

Weaning Management Study

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Stress, trauma, weight loss, and an undesirable amount of sickness characterize the events experienced by a calf that has just been weaned. These events are stimulated by a multitude of changes that a freshly weaned calf must adjust to, the first and most traumatic being the calf's loss of association and protection by its mother. In addition, when the calf is weaned directly into a drylot, it must also adjust to changes in its environment, feed type and physical form, and in many cases dusty lots and water type.

The purpose of this investigation is to evaluate three different methods of weaning to determine whether weaning stress can be minimized while maintaining or increasing weight gains. A second objective is to identify the cost/benefit ratio when additional feed is used to minimize stress; and, third, to evaluate the long term effects of weaning type on backgrounding performance.

The following methods are being used in this comparison of weaning management systems:

1. Conventional drylot weaning (control).
2. Short term pre-wean creep feeding by drylot weaning with creep feed.
3. Short term pre-wean creep feeding followed by weaning on native range pasture with creep feed for two weeks before being moved to drylot with creep feed.

Group 1 cows and calves served as the control group and grazed native range during the thirty day period just before weaning. No grain supplement was given to this group. When weaned, the calves were transported by trailer to drylot pens where they were started on a complete mixed ration containing 25% dry rolled oats, 74% ground mixed hay, .5% TM salt, .5% dicalcium phosphate and 5,000 IU Vitamin A per pound of feed. Ingredient changes were made

weekly in 10% increment increases until the calves were on a 45% dry rolled oats ration containing 54% mixed hay, .5% TM salt, .5% dicalcium phosphate and 5,000 IU Vitamin A per pound of feed. The thirty day period after weaning was monitored closely and fluctuations in weight gain recorded. Following the thirty day monitoring period the calves were carried on feed for an additional thirty-eight days to measure the effects of weaning stress on backgrounding performance.

Group 2 cows and calves grazed similar native range pastures, but calves had access to a self-fed creep ration thirty days before weaning that consisted of 62% dry rolled oats, 33% dry rolled barley, 5% molasses, 5,000 IU of Vitamin A and 500 IU Vitamin D per pound of feed. Upon weaning, calves in group 2 were transported to drylot pens adjacent to the control group calves. The self-fed creep ration just described for use on pasture was continued as a self-fed creep ration in drylot. Good quality ground mixed hay was offered to the calves in bunkline feeders.

Calves in this group were also weighed at selected intervals during the thirty day period after weaning. Upon completion of the thirty day monitoring period, calves in group 2 were switched to the same 45% dry rolled oats ration described for calves in group 1 and fed for an additional thirty-eight days to measure the effects of weaning stress on backgrounding.

Group 3 cows and calves were handled in exactly the same way as in group 2 during the creep-feeding phase thirty days before weaning. At weaning, however, the calves stayed on native range pastures that had been set aside especially for weaning and the cows were removed. While continuing on pasture the calves had access to the self-fed creep ration. The calves were kept on pasture an additional two weeks and were then moved to drylot with self-fed creep feed where they were handled in exactly the same manner, for the remainder of the study, as those calves in group 2.

Data have been collected for three consecutive years to measure yearly variations. Creep-feeding was begun the last week of September each year and the calves were consistently weaned on October 31st. The thirty day post weaning monitoring period started at weaning and ended on November 30th. During this period calves in all treatments were weighed one week after weaning, three weeks after weaning and at the end of the thirty day period. In order to measure the effects of weaning stress over a longer period the calves were continued on feed for an average thirty-eight day feeding period which ended the first week in January each year.

To develop the most immunity possible to Clostridium organisms the cause blackleg, malignant edema, hemorrhagic septisemia and overeating disease, the calves were vaccinated at the beginning of the trial in late September and again when weaned.

Composition of all rations fed and the sequence in which they were used is shown in Table 2.

Fluctuations in average daily gains which were monitored by weighing at selected intervals during the post weaning thirty day period are shown in Table 1.

Three year weight and gain data are shown in Table 3, and the three year summary of feed and economics of weaning is shown in Table 4.

Summary

Weaning methods in this investigation compared calves that have been conventionally weaned with those that were creep-fed one month before weaning and then either weaned directly into drylot with creep feed or weaned on pasture into set aside native range pastures with creep-feed.

