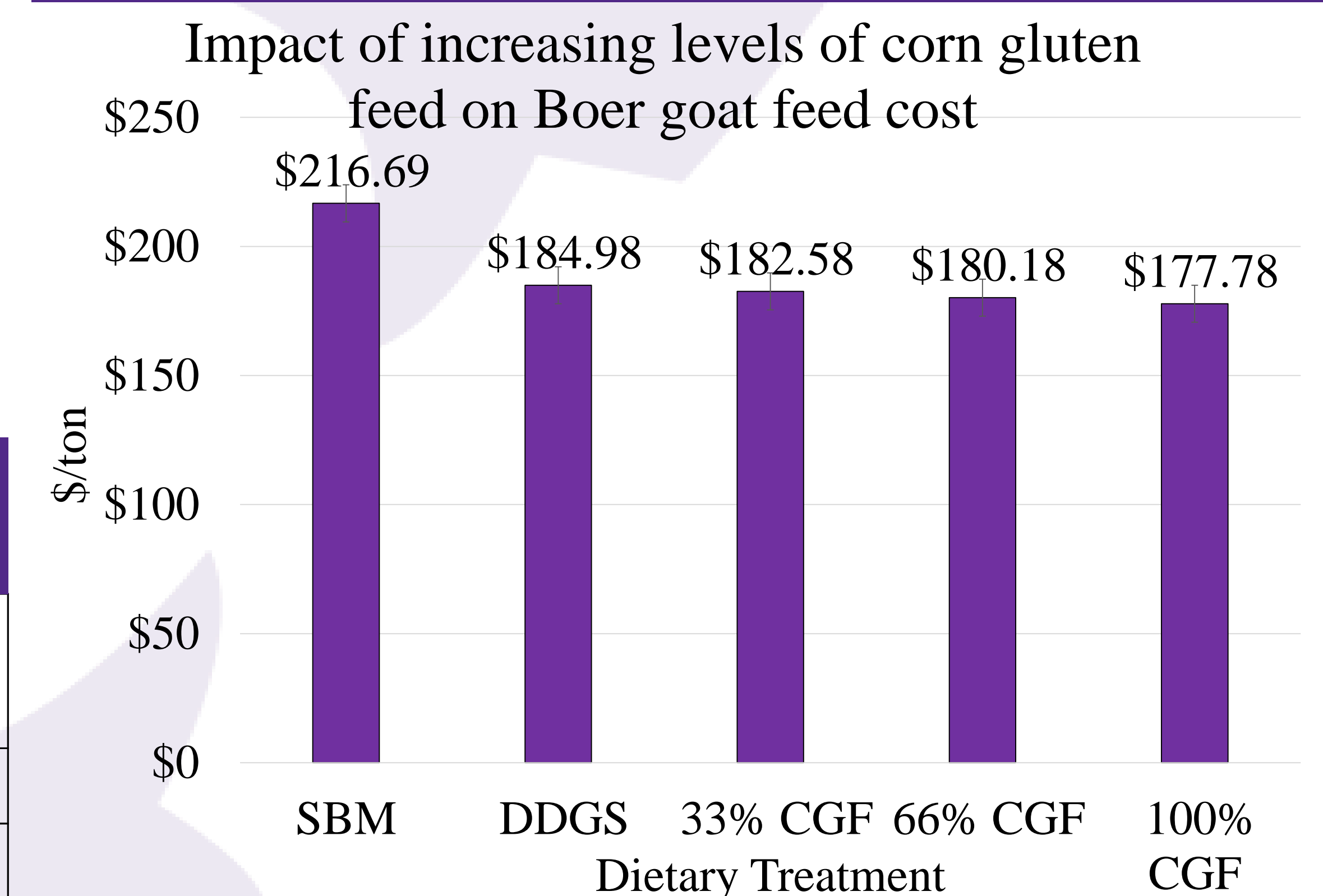


Figure 2: Effect on cost/ton of feed



## Conclusions

- Goats fed diets with corn co-products instead of SBM reduced feed cost/goat and reduced feed cost/kg of feed by approximately \$0.04 for goats fed corn co-products
- There were no observed effects ( $P > 0.05$ ) of dietary treatment on final BW, ADG, ADFI, G:F, or cost/kg of gain
- The results of this experiment suggest that based on growth performance and economic incentive, there may be benefit to replacing SBM with DDGS or CGF in Boer-type goat diets
- Outcomes of this study will provide information for goat producers to use for further maximizing their profit as well as provide a basis for continued research on goat production diets.