

FEEDING GRASS STRAW TO WINTERING BEEF COWS

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The grass seed producer is faced with the problem of disposing of grass straw if field burning is banned. Also, cattle producers are faced with increasing costs of wintering cattle. Wintering costs for beef cattle could be reduced by feeding grass straw while grass seed producers could recover the cost of removing straw from their fields. Research on the use of grass straw in wintering rations for beef cattle has been underway at the Union Station of the Eastern Oregon Agricultural Research Center for the past three years. This report will cover the work of the past two years.

EXPERIMENTAL PROCEDURE

The 1973-74 feeding trial was started on December 5, 1973 and continued for 57 days. The trial consisted of 3 treatments with 20 cows in each treatment. Cows averaged about 1,250 pounds body weight and were in a fleshy condition. Each cow was injected with one million I.U. vitamin A at the beginning of the trial. All cows had access to fresh water and salt-mineral mix. The treatments were: (1) hard fescue straw free choice plus two pounds of supplement, (2) Merion bluegrass straw free choice plus one pound of supplement, and (3) twenty-five pounds of alfalfa-grass hay. The supplement in treatments 1 and 2 consisted of two parts oats to one part cottonseed meal.

The 1974-75 feeding trial was conducted for 82 days starting October 23, 1974. There were 3 treatments with 20 cows in each. Cows were similar in size and condition to previous year. All cows were injected with one million I.U. vitamin A prior to the trial. All animals had access to fresh water and salt-mineral mix. The three treatments were: (1) hard fescue straw free choice plus five pounds of alfalfa-grass hay, (2) hard fescue free choice plus nine pounds alfalfa-grass hay and (3) hard fescue straw free choice plus two pounds of supplement (3:1 oats:cottonseed meal). In addition to the feeding trials, two digestion trials were conducted using sheep and a digestion and rate of passage trial was conducted using cows.

RESULTS AND DISUCSSION

The results of the 1973-74 feeding trial are shown in Table 1. Cows fed hard fescue straw lost 0.37 pound a day while cows fed Merion bluegrass straw gained 0.18 pound a day and cows fed alfalfa-grass hay gained 0.60 pound a day. Cows fed hard fescue straw gave birth to heavier calves than cows in the other two groups. This difference was consistent but further

work is needed to determine if this is real or by chance. Conception rate was highest (95%) for the cows fed Merion bluegrass straw followed by cows fed hard fescue straw (90%) and cows fed alfalfa-grass hay (85%). Numbers were too few to determine if this was significant. Also these cows were too fat to start with and added weight in this case may actually be a detriment to conception rate. When averaging the conception rate for cows in the 1972-73 and 1973-74 feeding trial there was no difference between the three treatments.

Table 1. Results of feeding grass seed straw and alfalfa-grass hay to pregnant cows during the winter of 1973-74

Treatment	Average daily roughage consumption lb	Average daily weight change lb	Calf birth weight lb	Conception rate %
Merion bluegrass straw	25.4	0.18	79	95
Hard fescue straw	20.1	-0.37	84	90
Alfalfa-grass hay	25.4	0.60	78	85

One cow that was fed hard fescue straw died of an abomasal compaction two weeks after she had been removed from the trial. Two cows on the same treatment died of compaction the previous year.

The results of the 1974-75 feeding trial are shown in Table 2. The cows fed straw plus 9 pounds alfalfa-grass hay consumed the most roughage (24.6 pounds) followed by cows fed straw plus 4 pounds alfalfa-grass hay (22.3 pounds) and cows fed straw plus supplement (19.8 pounds). Cows fed straw plus 9 pounds of hay gained 1.08 pounds per day compared to 0.46 pound for those cows fed straw plus 4 pounds hay and 0.29 pound for those fed straw plus supplement.

Table 2. Results of feeding two levels of alfalfa-grass hay or supplement in combination with hard fescue straw to pregnant cows during the winter of 1974-75

Treatment	Average daily straw consumption	Average daily hay consumption	Average daily weight change	Cost of ^a feed/head/day
	lb	lb	lb	¢
Straw + 4 lb alfalfa-grass hay	17.6	4.7	0.46	25.5
Straw + 9 lb alfalfa-grass hay	16.0	8.6	1.08	34.4
Straw + concentrate supplement	19.8	-	0.29	32.6

a Cost of feed: hard fescue \$15/ton, alfalfa-grass hay \$50/ton, oats \$150/ton and cottonseed meal \$220/ton. Cows of similar condition and size would require about 20 pounds of good quality alfalfa-grass hay per day for wintering which would make the wintering cost at 50¢ per head per day.

Two cows became compacted on the straw plus nine pounds of hay. The first cow became compacted after 55 days on feed. She responded to medication and lived. The second cow became compacted after 69 days on feed and died even though she was treated the same as the first animal. Possibly treatment was not started soon enough.

The lowest cost ration for the winter period was the straw plus four pounds of hay followed by straw plus supplement with straw plus nine pounds of hay being the most costly. Hard fescue grass straw can reduce the cost of wintering cows when compared to alfalfa-grass hay (Table 1).

Digestibility data from sheep trials indicates that hard fescue straw for a dry matter digestibility of about 46% (Table 3). The digestibility of Merion bluegrass straw was 47%, similar to the hard fescue. Good quality alfalfa will have average values of about 60% for digestible dry matter.

Table 3. Crude protein and dry matter digestibility of grass straw fed in feeding and digestion trials during 1973-74 and 1974-75

Forage	Crude protein	Dry matter digestibility
	%	%
Hard fescue straw (1973)	5.76	46.13 ^a
Hard fescue straw (1974)	4.92	43.49 ^b
Merion bluegrass straw (1973)	6.34	47.09 ^a

a Digestibility determined using sheep fed chopped straw.

b Digestibility determined using cows fed baled straw.

There is considerable variation in the quality of straw. Crude protein values of different varieties and farming practices such as cutting time, irrigation and fertilization on bluegrass straw, range from as low as 2.5% to a high of 9% with corresponding variations in energy values. We find these same variations in the ryegrass and fescue varieties. Due to this extreme variation the nutrient quality of the straw to be fed should be determined before the winter feed program is established.

The results of the work at the Union Station indicate that Merion bluegrass straw can be fed with an energy and protein supplement to wintering cows with no ill effects.

The feeding of hard fescue straw to wintering cows could result in compaction. Compaction usually occurs between 25 and 70 days on feed. Studies at the Union Station have shown that rate of passage slows down and digestion decreases after 45 days of feeding hard fescue straw. These two situations can lead to compaction. Work will continue in this area to find a solution to the compaction problem and to determine the effect of various cultural practices on the nutrient quality of grass and straw.