Complications, such as over eating on creep feed and keeping the calves in the pasture after weaning were important concerns. Four and five wire fences were strengthened with additional "stays". Cows were hauled far enough away from their calves so they could not hear each other bawling.

Although some death losses from bloat and respiratory illness was encountered, the illness or death loss could not be attributed to any particular treatment. None of the calves weaned on pasture developed bloat or respiratory illness until after they were confined to drylot.

Short term creep feeding beginning thirty days before weaning is one of the major elements in this investigation, the other being the type of weaning method used. Substantial variation in total weight gained per calf was measured between years during the creep feeding period before weaning. Control calves that were not creep fed outgained the creep fed groups by 10.8 pounds during the first year. During the second and third years, creep fed calves

outgained the control group by 6.7 and 14 pounds per head respectively. Three year combined weight and gain data show no large differences in total pounds gained between groups.

Calves were weighed at selected intervals after weaning to measure the effects that pre-weaning supplementation in the form of creep feeding and method weaning would have on reducing stress and subsequent weight gain after weaning. This segment was characterized by a wide variation in weight gain or loss, as the calves adjusted to being weaned. Greatest yearly variation was measured one week after weaning in the conventionally weaned group and ranged from a 2.06 pound per day loss the first year to a gain of 5.12 pounds the last year. Calves creep fed on pasture and weaned directly into drylot or on pasture experienced weight gain fluctuations but they were not as dramatic as the conventionally weaned calves, resulting in earlier stabilization of their growth profile. It is apparent that most of the fluctuations measured during the thirty day period after weaning were due to variations in rumen fill and that most of the month after weaning was needed for the calves to become fully stabilized.

Type of pre-weaning and post-weaning treatment did have an effect on performance. Best overall performance was shown among calves creep fed on pasture and weaned directly into drylot with creep feed. By continuing to use creep feed in drylot, calves were weaned on a high energy ration consisting of 71% grain (2/3 oats and 1/3 barley) and 29% chopped mixed hay. Pre-conditioning with creep feed on pasture facilitated a less stressful weaning which resulted in faster gains that were more economical. Calves in this group were approximately twenty pounds heavier, gaining a total of 151 pounds at a cost of \$31.15 per hundredweight gain. Conventionally weaned group gained 132 pounds at a cost of \$31.15 per hundredweight and the group creep fed and weaned on pasture gained 128 pounds at a cost of \$33.08 per hundredweight.

Table 1. Daily gain changes among calves weaned at selected intervals during the month following weaning.				
1982 weaning	Selected Intervals			Average 30 day post weaning gain
	Nov. 3	Nov. 16	Nov. 26	
Days between each weighing	7	13	10	30
Treatment I: Conventional weaning (Control)	-2.06	3.36	.01	1.11

Treatment II: Pasture Creep- drylot wean with creep	-.15	2.75	-.01	1.15
Treatment III: Pasture creep/pasture wean with creep/drylot with creep	1	.77	1.61	.97
1983 weaning	Selected Intervals			Average 30 day post weaning gain
	Nov. 7	Nov. 17	Nov. 28	
Days between each weighing	10	10	11	31
Treatment I: Conventional weaning (Control)	4.00	.38	2.11	2.16
Treatment II: Pasture creep-drylot wean with creep	2.45	.55	3.18	2.10
Treatment III: Pasture creep/pasture wean with creep/drylot with creep	2.15	.20 ²	1.11	1.16

¹Weaned on pasture one week after groups II and III and moved to drylot November 16th.

²Moved from native pasture into drylot on November 17th.

1984 weaning	Selected Intervals			Average 30 day post weaning gain
	Nov. 7	Nov. 21	Nov. 30	
Days between each weighing	7	14	9	30
Treatment I: Conventional weaning (Control)	5.12	1.97	.80	2.35
Treatment II: Pasture creep-drylot wean with creep	4.04	1.66	1.89	2.36
Treatment III: Pasture creep/pasture wean with creep/drylot with creep	2.87	1.98 ¹	.98	1.85

¹Moved from native pasture into drylot on November 14th.

Table 2. Creep feed and complete mixed ration composition and ration changes used .

