



# Economic Value of Preconditioning Feeder Calves

R. Keith Avent  
Graduate Assistant

Clement E. Ward  
Professor and Extension Economist

David L. Lalman  
Associate Professor and Extension Animal Scientist

Preconditioning programs involve a series of management practices on the ranch to improve health and nutrition of calves. Preconditioning adds value to calves for buyers, which benefits cow-calf producers. Preconditioning is not a new idea, but has received considerable attention in recent years with interest in value-added programs for cow-calf producers, beef quality assurance programs, and strategic alliances in the beef industry.

There are several preconditioning programs with varying names and management requirements. One familiar to many in Oklahoma is the Oklahoma Quality Beef Network (OQBN) program sponsored by the Oklahoma Cattlemen's Association. It is a process verification and certification program. Another example is the VAC-45 program which is a process verification program recommended by Texas A&M University. It requires a 45-day post-weaning phase with a proper nutritional program, specified animal health program, dehorning, castration of bull calves, and bunk feeding. The purpose of preconditioning programs is to reduce stress from shipping calves at weaning, improve the immune system, and boost performance in post-weaning production phases, i.e., stocker production and cattle feeding, and in carcass performance, i.e., higher grading carcasses with fewer defects.

Common preconditioning programs cost cow-calf owners about \$60/head, depending on the nutrition ration, health of calves, and length of the preconditioning program. One common question is whether or not preconditioning programs add sufficient value to feeder calves to offset the added costs. This fact sheet reviews effects of preconditioning programs on feeder cattle prices and reports findings from recent work (Avent). See also, Extension Facts ANSI-3529, "*Effects of Preconditioning on Health, Performance, and Prices of Weaned Calves*."

## Feeder Cattle Price Differences

Considerable research has been conducted on the market value for various traits of feeder cattle. Previous studies were conducted over two decades and under varying market conditions. Considerable consistency can be found across the studies. Preconditioning affects feeder calf traits such as weight, condition, horns, sex, and health, but does not directly affect

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other traits such as breed, frame size, and muscle thickness. Only traits affected by preconditioning will be discussed.

**Weight** – Research consistently indicates feeder cattle prices decline as feeder cattle weight increases, though the magnitude differs with market conditions. For example, buyers typically pay lower prices for 500-600 lb. feeder cattle than for 300-400 lb. feeder calves. Preconditioning calves results in marketing heavier animals compared with marketing calves at weaning. Producers sell more pounds after preconditioning, but the weight effect alone means producers can expect lower prices for preconditioned calves. Some of this lower expected price may be offset by the seasonal price component associated with most preconditioning programs. Preconditioning programs are frequently used with spring calving programs. Instead of selling calves at weaning in October, calves would be marketed 45 days later in November or December. The typical seasonal price pattern for feeder calves throughout the U.S. involves a higher price in November-December than October (Peel and Meyer). Thus, preconditioning may enable cow-calf producers to capitalize on the normal seasonal price pattern for feeder calves.

**Sex** – Previous research consistently shows significant feeder calf price differences among steers, heifers, and bulls. Buyers typically pay higher prices for steers when compared with heifers and bulls based on expected feedlot performance differences. Since most preconditioning programs require castrating bull calves, producers can expect higher prices for steers than for bulls, and thus higher prices for the castration requirement in preconditioning programs.

**Horns** – Polled feeder calves normally receive a price premium compared to horned calves and dehorned calves. Dehorning has received increased attention because the 1995 Beef Quality Audit found a significant increase in carcass bruise damage compared with the 1991 Beef Quality Audit. Most preconditioning programs require dehorning calves. Therefore, to the extent producers market preconditioned, dehorned calves versus marketing horned calves, higher prices can be expected from the dehorning requirement in preconditioning programs.

