

# The Effects of Corn Co-Products substituting Soybean Meal on Growth Performance of Boer Goats



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## Introduction

● The United States is a constant demographically changing nation as such many areas of business have greatly expanded. More specifically the goat industry has increased by leaps and bonds as the current U.S. goat inventory is 2.64 million head, which is up 211% from the 1.25 million head in 2002 (NASS, 2002 and 2017). This shows a increase in the demand for the goat enterprise; which greatly affects a need of information for goats. This study is to help build such information as there is a large absence of goat specific information, along with increasing the economic gain in such a industry.

## Objective

● Evaluate the efficiency of corn dried distillers grains with solubles (DDGS) or corn gluten feed (CGF) as a substitute for soybean meal (SBM) in a Boer-type goat diets.

## Experimental Procedures

● 75 Crossbred Boer-type Goats, (26.9±0.2 kg, approximately 70 day of age)

● Based on a complete randomized design

- 25 pens with 3 goats assigned per pen.
- 5 Pens per treatment
- See Figure 1

● Treatments

1. Soybean meal
2. 100% DDGS/0% CGF
3. 66% DDGS/33% CGF
4. 33% DDGS/66% CGF
5. 0% DDGS/100% CGF

● Goats and feeders were weighed weekly to gain data for Average Daily Gain (ADG), Average Daily Feed Intake (ADFI), Feed to Gain ratio (F:G)

● Data was analyzed using GLIMMIX procedure of SAS (v. 9.4, Cary, NC), with a accepted alpha value of 0.05 along with pen being experimental unit. See figure 2.



Figure 1: Boer-type Goats in their allotted pens  
Photo Credit to Taylor Belle

## Results

Figure 2: Final Data Table

	SBM Control	100% DDGS/ 0% CGF	66% DDGS/ 33% CGF	33% DDGS/ 66% CGF	0% DDGS/ 100% CGF	SEM	<i>P</i>		
							Treatment	Linear	Quadratic
BW, kg									
d 0	26.9	27.1	26.7	26.7	27.1	2.81	1.000	0.997	0.901
d 35	32.2	32.2	31.3	31.3	31.5	2.87	0.999	0.877	0.854
ADG, g/d	152	146	128	132	126	16.0	0.723	0.444	0.712
ADFI, g/d	1,080	1,110	1,022	1,074	1,140	34.7	0.210	0.371	0.038
G:F	0.14	0.13	0.13	0.12	0.11	0.015	0.796	0.442	0.949
Feed cost, \$/kg of feed <sup>1</sup>	0.239	0.204	0.201	0.199	0.196	n/a	n/a	n/a	n/a
Feed cost, \$/goat <sup>2</sup>	9.03 <sup>a</sup>	7.93 <sup>b</sup>	7.20 <sup>b</sup>	7.45 <sup>b</sup>	7.81 <sup>b</sup>	0.258	0.0008	0.937	0.049
Feed cost, \$/kg of gain <sup>3</sup>	1.72	1.64	1.73	1.75	1.89	0.214	0.941	0.417	0.919

<sup>1</sup>Calculated by multiplying the percentage of the ingredient included in the diet by the ingredient price as of January 1<sup>st</sup>, 2019.

<sup>2</sup>Calculated by multiplying the feed cost by the quantity of feed consumed during the 35 d experiment.

<sup>3</sup>Calculated by dividing the feed cost per goat by the body weight gained per goat during the 35 d experiment.

<sup>ab</sup>Means within a row that do not share a common superscript differ  $P < 0.05$ .