Calves in creep fed treatments:

Dry rolled creep feed mixture

Oats	62%
Barley	33%
Molasses	5%
Vitamin A, IU/lb.	5,000
Vitamin D, IU/lb.	500

Creep ration shown was self-fed in creep feeders on pasture and in drylot after weaning. After weaning chopped mixed hay was fed free choice in the bunkline in addition to the self-fed creep feed.

Conventionally Weaned Calves

	Weaning Ration	1 st Change	2 nd Change
Chopped mixed hay, %	74	64	54
Dry rolled oats, %	25	35	45
TM Salt, %	.5	.5	.5
Dical, %	.5	.5	.5

Vitamin A, IU/lb.	5,000	5,000	5,000
Ration changes made weekly			

Growing ration fed to all calves during short backgrounding phase	
Chopped mixed hay, %	54
Dry rolled oats, %	45
TM Salt, %	.5
Dical, %	.5
Vitamin A, IU/lb.	5,000

Table 3. Three year combined weight and gain data among calves comparing weaning management methods.			
	Control	Pasture creep drylot wean	Pasture creep pasture wean
30 day pre-weaning period:			
No. head	60 ¹	61 ²	62
Days fed	30	30	30
Initial weight, lbs.	409.9	410.2	411.1
Weaning weight, lbs.	443.3	444.4	447.5

30 day gain, lbs.	33.4	34.2	36.3
30 ADG, lbs.	1.11	1.14	1.21
30 day period after weaning:			
No. head	60	61	61 ³
Days fed	30.3	30.3	30.3
Weaning weight, lbs.	443.3	444.4	446.3
30 day post weaning wt., lbs.	496.7	499.7	481.9
30 day post weaning gain, lbs.	53.4	55.3	35.6
30 day post weaning ADG, lbs.	1.76	1.82	1.18
38 day backgrounding period:			
No. head	60	61	59 ⁴
Days fed	38.3	38.3	38.3
Initial weight, lbs.	496.7	499.7	484.6
38 day final weight, lbs.	542.2	560.9	540.8
38 day gain, lbs.	45.5	61.2	56.2
38 day ADG, lbs.	1.19	1.60	1.47
Gain - all phases:			
Days fed	98.6	98.6	98.6
Initial weight, lbs.	409.9	410.2	411.1

Final weight, lbs.	542.2	560.9	540.8
Gain, lbs.	132.3	150.7	129.7
¹ One heifer died of pneumonia: one steer died of bloat. ² One heifer died of pneumonia. ³ One steer strayed away from lot ⁴ One steer chronic bloater-removed; one heifer died of pneumonia			

Table 4. Three year summary of feed and economics comparing weaning management methods.			
	Control drylot wean	Pasture creep drylot wean	Pasture creep pasture wean
30 day pre-weaning period			
No. head	60 ¹ .	61 ²	62
Creep feed before weaning, lbs.	---	4862	5209
Creep feed/head, lbs.	---	79.7	84.0
Total Creep cost, \$	---	243.73	259.20
Creep cost/head, \$	---	4.00	4.18
Creep feed on pasture after weaning			
No. head	---	---	61 ³

Creep feed consumed, lbs.	---	---	5454
Creep feed/head, lbs.	---	---	89.4
Total creep cost on pasture, \$	---	---	273.73
Creep cost/head on pasture, \$	---	---	4.42
Pasture charge/calf, \$	---	---	3.20
Drylot Phase			
No. head	60	61	59 ⁴
Mixed hay, lbs.	---	7198	2934
Mixed hay cost/head, \$	---	3.76	1.54
Creep feed, lbs.	---	17613	6808
Creep feed cost/head, \$	---	13.95	5.52
Complete mixed ration, lbs.	62,577	37,091	33,813
Complete mixed ration cost/head, \$	42.22	25.24	23.52
Total cost/head all phases, \$	42.22	46.95	42.38
Gain head, lbs.	132.2	150.7	128.1
Cost/cwt. gain, lbs.	31.94	31.15	33.08

¹One heifer died pneumonia; one steer died of bloat.

²One heifer died of pneumonia.

³One steer strayed away from pasture lot.

⁴One chronic bloater removed; one heifer died of pneumonia.

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