

SYSTEMS OF FEEDING FOR EARLY WEANED CALVES

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Early weaning of beef calves in the cattle producing areas of the United States is practiced very little and is particularly uncommon among cattlemen in southwestern North Dakota. Weaning calves early has been shown to be a beneficial management tool with young cows or under drought conditions.

Early weaning increases the number of cows coming into heat early in the breeding season, and has been shown to be particularly effective in increasing the percentage of two year old cows being bred early for their second calf. Early weaning in these young cows at the U.S. Meat Animal Research Center increased estrus onset 29% and pregnancy rate by 26% when compared to two year old cows nursing calves.

The research reported here addresses the problems associated with rearing the early weaned calf; leaving reproductive performance among young early weaned cows for future research. The year of 1980 was the driest on record in 88 years of recordkeeping, surpassing the record low during the growing season recorded in 1936 of 2.03 inches. Response to the drought by stockmen had the telephones ringing. Questions such as, should I cull my herd now or hold on a little longer were common. Those pressed to sell because of dwindling feed supplies wondered if they should sell cow-calf pairs or if there would be any profitability in feeding the early weaned calf. The next question, how and what will I feed them, and what special handling is necessary if I keep the calves, was the most difficult to answer. This trial was designed to help find the answers to some of these questions.

Since early weaning research with beef calves is limited, we looked to the dairy industry and to the limited work that was available from Self and Burwell at Iowa State University, Bellows at Miles City, Montana and Haukins and Greathouse at Michigan State University. Information gained from these scientists and Dr. Chung S. Park of the N.D.S.U. dairy department indicated that to be successful the following criteria were necessary: 1) Calves should be at least 35 days old if supplemental milk wasn't going to be supplied. 2) Calves should be supplied a highly palatable ration that is high in protein, available energy, vitamins and minerals. 3) Starter rations should be available to the calves during a 2-3 week adjustment period before they are actually weaned. 4) Calf-hood vaccinations for blackleg, malignant edema, hemoglobulinuria, pasterellosis, and enterotoxemia should be administered at the beginning of the adjustment period. Injections of Vitamins A and D should be given at this time also. 5) Calves should be checked regularly and treated as needed to reduce or eliminate fly and pink eye problems.

The question asked by most producers was, what should I feed the calves? Answers range from a complete commercial calf growing program to a complete mixed ration processed and blended on the farm using home grown or purchased feed ingredients.

To address the questions posed to us, calves from young or poorer producing cows were randomized by age, sex, breed, size and age of dams into four feeding treatments as follows: 1) Complete commercial calf growing program, 2) Commercial program during the critical first $\frac{1}{3}$ of the growing phase followed by a home grown preparation, 3) Home grown ration formulated around an oat base and 4) Home grown ration formulated around a barley base. The calves ranged in age from 38-39 days during the first year and from 64-105 days of age the second year.

At the start of the trial, all calves were weighed, vaccinated with Electroid-7 and allowed to remain with their mothers in drylot for three weeks while they became accustomed to the starter rations. The starter rations, as shown in Table 1, were fed in low trough feeders inside a creep area during the adjustment period. After weaning, the rations were self-fed with long hay provided throughout the entire trial in all treatment groups. In 1981, calves were exposed to the creep rations for three weeks at the Ranch Headquarters near Manning, North Dakota. At weaning they were hauled to the feedlot facilities at the Dickinson Experiment Station in Dickinson, a trip of approximately 23 miles. Calves in the study were weighed at the start of the trial, when actually weaned from the cow, when feed changes were made, and every 28 days during the study. Final (205 day) weights were taken after an overnight feed and water shrink.

Discussion:

In the summer of 1980, molasses was used to control dust and increase palatability of the starter rations. Unfortunately, large numbers of flies were attracted to the feed and so the molasses was discontinued in the ration. Flies were a general problem in both 1980 and 1981, but were controlled by spraying the calves with a mixture of mineral oil and toxaphene. Pink eye was a problem in 1980 but not in 1981. In 1980, one calf suffered from a reoccurring bloat problem while in 1981, two calves were afflicted with a pneumonia or lung congestion problem early in the trial. Both calves responded to antibiotic treatment but were removed from the trial data records.