Table 1: Price per ton by Treatment

\*Price data is as of January 1st, 2019

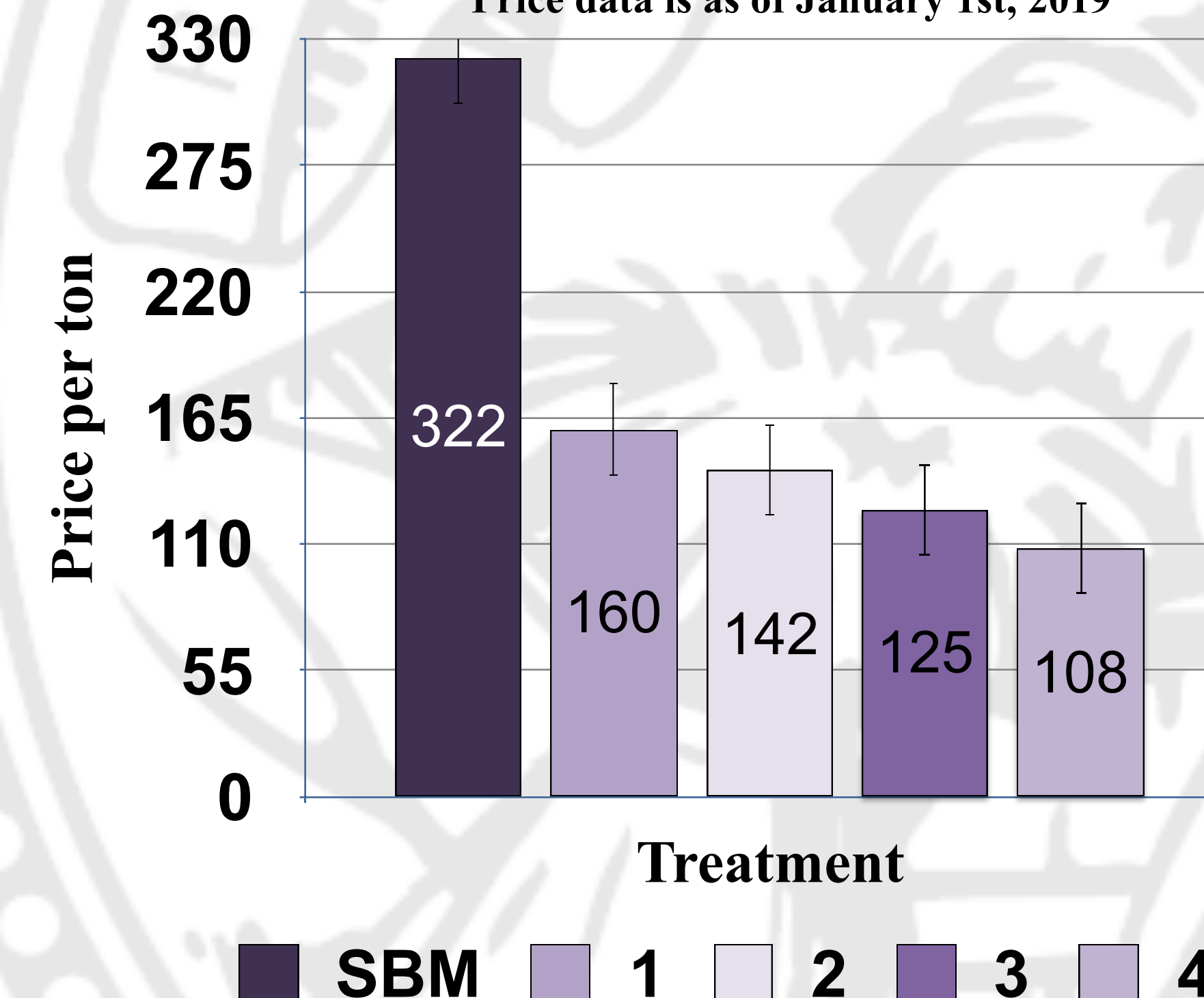


Table 2: Feed Costs per Goat (\$/goat)

