

Preconditioning of Calves from the Feedyard Perspective

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Young calves or freshly weaned calves that are placed directly on high grain concentrate feeding can be expected to experience increased health-related problems compared to cattle of yearling age. Survey data of feedlot cattle in Texas generated by Bechtol and Jordan (1) show that morbidity and mortality averaged 7.29% and 0.70%, respectively. Work in Kansas and Nebraska (2) shows closely related figures. These figures are shown in Table 1.

TABLE 1. Survey data of pooled data from commercial feedyards showing total percentage morbidity and mortality.

Location	Total Head	% Morbidity	% Mortality
Texas 1984	232,213	7.29	0.70
Kansas & Nebraska 1979-1982	745,172	8.80	1.07

A wide range in health related figures versus the average for all cattle occurs when looking at calves only. In a review of data from the author's client's feedyards, freshly weaned calves range in arrival weight from 400-600 pounds and in age from 4-8 months. The range in morbidity for cattle of this type was 4-80% and mortality was 0-10%. Average figures reviewing in excess of 30,000 calves placed on grain concentrate feeding showed that total morbidity averaged 22.8% and total mortality averaged 1.62%.

Due to the potential health related problems experienced with these extremely disease susceptible animals, alternatives have been proposed. Preweaning and preconditioning of calves are two alternatives that have been utilized to decrease health related economic loss incurred when these cattle are placed on feed.

By definition preweaning includes the process of removing the nursing calf from its dam and allowing a post weaning acclimation period of 14-28 days prior to shipment to an off-farm location. Supplemental feeding may or may not be utilized during the preweaning period.

Preconditioning will include the management aspects of a preweaning program and vaccinations necessary for prevention of the Bovine Respiratory Disease Complex. The products include, at least in part, IBR, BVD, PI3, *Pasteurella* and *Hemophilus* inoculations. Also, dehorning and castration are performed if necessary at this time. All processes and procedures must be certified by a licensed veterinarian to be validated in states with a standardized program. A period of 21-28 days is required prior to shipment.

The theory behind both of these practices is based upon sound animal husbandry and veterinary medical criteria. Economic evaluation of these systems is necessary to fully realize the economic cost-benefit ratios of these management practices.

Little controlled data exists that applies economic principles to preconditioning and preweaning programs. Utilizing the data available (3) one can compare controlled field studies of treated and control calves in a feeding environment. (Table 2 & 3).

TABLE 2. Comparison of pooled data generated in controlled field studies of preweaned and non-preweaned calves in feedlot studies.

	Preweaned	Control
ADG (kg)	1.08	1.07
F/G*	7.47	6.96
Morbidity (%)	43.9	52.7
Mortality (%)	1.10	1.47

* Kg of feed per kg of grain.

TABLE 3. Comparison of pooled data generated in controlled field studies of preconditioned and non-preconditioned calves in feedlot studies.

	Preconditioned	Control
ADG (kg)	0.97	0.94
F/G*	7.88	7.98
Morbidity (%)	20.4	26.5
Mortality (%)	0.74	1.44

* Kg of feed per kg of grain.

Let us now examine this data from an economic standpoint and from a cattle feeders' perspective. With these figures, the calf producer and veterinarian can see the economic window within which the preconditioned calf must be viewed.

In order to totally apply this data, one must first convert percentage morbidity into economic figures. Work performed by Bechtol and Jordan (4) (Table 4) with calves of this type showed that 51.3% of calves required treatment in this study, 18.8% of this total required one treatment at a cost of \$5.10/head. 38.5% required two treatments at a cost of \$10.50/head. 42.6% required three or more treatments at a cost of \$16.84/head. Extrapolation of this data for economic evaluation is shown in Table 5.

Using these figures one can then generate the necessary economic values for evaluation.

	Preweaned Calves	Control Calves
% Mortality	1.10	1.50
ADG (lbs)	2.40	2.30
F/G	7.50	6.90
Medicine Cost/Head	\$5.34	\$6.42

TABLE 4. Performance and treatment cost of freshly weaned calves in a controlled feedlot situation.

	Treatment			% of Total
	ADG (kg)	F/G	Cost/Hd	
Non-Treated Calves	1.25	5.02	—	48.7
Calves-Treated 1 Day	1.05	6.03	\$ 5.10	9.7
Calves-Treated 2 Days	1.14	5.55	\$10.50	19.7
Calves-Treated 3+ Days	1.07	5.91	\$16.84	21.8

TABLE 5. Extrapolated cost of treatment of freshly weaned calves from percentage morbidity.