**Condition** – Condition of feeder cattle can significantly affect feeder cattle prices. However, the degree of price differences varies by time of study and market conditions. One argument is that thin cattle may be discounted, especially if there is evidence of thinness being related to poor health or muscling. However, if associated with poor nutrition, thin cattle may receive a price premium because buyers expect

compensatory gains after improving the nutritional level. Fleshy cattle are usually discounted, i.e., a recognition by buyers that no compensatory gains are likely. However in some cases, fleshy cattle are preferred as long as the degree of fleshiness is slight or moderate and is associated with health or thriftiness of the animals. Preconditioned calves that receive or are provided a high degree of nutrition may appear fleshy. Thus, in some cases, preconditioned calves may be discounted due to their fleshy condition. Some buyers may associate the increased fleshiness, i.e., especially if only slight or moderate, with higher nutrition and health, and may pay a price premium for preconditioned calves.

**Health** – Health is one of the most important stocker and feeder cattle traits (Lalman and Smith). Of all feeder cattle characteristics, health-related attributes often have the most profound effect on price. Unhealthy traits generally translate into severe price discounts. Preconditioned calves are expected to be healthier, less stressed, and have a stronger immune system than calves sold at weaning. Therefore, cow-calf producers should expect a price premium for preconditioned calves, due to the animals' improved health. In some cases, the certification process screens or inspects cattle that have any type of health problem. They are sorted out and not certified or marketed with certified calves.

**Uniformity** – Sorting calves into uniform quality, weight, and breed type sale lots typically results in a price premium. Production and feeding efficiency increases for uniform lots of cattle. Not all preconditioning programs include sorting as part of their protocol. In cases where they do, cow-calf producers can expect a price premium for more uniform sale lots of calves.

**Lot Size** – A role of many feeder-cattle buyers is to accumulate small sale lots of particular types of feeder cattle into larger, often truckload size groups. Stocker producers and cattle feedlots want larger groups, preferably truckload size groups of calves, for more efficient shipping and to fill pre-established pasture and pen sizes. Therefore, the buying task is made easier if feeder cattle are sold in larger sale lots. Research regularly finds premium prices paid by buyers for larger lots of feeder calves.

## Value of Preconditioning

Evidence supports the importance health makes to stocker, feedlot, and carcass performance, and profitability. Preconditioning increases feedlot and carcass performance while reducing feedlot morbidity and mortality rates and lowering medicine costs (Lalman and Smith). Performance gains included higher average daily gains, lower feed conversion, and lower cost of gain. Sickness in the feedlot reduces the percentage of Choice grade carcasses compared with those that have not been sick. As cattle feeders continue to increase their use of grid pricing, even more importance will be placed on carcass attributes.

Managers of Texas Cattle Feeders Association's (TCFA) member feedlots concur with prior research. TCFA feedlot managers were asked to estimate performance differences between preconditioned calves and non-preconditioned calves (Avent). All comparisons between performance estimates for preconditioned calves versus non-preconditioned calves were statistically significantly different (Table 1). Managers perceived advantages in several performance categories from

**Table 1. Perceived Performance Differences by Texas Cattle Feeders Association Feedlot Managers.<sup>a</sup>**

	Preconditioned calves	Non-preconditioned calves
% Sick	9.2	36.4
% Death loss	1.5	4.3
ADG (lbs/day)	2.9	2.6
Conversion (lbs/gain)	6.3	6.9
% Choice carcasses	50.4	35.8
% Outs	2.5	6.9

<sup>a</sup> Responses numbered 17.

preconditioning, i.e., reduced morbidity, reduced mortality, increased average daily gains, improved feed conversion, higher percentage of Choice grade carcasses, and fewer non-conforming or severely discounted carcasses, frequently referred to as "outs."

