

Animal Health and Husbandry Practices That Increase Beef Herd Profitability

Brent Credille, DVM, PhD, DACVIM

Associate Professor

Section Head – Farm Practice, Theriogenology, and Production Medicine

Food Animal Health and Management Program

Department of Population Health

College of Veterinary Medicine

University of Georgia

INTRODUCTION

Cow-calf producers have historically operated within fairly narrow profit margins. Standardized performance analyses (SPA) of cattle herds in the southwestern United States and Great Plains region have shown that the annual return on assets (ROA) in these operations ranges from 0.3 to 3.1%. For reference, other businesses in the United States have historical ROA that exceed 10%. While the reasons for this discrepancy are numerous, most cow-calf operations have relatively high operating costs, pay high interest rates on borrowed money, and function within a market of highly volatile prices that are largely beyond their control. In addition, producer level surveys of cow-calf operations across the country have shown that a minority of herds adopt management practices that promote herd efficiency and profitability. For example, these surveys have found that less than 35% of producers utilize pregnancy examination of cows and only 23% use body condition scoring to monitor adequacy of herd nutritional programs. The easiest way to improve herd profitability is to focus on optimizing herd efficiency. Optimization of herd efficiency and farm profitability can be done in several ways:

- 1. Increase the number and weight of calves sold**
- 2. Reduce the overall cost of production**
- 3. Increase the number and weight of calves sold while also decreasing the overall cost of production**

In the ideal world, we would focus our attention on option 3 and increase the number and weight of the calves we sell while also decreasing the total cost of production. The goal of this document is to provide producers with management practices that will positively impact herd efficiency and improve long-term profitability in one of the three aforementioned ways.

REPRODUCTIVE EFFICIENCY

Unlike reproduction, which just evaluates whether or not a cow gets pregnant, reproductive efficiency evaluates the speed at which pregnancy occurs. In cow-calf operations, reproductive efficiency is the primary driver of calf numbers and weight and, therefore, increased gross revenue. The reason reproductive efficiency is so important is as follows: calf weaning weight is a function of both average daily gain (ADG) and age at weaning and, as a result, a calf that is born early in the calving season will, on average, weigh more than a calf that is born late in the calving season simply because the calf born earlier is older at the time of weaning. Therefore, the early born calf will be worth more at sale for no other reason that it was born sooner. For example, if we assume

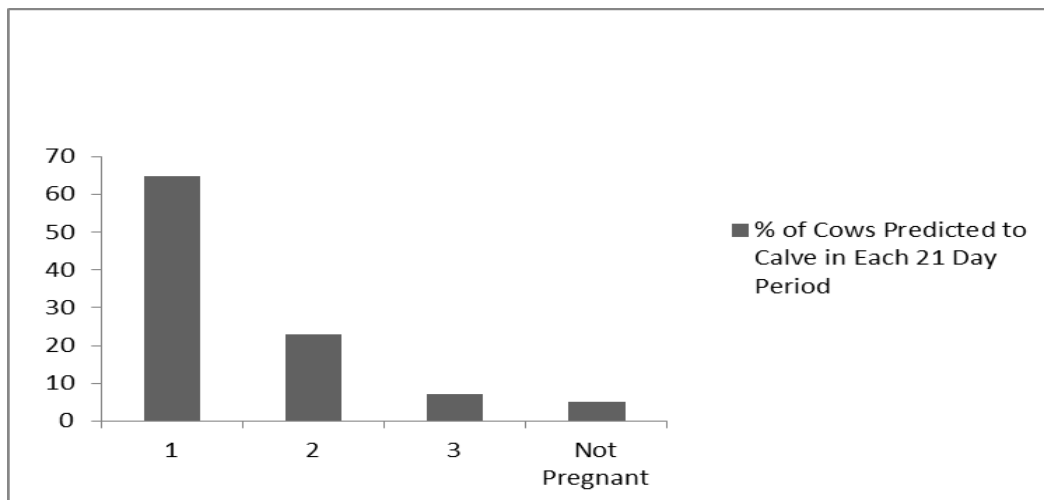
that a calf born on day 1 of a calving will gain 2 lbs/day from birth to weaning and another calf born on day 42 of a calving season will gain at the same rate until the day of weaning, calf 1 will weigh approximately 84 lbs more than calf 2 simply because it's older. The impact of improving reproductive efficiency on herd profitability can be seen in Table 1 below. In this example, both herds are the same size, have the same number of cows pregnant at the end of the breeding season, and wean the same number of calves at weaning. The only difference is the speed at which cows in each herd got pregnant and, therefore, the age of the calves at weaning

