



Cattle Producer's Handbook

Management Section

735

Culling the Beef Cattle Herd

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Cattle are culled or removed from a beef cattle herd for two basic reasons—physical impairment or culling policy. Physical culls in order of volume have normally consisted of cows suffering from cancer eyes, prolapses, poor udders, stifles and other injuries, and poor feet and lump jaws.

Normally less than 1.5 percent of the herd will be culled annually as physical culls. The remainder will be culled because of the culling policy adopted in that herd. Culling policy is the course of action or criteria used within a herd to determine which cattle will be removed.

A University of Idaho study indicates that the average culling rate is about 13.5 percent of the beginning cow inventory (Loucks 1991). In most herds, death loss accounts for an additional 1 to 1.5 percent of the herd. So enough replacement heifers need to be saved to replace about 15 percent of the cow herd annually. High-profit herds retained enough replacements to replace 18 to 22 percent of the cow herd, while low-profit herds retained only enough replacements to replace 11 percent of the cow herd (Loucks 1991).

Culling Policy

Culling policy considers whether cows will be culled for some specific reason such as: terminal age, not raising a calf, being non-pregnant (open), not producing some specified level of calf weight, disposition, or other reasons determined by the herd manager. Evaluating various culling policies for biological efficiency is relatively straightforward.

Unfortunately, economic evaluation, since it is confounded by the relative prices of cull cows and calves and seasonal price cycles and seasonal changes in cow grade, is not quite so simple. Fair to say, however, is culling policies that maximize biological efficiency often do not maximize economic efficiency.

Open Cows

For spring calving herds, most studies of economic culling policy have concluded that open cows should be culled from the breeding herd at pregnancy check time. Whether the cows should be marketed at the time they are culled from the herd or fed and marketed at a later date depends on price and availability of feed (also see 737), potential slaughter grade changes, and the expected price differentials between the two dates. In the Idaho study, about 4 to 6 percent of cows on a ranch were culled for being open or breeding late (Loucks 1991).

Pregnant, But Did Not Wean a Calf

Studies are in general agreement that if a cow is sound, under the terminal age desired, and pregnant to calve within the established calving season that economic efficiency is maximized by retaining the cow. Note the higher nutrient requirements for a heifer and her potential calving problems make a pregnant cow more economical to keep.

The odds of a mature cow losing a second calf are much less than of a heifer losing a calf, and an older cow will usually wean more pounds of calf than a heifer. A cow should not be culled at pregnancy test time solely on the basis of not having weaned a calf.

Terminal Age

Pounds of calf produced per cow peaks at about age 8 and declines thereafter. The rate of decline is primarily a function of feed quality and availability due to teeth condition and metabolism changes. Most studies are in agreement that the optimum economic culling age is somewhere between 8 and 10 years of age with normal price spreads between cull cows and calves, and there is little economic difference within that age range.

When calves are high priced in relation to cows, the optimum culling age increases. When calf prices are low,

the optimum culling age decreases, and cows should be culled at younger ages. Many cows culled on typical ranches are culled because of age or being open.

Production Level

In practice, few cows are culled on the basis of performance or pounds of calf weaned. However, for optimum economic efficiency cows producing the least pounds of calf for their age class should be culled within the constraints of the available number of replacements. Since the biggest cause of low calf production is calving date within the herd, culling late calvers will have almost the same economic effect as culling based on a sophisticated performance evaluation program.

The Impact of Cyclical Prices on “Optimal” Culling and Replacement

Beef prices have tended to be cyclical for decades and are expected to continue to be cyclical. Beef cattle price cycles have historically tended to be about 12 years in length. Thus, there is some regularity as to when calves will be high priced.

Obviously, producers would like to have more cows (and thus more calves to sell) when prices are high and there are good profits to be made. When prices are low and losses are a painful fact of life, a producer would prefer to have fewer cows.

However, cow herds that are maintained via self-produced replacements cannot rapidly expand and contract, and many ranches have forage supplies that can only stretch so far. Likewise, the huge fixed cost of owning grazing land dictates that it not be left idle at any point in time. Thus, ranches must continue to operate through bad times as well as good.