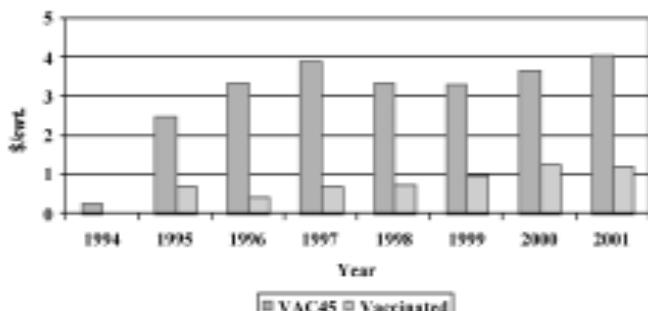
Several studies have investigated factors affecting cattle feeding profitability. Cattle performance and carcass characteristics are consistently important. Since preconditioning programs improve health and thriftiness of calves, producers can expect a price premium due to the improved health of preconditioned calves marketed. However, relatively few studies have estimated the price effects related to preconditioned calf programs.

King annually estimated the price effects from specific preconditioning programs for calves marketed through Superior Livestock Auction for 1994 to 2001. Figure 1 indicates significant growth in two preconditioning programs (VAC34 and VAC45) vs. not preconditioning over the eight-year period. Figure 2 shows premiums for the VAC45 preconditioning program vs. just vaccinating calves over the eight years. Premiums have increased over time and reached their highest annual average premium (\$4.06/cwt.) in the most recent year, 2001.

In an Oklahoma State University study, Avent analyzed two sets of livestock market data to estimate the market value buyers placed on preconditioning programs. Both data sets were on feeder cattle at the Joplin Regional Stockyards in Joplin, Missouri. One set of data included regular and special preconditioned calf sales from December 1997 to March 2001. The second set of data was from two preconditioned calf sales



**Figure 1. Growth in two preconditioning programs (VAC34/VAC45), Superior Livestock Auction, 1994-2001.**



**Figure 2. Annual price premium for one preconditioned program vs. a non-preconditioned management program, Superior Livestock Auction, 1994-2001.**

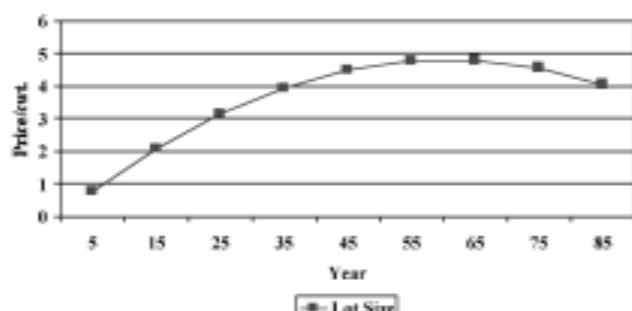
and one regular feeder cattle sale on three consecutive days in December 2000.

For the first set of data, preconditioned calves received a premium of \$2.59/cwt. when compared to non-preconditioned calves over the four-year period. Note that the preconditioned premium is based upon two different preconditioning programs. One program has a single, strict protocol, while the second has several modifications of the vaccination and feeding program.

The second set of data provided more detail on each sale lot. The premium price for the preconditioning program with a single protocol was \$3.36/cwt. compared with the regular weekly auction. The second preconditioning program generated premiums of \$1.96/cwt. The lower premium for the second program could be attributed to having several different vaccination and feeding guidelines. Both results are consistent with previous results (Figure 3). Price premiums at Superior Livestock averaged \$3.04/cwt. over eight years (King) compared with the two Joplin Regional Market data sets for different time periods.

Figure 4 indicates how much marketing calves in larger lots increased prices received at the Joplin market for the December 2000 data. A price premium of \$0.60/cwt. was found for sale lots of 5 head compared with single-head lots. Sale lots of 15 head received \$1.30/cwt. more than sale lots of 5 head. The price premium for larger sale lots reached its peak at about 65 head lots. Those larger sale lots received a price premium of \$4.79/cwt.

Other pertinent results from the December 2000 data were consistent with most previous research. Bull calves



**Figure 4. Price effect from larger sale lots, Joplin Regional Market, 2000.**

were discounted \$4.52/cwt. relative to steers, again indicating a benefit from preconditioning programs that require castration of steer calves. Horned and dehorned calves were not significantly discounted in the three, consecutive-day sales as was found often in previous research. However, mixed lots of horned and dehorned or polled calves were discounted \$6.14/cwt.