Table 1. Impact of improved reproductive efficiency on productivity in a theoretical cow-calf operation

Calving period	Average calf weight	Herd A total calf weaning weight	Herd B total calf weaning weight
1	500	31,000	7,500
2	458	10,992	11,450
3	416	3,744	11,648
4	374		5,236
5	332		2,656
6	290		1,450
Total lbs weaned		45,736	39,940
Estimated returns (\$1.50/lb)		\$68,604	\$59,910

Here, it's clear that herd A is more efficient and, therefore, more profitable than herd B because calves were older and heavier at weaning. The ideal distribution of pregnancies across a breeding season is below in Figure 1.

Figure 1. Pregnancy Distribution Goal for a 63-Day Breeding Season



Ways to Improve Reproductive Efficiency

1. Perform pregnancy examinations on heifers and cows within 45-60 days of bull removal

- Not only will pregnancy examinations help determine which heifers and cows are and are not pregnant, it also allows for the collection of data that will help improve herd efficiency. Cow body condition score (BCS), age, teat/udder score, foot health and identification can all be used to help refine culling parameters, animal grouping, feeding strategies, and herd health procedures
- Pregnancy examination allows for the application of a breeding season evaluation in overall herd management. Breeding season evaluations use pregnancy examination data to look at overall herd efficiency and allow for troubleshooting to be done when problems arise
- Overall, pregnancy examination facilitates the selection of more fertile females that thrive in a given production setting.

2. Perform breeding soundness examinations (BSE) on all herd sires prior to the beginning of the breeding season

- Across the United States, less than 25% of producers regularly have BSEs performed on their bulls. BSEs should be performed on all bulls (new and old) 45-60 days before the beginning of a breeding season. In one study, the elimination of subfertile bulls resulted in a 6% increase in calf crop. At today's calf prices, a 6% increase in calf crop would result in an approximately \$20 return for every \$1 invested in a BSE, making this a very profitable venture

3. Maintain heifers and cows in the proper body condition prior to calving

- Nutrition and reproduction are intimately linked and cows on a poor nutritional plane have significantly poorer reproductive performance than cows maintained on a more adequate nutritional plane. The impact of nutrition on herd reproductive performance can be seen in Table 2 below.
- Cows should be maintained so that they calve at a BCS of 5-6 and heifers maintained so that they calve at a BCS of 6-7.

Table 2. Impact of BCS at Calving on Future Reproductive Performance, Calf Growth, and Farm Income

BCS	Preg Risk (%)	Calving Interval (days)	Calf ADG (lb/day)	Calf WW (lbs)	Calf Price (\$/lb)	Gross Income/Calf (\$)	Gross Income/Cow (\$)
3	43	414	1.6	374	1.23	460	182
4	61	381	1.8	460	1.16	534	300
5	86	364	1.9	514	1.09	560	443
6	93	364	1.9	514	1.09	560	479

IMPROVED CALF HUSBANDRY

The sale price of calves can be affected by many things that are beyond the control of most producers. However, small investments in calf management can dramatically increase the revenue an individual calf generates. For example, recent data from auction markets in Athens, GA show that steer calves bring, on average, \$5-7/100 lb more than bull calves of the same weight. For a 500 or 600 lb calf, this equates to an extra \$25-45 in gross returns. Recent studies evaluating factors affecting the price of calves sold through auction markets in Arkansas found that calves sold in groups of more than 6, calves with muscle scores of 1 or 2, crossbred or black-hided calves, and polled calves brought \$5-10/100 lbs more than calves sold within other classifications. Thus, for relatively small investments, producers can reap significant increases in gross returns that will improve herd profitability. Calf management practices that can improve herd profitability are listed below:

