

Culling the Commercial Cow Herd

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Beef cow owners should evaluate the performance of their animals at least once a year — perhaps more often. The most convenient time for evaluating is when the calves are weaned. For spring-calving cows, this is in the fall before supplemental feed is offered.

Before any decisions can be made about culling animals from the herd, the cow owner or manager must make two decisions 1) which production traits are most desirable, and 2) what priority should be given to each trait. It is management's responsibility to determine the minimum levels of performance that a cow must meet to stay in the herd. These levels may be different from herd to herd due to the expansion or reduction of herd size. In constant sized herds, there are two minimums that the cow should meet. She should 1) wean a calf, and 2) rebreed early in the breeding season.

The information to use in determining which cows to cull comes from two sources 1) information supplied by the animal's own performance, and 2) information that compares the animal to the herd or group. Each female entering the herd must meet these critical performance levels 1) breed early in the breeding season (first 40 days), 2) deliver a live calf, 3) rebreed on schedule (within 80 to 90 days after calving), and 4) wean a calf.

After a cow meets these necessary performance levels, other culling criteria should be of a comparative nature. The most important of these is the size or weight of her calf. This can be established fairly only by comparing the calf's weight or standing within an age group for a particular year or similar environment.

Economically important traits

Economically important traits that need to be selected for and retained in the herd are 1) reproduction, 2) functionality, and 3) production.

Reproduction

Heifers should calve at two years of age and raise a calf to weaning. Cows should rebreed and calve every 365 days under the environment in which they are maintained with a minimum of supplemental feed. A replacement heifer development program, which allows for the breeding of more heifers than are needed (with final selection based on how early the heifer breeds), will have a positive effect on reproduction. Selection pressure should be toward heifers and cows that breed and rebreed early in the breeding season.

Open cows are the greatest contributors to low weaning percentages (Table 1). On the average, a cow that does not breed one time will lose 15 to 20 percent of her lifetime production potential. It will take the net return from two to three productive cows to pay for the maintenance of the open cow.

Table 1. Factors that contribute to a reduction in calf crop percentage weaned of cows exposed.

	Percent
Open cows	16.6
Calf losses at birth	6.4
Calf losses, birth to weaning	4.1
Calf losses, during gestation	2.4
Net calf crop weaned	70.5
Bellows, R H., 1972.	

An unusually high number of open cows warrants a serious investigation. Diseases in the cow herd or bull reproductive problems could be the cause. It would make more economic sense to sell the open cows and buy bred cows or bred heifers that have a known genetic and health background rather than to wait two years for these open cows to wean their next calf, providing they conceive when next exposed. Research has shown that open cows conceive only about two-thirds of the time.

Death loss, infertility, low productivity and advanced age may result in the culling of 15 to 25 percent of the cow herd annually. Low culling rates permit more intense selection of the replacement heifers raised. A high percent calf crop weaned has a positive effect on the culling/selection program as shown in Table 2. In commercial herds, the expense of raising replacements must be compared with the amount of genetic improvement desired to determine culling rate.

Table 2. Proportion of heifer calves to be retained for constant herd size based on various reproductive and culling rates.

Cow herd culling rate (%)	Calf crop weaned (%)	Heifers needed for replacements	
		100% pregnant	90% pregnant
15	90	33	37
15	85	35	39

15	80	37	41
15	75	40	44
20	90	44	49
20	85	47	52
20	80	50	55
20	75	53	59
25	90	56	61
25	85	59	65
25	80	63	69
25	75	67	73

Functionality

With the high cost of replacement heifer development, longevity becomes extremely important. Evaluate the soundness of mouth, feet, legs and udders. Cull cows with problems. Examine the eyes. Salvage cows exhibiting any signs of cancer eye before they are discounted at the market place. Remove cows that have previously prolapsed or exhibited abnormal calving difficulty, or that exhibit any other physical impairment that would increase management needs and costs in producing a calf. Table 3 gives results of a study on why cows were culled at the Livestock and Range Research Station, Miles City, Montana.

Table 3. Proportion of cows culled by age and reason for culling.

