

Converting from Year-round to Controlled Calving

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In the United States more than half (55%) of all beef cow-calf operations do not have a defined calving season. Typically, in these operations, bulls are not removed from the herd and remain with the cows the entire year. This “uncontrolled breeding” results in cows calving over several months or, in some cases, cows calving every month. Calving year-round presents many challenges in herd management and decreases productivity. In some cases, producers have an off-the-farm job and limited time can be left to dedicate to the cowherd. In these scenarios, it is crucial to maximize time and labor efficiency.

Rationale for Controlled Calving Season

A key step in reproductive management is limiting the time cows are exposed to a bull for breeding, thus controlling the calving season. Whichever calving season (spring, winter, fall, or a spring/fall dual) is chosen, the following reasons illustrate why a controlled, seasonal calving schedule is desirable for most beef cow-calf operations:

1. The culling of cows and selection of replacements is often based on pregnancy status, production records, disposition, and structural features; however, accurate comparisons of the production of cows within a herd cannot be made unless some uniformity in age exists amongst their calves. Decisions to keep or cull cows should reflect relative performance of calves within the herd. As an example, it would be unfair to compare cows that are in peak lactation during periods of limited feed resources to cows that are in this same production phase during times of abundant feed resources. Acceptable performance of a cow includes the weaning weight of her calves and her ability to calve every 12 months.
2. Shortened calving seasons provide a better opportunity for observation of the cow herd during calving, resulting in fewer death losses (a major source of reproductive failure among cow herds). This is vital because percent calf crop weaned is one of the major profit determining factors in a cow-calf operation.
3. Shortened calving periods facilitate improvements in herd health and management. Uniformity in timing of vaccinations and routine management practices result in decreased labor requirements and enhanced efficiency. Calving in controlled seasons aids in accurate pregnancy testing and culling of open cows, which can reduce feed expense and improve herd efficiency.
4. Brood-cow nutrition can be improved by grouping cows according to stage of gestation and feeding each group accordingly to meet nutritional requirements. When cows have extended calving dates throughout the year, some cows may be over/under fed, making it difficult to provide adequate nutrition to cows in a cost-effective manner.
5. Calf crops that are uniform in age and size can be marketed in groups. Marketing groups of calves generate premiums compared to marketing single calves, which increases revenue and profit potential. Calves born in the first 21 days of the calving season can weigh 30-50 pounds more at weaning than those born during the second 21-day period. Calves born 42 days into the calving season have been found to weigh as much as 70 pounds less than those born in the first 21 days and 42 pounds less than calves born in the second 21 days.

6. A research analysis of 394 ranch observations from the Texas, Oklahoma, and New Mexico standardized performance analysis data provided insight into the age-old argument about "leaving the bull out" or having a defined breeding season. A positive relationship between the number of days of the breeding season and the production cost per hundredweight of calf weaned was observed meaning longer breeding seasons were more costly to the operation. Also, they reported a negative relationship between the number of days of the breeding season and pounds of calf weaned per cow per year. The data suggested that for each day the breeding season was lengthened, the annual cost of producing a hundred pounds of weaned calf increased by 4.7 cents and pounds of calf weaned per cow per year decreased by 0.16 pounds. The range of breeding seasons in the data set was from extremely short (less than one month) to 365 days or continuous presence of the bull. The trend lines that resulted from the analysis of the data give us an opportunity to evaluate the economic importance of a defined breeding season. The producer that leaves the bull out year-round (365 days) would sell 46 fewer pounds of calf per cow per year on average than producers with a 75-day breeding season. That same producer would have \$13.63 greater costs per *hundredweight* of weaned calf than the producer that used a 75-day breeding season. In this era of cost/price squeezes, a well-defined breeding and calving season provides a better opportunity to survive the volatility of cattle prices and input costs.

Shortening the calving season results in:

- Heavier, more uniform calves at weaning
- Better use of available labor
- Better opportunity to select for fertility in the cow herd
- Greater income potential

Transitioning from Year-long Breeding to a Controlled Breeding Season

Converting from a year-long breeding season to a shortened, approximately 70-day window, should not be done haphazardly. A system for converting from year-round to a single, 70-day controlled calving season over two years would present less economic loss and fewer problems than trying to convert in one year. However, as described in the factsheet, Example of Implementing a Plan to Control Calving, it is possible to transition to a single 75-day calving season in a single year. The following steps are suggested for transitioning to a controlled breeding system:

1. Determine the ideal time of year and the length of your new calving season. For example, cows will calve from March 1 to May 10 (71 days).
2. Remove the bull(s) from the cows. Control of the calving season cannot be accomplished with the bull in the pasture with cows. Either sell him or build a bull pen or well-fenced bull pasture that will ensure he is maintained away from the cows. An electric fence in addition to the regular fence may be needed.
3. Determine the reproductive status of each cow in the herd. First, go to the record book to determine the last date

each cow calved. If calving records are not available, try to match the dam (cow) with her calf by observing nursing. Try to estimate their age. For example, let us assume we have 30 cows and today's date is March 18, 2024. Calving dates for 2023 are as follows: Jan = 0 calved, Feb = 3 calved, Mar = 9 calved, Apr = 5 calved, May = 5 calved, June = 2 calved, July = 1 calved, Aug = 0 calved, Sept = 2 calved, Oct = 2 calved, Nov = 1 calved, Dec = 0 calved. The bull has been in the entire time, so the cows that calved last spring are getting ready to calve in Spring 2024 and the five cows that calved in the fall could be pregnant. Next, work with your veterinarian to determine the pregnancy status of the herd. When will the spring cows calve? Are the fall-calving cows open or pregnant? The cows that calved in October and November may not have conceived yet so they can roll easily into your spring-calving system.