1. **Castrate all bull calves not intended to be future herd sires (\$5-10/100 lb increase in value)**
2. **Sell calves in lots of 6 or more (\$5-10/100 lb increase in value)**
3. **Ensure calves are in adequate body condition prior to sale (\$5-10/100 lb increase in value)**
4. **Use of cross-breeding to improve both average daily gain and calf value by providing buyers with calves that have characteristics they are looking for (i.e. black, white-face, black hided, \$5-10/100 lb increase in value)**

IMPLANTING NURSING BEEF CALVES

Calf average daily gain (ADG) can be improved by using growth-promoting implants. These implants use estrogen, progesterone, their derivatives, or combinations of these hormones to improve feed efficiency and promote deposition of lean muscle mass. Ralgro, Synovex C, Encore, and Compudose are all labeled for use in nursing beef calves. A single Ralgro implant will increase ADG by approximately 0.12 lb/day compared to calves that are not implanted. Because some of these implants (Ralgro and Synovex C) work for less than 90 days, some producers will often administer a second implant after the payout period of the first has wanted. With two Ralgro implants used approximately 60 days apart from one another in a nursing calf, ADG is expected to increase by approximately 0.13 lb/day. Similarly, two implants of Synovex C will give an additional 0.1 lb/day increase in ADG compared to calves not implanted at all. Ralgro can be used as early as 30 days of age and the other three at day 45 and later. Generally, implants are expected to provide a \$30-40 return on each dollar invested in them. To better illustrate how profitable implants can be, implanting nursing calves represents an approximately \$1800/hr value proposition. **So, since it seems that all implants give a positive increase in ADG relative to no implant at all, producers should not be concerned about which implant to use. Rather, the focus should be on choosing the right implant for your production system and getting it into the calves at the appropriate time to reap the benefits that come with their use.**

The use of implants in replacement heifers has been controversial. However, new work would suggest that the use of a single implant in a heifer calf that is at least 45 days old but less than 6 months of age **WILL NOT** impair future reproductive performance. These calves will have higher ADG and a slightly larger pelvic area but no decrease in pregnancy rate over the long term.

This will give producers the flexibility to gain the weight benefits in these animals but feel safe in knowing no harm is being done to the future performance of heifers that might end up as replacements. Bulls should never be implanted, regardless of future purpose.

INTERNAL AND EXTERNAL PARASITE CONTROL IN THE CATTLE HERD

Internal parasites represent a source of significant economic loss in almost all segments of beef production. The implementation of an internal parasite control program can lead to increased weaning weights in calves and increased pregnancy rates in heifers and cows. For example, one study that was performed in Watkinsville, GA found that a single dose of Panacur given at the label dose to cows in early May resulted in a 22% increase in both pregnancy and calving rate compared to cattle that were not dewormed. Similar, but more recent, work from Louisiana has found that cows dewormed with Panacur midsummer had a 12% increase in pregnancy rate compared to untreated cows. In addition, that same study showed that calves dewormed at 3-5 months of age gained 0.3 lb/day more than calves that were not dewormed and weighed, on average, 25-45 lbs more at weaning than control calves. As a general rule of thumb, calves should not be dewormed until they are at least 4 months of age to optimize growth responses.

External parasites (flies) contribute to almost \$1 billion in economic losses yearly. Excessive fly burdens cause irritation, decreased grazing efficiency, reduced weight gains, and reduced milk production. Studies from Louisiana State University have shown that even marginal levels of fly control in the cow herd can have a positive impact on calf weaning weights. This work found that calves born to cows treated for horn flies using insecticide impregnated ear tags placed in late May weighed 20-25 lbs more, on average, at weaning than calves born to cows not treated for horn flies.

SUMMARY

Cow-calf production has historically been an industry with relatively low profit margins. Utilizing cattle health and management practices that improve herd efficiency will increase the value of the final product sold (calves) and, in most cases, reduce the overall cost of production. This combination of factors will, over the long term, enhance the bottom line of cattle producers while also maximizing animal health and well-being. As always, when questions regarding animal health arise, contact your local herd health veterinarian.