However, the 20 to 30 percent swings in prices during a price cycle suggest that varying the herd size through systematic changes in culling and replacement policies may bring benefits over a typical cattle price cycle. Also, seasonal cull cow price variation should be considered when determining time of year to market cull cows (also see 737).

Simulation and budgeting exercises that consider the profitability of alternative culling and replacement strategies over the course of a typical price cycle have been conducted. They show that the optimal way to adjust culling and replacement patterns to deal with the cattle price cycle is not with quick, sharp changes, but with slow, anticipated adjustments. Assuming that most ranches have a rather fixed set of forage resources, the objective of a systematic culling and replacement policy is not so much to change the herd size over the price cycle, but to assure that the age composition of the herd is timed right.

Simulations show that producers should strive to have their herd size about 8 percent above “normal” approximately 2 years before prices peak, with most

of these cows being 2 to 6 years old. How does a cattle producer achieve this?

Several general rules can be used to guide this process. With regard to replacement rates, the first year after the feeder cattle price cycle is believed to have bottomed the number of heifer replacements should be increased to about 25 percent of the herd size. Also, a year after feeder cattle prices begin to cyclically rise the culling age of mature cows should be lowered 1 year of age for each year prices continue to rise, however, it should never fall below the age of about 6.

Culling for health reasons and failure to calve should continue during this time. Holding this culling and replacement policy in effect for 4 to 6 years should result in about an 8 percent growth in a producer’s herd size. At this point, or when feeder cattle prices are believed to have peaked, whichever comes first, the culling and replacement policy/strategy changes. It changes to a strategy of relative inactivity.

The culling age should be increased to around 12, and replacements should be only for cows that are being culled for health reasons or failure to calve. If sustained for 6 years (e.g., the approximate normal length of a cyclical down turn in prices), this culling and replacement practice will result in the herd shrinking to 8 percent below average (about 16 percent below its largest size) and a relatively old herd. At this point, if the cycle is typical, it will soon be turning back upward. As it does producers will be entering the upturn with a relatively small and old herd.

Once again about a year after feeder cattle prices are believed to be cycling upward producers should start a 4- to 6-year program of replacing 25 percent of their herd each year. Indeed, producers will need to have a heavy replacement rate because at this point the herd will be old. Ideally, however, a rancher will be replacing these old cows with relatively cheap heifers that will most likely be reaching their most productive ages near the peak of the next price cycle.

The above strategy is not an easy one to follow because it requires a producer to correctly ascertain where the cattle cycle is and where it is headed. Likewise, sustaining herd quality with a 25 percent replacement rate may be a challenge. But simulations show that this strategy does have the potential to improve profits.

But more importantly it shows that producers must anticipate the good times in the industry by 4 to 6 years in order to position themselves to take advantage of high prices. In a self-replacement system it is typically far too late to be expanding the herd when prices are approaching their peak or have been rising for 4 or 5 years or more.

A Practical Program

Obviously, a ranch culling program and replacement program must be coordinated. To achieve economic

efficiency, most ranches need to maintain sufficient livestock to consume the feed produced. For ranches that produce their own replacement heifers, the constraint on culling policy is the number of bred replacement heifers available. Advanced planning is necessary to remove this constraint. Ranches that purchase replacement females have more management flexibility in this regard.

For many ranchers, a practical program will consist of culling cows in the following order of priority within the constraints of the number of bred replacement heifers available: (1) physical culls, (2) open cows, (3) open yearling heifers, (4) cows that have reached some terminal age, (5) bred yearling heifers that will calve after the first 45 days of the calving season, and (6) late-calvers or young cows that are producing small calves in comparison with other cows in their age group.

This kind of culling program has the advantage of removing young cattle that will probably not cover operating costs in the next year while they still have high salvage values. Over time, the program focuses on culling late bred heifers and poor producing young cows and eliminates late-calvers by not allowing them to enter the breeding herd.

Many ranchers with intensively managed herds will retain many of the terminal age cows through the calving season as a source of “graft” calves for young cows that lose calves. The aged cows are then marketed after the calving season.

Reference

Loucks, R. R. 1991. Costs, returns, and profitability on central Idaho cattle ranches in 1989. Proc. SE Idaho Extension Beef School.



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