

# Managing Heifers And Cows To Remain In The Herd

by Jack C. Whittier, PhD Colorado State University, Ft. Collins, CO

## Keeping heifers in the herd is important to overall herd profitability.

Developing and managing replacement heifers are expensive components of overall cow-calf profitability. Since heifers do not produce salable offspring for up to 2 years after they are weaned, they are sometimes referred to as "non-bearing assets." The relationship of heifer value, cow salvage value and annual net return per cow was used by Dalsted and Gutierrez to project the number of years required for a heifer to reach her breakeven cost. These relationships are shown in Table 1.

Replacement Heifer Value	Salvage Value	Net Return per Cow		
		\$50 Year	\$100 Year	\$150 Year
\$500	\$400	4	2	1
	\$450	2	1	1
	\$500	1	1	1
\$600	\$400	8	3	2
	\$450	6	2	2
	\$500	5	2	1
\$700	\$400	14	5	3
	\$450	12	4	3
	\$500	10	3	0

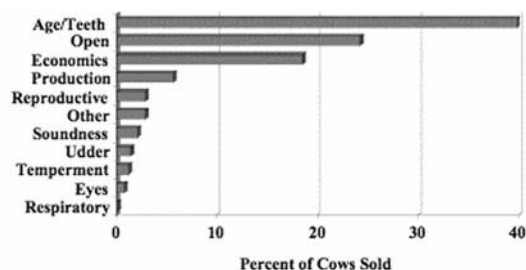
Note: Prices based on relationships, not actual data.

Dalsted and Gutierrez, Colorado State University Assumptions: 90% Weaning rate and 5% Discount rate

## Why do cows leave the herd?

To understand how to manage heifers so that they will stay in the herd as productive cows, let's examine the reasons that cows leave the herd and at what age. Figure 1 depicts data collected from the 1997 National Animal Health Monitoring System Beef Cow-Calf survey that evaluated the reasons that cows are sold from commercial herds in the United States. Not surprising, the primary reason is due to age and/or age-related problems with a cow's teeth. Second to this reason was that fact that cows were open and therefore would not produce a calf in that production cycle.

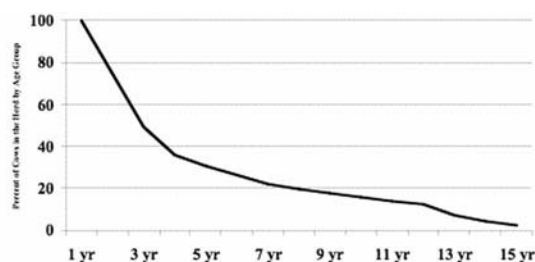
Figure 1. Culling practices of Beef Cow-Calf Operations



## At what age do cows leave the herd?

Information from a ranch in Nebraska was used to evaluate economic sensitivity to changes in management options. These data were collected from a sizable cow-calf operation located in the Sandhills region for the 1996 production year. While cattle feeding management varies by group and year on this ranch, in general, yearling heifers, two-year-old heifers, middle-aged cows, and old cows are fed and managed in separate groups throughout the year (Meek et al., 1999). Figure 2 illustrates the dramatic reduction in the number of cows as age increases. It is important to note that one of the management and marketing practices used on this ranch is to develop extra heifers for sale as bred heifers and again as pregnant two-year-olds; therefore, the data are biased toward a greater reduction in inventory of these age of animals than might be the practice on other ranches. However, it does illustrate that only a small number of heifers that start into production remain in the herd beyond 8 to 9 years of age.

Figure 2. Percent of Cows in the Herd by Age Group

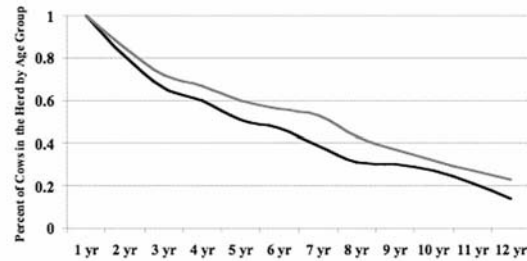


Data from an existing cow-calf operation in the Nebraska Sandhills region for the 1996 production year (Meek et al., 1999.)

## So, what can be done to reduce the number of young cows that leave the herd?

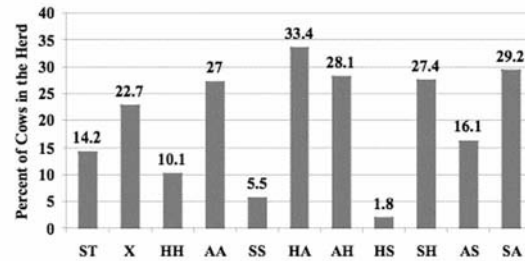
Heterosis - Hybrid vigor, or heterosis in beef cattle has been shown to cause an increase in preweaning growth rate and survival of calves. In addition, crossbred cows have better reproductive performance and milking ability than straightbred cows. Publications from the Meat Animal Research Center, using data collected at Fort Robinson, NE in the 1960's, reports an improvement in longevity and cow survival with crosses of British breeds of cows. Together, increases in both cow and calf performance contribute to the heterosis in lifetime cow production. Figures 3 and 4 illustrate the positive benefits of heterosis on the retention of cows in the herd, both as young cows through improved breed back and as older cows through sustained reproduction and soundness.

