

Culling the Beef Cow Herd

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Introduction

Deciding which cows to cull and which cows to keep in the breeding herd impacts future herd performance and profitability. There are many factors to consider when choosing which cows to put on the cull list. Production and market conditions can influence the priority that is placed on different culling criteria. It is often easy to recognize “red flags” that make cows obvious culls (e.g., cows with poor rebreeding performance or severe cancer eye), but there are other reasons to cull cows. The challenge in selecting cull cows is identifying the cows that are making the operation money and the cows that are losing the operation money.

Recording Information for Use in Culling Decisions

Recognition and assessment of poor animal performance or other factors that might call for animal culling require organized data collection and record keeping. The keys to an effective record keeping system are: 1) decide what production and financial information is useful and practical to collect, 2) collect accurate information in a timely manner, 3) manage that information in a usable form and 4) use the information. Record keeping can be as simple as handwritten notes in a pocket-sized record book or as advanced as data entry into a computerized record keeping system.

Identifying individual animals in the herd is an important first step in developing a record keeping system. Ear tags should be permanently marked and easy to read. Since cattle lose ear tags, it is useful to have a more permanent method of identification, such as ear tattoos. Calves should be tagged and tattooed at birth and matched with their dams. Calf birth date and sex should also be recorded.

Recommended production records to keep include cow ID, calf ID, sire ID, calf birth date, calf birth weight, calf sex, calving ease score, breed of dam, breed of sire, breed of calf, weaning date and weaning weight. Collection of weaning weights requires a scale, so plan ahead if a scale needs to be acquired or borrowed. Because adjusted calf weaning and yearling weights take the age of dam into consideration, ages of breeding females should be recorded. If cow ages are unknown, they can be estimated by observing the number of incisors as well as the degree of tooth wear.

Breeding records should include lists of all cows and heifers exposed to either natural service or artificial insemination. This information is important for calculating calving and weaning percentages and assessing reproductive performance. Insemination dates, bull ID and female ID should be recorded for artificial insemination. For natural service, recorded information should include bull IDs, female IDs and

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breeding season dates. Identify and record the IDs of non-pregnant cattle for future reference in culling decisions. In addition, health records and herd management practices should be properly recorded as part of herd production information.

The University of Arkansas Cow Herd Performance Testing Program is designed to collect performance information that can be used in cull cow decisions as well as replacement heifer and sire selection decisions. Calf growth performance, calf muscling, cow and calf frame size, cow efficiency (adjusted 205-day calf weight \div cow weight), most probable producing ability (a measure of the lifetime productivity of the dam in terms of calf adjusted 205-day weaning weight ratios), cow body condition and calving interval are evaluated as part of the program.

Culling Criteria

Pregnancy Status

One of the greatest determinants of profitability in a cow-calf operation is reproductive rate. Open (non-pregnant) cows are a drain on resources. They consume feed, forage and other resources without producing a marketable calf to contribute to expense payments. A productive cow is expected to produce a calf at least once a year. Cows that are open at the end of the breeding season should be at the top of the cull list. Cows that calve outside of a controlled calving season are also potential culls, particularly when feed and forage supplies are running short. Late-calving cows should be scrutinized as well, because they have less opportunity to breed back to stay within a controlled breeding season.

Closely observe the herd for cows returning to standing heat after breeding or artificial insemination. Identify open cows by rectal palpation (60 to 90 days post breeding season). Palpating cows earlier than this can induce abortions in short-term pregnancies. Waiting too long to palpate simply allows an unproductive animal to consume more resources. Pregnancy status can also be determined with ultrasound technology. Ultrasound offers more accurate fetal age determination and the option of fetal sexing under certain conditions, but it is often more difficult to schedule and more expensive than rectal palpation.

Pregnancy checking can help identify herd health and fertility problems. If an unusually high percentage of the cow herd turns up open, then reproductive diseases, inadequate herd nutrition or bull infertility are potential culprits. A breeding soundness examination is an excellent tool for identifying bulls with unsatisfactory breeding

potential. Even bulls that have passed a recent breeding soundness evaluation can be ineffective breeders if they do not display the libido to seek out and breed cows in heat or become injured during the breeding season. The sooner these problems are recognized, the sooner the breeding program can get back on track.

Poor Performance

Poor calf performance is usually the result of inferior genetics, poor dam milk production, calf sickness or a combination of these factors. Cows transmitting inferior genetics to their calves for economically important performance traits and cows with unacceptably low milk production are potential culls. If poor calf performance is due in large part to calf sickness and not associated with the dam, then the dam may still have a productive future in the herd. The age of the dam should also be considered when culling for low performance as first- and second-calf heifers should not be expected to perform at the same level as older cows.

