



## Importance of Yearly Calving Interval and Calving Distribution for New Mexico Cow-Calf Operations

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### Calving Interval versus Calving Distribution

Maintaining a yearly calving interval and optimizing when your cows calve during the calving season are two drivers of profitability in a beef operation. Maintaining a yearly calving interval is simply ensuring the cow calves every 365 days or fewer. In large pasture operations, essentially the only way to track yearly calving interval is to have a defined breeding season and check for pregnancy in the fall. If a cow does not maintain a yearly calving interval, her lifetime productivity is reduced. For example, a cow that is in the herd for 6 calving seasons but only calves every 430 days will have 1 fewer calf over those years than a cow that calves every 365 days. Even if a yearly calving interval is maintained, it is important to know when the cow calves within that year. Cows only display estrus and can become pregnant approximately every 21 days. Thus, calving distribution is the number of cows calving in 21-day periods during the calving season. The start of the 21-day window (termed calving period) each year is when the third mature cow has calved or approximately 285 days after the previous year's breeding season.

### Calving Distribution and Profitability

The primary factor associated with calving distribution and profitability is weight; cows that calve earlier wean heavier calves. Several experiments have evaluated calf weaning weights from calves born in the first calving period through the third calving period as would be the case in a typical operation with a 3-month breeding season. Table 1 shows the average weight difference and range for each calving period, and essentially every cycle that a cow misses getting bred costs approximately 40 pounds in weaned calf value. It is important to consider that a cow who breeds and subsequently calves every year in the first calving period has the same yearly cost as a cow that calves in the third period, yet the former will wean on average a calf that is 80+ pounds heavier at weaning.

Puberty in heifers is largely driven by percent body weight relative to mature body weight. As heifers approach 60% of their mature body weight, they begin to cycle. As expected, heifers that are born after the first calving period are lighter and take longer to reach puberty. Interestingly, the potential reduction in pregnancy rate isn't limited to getting heifers bred for the first time. Table 2 shows that heifers born after the first calving period may also exhibit reduced pregnancy rates after their first calf. Interestingly, the pre-calving weight was similar for heifers born in the first and second calving periods, yet the percent calving in the first period was reduced. Heifers born in the third calving period also displayed decreased pregnancy rates after their first calf. In

addition, heifers that are born after the first calving period are more likely to be open earlier in their life and subsequently culled than heifers born in the first calving period; thus, longevity is increased for heifers born in the first calving period. Work from the U.S. Meat Animal Research Center showed that heifers born in the first calving period will wean heavier calves for their first 6 calving seasons compared with heifers born in the second or third calving period. Selecting heifers that are born in the first calving period can impact profitability for over half a decade and on average they will wean 1 to 2 more calves in their lifetime than heifers born later in the calving season.

### Benchmarks and Altering Calving Distribution

It is not realistic to expect 100% of your cow herd to calve in the first 21 days. However, a good target is to have approximately 70% calve in the first 21 days and just over 20% calving in the second calving period with very few cows calving in the third calving period. If your calving distribution is more spread out over the calving period, then the first things to rule out are management factors like disease, dystocia, and body condition score of the herd. Consider moving to a defined breeding season and pull bulls after 3 months of breeding. Follow up the breeding season with pregnancy diagnosis at weaning. Finally, when selecting replacement heifers, try to choose heifers that were born in the first calving period and utilize calving date in your cull cow decision. If pasture size limits your ability to determine when calves are born, one option is to sort the lowest value calves at weaning and return those to the herd. Once they mother up, you can identify the cows that are producing the lowest value calves which are likely the late calves.

### References

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Figures

Weaning Weight Difference for Calves Born in Different Calving Periods

	Calving Period 1	Calving Period 2	Calving Period 3
Average Weight Difference (lbs)	x	-40.3	-81
Range (lbs)	x	-29 to -46	-71 to -97

Table 1. Difference in weights of calves at weaning from three different calving periods. Every 21-day period accounted for approximately 40 pounds of weaning weight. Data are adapted from Lesmeister et al. (1973), Funston et al. (2012), and Cushman et al. (2013).

Production Characteristics for Heifers Born in Different Calving Periods

	Calving Period 1	Calving Period 2	Calving Period 3
Pre-breeding body weight (lbs)	653	644	608
Pregnancy rate %	90	86	78
Pre-calving body weight (lbs)	946	948	922
% calving in first calving period	81	69	65
Pregnancy rate % after first calf	93	90	84

Table 2. Production characteristics for replacement heifers born in one of three different calving periods. Heifers born after the first calving period had lower pregnancy rates, fewer calved in the first calving period and had reduced pregnancy rates after their first calf. Adapted from Funston et al., 2012.



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