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1979

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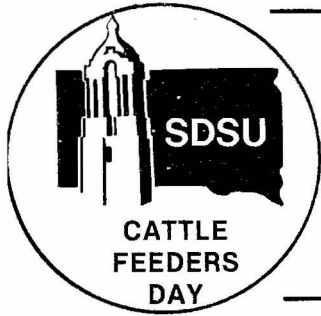
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Recommended Citation

Embry, L. B. and Bush, L. F., "Whole or Rolled Corn Grain Fed at Various Levels to Cattle on Pasture" (1979). *South Dakota Cattle Feeders Field Day Proceedings and Research Reports, 1979*. Paper 7.
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WHOLE OR ROLLED CORN GRAIN FED AT VARIOUS LEVELS TO CATTLE ON PASTURE

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A.S. Series 79-2

Results of several experiments with drylot finishing of cattle have shown little, if any, advantage for processing corn grain on basis of weight gain and feed efficiency when rations contain 80% or more grain dry matter. At lower levels there has generally been some advantage from processing the grain.

Various levels of grain are frequently fed to growing and finishing cattle on pasture. Levels may vary from a few pounds daily to free access to grain. Questions are then raised as to the benefits of processing the grain and how the benefits might be affected by the levels fed.

Two experiments are reported here when cattle were fed various levels of corn grain on pasture. Comparisons were made between corn fed whole and rolled.

Procedures

The same pasture area was used for the two experiments. It was established in 1968 and has been grazed at about maximum stocking rates each pasture season since that time. The pasture area was seeded for a stand of about equal parts of alfalfa and grasses (bromegrass and intermediate wheatgrass). It has been fertilized in early spring of most years with a typical application being about 125 lb. of 18-46-0 per acre. Management procedures have appeared to maintain the desired proportions of alfalfa and grasses.

Levels of corn grain fed per head daily were 0 (control), 4 lb., 8 lb. and a full feed. Each level was replicated four times for 16 paddocks of cattle. For those fed corn, it was fed whole in two paddocks and rolled for the other two at each level.

For the first experiment, 64 Hereford steers were allotted into the 16 paddocks with four head each. For the second experiment, 80 Hereford heifers were used with five per paddock. Acres per paddock provided were 5 for the no grain control and 4-lb. groups, 3.75 for the 8-lb. group and 2.5 for those full fed.

Each paddock was subdivided to allow for rotational grazing. Grazing procedures used during the 2 years were to allow the cattle access to one of the subdivided plots at the beginning of the grazing season. When the other side had reached an adequate growth for a hay crop, it was harvested. After a short recovery period, the cattle were then given access to this area, thereby doubling the grazing area for the remainder of the season. Ample forage appeared to be provided throughout the season.

Cattle in all paddocks fed corn were offered 4 lb. per head initially. The grain was increased at a rate of 1 lb. daily to the 8-lb. level for this group and until grain remained in the feed bunks at the next feeding for the full-fed group. Grain feeding in the 1978 experiment was started after the cattle had been on pasture for 34 days. A wet early season made alleyways impassable with the feeding experiment during this time.

Grain was offered once daily in feed bunks located near watering tanks. Trace mineral salt and a calcium-phosphorus supplement were offered free access. The steers were implanted with Synovex-S and the heifers with Synovex-H.

Results

1977 Experiment

Results of this experiment with steers are presented in table 1 for effects of levels of corn feeding and in table 2 for comparisons between whole and rolled grain.

The response in weight gain increased with increasing levels of corn but was quite low in comparison to the no grain control for the levels of grain consumed.

Steers fed the rolled corn gained at a faster rate than those fed whole corn. The differences were small when corn was fed at only 4 lb. per head daily. When fed at 8 lb. daily or full fed (avg 17.60 and 17.06 lb.), the advantage in weight gain amounted to 12 and 11% for the rolled grain. Feed efficiency would be improved to a similar degree as rate of gain since corn intake was held constant at the fixed levels and varied only slightly when full fed.

1978 Experiment

Results of this experiment with heifers are presented in table 3 for effects of levels of corn feeding and in table 4 for comparisons between whole and rolled grain. Daily intake shown is the average for the 133-day experiment even though corn was not fed during the first 34 days on pasture. Treatment levels designated are for the levels of grain offered during the time fed, but levels of intake shown during the experiment are at lesser amounts.