4. Based upon the reproductive status of your herd, determine if you would like one controlled calving season or two. In our example, we only have six cows calving in the fall window (July-November) so having two seasons is not labor efficient. If, however, half of your herd calved from July-December, it is a better economic decision to make these your fall-calving cows and the ones that calve from January-June your spring-calving cows.
5. Identify cows that are going to be "problem" breeders. Problem breeders are those expected to be anestrus at the start of the breeding season. Anestrous cows are those that have not started having estrous cycles regularly. These cows include all two-year-old cows (first-calf heifers) and any cow that calved within 45 days of the start of the breeding season. Thin cows are also a problem regardless of when they calve. If cows calved thin (body condition score <5), they need to be separated and supplemented to gain weight at least through the first 30 days of the breeding season.
6. Identify cows that are going to be "extreme problem" breeders. Extreme problem cows are expected to be anestrus for over half of the upcoming breeding season. These are cows that either calve right before or during the breeding season. These cows need to be managed separately from the breeding herd if possible.
7. Create a plan to improve the reproductive performance of your herd.
 - All cows need to be fed to maintain or increase body condition score (slightly), need to be vaccinated (respiratory viruses, leptospirosis, vibrio, etc.), and treated for internal/external parasites. Vaccination against abortifacients needs to occur at least 60 days before the breeding season.
 - Early calving, mature cows with a body condition score of 5 or greater do not need additional management. Just turn them out with the bull at the start of planned breeding season.
 - "Problem cows" need to receive a CIDR® device for seven days immediately prior to bull turn out (see section "Estrus Synchronization Protocols for Natural Service," in [ID-108: The Kentucky Beef Book](#)). Results from UK field trial work in more than 300 late-calving cows suggests exposure of cows as early as 14 days after calving can improve the rebreeding performance in 80% of cows

- treated. The average shift in calving interval was 36 days earlier.
- “Extreme problem” cows need to receive a CIDR® device for seven days immediately prior to turning them with a bull. Group the cows so that they receive a CIDR® device at least 14 days after calving. Thus, cows calving during the planned breeding season would receive a CIDR® device for seven days immediately before transporting them to the breeding pasture. It is important to keep cows with an inserted CIDR® device out of the breeding pasture to avoid potential injury to the bull.
8. Plan your breeding season. Assuming the cow that calved in November was open when the pregnancy status of the herd was determined, she will be moved to the spring with the cows that will calve from January-July. A decision will need to be made for the August-October calving cows. Do we cull and replace them, or do we hold them after they calve this year? Remember, they were pregnant when reproductive status was determined in Step 3, so, we need to either cull and replace or wait for them to calve and hold them over until the spring of 2025. Typically, it is cheaper to simply hold the cow over because the “cost” of this decision is the loss of 4-6 months of potential revenue (\$200-400). If the cow is older (6+ years) then cull and replace her with a bred heifer that will calve in February. The cost difference between a bred replacement heifer and a cull cow may be \$500-\$1,000.
 9. Expose your herd to the bull on May 20 and remove the bull September 1 in this example. This is later than ideal, but the process to move from year-round calving to controlled calving is normally a two-year process. Sixty days after removing the bulls from the herd, or a convenient time near this date, pregnancy check all cows and cull open cows. Your fall-calving cows have either calved or are close to calving.
 10. If you are developing your own replacements, consider starting the breeding season of replacement heifers 20 to 30 days ahead of the final breeding date for the herd. Most extended calving seasons are the result of the failure of young cows (2- and 3-year-olds) to rebreed in a timely fashion. The additional 20-30 days enhances the opportunity for these young cows to rebreed and calve within your window next season. For instance, the replacement heifer breeding season would start around April 20 and these cows would begin calving around February 1. Weather in February is not always ideal and calf death loss might increase slightly. A 1-2% death loss is financially better than a 25% decrease in pregnancy rate the following year.
 11. The second year follows the same system as outlined above except remove the bull on August 1. If you have fall and spring calving cows, then put the bull in for the fall cows around November 20 and remove him around February 1.

Summary

Data collected by the University of Kentucky Beef Integrated Resource Management (IRM) group demonstrates that following this stepwise plan for reproduction can improve pregnancy rate by 6% and increase the pounds of calf weaned per cow exposed to the bull by about 150 pounds (more calves born and wean more at marketing). This increase in productivity resulted in increased revenue on these farms of 34% during a period of low/average/high market prices. Controlling reproduction pays regardless of market conditions.

References

USDA. Beef 2007-08, Part II: Reference of beef cow-calf management practices in the United States, 2007-08 USDA: APHIS:VS, CEAH. Fort Collins, CO. #N512.0209. 2009.



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