

FEEDING VALUE OF POULTRY LITTER FOR SUPPLEMENTING BERMUDAGRASS HAY

S.C. Smith¹, J.G. Britton², K. Barnes³, J.W. Kelley⁴, and K.S. Lusby⁵

Story in Brief

A stocker cattle feeding trial was conducted to determine the value of deep stacked poultry litter when used as a supplement to good quality hay. Seventy-six 562 lb stocker steers and heifers were assigned to treatment groups that were fed hay free-choice, hay + 3 lb corn, hay + 3 lb corn and 1.54 lb cottonseed meal, or hay + 3 lb corn and 3 lb deep stacked poultry litter. All supplements were hand-fed daily. Cattle fed hay with no supplement gained .97 lb/day compared to 1.74 lb/day for hay + corn, 1.53 lb/day for hay + corn and cottonseed meal and 1.49 lb/day for hay + corn and litter. The Bermudagrass hay used in this study contained about 10% protein and probably met protein requirements for these stockers. Results suggest that when good quality hay is fed, additional protein is of little value. Under these conditions, feeding litter in addition to corn was of no value.

(Key Words: Poultry Litter, Beef Cattle, Supplement Hay.)

Introduction

The commercial poultry industry has expanded greatly in eastern Oklahoma resulting in the production of large amounts of poultry litter. Litter is typically used as a fertilizer but environmental concerns and its low cost have increased interest in its use as a feedstuff for ruminants. Broiler litter consists of bedding (wood shavings, rice hulls, peanut hulls, etc.), manure, and feed spilled by the birds. Analysis has shown broiler litter to be highly variable in nutrient content and contain high levels of some minerals and heavy metals. Previous studies have suggested that litter may be of value as a cattle feed. However, most trials have involved low levels of performance and have not included proper controls needed to evaluate the value of litter compared to

¹Area Extension Livestock Specialist ²Area Extension Poultry Specialist
³Area Extension Livestock Specialist ⁴County Extension Agent ⁵Professor

other feeds. The objective of this research was to determine the value of litter when used to supplement stockers grown on good-quality Bermudagrass hay.

Materials and Methods

Eighty previously received, healthy stocker steers and heifers weighing an average 562 pounds were individually identified, dewormed (Ivomec Pouron), implanted (Ralgro), weighed, blocked by sex and randomly allotted to one of four treatment groups: those cattle fed hay only (HAY), hay plus 3 lb corn (CORN), hay plus 3 lb corn and 1.54 lb cottonseed meal (CCSM), or hay plus 3 lb corn and 3 lb deep stacked poultry litter (CLIT). Laboratory results showed crude protein levels of 9.3 and 28.56 percent on a dry matter basis in the hay and litter, respectively. Poultry litter and cottonseed meal supplements were isonitrogenous. The CORN and CCSM supplements were mixed and sacked by a local feed mill. The CLIT supplement was mixed and sacked by hand with use of a concrete mixer. Supplements were hand-fed daily.

Prior to the beginning of the trial, over 200 head of stocker cattle previously grazing a common fescue pasture and offered a 50:50 poultry litter: corn supplement fed free-choice were gathered and culled to a uniform group of 80 head. Only calves that would eat the litter-corn mix were used. A three-acre pen was divided by electric fence into four smaller pens with a common watering source at the center. Cattle were placed in the pens and allowed to adapt to the electric fence for five days. Body weights were taken on Day 0 and Day 56 of the study. Cattle were withheld from feed and water overnight prior to taking the final weight. Beginning weights were shrunk four percent to equalize fill conditions between the two weights. Four cattle were removed from the trial due to injury, illness or refusal to eat poultry litter. Data were analyzed using General Linear Models procedure of SAS.

Results and Discussion

Cattle fed HAY with no supplement (Table 1) gained .97 lb/day compared to 1.74 lb/day for hay + CORN ($P < .05$). Gains of the HAY-fed cattle were typical for cattle of this weight consuming good quality Bermudagrass. The Bermudagrass hay used in this study contained about 10% protein and probably met protein requirements for these stockers. Under these conditions, the addition of 3 lb of corn apparently did not provide enough starch to negatively affect Bermudagrass digestibility or intake. Gains of calves fed CCSM (1.53 lb/day) tended to be less than for CORN calves and were similar to gains of CLIT calves (1.49 lb/day).

The lack of response to supplementation from cottonseed meal (CSM) or poultry litter further indicates that the hay contained adequate crude protein to

Table 1. Effect of supplement on animal performance (least squares means).

Item	Treatments			
	HAY ^a	CORN	CCSM	CLIT
Number animals	17	20	20	19
Beginning wt, lb	551	546	562	588
Daily gain, lb	.97 ^b	1.74 ^c	1.53 ^c	1.49 ^c

^a Hay = Bermudagrass hay alone; CORN = hay + 3 lb corn; CCSM hay + 3 lb corn and 1.54 lb cottonseed meal; CLIT, hay + 3 lb corn and 3 lb deep stacked poultry litter.

^{b,c} Means in the same row with different superscripts are different ($P < .01$).

support gains in all treatments. Because added protein was not needed, the added CSM or litter would have substituted for Bermudagrass hay. Without the HAY and CORN treatments, it would be tempting to suggest that litter is equivalent to a mixture of corn and CSM because both treatments had similar gains. However, with proper control treatments, it is apparent that litter had no value when fed under the conditions of this study. The cost of handling and the refusal of some cattle to consume litter questions its use in stocker growing programs.