Cows exhibiting poor performance over several calving seasons are not likely to show greatly improved performance in future calving seasons. Information from the University of Arkansas Cow Herd Performance Testing Program revealed that most cows ranking in the bottom one-third of the herd for calf 205-day adjusted weaning weights consistently ranked in the bottom one-third of the herd over a period of several years, regardless of cow age. Therefore, identification and culling of poorly performing herd females can be effective for improving herd performance averages.

While herd genetic improvement is largely dependent on sire selection, the dam contributes half of the genetics to the calf. Expected progeny differences (EPDs) provide valuable information about expected genetic merit and are available on many seedstock cows. Culling cows with EPD values that do not compare favorably with breed or herd averages for economically important traits contributes to herd genetic improvement. Many breed associations publish breed averages and percentile ranking tables for EPDs for active dams. When using EPDs, a balanced selection approach instead of a focus on single trait selection will help limit unacceptable performance tradeoffs.

Another consideration when evaluating cow genetics is the marketability of traits passed on to calves. Feeder calf premiums and discounts are based on market specifications for frame size, muscling, conformation and structure, breed composition, coat color, etc. Calf uniformity also impacts prices paid for calves sold in groups. Culling cows that are extreme

in terms of frame size (very small or very large), for example, is not only useful for producing calves within a desirable frame size range, but culling can also improve calf crop uniformity. Calf marketing plans will influence the selection of cull cows based on the importance of different traits for different marketing options. For calves marketed for stocker or backgrounding programs, desirable levels of post-weaning growth performance are needed. When calves are marketed for finishing programs that pay premiums for carcass merit, selection and culling of breeding animals for carcass traits is important.

Age

The productive lifetime of a beef cow is variable. As long as teeth, udders, feet and legs are sound, many older cows are still able to perform well. Breed and production environment can play a role in longevity. Florida research on Brahman-influenced cows indicated that there was a consistent rebreeding performance through about 8 years of age and a decline in reproductive performance after 10 years of age. An even steeper drop in reproductive performance occurred in cows beyond 12 years of age. In addition, with an emphasis on herd genetic improvement, younger beef females are often genetically superior to older cows. Ideally, cows should be culled for advancing age prior to a sharp decline in reproductive or maternal performance.

Mouth

Teeth wear with normal use over time. Gritty feeds and forages accelerate tooth wear, so soil type (sandy soil) can affect how long teeth remain sound. Cows can eventually wear their teeth down to a stage where grazing effectiveness is severely impacted. This results in poor body condition despite

adequate available nutrients. “Smooth-mouthed” cows have teeth worn down to the gums (Figure 1). Cows may also lose teeth at any age from being knocked out by blunt force or from gum disease or infection, resulting in a “broken-mouthed” condition. These cattle may dribble feed from the mouth and have a hard time consuming adequate quantities of feed or forage. Lumpy jaw is another condition of the mouth that can negatively impact grazing ability (Figure 2). Annual inspection of the teeth and mouth during routine cattle working is recommended.

Udder

Udder soundness affects milk production, milk consumption and ultimately calf weaning weights. Proper udder attachment in a beef female is important for a long, efficient, productive life. A sound udder should be firmly attached with a strong, level floor and four properly formed teats proportional to body size. Weak udder suspension results in pendulous udders that are difficult for a sucking calf to nurse. Balloon or funnel-shaped teats are also difficult to nurse and may hurt calf milk consumption and weaning weight (Figure 3). Balloon teats are sometimes an indication of past mastitis (a bacterial infection of the mammary tissue). The udder should be healthy and free of mastitis in all four quarters for good milk production.



Figure 3. Balloon teats.

Structural Soundness

Structural soundness is important from the standpoint of functionality. Structural problems subject the joints to excessive wear and stress that can eventually hamper mobility. For example, a cow with poor hip structure, exhibiting too much slope from her hooks to her pins, may become lame (Figure 4). Cows that have difficulty moving around the pasture may be less active grazers. Cows need to be sound enough for effective grazing and successful pasture breeding.



Figure 4. Cow with poor hip structure.



Figure 1. “Smooth-mouthed” cows.

Figure 2. Lumpy jaw.



Condition and performance of structurally unsound or crippled cattle often go downhill. Obvious structural defects can decrease the market appeal of an animal as well.

Lameness is a major reason for culling cattle. Lameness leads to decreased performance, decreased reproductive efficiency, weight loss and increased treatment costs. A study of five large western feedlots showed that lameness accounted for approximately \$121 loss per lame animal. Many conditions can be the cause of lameness in cattle including foot rot, laminitis, joint injury and fescue toxicosis.