The response in weight gain increased with increasing levels of corn fed as in the 1977 experiment with steers. Again, the response in amount of gain over the no corn group was low for the levels of grain consumed.

Heifers fed rolled corn gained at a faster rate and more efficiently than those fed whole corn. Some differences from the 1977 experiment were observed, but this is to be expected because of the small number of cattle involved each year, differences in cattle and yearly effects.

Summary and Comments

Results of the two experiments show a relatively small response in weight gain by steers and heifers fed grain on pasture at daily levels of 4 lb., 8 lb. or a full feed (about 17 lb. for steers and about 12 lb. for heifers) in comparison to no grain controls. Rates of gain increased with increasing levels of grain and would, therefore, reduce days needed for drylot finishing following the pasture season.

Increasing levels of grain could be expected to reduce consumption of pasture forages which was not measured in these experiments. The decrease in forage consumption would mean more animals could be stocked per acre and would result in a lower pasture charge per animal.

Rolled corn grain resulted in faster weight gains than did whole corn within the levels fed in these two experiments. The average improvement for the 4-lb., 8-lb. and full-fed levels (about 12 or 17 lb. daily) was 12%. There was no consistent difference between levels of grain in the two experiments.

The results of the two experiments show an average of about 12% more weight gain for rolled corn over whole corn when fed at similar daily levels. If type of corn fed had no effect on pasture forage consumption, the cost of the increased amount of gain would be that for processing the corn.

Table 1. Levels of Grain for Pasture Feeding
(Steers: May 17 to October 20, 1977--156 days)

	No grain	4 lb. per head daily	8 lb. per head daily	Full fed
No. animals	16	16	16	16
Init. shrunk wt., lb.	655	653	653	650
Final shrunk wt., lb.	822	868	885	1000
Avg daily gain, lb.	1.07	1.37	1.48	2.24
Avg daily corn, lb.	--	3.93	7.72	17.33
Corn/100 lb. gain, lb.	--	286	521	775
Gain over no grain group per lb. of corn consumed, lb.	--	.076	.053	.068

Table 2. Whole or Rolled Corn Grain Fed at Various Levels on Pasture
(Steers: May 17 to October 20, 1977--156 days)

	4 lb. per head daily		8 lb. per head daily		Full fed	
	Whole	Rolled	Whole	Rolled	Whole	Rolled
No. animals	8	8	8	8	8	8
Init. shrunk wt., lb.	655	651	655	652	648	651
Final shrunk wt., lb.	866	869	873	897	980	1019
Avg daily gain, lb.	1.35	1.40	1.40	1.57	2.12	2.36
Percent from whole		104		112		111
Avg daily ration, lb.	3.92	3.94	7.68	7.76	17.60	17.06
Feed/100 lb. gain, lb.						
Whole or rolled corn	291	281	548	494	828	723
Percent from whole		97		90		87

Table 3. Levels of Grain for Pasture Feeding
(Heifers: June 8 to October 19, 1978--133 days)

	No grain	4 lb. per head daily	8 lb. per head daily	Full fed
No. animals	20	20	20	20
Init. shrunk wt., lb.	557	561	562	556
Final shrunk wt., lb.	709	737	767	817
Avg daily gain, lb.	1.14	1.32	1.54	1.96
Avg daily corn, lb.	--	2.98	5.88	11.89
Corn/100 lb. gain, lb.	--	226	382	609
Gain over no grain group per lb. of corn consumed, lb.	--	.060	.068	.069

Table 4. Whole or Rolled Corn Grain Fed at Various Levels on Pasture
(Heifers: June 8 to October 19, 1978--133 days)

	4 lb. per head daily		8 lb. per head daily		Full fed	
	Whole	Rolled	Whole	Rolled	Whole	Rolled
No. animals	10	10	10	10	10	10
Init. shrunk wt., lb.	561	560	562	563	559	554
Final shrunk wt., lb.	725	749	760	74	792	843
Avg daily gain, lb.	1.23	1.42	1.49	1.59	1.75	2.17
Percent from whole		115		107		124
Avg daily corn, lb.	2.98	2.98	5.88	5.88	11.27	12.51
Corn/100 lb. gain, lb.	243	209	395	70	644	575
Percent from whole		86		94		89