January 1997

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Replacing soybean meal with sunflower/feather meal is an effective alternative when supplementing cows and heifers grazing corn residue while saving about $50 per ton in ingredient cost.

Summary

Two grazing trials during the fall of 1994 and 1995 were conducted to determine the feeding value of a sunflower/feather meal supplement relative to soybean meal in cows and heifers grazing cornstalks. Cattle on either supplement had similar gains. Replacing soybean meal with a sunflower/feather meal supplement is effective and economical for cows and heifers grazing corn residue.

Introduction

Grazing cornstalks is an economical and efficient way to maintain or increase weight and body condition score in cows and heifers during fall and winter months. However, cattle may require supplementation to meet their protein requirement; especially younger cows. Feather meal is an excellent source of undegraded intake protein (UIP) for ruminants while sunflower meal con-

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tains mostly degraded intake protein (DIP). To minimize possible palatability problems associated with feather meal, sunflower meal can be used as both a carrier and a source of DIP. Blood meal may also be used as a source of UIP, as it complements the amino acid profile of feather meal. A supplemental mixture using these proteins is less expensive and should show similar gains when compared to a more traditional supplement such as soybean meal. Several studies have shown that feather meal can replace up to half of the soybean meal in ruminant diets without adversely affecting animal performance. However, few studies have been conducted to evaluate the response of cows and heifers grazing cornstalks supplemented with sunflower/feather meal.

The objective of this trial was to evaluate the feeding value of sunflower/feather meal relative to that of soybean meal in cows and heifers grazing cornstalks.

Procedure

Eighty-six yearling heifers and two-year-old cows were used in two trials over two consecutive years. In year one, forty heifers and cows were assigned randomly to one of four dryland fields with equal numbers of heifers and cows in each field. In year two, forty-six yearling heifers and two-year-old cows were assigned randomly to one of four dryland fields, with equal numbers of heifers and cows in each field. Two fields contained ten cows in each , while the remaining two fields contained thirteen cows in each. In each year, two fields received the soybean meal supplement with the remaining two fields receiving the sunflower/feather meal supplement. Supplements were formulated to contain equal amounts of metabolizable protein and UIP and were fed at 1.5 lb/hd/day (as-is, Table 1) in a pelleted form to reduce wastage.

In situ analysis was performed on each supplement to determine UIP values. One steer, maintained on a grass hay diet, was used. Soybean meal and sunflower/feather meal supplements were ground and incubated in quadruplicate. Incubation time for all samples was 12 hours. After incubation, bags were rinsed with warm tap water until the rinse water was clear, dried for 48 hours at 140°F and weighed. Residue was then analyzed for N using a nitrogen analyzer.

Stocking rates were 0.5 hd per acre for both treatments. These were determined by previous work at the University of Nebraska with cows grazing dryland corn residue and based on lb of available leaf and husk material per acre.

Animal performance was measured in terms of ADG. Initial and final weights were determined by taking the average of two consecutive day weights. Animals were removed from fields when, based on visual appraisal, the amount of remaining residue became limited to maintain weight gains.

Table 1. Supplement compositions.

	Supplement, %DM	
Ingredient	SBM[a]	SFM/FM[a]
SBM[a]	91.4	—
FM[a]	—	11.2
SFM[a]	—	81.2
BM[a]	—	2.1
Dical	3.3	1.6
Vit. premix	.08	.08
Trace min. premix	.26	.26
Selenium	.18	.18
Pellet binder	1.36	—
Salt	3.27	3.27
Rumensin 80	.14	.14

[a]SBM = soybean meal; FM = feather meal; SFM = sunflower meal; BM = blood meal.

Table 2. Pooled cow and heifer performance from 1994-1995 and 1995-1996.

	Soybean meal	Sunflower/ feather meal
Initial weight, lb	1061	1059
Final weight, lb	1181	1174
ADG, lb	1.74	1.68

Results

Statistical analysis showed no year x treatment interaction, therefore data were pooled across years. Weight gains were similar for either supplement ($P > .15$). Visual observation showed no apparent differences in supplement palatability. Cattle on both treatments were initially slow to the bunk while available residue was plentiful, but as the trial progressed they quickly came up to consume their supplement.

Gains were greater than expected in year two (2.38 lb/day). This was likely a result of limited grass in pastures preceding stalk grazing, excellent stalk quality, and relatively little mud or snowfall during the trial. Cows were in poorer condition due to high milk production demands while grazing poor summer pasture. Pastures were slow in growing due to little rainfall. This contributed to higher gains as cows tried to replenish lost body reserves, while heifers experienced compensatory gain following low summer gains. Gains in year 1 were closer to what might be expected from cows and heifers grazing fall cornstalks (1 lb/day); however, gains in year two raised the average of pooled weights. *In situ* analysis showed soybean meal to be slightly greater in escape protein (30.0%) than the sunflower/feather meal (24.1%).

Statistical analysis was also performed on pooled data to determine animal performance by age. Average daily gain of cows (1.81 lb/day) was greater ($P < .05$) than for heifers (1.65 lb/day). This was probably due to milk production. Heifers had not raised a calf over the previous summer, thereby allowing them to start the trials in better condition; cows were in poorer condition following milk production demands.

Economic analysis of supplements showed the sunflower/feather meal supplement to be $52 less per ton than soybean meal. This resulted in a savings of $0.04/hd/day and a total savings over 70 days of $2.80/hd

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