Effects of varying protein sources and ammonium chloride sources on Boer goat growth performance and carcass traits

L. Markland, R. J. Sorensen, A. R. Crane, J. L. Lattimer, and C. K. Jones

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

Introduction

- Global population of goats has increased 34% in the past 10 years with a current global population of 1.01 billion goats.
- There is limited research on goat nutrition.
- Soybean meal (SBM) is a traditional goat protein source.
- Dried distillers grains with solubles (DDGS) is also used as a protein source due to its affordability and high bypass protein level
- Novel protein and acid sources were introduced by Dairy Nutrition Plus (SoyPlus and SoyChlor).
- SoyPlus is a soybean-based product with higher bypass protein than SBM.
- SoyChlor was used to investigate if it could replace traditional Ammonium Chloride (AmCl)

Objective

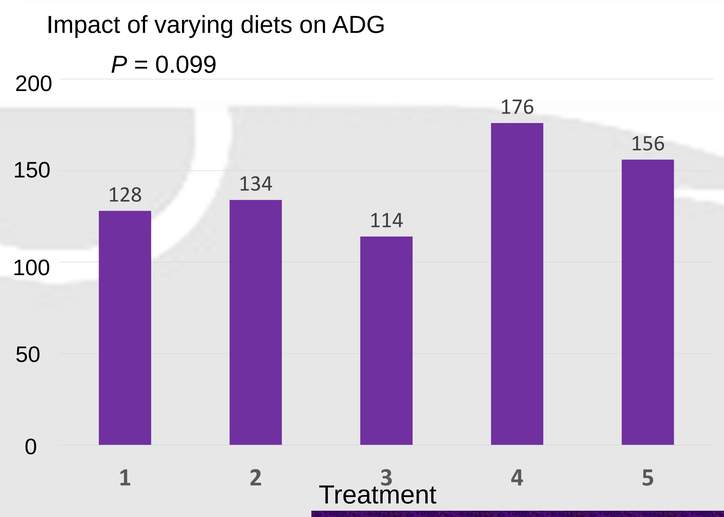
Evaluating the impact of varying protein source and acid source on feedlot goat growth and carcass traits

Experimental Procedures

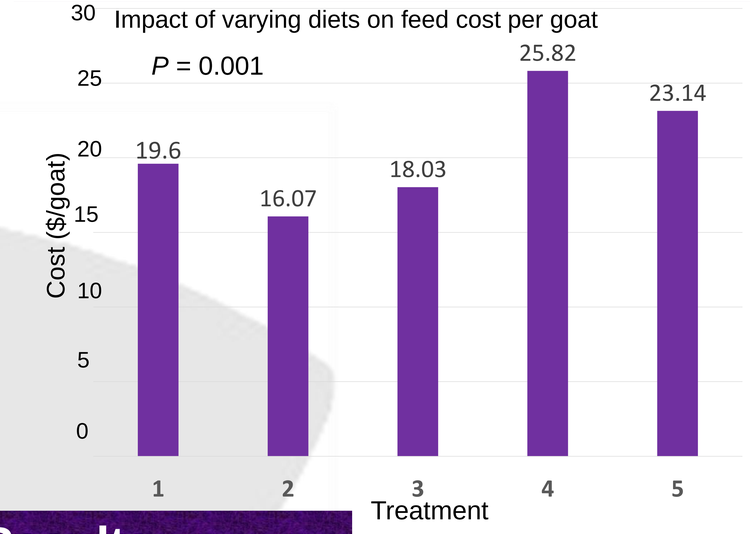
- 75 Boer goats were group housed and randomly allocated to 1 of 5 treatments with 15 goats per treatment and 3 goats per pen
- Treatments:
  1) SBM plus AmCl
  2) DDGS plus AmCl
  3) SoyPlus plus AmCl
  4) SBM plus SoyChlor
  5) SoyPlus plus SoyChlor
- All diets were isocaloric and isonitrogenous.
- The goats were fed their treatment diet for 42d.
- The goats were fed as needed and the amount of feed was weighed and recorded each time.
- Goat BW and feeder weights were collected weekly.
- ADG, ADFI, and G:F were calculated every week.
- Carcass traits were calculated at the end of the study.
- α – value = 0.05

Results

D 0-42 Average Daily Gain



Feed Cost



Carcass Trait Results

Protein Source:	SBM	DDGS	SoyPlus	SBM	SoyPlus	P =				
Chloride Source:	AmCl	AmCl	AmCl	SoyChlor	SoyChlor	Treatment	SBM vs. DDGS	SBM vs. SoyPlus	DDGS vs. SoyPlus	AmCl vs. SoyChlor
Hot Carcass Weight, kg	15.6	14.5	13.1	16.4	14.7	0.264	0.252	0.058	0.672	0.231
Carcass yield, %	50.7	49.4	48.3	50.7	49.6	0.519	0.344	0.122	0.742	0.504
Loin eye area, cm²	10.8	9.4	9.5	11.4	8.8	0.046	0.040	0.005	0.781	0.750
Loin eye depth, cm	2.6	2.4	2.4	2.6	2.3	0.135	0.120	0.021	0.719	0.778
Backfat depth, mm	0.9	1.2	1.0	1.1	1.2	0.710	0.379	0.513	0.727	0.461
Body wall thickness, cm	1.5	1.6	1.5	1.7	1.5	0.756	0.928	0.515	0.534	0.437

Conclusions

- No evidence for significant difference was observed in BW, ADG, ADFI, and G:F, although there was a marginal increase in ADG when using SoyChlor instead of AmCl
- Feeding DDGS had the lowest feed cost per goat
- SBM resulted in a greater LEA than DDGS and SoyPlus, while acid source had no affect on LEA
- There was no significant difference in other carcass traits
- Although growth performance and carcass traits were not significantly altered by treatments, farmers could utilize DDGS plus AmCl (Treatment 2) for high growth performance at a lower cost

Acknowledgements

This project received funding from Dairy Nutrition Plus. Special thanks to Tim Brown from Dairy Nutrition Plus, Dr. Mark Young, and the Kansas State University Sheep and Meat Goat Unit.