

Culling the Beef Cow Herd

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Introduction

Removing select cattle from a herd (culling) is done to improve herd performance and profitability. Production and market conditions influence culling criteria. Some cattle are obvious candidates for culling (e.g., cows with poor breeding performance or cancer eye), but cattle can and should be culled for reasons that may not be readily observable. Simply put, cows are selected for culling based on whether they are cost-effective to the operation.

Analyzing your individual cow records is vital for recognizing and assessing poor animal performance. The keys to an effective record keeping system are (1) deciding what production and financial information is useful and practical to collect, (2) collecting accurate information, (3) managing that information in a usable form and (4) using the information to maintain best practices. Record keeping can be as simple as handwritten notes in a pocket-sized record book or as advanced as data entry into an interactive computerized record keeping system.

Identifying individual animals in the herd is an important 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, as backup. Calves should be tagged at birth and matched with their dams. Calf birth date and sex should also be recorded.

Recommended 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, weaning date and weaning weight. Collection of weaning weights requires a scale, so a plan should be in place to acquire or borrow a scale before working the animals. 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. Information on how to age cattle by their teeth can be found in the appendix of *MP184, Beef Cattle Production*, at www.uaex.uada.edu.

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

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should be recorded for artificial insemination. For natural service, recorded information should include bull IDs, female IDs and breeding season dates. Identify and record the IDs of open (nonpregnant) 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. For more information on maintaining performance records, refer to the University of Arkansas Cow Herd Performance Testing Program.

Culling Criteria

Reproductive Efficiency

The greatest determinant of profitability in a cow-calf operation is reproductive rate. Open cows decrease the profit margin as they consume feed, forage and other resources without producing a marketable calf to offset the costs. A productive cow is expected to produce a calf once a year. Open cows at the end of the breeding season should be at the top of the cull list. Cows calving 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.

Cows should be closely observed for returning to standing heat after breeding or artificial insemination. Open cows can be identified with rectal palpation or ultrasound at 60 to 90 days post breeding season by a skilled veterinarian. Palpating cows earlier than this can induce abortions in recent pregnancies. Waiting too long to palpate simply allows an unproductive animal to consume more resources. 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 may be more expensive than rectal palpation.

Pregnancy checking can help identify herd health and fertility problems. If an unusually high percentage of the cow herd is found to be open, then reproductive diseases, inadequate herd nutrition or bull

infertility must be considered. A thorough breeding soundness examination (BSE) by a veterinarian is an excellent tool for identifying bulls with unsatisfactory breeding potential prior to the breeding season. A comprehensive BSE should include a physical exam, semen exam, trichomonas testing and libido assessment. Once infertile cows and bulls are culled, the breeding program can proceed more efficiently.

Poor Performance

Poor calf performance is the result of inferior genetics, poor mothering, poor milk quality, poor colostrum quantity, calf sickness or a combination of these factors. The most important factor to calf health and calf performance is having a healthy mother with good mothering instincts. Cows that transfer inferior genetics to their calves and cows with inadequate milk production should be considered cull animals. 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 a calving season 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.

Expected progeny differences (EPDs) provide valuable information about expected genetic merit and are available on many seedstock cows. While herd genetic improvement is largely dependent on sire selection, the dam contributes half of the genetics to the calf. 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 instead of focused 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, 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) is useful for producing calves within a desirable frame size range with consistency. 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 are important.

Age Effects

The productive lifetime of a beef cow is variable. As long as teeth, udder, feet and legs are sound, many older cows are still able to perform well. Breed and the production environment can play a role in longevity. 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. Ideally, cows should be culled for advancing age prior to a sharp decline in reproductive or maternal performance.

Condition of Teeth

The teeth of cows should also be considered when assessing their value to the herd. 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. The

ineffectual grazing results in poor body condition despite adequate and available nutrients. The most extreme example is when cows appear to have a smooth mouth with their teeth worn down to the gums. Furthermore, cows can lose teeth at any age from damage by blunt force or from gum disease with or without infection. These cattle may dribble feed from the mouth and have a hard time consuming sufficient quantities of feed or forage. Annual inspection of the teeth and mouth during routine cattle working is recommended to identify potential problems.

Udder Conformation

Cow udder soundness affects milk production, calf consumption of milk and subsequent calf weaning weights. Proper udder attachment in a cow/heifer 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 the calf to suckle. Balloon or funnel-shaped teats are also not ideal for nursing calves. Balloon teats can be an indication of past mastitis (a bacterial infection of the mammary tissue). In general, the udder should have a healthy conformation and be free of infection in all four quarters for good milk production.

Musculoskeletal Soundness

Structural soundness of the musculoskeletal system is important from the standpoint of functionality. Structural problems subject the joints to excessive wear and stress that can eventually hinder mobility. For example, a cow with poor hip structure, exhibiting too much slope from her hooks to her pins, is at risk of becoming lame. Cows need to be sound enough to graze effectively and breed successfully. Cows that are not structurally sound often decline in condition rapidly, thus decreasing their market appeal.