$P = 0.0008$

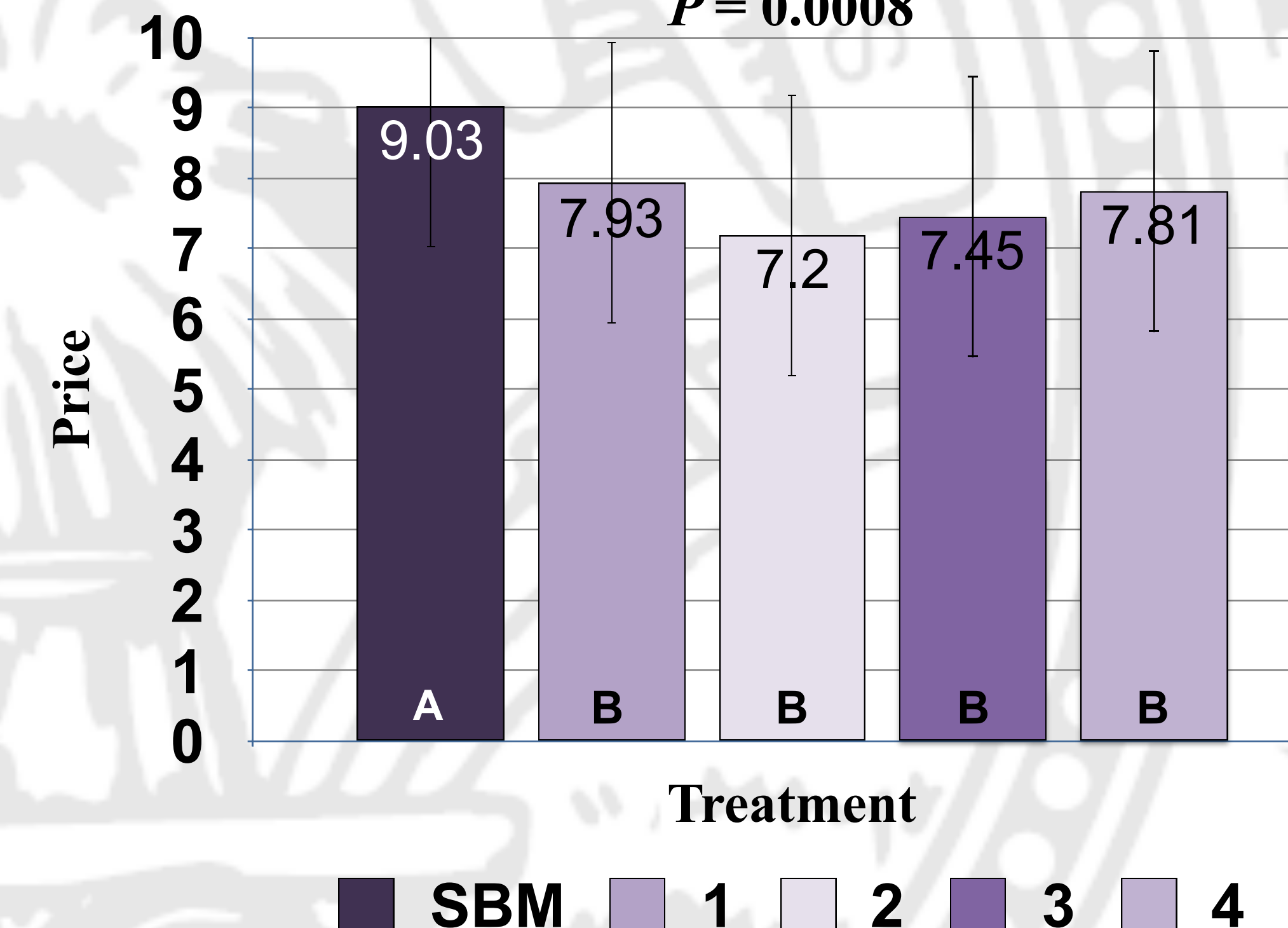
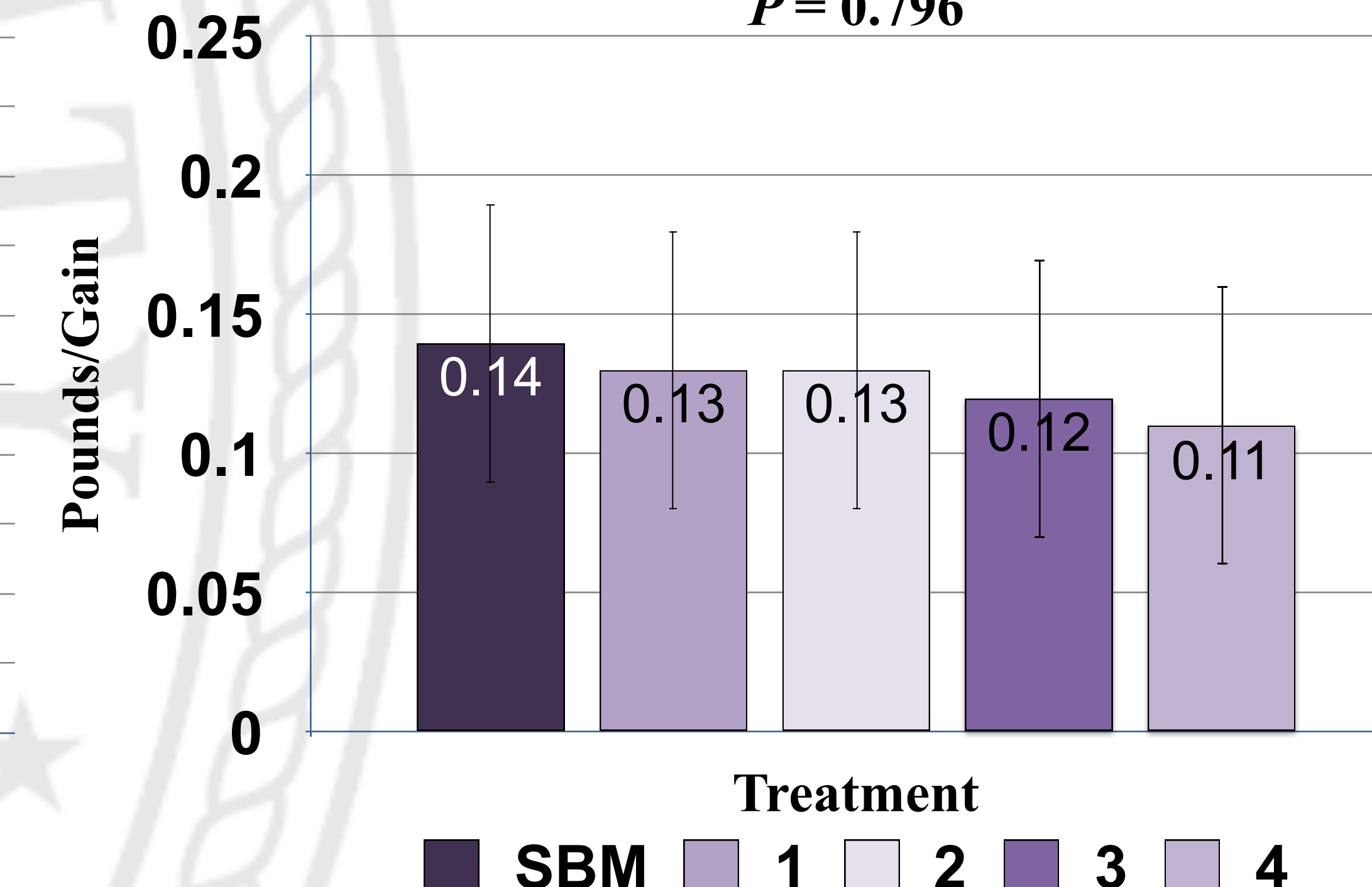


Table 3: Gain to Feed (G:F)

$P = 0.796$



## Conclusions

- No detected difference between SBM and CGF/DDGS besides cost ( $P = 0.0008$ ) was detected, with an accepted alpha value of 0.05
- Results suggest that CGF or DDGS can completely substitute SBM in the diet of Boer-type goats, in a cost effective manner, with no detected impact on growth performance

## References

- (NASS 2017) "Sheep and Goats" *NASS.USDA.Gov*, NASS, USDA, ASB, 31 Jan. 2017, [www.nass.usda.gov/Publications/Todays\\_Reports/reports/shep0117.pdf](http://www.nass.usda.gov/Publications/Todays_Reports/reports/shep0117.pdf).
- (NASS 2002) "Sheep and Goats." *NASS.USDA.Gov*, NASS, USDA, ASB, 1 Feb. 2002, <https://downloads.usda.library.cornell.edu/usda-esmis/files/000000018/gb19f832p/z316q397f/SheeGoat-02-01-2002.pdf>

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