	Morbidity (%)	Extrapolated Cost of Treatment
Preweaned Calves	43.9	\$5.34
Preweaned Control Calves	52.7	\$6.42
Preconditioned Calves	20.4	\$2.48
Preconditioned Control Calves	26.5	\$3.23

From this information, on today's market with \$64.50/CWT calves, \$60.00/CWT finished cattle, interest at 10.5% and grain ration costs of \$100.00/ton, one can see that the net income for preweaned calves would be \$24.91 (Table 6). For control calves the net income would be \$36.45. Therefore, cattle feeders (doing an average job of calf herd health management) would realize 27.3% less income from purchasing and feeding preweaned calves.

TABLE 6.

	Preweaned Calves	Control Calves
Income		
Sale Weight (lbs)	1,056	1,056
Gross Income	\$633.60	\$633.60
Expenses		
Pay Weight (lbs)	550	550
Feeder Cattle	\$354.75	\$354.75
Retain Cost	\$206.25	\$192.50
Processing	\$ 6.85	\$ 6.85
Medication	\$ 5.34	\$ 6.42
Death Loss	\$ 4.08	\$ 5.60
Interest	\$ 31.42	\$ 31.03
Total Expenses	\$608.69	\$597.15
Net Expected	\$ 24.91	\$ 36.45
Total Cost Per Cwt of Gain	\$ 50.01	\$ 47.62
Feed Cost Per Cwt of Gain	\$ 41.26	\$ 38.68

One can easily see that the additional cost is due to decreased feed efficiency in the preweaned calves. Studies of calf growth show that calves fed on the farm after weaning deposit more fat relative to muscle (5). This condition is also carried over into the first few weeks in the feeding environment. Research has also shown that gains while on feed are inversely proportional to the gains during the last 30 days on the farm prior to shipment (6).

Following the same economic principles preconditioned calves can be compared to non-preconditioned calves.

	Preconditioned Calves	Control Calves
Mortality %	0.70	1.40
ADG (lbs)	2.20	2.10
F/G	\$7.80	\$7.90
Medicine Cost/Head	\$2.48	\$3.23

TABLE 7.

	Preconditioned Calves	Control Calves
Income		
Sale Weight (lbs)	1,056	1,056
Gross Income	\$633.60	\$633.60
Expenses		
Pay Weight (lbs)	550	550
Feeder Cattle	\$354.75	\$354.75
Ration Cost	\$214.50	\$217.25
Processing	\$ 6.85	\$ 6.85
Medication	\$ 2.48	\$ 3.23
Death Loss	\$ 2.57	\$ 5.18
Interest	\$ 34.37	\$ 36.17
Total Expenses	\$615.52	\$623.43
Net Expected	\$ 18.08	\$ 10.17
Total Cost Per Cwt of Gain	\$ 51.43	\$ 52.91
Feed Cost Per Cwt of Gain	\$ 42.71	\$ 43.60

Application of this data to a feeder cattle budget with the same economic criteria as for the preweaning comparison shows that preconditioned calves have a net income of \$18.08. Non-preconditioned calves have a net income of \$10.17. Therefore, the cattle feeder would expect to have a 77.9% increase in net income from handling preconditioned calves. In today's market the feeder cattle buyer could only pay a \$1.33/CWT premium for preconditioned calves.

Conclusion

The economic data presented in this discussion was from the viewpoint of a cattle feeder. One can easily see that preconditioning of calves does offer an increase in economic return versus non-preconditioned calves. There was a negative economic basis for the purchase of preweaned (and fed on farm) calves versus non-preweaned calves.

Although there was an economic return for the feeder to handle preconditioned calves, the seller of those calves could only expect a premium of \$1.33/CWT. On a 550 pound calf

this relates to an increase of purchase price of \$7.32. It has been the author's experience that castration of calves prior to shipment will generally increase the purchase price by \$2.00/CWT.

The figures presented in this discussion looked at the average calf feeder. In operations that experience greater than average morbidity, mortality, and treatment costs, the preconditioned calf may offer an alternative to the economic losses incurred in operations that have difficulty achieving industry average figures.

References

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