**Figure 3. Percent of Cows in the Herd by Age Group**



(Gray line represents crossbred cows, black line represents straightbred cows. Source: Nunez-Dominguez, et al. 1991. *J. Anim. Sci.* 69:1885.)

**Figure 4. Predicted Survival to 12 years of Age**



(ST=mean of straightbreds, X=mean of crossbreds, H=Hereford, A=Angus, S=Shorthorn. Source: Nunez-Dominguez, et al. 1991. *J. Anim. Sci.* 69:1885.)

Some in the beef industry have recently been advocating a move back to straightbred cows in commercial herds. In my opinion, this would be a major step backward in taking advantage of the benefits of heterosis that are brought to the cowherd. In context of this paper, I highly recommend using heterosis as a means of keeping more heifers in the herd should be a management priority.

### Heifer Development

The manner in which heifers are developed, particularly relative to nutrition and weight gain plays a major role in their retention in the herd. It is common to use the rule of thumb that heifers should be developed to 65% of their anticipated mature weight by the beginning of their first breeding season. This is a good starting point and in most cases will assure adequate reproduction. However, the economic considerations relative to this development must also be considered in management decisions for heifer development. I would like to mention three studies and ideas for consideration in this decision process.

*1. Is there a positive or negative impact of timing and rate of gain from weaning to breeding on fertility of heifers?*

Clanton and coworkers (*J. Anim. Sci.* 56:289) used a development schedule that evaluated the impact of time

and rate of gain on heifer fertility. In this study the period from weaning to breeding was divided into two periods. Heifers were divided into three groups according to the level of weight gain they were fed to attain during these two periods: 1) high gain / maintenance, 2) moderate gain during both periods, and 3) maintenance / high gain. The percentage of heifers that had reached puberty at the start of the breeding season was measured, as well as the overall pregnancy rate following the breeding season. This study showed no difference in percent puberty at the start of breeding, nor overall pregnancy rate, regardless of the development schedule. The authors concluded that as long as heifers are developed to reach their target weight at the start of breeding, the route taken to this target has some degree of flexibility.

*2. Is it best to use scarce development inputs during year 1 or year 2 of a heifer's development program? (Meek et al., 1999. The Professional Animal Scientist 15:46-52.)*

Using a technique to estimate the breakeven price of a change in production (shadow price), this research at Colorado State University concluded: "Assuming that yearling pregnancy goals can be met, it is advantageous to finish developing heifers in the second year rather than to overdevelop yearling heifers as insurance that they will breed back the following year."

*3. Is there a risk of "rescuing" heifers of the wrong biological type that simply do not fit the production environment with an intensive and costly nutritional program?*

A risk exists of putting too many development inputs into heifers as yearling. This can result in heifers of the wrong biological type to match the production environment being "rescued" nutritionally and they therefore become pregnant as yearlings. However, later, as the heifers are exposed to a more stressful and realistic environment they will frequently fail as 2 and 3-year-olds. This fallout is doubly expensive, since the heifer has not yet had time in production to pay for her cost of development and the fact that the cost of development was excessive anyway.

## **Disease**

Lastly, it must be noted that if disease problems exist, either reproductive diseases, respiratory diseases, or others, the ability of the heifer to remain in the herd is greatly compromised. Therefore, working with a local veterinarian to design and implement a health program that is both cost effective and provides the needed immunity to disease is important. ■

## Management of Cows with Limited Forage Availability

*Chris Richards, Dave Lalman, and Glenn Selk  
Oklahoma State University Beef Cattle Specialists*

### Cull Poorer Producing Cows

Many producers are currently being faced with limited forage availability due to drought and/or fire. One of the first management tools that should be evaluated for cow/calf producers is to cull poorer producing cows and capture their value at a time in the cattle cycle when the prices for cows and culled replacement heifers are fair and allow for some capital investment to be used when cattle prices are considerably lower and forage supplies are more plentiful.

Below is a suggested order of culling in the face of diminishing forage supplies.

#### Culling order

1. Open (non-pregnant) old cows
2. Open replacement heifers
3. Old cows with unsound mouth, eyes, feet and legs
4. Open cows of any age

5. Thin cows over 7 years of age (BCS < 4)
6. Very late bred 2 year olds

The first two items on the list are automatic culls in any forage year. Old open cows are not worth keeping through a low-forage, expensive feeding period. Replacement heifers that were properly developed and mated to a fertile bull or in a well organized AI program should be pregnant. If they are not bred, there is a likelihood that they are reproductively unsound and should be removed from the herd while still young enough to go to the feedlot and grade choice with an A maturity carcass. The more difficult decisions come when the producer is short enough in forage and feed supplies that he/she feels the need to cull cows that have been palpated and found pregnant. That order of culling starts with line 5 on our culling order. This is necessary only when grass and feed supplies are very short. The thin older cows are going to require additional feed resources to have a high probability of being productive the following year and the late bred 2 year olds are least likely to have long-term productivity in your herd. ■