Foot rot (interdigital phlegmon) is an acute bacterial infection of the skin between the toes and deeper structures. *Fusobacterium necrophorum* is the organism most commonly associated with this disease. These bacteria invade the foot after trauma occurs or with skin softening from wet or muddy environments. Clinical signs include swelling, redness and pain associated with the affected foot. Treatment should include a systemic antibiotic such as oxytetracycline. Attempts should be made to clean the affected area and remove unwanted dirt and debris. Topical applications of copper sulfate or iodine will also aid in healing. Prevention of foot rot is best accomplished by improving management practices to reduce foot trauma as well as wet or muddy pasture conditions. Vaccines are available to help prevent the disease if a herd is experiencing severe problems.

Laminitis (also known as founder) is a disease that can lead to severe lameness. This disease is typically due to overeating grain or rich forage, which leads to rumen acidosis and release of endotoxins that can damage proper blood flow to the foot. Laminitis may also be secondary to stress, ration change, uterine infection or hormone changes. Cattle less than three years of age are usually affected. Clinical signs of this disease include stiff gait, continuous weight shifting to relieve pressure from affected feet, bounding pulse, as wgs, dropped sole, deformed foot and white line separation. Chronic changes can lead to permanent lameness, which may result in the need to cull the animal.

Health

Cancer eye is the most common and the most economically significant tumor of cattle. Approximately 70 percent of all eye tumors in cattle are cancerous. Cancer eye is an aggressive disease that can infiltrate tissue surrounding the affected eye and invade lymph nodes near the lesion. Tumors that result in extensive invasion can impair a cow's ability to raise her next calf. Once a cow is noted to have the disease, a decision should be made to cull or treat the

animal. Culling is often the best option once an affected cow has weaned her calf. Treatment options depend on the size and development of the tumor when it is initially found (Figure 5). Procedures

involving very high or low temperatures or surgical removal of part of the eye can be performed depending on the size and location of the tumor. Whole eye removal is another option if the eye is not salvageable. Often treatment will only shrink the tumor, and regrowth may occur at some point. Genetic selection for dark pigmentation around the eyes is also effective in reducing the incidence of cancer eye in the herd. Animals with the dark pigment have a significantly reduced predisposition for cancer eye.

Another health issue that may determine if a cow should be culled from the herd is Johne's disease. Paratuberculosis, or Johne's disease, is a chronic, incurable, contagious infection of the intestinal tract. This disease is caused by the bacterium, *Mycobacterium paratuberculosis*, which can survive in the environment (soil, pasture, etc.) for periods longer than one year. Infection occurs in young animals, but clinical signs of the disease do not usually develop until animals are older than 18 months. Calves usually become infected when they nurse udders that are contaminated with infected fecal material or when they are housed in contaminated pens or pastures. Johne's disease causes severe, explosive diarrhea and weight loss in adult cattle leading to enormous production losses in infected herds. Since there is not an effective treatment or cure for Johne's disease, the best way to keep infected cows from spreading it to others in the herd is to cull them. Serological blood tests or fecal culture tests may be performed to identify infected cattle.

Prolapse

Prolapse can occur before or after calving and can be vaginal or uterine in nature. A vaginal prolapse occurs when vaginal tissue protrudes through the vulva where it is exposed to the outside environment, potential injury and disease-causing agents (Figure 6). Vaginal prolapse typically occurs during late gestation as calving approaches. Although vaginal prolapses can be corrected, they are likely to

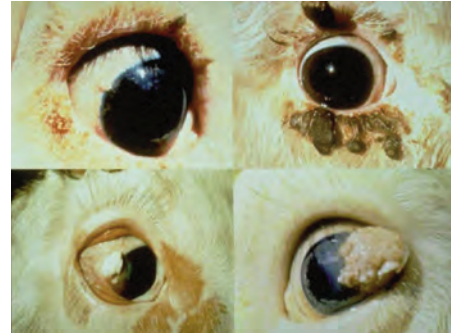


Figure 5. Different stages of cancer eye.



Figure 6. Vaginal prolapse.

recur. Because vaginal prolapses are known to have a genetic component, cows suffering from this condition should be marked for the cull list. Daughters of cows with this problem have an increased risk of experiencing vaginal prolapses, and bull or heifer calves retained out of a cow with a history of vaginal prolapse can multiply the problem within a herd.

Uterine prolapses usually occur at or shortly after calving and can be life-threatening. Uterine prolapse is often associated with difficult calving and is a condition in which the uterus is pulled through the birth canal with the calf or afterbirth. If properly repaired, cows experiencing uterine prolapse may never have a repeat prolapse problem. A primary concern with uterine prolapse is making sure that affected cows rebreed in a timely manner after the prolapse is corrected.

Disposition

Cattle with unacceptable dispositions are dangerous, and culling them reduces the risk of injury to both cattle and people. Very excitable cattle not only are more difficult to handle, but Colorado State University research has indicated that calves with disagreeable dispositions do not gain as well as calmer calves. Colorado State University studies have also shown that excitable cattle are more likely to produce dark cutter carcasses, which are subject to severe discounts. Because calves inherit a genetic component of temperament and pick up habits from their dams during the suckling phase, bad attitudes can be propagated within the herd without selection pressure for acceptable disposition.