Cattle lameness leads to decreased reproductive efficiency, decreased weight gains and increased treatment costs. For these reasons, lameness is a major reason for culling cattle. Feedlot studies have

shown that lameness can cost an average of \$120 per lame animal. Cattle lameness causes include foot rot, toe abscesses, laminitis, joint injury and fescue toxicosis. Early identification of lameness is essential when making the decision to treat or cull as severely lame cattle are not acceptable for slaughter and are considered a complete loss. Furthermore, pain associated with lameness is an animal welfare issue. The Step-Up® Locomotion Scoring system developed by the Zinpro Corporation in collaboration with the Beef Cattle Institute and Kansas State University allows for easy scoring of beef cattle lameness. A score of zero indicates a normal animal with no apparent lameness or change in gait. A score of one indicates a mildly lame animal that exhibits a short stride when walking and drops its head slightly. A score of two indicates a moderately lame animal that exhibits an obvious limp and a slight head bob when walking. Finally, a score of three indicates a severely lame animal that applies little or no weight to the affected limb and is reluctant or unable to move. Cattle that are scored a one or higher should be examined by a veterinarian. The decision to treat or cull should be made upon a definitive diagnosis of the lameness.

Cancer Eye

Cancer eye (ocular squamous cell carcinoma) is the most common and the most economically significant tumor of cattle. The cause is multifactorial, with genetics, sunlight exposure, nutrition, eyelid pigmentation and possibly viruses playing roles in formation of the tumor. Cancer eye is an aggressive disease that can infiltrate tissue surrounding the affected eye and invade nearby lymph nodes. Once a cow is diagnosed with the disease, a decision should be made to cull or treat the animal immediately. Culling is often the best option once an affected cow has weaned her calf. Cows with advanced stages of cancer that have spread to other parts of the body or invaded the local tissues around the eye must be euthanized as their carcasses will be condemned. Treatment options depend on the size and development of the tumor when it is initially found. Surgical removal of parts of the eyelids can be performed depending on the size and location of the tumor. Whole eye removal is another option if the eye is not salvageable. Treatment with cryotherapy (freezing) or hyperthermia

(heating) can shrink the tumor, but regrowth often occurs. Cattle with dark pigment immediately surrounding the eyes have a significantly reduced predisposition for cancer eye; therefore, genetic selection for dark pigmentation around the eyes may help reduce the incidence of cancer eye in the herd. Breeding bulls diagnosed with this disease should be culled. Cattle with cancer eye are unsuitable for food and should be euthanized rather than attempting to market.

Johne's Disease

Cattle suspected of being infected with Johne's disease should be marketed for food as soon as possible to get them out of the herd. This disease is caused by the bacterium, *Mycobacterium avium 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 usually develop in cattle 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 manure-contaminated pens or pastures. Johne's disease causes severe diarrhea and weight loss in adult cattle leading to enormous production losses in infected herds. Since there is no effective treatment or cure for Johne's disease, cull infected cows to keep them from spreading the disease to others. The best way to keep Johne's out of the herd is to have cattle tested for the disease prior to purchase.

Prolapse

Prolapse can occur before or after calving and can involve the vagina or uterus. A vaginal prolapse occurs when vaginal tissue protrudes through the vulva where it is exposed to the outside environment, leading to potential injury and/or infection of the organ. Vaginal prolapses typically occur during late gestation as calving approaches. Although vaginal prolapses can be corrected, they are likely to recur. Because vaginal prolapses are known to have a genetic component, cows suffering from this condition should be marked for the cull list to prevent passing down the problem to their progeny.

Uterine prolapses usually occur at or shortly after calving and can be life-threatening if the uterine artery is damaged. Uterine prolapse occurs when the uterus is pulled through the birth canal with the calf or afterbirth. If properly repaired by a veterinarian, cows with a uterine prolapse may never prolapse again. However, the sooner the uterine prolapse is treated, the better the chances for a favorable outcome. If a full recovery is expected and the cow is still young enough for future breeding, then there is no need to cull. If the uterus appears compromised in any way, then the cow should be culled after honoring the withdrawal period of any drugs used for treatment.

Disposition

Cattle with unacceptable dispositions are dangerous, and culling them reduces the risk of injury to both cattle and people. Overly excitable cattle are more difficult to handle and studies have indicated that calves with disagreeable dispositions do not gain as well as calmer calves. Research from Colorado State University showed that excitable cattle are more likely to produce dark-cutting beef that appears purple due to stress-induced depletion of glycogen stores prior to slaughter. This is important because the dark-colored beef is subject to severe discounts. Because temperament is highly heritable and calves pick up habits from their dams during the suckling phase, bad attitudes can be propagated within the herd. Once the excitable cattle are identified and removed from the herd, production will be more manageable.

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 non-ambulatory lameness, removal from the herd should be immediate. In situations where cows are being culled for low performance or other less urgent factors, it is logical 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 cow-calf operations. Cull cow price levels and seasonal trends should be taken into consideration when deciding when to sell. When cow prices are trending upward, it is often advantageous to wait if the increasing values can cover added production expenses from holding them over. It may also be advantageous to retain 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 prices are trending downward, however, it may be advisable to market cull cows in a timely manner before more money is invested in maintenance. In Arkansas, the traditional seasonal highs for cull cow prices fall in March, while the seasonal lows usually fall in November.

Summary

Beef cow culling strategies, 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 timely identification and removal of cull cows from the herd. Carefully maintained records will help identify cow health and breeding performance. Sensible decisions on whether to treat or cull will keep cow production costs to a minimum. More information on livestock health can be found at www.uaex.uada.edu. If more help is needed to make a decision on whether to cull a cow, contact your local Extension agent.

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