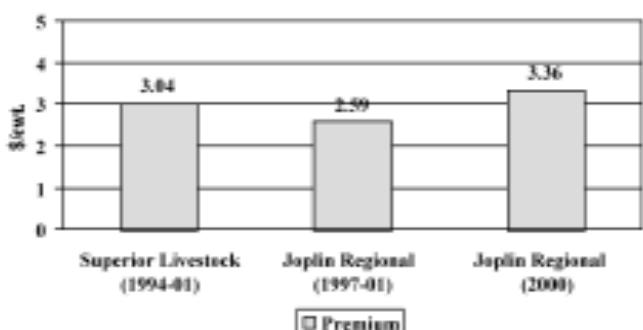
Uniform sale lots of calves received a \$0.87/cwt. premium relative to lots of non-uniform calves. Fleshy calves were discounted \$0.60/cwt., suggesting that preconditioning programs should ensure a high level of nutrition but there is a tradeoff when added weight is in the form of added fleshiness. As expected, several types of unhealthy calves were discounted severely compared with healthy calves. For example, sick appearing calves were discounted \$13.88/cwt. Enhanced health and thriftiness is one of the central reasons to precondition calves.

There are several preconditioning programs and sponsoring organizations. The reputation of each varies. Building a positive reputation takes time. Buyers of feeder calves pay premiums for what they feel is the quality of the cattle, given the confidence they have that producers treated the animals according to the specified program (Yeboha and Lawrence). TCFAfeedyard managers estimated that preconditioned calves were worth \$5.25/cwt. more on average than non-preconditioned calves. Note their perceived difference was higher than the research reported here. One reason for the difference may be reputation and integrity questions surrounding existing preconditioning programs. Cattle feeders might pay a premium more closely related to the expected performance difference if there was higher perceived assurance and confidence that cow-calf producers followed the preconditioning protocol, thus resulting in actual expected performance differences. Without that assurance, cattle feeders will bear a portion of the risk and will respond by bidding less than the "true" or estimated value difference.

## Summary and Conclusions

Preconditioning programs are not new, but interest in them has increased sharply. Preconditioned calves are healthier, with a stronger immune system, so they are more valuable to feeder cattle buyers than are non-preconditioned calves. The question is how much more valuable?

Feedlot managers indicated a significant perceived performance difference favoring preconditioned calves. Significant benefits were expected for death loss percentage, percentage



**Figure 3. Summary of estimated price premiums for preconditioning calf programs, three markets and time periods.**

of sick cattle, average daily gain, feed efficiency, and carcass traits, i.e., percent grading Choice and percent of severely discounted carcasses. Those differences increased the perceived value of preconditioned calves for feedlot managers by \$5.25/cwt.

The perceived value expressed by feedlot managers exceeded the value based on market data. The estimate from market data for a single-protocol preconditioning program was \$3.36/cwt. in 2000. It appears feedlot buyers pay what it takes to purchase preconditioned calves. That premium, from this and previous research, appears to be less than the perceived, expected value of preconditioned calves based on feedlot managers' experience. Therefore, for cow-calf producers to receive premium prices closer to the perceived added value for preconditioning programs, more effort should be made to build a reputation for integrity by sellers.

Preconditioning programs can be profitable for cow-calf producers, but not from the premium price alone that buyers have been found to pay for preconditioned calves. Several factors contribute to enhanced returns from preconditioning; selling added weight, marketing into a seasonally upward trending market, marketing steers rather than bulls, marketing dehorned rather than horned or mixed lots, marketing in larger and more uniform lots, and marketing healthier calves. Producers should recognize that added weight means lower prices, *ceteris paribus*, and may increase fleshiness, which often is discounted by feeder cattle buyers.

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