Appropriate Times to Cull

Appropriate times to cull cows from the herd depend in part on the reasons behind the culling. In cases where cows have developed severe health problems such as cancer eye, Johne's disease or downer cow syndrome, removal from the herd may

need to be immediate. In situations where cows are being culled for low performance or other less urgent factors, it often makes sense to wait until after nursing calves are weaned. If marketing conditions are such that even cows weaning low-performing calves are generating a profit, it may be cost-effective to hold onto these cows in the near term and then market them before they become unprofitable. Production conditions can also influence the best time to remove cows from the herd. During drought or other conditions where forage and feed resources are limited, culling deeper into the herd is often appropriate.

Maintaining or increasing herd size requires adding females to the herd to replace cull cows. When the cost of replacement heifers is high, it may not be as financially sound to replace cull cows with purchased heifers as when heifer prices are more reasonable. The decision to replace cows with heifers should take the quality and value of each animal into consideration. Producers with effective genetic improvement programs using superior sire selection may find considerable performance differences between bred heifers and below-average performing cows. If the values of potential production improvements and cow salvage returns can cover the costs of heifer development, it may be sensible to replace low-performing cows with genetically superior heifers.

Cull cow receipts generally account for 15 to 20 percent of gross income in beef cow-calf operations. Cull cow price levels and seasonal trends should be taken into consideration when deciding when to sell cull cows. When cull cow prices are trending upward, it is often advantageous to wait to market cows if the increasing values can cover added production expenses from holding over cull cows. It may also be advantageous to retain cull cows until weight and body condition can be added. Unlike feeder cattle prices, cull cow prices generally increase on a per pound basis with increasing cattle weights. If cull cow prices are trending downward, however, it may be advisable to market cull cows in a timely manner before more money is invested in cow maintenance, particularly if this investment will not likely be recovered. In Arkansas, the traditional seasonal highs for cull cow prices fall in March, while the seasonal lows usually fall in November.

Selection Checklist

✓ Reproduction

- Is she pregnant or open?
- Does she breed back in an acceptable time frame and produce a calf every year?
- Is she too extreme in her muscling pattern?
- Is her frame size or pelvic area too small, making calving difficulty a real concern?
- Is she healthy and in good condition for breeding?
- Is there a history of vaginal prolapse?

✓ Functionality in a Given Environment

- Is her frame size too large for feed and forage conditions?
- Is her milking potential excessive for feed and forage conditions?
- Is she an easy keeper (keeps flesh and condition with proper nutrition)?
- Does she have adequate body capacity for carrying a calf and consuming large quantities of forage/feed?
- Is her breed composition suited to the environment?
- Is her disposition manageable with available labor and facilities?

✓ Maternal Traits

- Does she exhibit desirable maternal instincts (licks off calf at birth, readily accepts nursing calf, etc.)?
- Does she milk adequately for acceptable calf growth?

✓ Structural Soundness

- Are her feet and legs structurally sound for ease of movement under pasture and breeding conditions?
- Does she have desirable slope to her shoulders (not too straight)?
- Are her hips level from hooks to pins?
- Are her eyes healthy?
- Is her udder healthy with a level floor and good suspension?

- Does she have four evenly-spaced, acceptably-sized teats?
- Does she still have teeth that will be effective for grazing?

✓ Marketability of Traits Passed on to Calves

- Does she have the potential to produce calves that fit market specifications for frame size, muscling, conformation and structure, breed composition, coat color, etc.?
- Does she have the potential to transmit desirable post-weaning growth to calves marketed for stocker or backgrounding programs?
- Does she have the potential to transmit desirable carcass traits to calves marketed for finishing programs that pay premiums for carcass merit?

✓ Performance Potential

- Do performance test results indicate desirable performance over her lifetime (acceptable Most Probable Producing Ability values and calving intervals)?
- If her calf did not perform well, was it due to the genetics or milking ability of the dam? (Calf health problems and sire genetics can contribute to this.)
- Does she have acceptable Expected Progeny Differences (EPDs) for economically relevant traits (seedstock operations)?

Summary

Cow culling strategies impact both calf quantity and quality and, when designed and implemented effectively, can greatly enhance the profitability of a cow-calf operation. Making informed culling decisions helps maintain a high level of herd performance. Herd genetic improvement involves not only proper bull and replacement heifer selection, but also proper selection and timely removal of cull cows from the herd. Even favorite cows should be subject to a systematic culling process to improve cow herd profitability. Contact your local county Extension office for more information on cow culling or related topics.

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