Reason for culling	Age in years								
	2	3	4	5	6	7	8	9	10
Died or missing, %	1.6	1.8	1.0	1.9	1.1	0.4	1.4	0.0	0.0
Bad udder, %	0.0	0.1	0.0	0.3	0.2	0.0	1.4	5.6	6.7
Lump jaw, %	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Eye cancer, %	0.0	0.1	0.1	0.6	1.6	1.3	0.0	5.6	13.3

Prolapse, %	0.3	0.2	0.0	0.1	0.2	0.0	0.7	0.0	0.0
Bad feet, %	0.0	0.0	0.1	0.0	0.2	0.4	0.0	0.0	0.0
Other injury or illness, %	0.1	0.2	0.2	0.1	0.4	0.0	0.7	0.0	0.0
Management decision criteria, %	17.2	16.9	11.7	14.6	14.6	19.4	23.0	50.7	53.3
Total culled, %	19.3	19.5	13.2	17.6	18.5	21.5	27.3	62.0	73.3
Number of cows	2,487	1,623	1,000	698	438	237	139	71	15
Greer et al (1980)									

Production

The cow should provide enough milk to wean a calf that will reach the weight goal set by the manager.

Genetic ability for growth is important. The most reliable means of making genetic progress for economically important traits is to use superior sires. If the replacement heifers are produced within a herd, 87.5 percent of the genetics contained in the calf crop will come from the last three sires or groups of sires used in the herd. Therefore, selecting herd bulls that are superior for economically important traits (birth weight or calving ease; maternal, weaning and growth breeding values; or expected progeny differences) will aid in establishing a trend of genetic improvement.

After culling for reproductive inefficiency and functionality, make decisions regarding weaning weights that are a highly correlated measure of cow productivity. Individually identified cows and calves, known birth dates and calf weaning weights are highly desirable. An accurate set of records will provide the basis for evaluating performance and making management decisions with greater accuracy. However, by simply pairing calves with their dams, a manager can identify early calving cows and/or those producing later, heavier calves. Culling cows that produce lightweight calves will improve overall herd productivity.

When individual calf weights are obtained, they can be adjusted for age and sex of calf, as well as age of dam. Exercise caution when using these adjustments since young, late-born calves often receive the most advantage from the above adjustments. Although these adjustments do allow for maximum genetic evaluation, they do not take into account the environmental factor that may be responsible for a cow weaning a younger calf. This can have a detrimental effect on the commercial producer who might be selling pounds at

weaning or who is trying to develop a cow that will produce under a certain set of environmental conditions. In these cases, give preference to evaluating performance based upon actual weaning weights within sex and age group of the cow (with 2- and 3-year-olds' offspring being compared separately from those of the mature cows).

A difficult decision is faced when a cow does not wean a calf, but is bred at the time of pregnancy testing. From a business standpoint, there should be some return from that cow-calf unit each year, even if it is only the salvage value of the cow. However, the cost of developing a replacement female to the point where she offers some return in the form of a weaned calf may suggest keeping the cow if she gave birth to a calf and the reason for her not weaning it was due to something other than calving difficulty.

Support for this decision would be enhanced if she rebred early. This is where a complete set of records can help make the decision. If the cow is an above average producer, has not missed weaning a calf before, and is relatively young (5 years or less), it may be advantageous to keep her. However, if a producer has developed an effective genetic improvement program through superior sire selection, the improved performance in a bred heifer in comparison to a below average cow could well make up the production difference between the cow and heifer. Also, the increased salvage value of the cow will aid in covering the cost of heifer development.

Summary

Several criteria must be applied when culling the cow herd. Cull open cows or cows not raising a calf to weaning unless economic conditions warrant retaining a pregnant cow that has not weaned a calf. Any unsoundness that impairs bearing or raising a calf to weaning or that might result in unsatisfactory performance the next year is a basis for culling. Another criterion for culling is the weight and quality of her weaned calf compared with the rest of the cow herd. Decisions are only as good as the information upon which they are based. Good records make sound management decisions possible.

References

Bellows, R.A. 1972. "Reproductive Efficiency." *Proceedings 21st and 22nd Beef Cattle Short Course*. Texas A&M University.

Greer R.C., R.W. Whitman, and R.R. Woodward. 1980. "Estimation and probability of beef cows being culled and calculation of expected herd life." *J. Anim. Sci.* 51:10-19.

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