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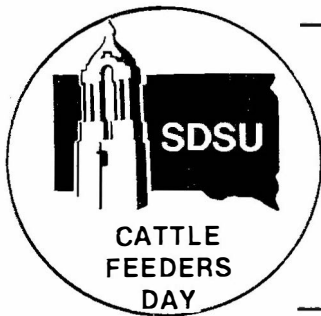
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THE USE OF ALFALFA PRODUCTS AS THE FIBER
PORTION OF BEEF FINISHING DIETS
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Summary

Alfalfa haylage, dehydrated alfalfa and alfalfa press cake (a by-product of the leaf protein concentrate Pro-Xan) were each fed as the fiber portion of corn-based diets. A factorial feedlot experiment was conducted with beef cattle for 111 days to determine feed intake, feed efficiency and average daily gain.

No significant differences were noted between alfalfa products as supplements to corn diets in feed intake, daily gain or feed efficiency. It would appear that feed consumption was increased approximately 8% by the addition of any of the alfalfa products. Steers fed the corn-no roughage diet did have a significantly lower average daily gain than animals supplemented with either dehydrated alfalfa or alfalfa haylage. Animals did very well on all diets fed. However, some of the responses may have been compensatory growth from previous high roughage feeding where gains were very low.

It would appear that any of the alfalfa products used in this experiment could serve equally as well as supplements to high corn diets.

Introduction

This experiment was a continuation of research with alfalfa products as supplements and various types of high roughage and high grain rations. Products compared were alfalfa haylage, conventional dehydrated alfalfa meal and an alfalfa pressed-cake by-product.

Alfalfa press cake is a by-product of the commercial product Pro-Xan, a leaf protein concentrate extracted from high quality, green-chopped alfalfa. The press cake, even with the soluble proteins removed, contains approximately 17% crude protein. Since it is a new product, its potential as a feed has yet to be established. It seemed appropriate to compare it to other alfalfa products now in common usage.

Procedure

Sixty-four Hereford x Angus and 32 Hereford x Simmental crossbred cattle, averaging 326 kg (717 lb) shrunk wt, were allotted according to size and breed into four treatments with four replications per treatment and six steers per replication. Blocks of four pens were established so that one replication of each treatment was randomly assigned within each block. Seventy-two of the animals used previously in a corn-residue wintering trial were carried over into the finishing phase discussed herein.

The four treatment diets were 100% corn (control), 92% corn-8% alfalfa haylage, 92% corn-8% dehydrated alfalfa and 92% corn-8% alfalfa press cake with solubles. The analysis of the feed components is shown in table 1. All animals received trace mineral salt on a free access basis. Filled and shrunk weights were taken at the beginning and end of the 111-day trial. Also, all animals were implanted with Ralgro, poured with Warbex, injected with Bovibac and injected with three million I.U. of vitamin A.

TABLE 1. PROXIMATE ANALYSIS OF FEEDS USED IN RATION FORMULATION FOR THE FEEDLOT TRIAL ON A DRY BASIS

Item	Dehydrated alfalfa	Alfalfa haylage	Alfalfa press cake	Corn
NRC Feed Reference No.	1-00-023	1-00-063	---	4-02-931
Dry matter	94.0	59.0	94.0	70.0
Crude protein	18.9	17.1	17.2	11.6
Crude fiber	26.6	35.7	24.3	2.0
Ether extract	2.9	2.4	2.8	4.5
Ash	10.9	9.6	12.3	1.7
Nitrogen free-extract	40.7	35.1	43.4	80.2

Results

Feedlot Performance

Results of the feedlot experiment are shown in table 2. Feed consumption was increased over the corn control for all alfalfa products. The increase (dry basis) in each case was approximately equal to the amount of the alfalfa product in the diet. Apparently, the level of alfalfa dry matter, fed at 8% in each diet, did not reduce corn consumption in comparison to the no-roughage diet.

Rates of gain were quite high and likely were influenced to a considerable degree by low rates of gain during the previous experiment in which alfalfa products were used to supplement corn stover diets. The average daily gain was improved over the no-roughage control by addition of each alfalfa product. While there were no significant differences between alfalfa products, gains were somewhat higher for alfalfa haylage and dehydrated alfalfa than for the press cake.

The greater feed consumption with the alfalfa products that accompanied the greater rate of gain resulted in only small differences in feed efficiency for the alfalfa products in comparison to the no-roughage control. This could indicate that alfalfa products had essentially the same values as an equal weight of corn grain without roughage on the basis of feed efficiency in this experiment. Differences between alfalfa haylage and dehydrated alfalfa on the basis of feed consumption, rate of gain and feed efficiency were quite small, but both appeared to have slight advantages over the press cake as supplements to the no-roughage diet. It would appear, however, that press cake or any of the other alfalfa products can be used interchangeably to supplement high corn diets. Choice would depend on availability and costs at any particular time.

TABLE 2. FEEDLOT PERFORMANCE OF STEERS FED CORN-ALFALFA DIETS
(AUGUST 1-NOVEMBER 20, 1980--111 DAYS)

Item	92% corn - 8% haylage	92% corn - 8% alfalfa press cake	92% corn - 8% dehydrated alfalfa	100% corn	\bar{Sx}
Number of animals	24	24	24	24	--
Initial filled weight, kg	303	303	301	303	--
Final filled weight, kg	522	513	523	504	--
Initial shrunk weight, kg	298	300	295	298	--
Final shrunk weight, kg	510	502	513	493	--
Avg feed intake (DM basis), kg	10.01	10.02	10.14	9.29 _b	±.000
Avg daily gain (shrunk), kg	1.91 ^a	1.83 ^{ab}	1.96 ^a	1.76 ^b	±.225
Feed/kg gain (shrunk), kg	5.25	5.49	5.18	5.30	±.000

^{a,b}Means in the same row with different superscripts differ significantly (P<.05).