Rations, Weights, Gains, and Feeding Economics are shown in the following tables:

Table 1. Percentage of Ingredients and Various Ration Changes in the Home Grown Oat and Barley Based Rations

Changes	Starter	Oat Base				Starter	Barley Base			
		(1)	2	3	4		(1)	2	3	4
Ingredients:										
Alfalfa, %		34	39	39	39		36	41	41	41
Corn, %		20	20	20	20		20	20	20	20
Oats, %		27	27	33	34		--	--	--	--
Barley, %		--	--	--	--		27	27	31.5	32.5
Soybean meal, %		12	12	6	5		10	10	5.5	4.5
Molasses, %		5.1	--	--	--		5.1	--	--	--
Minerals & Vit. ^{1/}										
Protein %, as fed		16	16.4	14.5	14.2		15.5	15.8	14.4	14.1

^{1/} Minerals and Vitamins: 1.0% Di-Calcium Phosphate; .3% Limestone; .6% T.M. Salt; 2,000,000 IU Vitamin A; 800,000 IU Vitamin D.

Table 2. Gains, Feed and Ration Economics among Early Weaned Calves Fed Four Different Ration Types in 1980

Rations:	Commercial	Commercial/Home Grown Oat Base	Home Grown Oat Base	Home Grown Barley Base
No. Head	14	14	14	14
Days Fed	140	140	140	140
Gains:				
Initial wt., lbs.	149	161	148	157
Final wt., lbs.	446	428	395	368
Gain, lbs.	297	267	247	211
ADG, lbs.	2.12	1.91	1.76	1.51
Feed:				
Feed/head, lbs.	1596	1317	1462	1202
Feed/hd/day, lbs.	11.4	9.4	10.4	8.58
Feed/lb., gain, lbs.	5.4	4.9	5.9	5.7
Economics:				
Feed cost/hd, \$	152.56	96.49	91.15	74.61
Feed cost/hd/day, \$	1.09	.69	.65	.53
Feed cost/cwt gain, \$	51.36	36.14	36.90	35.36

Table 3. Data on Gains, Feed and Ration Economics among Early Weaned Calves Fed Four Different Ration Types in 1981

Rations:	Commercial	Commercial/Home Grown Oat Base	Home Grown Oat Base	Home Grown Barley Base
No. Head	7	7	6	6
Days Fed	145	145	145	145
Gains:				
Initial wt., lbs.	161	154	157	156
Final wt., lbs.	533	490	473	474
Gain, lbs.	372	336	316	318
ADG, lbs.	1.57	2.32	2.18	2.19
Feed:				
Feed/head, lbs.	1913	1451	1784	1616
Feed/head/day, lbs.	13.2	10.0	12.3	11.1
Feed/lb., gain, lbs.	5.14	4.32	5.64	5.08
Economics:				
Feed/cost/hd., \$	201.10	111.17	110.04	102.22
Feed/cost/hd/day, \$	1.39	0.77	0.76	0.70
Feed/cost/cwt gain, \$	54.06	33.09	34.82	32.14

Table 4. 1980 and 1981 Two Year Combined Data on Early Weaned Calf Study

Rations:	Commercial	Commercial/Home Grown Oat Base	Home Grown Oat Base	Home Grown Barley Base
No. Head	21	21	20	20
Days Fed	142	142	142	142
Gains:				
Initial wt., lbs.	155	158	152	156
Final wt., lbs.	490	459	434	421
Gain, lbs.	335	301	282	265
ADG, lbs.	2.34	2.12	1.97	1.85
Feed:				
Feed/head, lbs.	1754	1384	1623	1409
Feed/hd/day, lbs.	12.3	9.70	11.35	9.84
Feed/lb., gain, lbs.	5.27	4.60	5.77	5.39
Economics:				
Feed cost/hd, \$	176.83	103.83	100.60	88.42
Feed cost/hd/day, \$	1.24	0.73	0.70	0.62
Feed cost/cwt gain, \$	52.71	34.62	35.86	33.75

Summary:

The early weaning of beef calves (64-105 day old) in 1981 again supported the 1980 data showing good average daily gains (2.18 – 2.57) and excellent feed efficiency (4.32 – 5.64 lbs/lb gain) on all rations as fed. Feed cost per hundred pounds of gain ranged from a low of \$32.14 for the barley based ration to \$54.06 for the all pelleted commercial ration. Except for two cases of pneumonia early in the trial, health in all treatment pens was excellent. Fly control was the most serious problem.

A combination of 1980 and 1981 results do not change the picture appreciably. Livestock producers wanting to wean calves at an early age have several options to choose from, depending upon individual circumstances.