

Protein Source and Potassium for Heavy Feedlot Steers

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Story in Brief

Ninety finishing steers (976 lb) received urea, soybean meal, or soybean meal plus potassium in their protein supplements with high moisture corn diets for the final 28 days of a finishing trial. Added potassium increased live weight gain and efficiency by 21 percent. Gain with urea was 39 percent more rapid and 19 percent more efficient than with the soybean meal supplement. Feed intake was greatest with urea supplementation. Further studies are needed to examine how much of these effects are due to gastrointestinal fill and how much is tissue retention of fluid or dry matter.

Introduction

Protein source and potassium level for finishing steers can influence rate and efficiency of gain. These differences have been noted primarily at the start of a finishing trial, but withdrawal of supplemental protein for steers over 850 lb has not reduced performance in some trials. This suggests that one would expect little effect from alteration of the diet for steers nearing 1000 pounds. This trial was conducted to determine if protein source or potassium level would influence performance of steers approaching market weight.

Material and Methods

Steers fed high moisture corn in a trial elsewhere in this publication (Gill et al., 1982) were used in this 28-day study. Two steers from each of the 30 pens were marketed leaving three steers (976 lb) in each of the 30 pens for this study. All steers received high moisture corn with corn silage. Each pen received one of three different supplements (Table 1). These supplements contained urea, soy-

Table 1. Ration composition (% of dry matter)^a

Ingredient	Supplement		
	Soybean meal	SBM & K	Urea
Corn, high moisture	82.1	82.1	86.7
Corn silage	6.4	6.4	6.4
Alfalfa, chopped	3.6	3.6	3.6
Soybean meal	5.84	5.84	
Limestone	.86	.86	.82
Urea	0	0	.87
Ammonium sulfate	.15	.15	.15
KCl	.23	1.22	.43
Salt	.38	.38	.38

^aCrude protein of rations was 11.8% of dry matter. All rations contained .7% K, .5% Ca and .34% P plus rumensin (30 g/ton), Tylan (90 mg/head daily) and vitamin A (30,000 IU/head daily).

bean meal or soybean meal plus added potassium (K) to increase dietary potassium level to 1 percent of the diet dry matter. Steers were weighed following 18 hr without feed and water at the start and end of this 28-day study.

Results and Discussion

Addition of K to the ration slightly reduced feed intake but improved live weight gain and feed efficiency by 21 percent in this short study (Table 2). Unfortunately, carcass data from this trial was not obtained to measure effects of added potassium on carcass weight. Dressing percentage decreased with supplemental K in another trial in this publication (Zinn et al., 1982). A decrease in dressing percentage of .7 percent could explain the gain response seen in this study. Nevertheless, more frequent feeding and increased ruminal buffering and digestion with added potassium could prove beneficial for these heavy steers.

Similar to results noted in the "Corn Moisture and Processing" study by Gill et al. (1982), gains, feed intakes, and feed efficiency favored the urea supplement. This also supports the suggestion that ruminal ammonia may be deficient with soybean meal supplementation of diets for finishing steers.

Table 2. Steer performance results

Item	Supplement		
	SBM	SBM & K	Urea
Daily gain, lb	2.05 ^b	2.48 ^{ab}	2.85 ^a
Daily feed, lb	15.1 ^b	14.9 ^b	17.7 ^a
Feed/gain	7.87 ^a	6.19 ^b	6.35 ^b

Literature Cited

Zinn, R. A. et al. 1982 Limestone and potassium for feedlot steers. Elsewhere in this publication.