

CORN STOVER SILAGE VS. WHOLE PLANT CORN SILAGE FOR
GROWING-FINISHING CALVES (PROGRESS REPORT)

The increased use of harvested corn crop residues for beef cows also allows for alternative use of the residues for feedlot cattle. This feeding practice may be favorable in areas of hay shortage or of purchased roughages. Also, the higher and more volatile pricing of corn grain may discourage some feeders from storing and feeding the grain through corn silage.

Previous research was reported in A.S. Leaflet R207 on the use of crop residues in growing-finishing rations. The results were satisfactory with roughage levels up to 15 to 20 percent of ration dry matter.

The objectives of this experiment were to determine the comparative feeding value of corn stover silage with whole plant corn silage and to evaluate the use of cobalt-dextro-lactate as a feed additive in higher roughage growing rations.

Experimental Procedure

Animals

A total of 64 crossbred calves from the Beef Nutrition Herd were used in this study. They were weaned in mid-November 1975 at an average age of 6 months. These calves were carried on a whole plant corn silage (WPCS) ration for about 8 weeks prior to this trial. Previous to that, all steers and heifers had been used in a 42-day post-weaning test.

The 64 calves (32 steers, 32 heifers) were divided into two weight groups by sex. They were randomly allotted within each of the weight by sex groups for a total of 16 pens of four calves each to provide four pen replicates per treatment. All animals started on test on Feb. 18, 1976.

All animals were weighed every 14 days. Weighings were made in the morning before feeding.

Rations

The ration composition and analyses are presented in table 1. The whole plant corn silage (WPCS) was harvested in September 1975 and ensiled in a concrete stave silo. It averaged 62 percent moisture at the time of

feeding. The corn stover silage (CSS) was harvested in October and November 1975 with a John Deere "stalker" machine, immediately following a corn combine. The "stalker" has a low-profile head attachment designed for collecting the corn residue. The chopped stover was ensiled in a Harvestore. It averaged 55 percent moisture at the time of feeding. Both silages were fed free choice.

A balanced supplement, shown in table 1, was prepared for the WPCS and CSS treatments. It was fed at a rate of 3.3 pounds per calf per day. The supplement was also the carrier for the cobalt dextro-lactate (CDL) additive for cattle rations, which 32 calves (eight lots) received in their rations.

Ground corn was added to the CSS treatment to account for the estimated amount of corn grain in WPCS. The amount of corn fed was adjusted to the consumption of whole plant corn silage, so that all animals had the same corn intake. This adjustment was made every 14 days. It was based on the estimate that 46 percent of WPCS dry matter (DM) is corn.

Results and Discussion

The results are summarized in tables 2, 3 and 4.

1. The main comparison between WPCS and CSS rations show a higher gain ($P<.05$) for heifers and steers fed WPCS (2.21 lb. vs. 1.86). The difference in gain was statistically significant ($P<.05$) for both periods of the trial. Feed efficiency was also in favor of the WPCS treatment.

The cause of lower gains for the cattle on CSS could have resulted from an underestimation of the amount of corn grain contained in the WPCS. The amount of available protein from corn stover silage is questionable because of the high levels of lignin-bound nitrogen. As a possible result, the digestible protein in the complete CSS ration could be below the requirement of the calves.

2. The 98-day results from this trial show no difference in weight gain from the addition of cobalt dextro-lactate (CDL) to the rations which contained about 40 percent

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roughage on the dry matter basis.

The additive CDL seemed to have a slight effect favoring the treated steers in both roughages and the heifers in the corn stover silage (table 4). The feed efficiency results have not been analysed statistically.

The finishing phase of the test is being conducted with the equivalent level of roughage from WPCS and CSS at 25 percent of ration dry matter. The same treatments are included. Any conclusions will be presented later in a final summary.

Table 1. Ration Composition and Analyses

Supplement composition		Analyses of components		
Ingredient	%		DM(%)	CP(%) (dry basis)
Ground corn	59.44	Whole plant corn silage	37.9	7.41
Soybean meal	29.71	Corn stover silage	45.7	3.95
Alfalfa dehydrated	2.97	Ground corn	88.2	9.97
Urea	2.97	Alfalfa dehy.	92.0	21.12
Dicalcium phosphate	2.97	Soybean meal	90.5	48.49
Limestone	1.49			
Trace minerals (ccc)	.13			
Vitamin A (5000 IU/g)	.32 (25,000 IU/day)			
Vitamin E (125 IU/g)	.006 (12.5 IU/day)			
Cobalt dextro-lactate	-- (14.2 g/day)			
Dry matter (DM) = 89.9%				
Crude protein (CP) (dry basis) = 35.7%				

Table 2. Feedlot Performance of Calves Fed Whole Plant Corn Silage vs. Corn Stover Silage. Evaluation of Cobalt Dextro-lactate (CDL).

Whole plant corn silage											
	Control						C D L				
	Heifers			Steers			Heifers			Steers	
	Heavy	Light	Avg.	Heavy	Light	Avg.	Heavy	Light	Avg.	Heavy	Light
Pen No.	1	11		5	15		3	9		7	13
No. calves	4	4		4	4		4	4		4	4
Avg. initial wt., lb	565	492	529	587	480	534	574	493	534	580	403
Avg. final wt., lb	760	720	740	788	723	756	783	685	734	808	720
0-56 days											
Avg. daily gain, lb.	1.77	2.07	1.92	1.71	2.20	1.95	1.88	1.64	1.76	1.91	2.13
Feed efficiency, DM	7.16	5.86	6.51	7.42	5.52	6.47	6.74	7.40	7.07	6.64	5.70
0-98 days											
Avg. daily gain, lb.	1.99	2.33	2.16	2.05	2.48	2.46	2.13	1.96	2.04	2.33	2.42
Feed efficiency, DM	7.29	6.05	6.67	7.24	5.71	6.48	6.83	7.16	7.00	6.37	5.79
Corn stover silage											
Pen No.	4	10		8	14		2	12		6	16
No. calves	4	4		4	4		4	4		4	4
Avg. initial wt., lb.	598	497	548	580	497	539	584	480	532	587	480
Avg. final wt., lb.	773	683	728	765	670	718	773	648	711	783	670
0-56 days											
Avg. daily gain, lb.	1.38	1.68	1.53	1.66	1.43	1.54	1.83	1.33	1.58	1.73	1.65
Feed efficiency, DM	10.66	7.79	9.23	9.11	9.18	9.15	7.63	9.80	8.72	8.62	7.92
0-98 days											
Avg. daily gain, lb.	1.78	1.89	1.84	1.89	1.77	1.83	1.92	1.71	1.82	1.99	1.94
Feed efficiency, DM	8.96	7.65	8.30	8.96	8.29	8.63	7.80	8.26	8.03	8.24	7.25

Table 3. Mean Average Daily Gain (lb/day) by Treatments From 0-98 Days.

	Control	CDL
Whole plant corn silage	2.21	2.21
Corn stover silage	1.83	1.89
Steers	2.05	2.17
Heifers	2.0	1.93

Table 4. Feed Efficiency by Treatments From 0-98 Days lb Feed/lb. Gain.

	Control	CDL
Whole plant corn silage	6.57	6.54
Corn stover silage	8.47	7.89
Steers	7.56	6.92
Heifers	7.49	7.52

