



Using Weaning Weight Ratios to Gauge Cow and Calf Performance

With weaning right around the corner for most, or already underway, producers should consider using weaning weight data to better understand calf growth and cow productivity. With records kept for birthweight, weaning weight (then adjusted), and dam information, the weaning weight ratio can be calculated to determine which calves are above average for growth (above 100) and those that are not (below 100) compared to their own sex and calf crop. This would aid a producer in identifying cows that consistently produce poor performing calves year after year. Without such data, producers may be unintentionally keeping unproductive cows and retaining heifers out of them as well.

Weaning weight (WW) is often used to determine calf growth and value. However, WW must be put into context to better understand calf growth and compare a calf to its counterparts. Implementing a 205-day adjusted WW to standardize weights is a recommendation by the Beef Improvement Federation (BIF) to account for calf age and age-of-dam. By adjusting the weaning weight to 205 days, calves born at different times of the calving season and to cows of different ages can be compared more fairly. Age of dam (AOD) adjustments can be found below in Table 1. While this approach is not perfect, it can certainly provide more confidence to comparing the weights of the first calf and the last calf of the crop at weaning.

$$\text{Adjusted 205-Day WW} = \left(\frac{\text{Weaning Weight} - \text{Birth Weight}}{\text{Weaning Age (days)}} \times 205 \right) + \text{Birth Weight} + \text{Adjustment}$$

While adjusting the weaning weight (WW) of calves can minimize the effect of calf age and age of its dam (AOD), it cannot be used to minimize the effects of other factors. Due to the adjustment's limits, WW should only be compared to calves in the same contemporary group. This means that calves should only be compared when they are the same sex, in the same age range, and under the same management. As a rule of thumb adjusted 205-day WW should only be used to compare calves within a 160 to 250 day age range (Gould, 2015). Furthermore, adjustments should always be calculated and reported separately for bulls, steers, and heifers. Lastly, comparisons should only be made between animals managed the same. This means that the calves born out on grass and managed there should not be compared to calves born and raised in the dry lot. This will ensure that animals are compared fairly, and not one group has an advantage over the other due to nutrition or physiological differences such as hormones. Comparisons made within contemporary groups of adjusted weaning weight can be useful alone, however using that information to calculate WW ratios will present the data in a straight forward manner.

Table 1. Age of Dam Adjustment Factors for WW based on BIF Standards

Age of Dam (AOD) at birth of calf	Male	Female
2	+ 60	+ 54
3	+ 40	+ 36
4	+ 20	+ 18
5-10	0	0
11 and older	+ 20	+ 18

Adapted from "Calculating calf-adjusted weaning weights and herd indexes" by K. Gould, 2015, Michigan State University Extension

When utilizing WW ratios, one can quickly identify if an animal is above or below average within their group. When ranked highest to lowest, a percentage of the poorest producing dams can be quickly identified. While it should be understood that things out of the cow's control can happen, a cow that consistently produces far below average calves could potentially be culled. The equation for Adjusted 205-Day WW found below will convert the adjusted WW and group average adjusted WW into a convenient value that can be used for ranking.

$$\text{Adjusted 205-Day WW Ratio} = \frac{\text{Individual Adjusted 205-Day WW}}{\text{Group Average Adjusted 205-Day WW}} \times 100$$

The data below in Table 2. is an example of three bull calves pulled from a larger calf crop:

Table 2. Example of Calf Birthweight and Adjusted Weaning Weight to Determine Under Performing Calves

Calf ID	Dam ID	AOD	AOD Adj.	Calf Sex	Birth Weight	WW	Weaning Age	205 Adj. WW	WW Ratio
0110	7567	4	+ 20	Bull	72	600	225	573	97
0120	9514	2	+ 60	Bull	76	575	205	635	107
0158	4620	7	+ 0	Bull	84	515	195	537	91
Entire Calf Crop Average					75	555	210	592	100

While calf #0110 is the heaviest at weaning and appears to be more valuable than the other two calves selected, he was given an advantage of extra time and a prime aged dam. When you eliminate or reduce the effect of these two advantages by adjusting the weaning weight, the calf now becomes below average with a WW ratio falling under 100 compared to the rest of the bull calves in the herd. This does not mean he is a bad calf, however it helps put the situation into perspective before we jump to conclusions. Calf #0120 was not the heaviest of the three selected as examples, however he was younger at weaning and was born to a first calf heifer, two disadvantages compared to the first calf considered. When the WW was adjusted he becomes the clear front runner of the three calves shown and is clear above average for his WW ratio. Calf #0120 shows exceptional growth compared to the bull calves in his calf crop boasting his own genetics and his dam's mothering abilities.

Weaning weight ratios can be an important and useful tool for producers interested in identifying calf and cow performance up to weaning. With the collection of a few pieces of data (birth date, birth weight, age of dam, and weaning weight) adjusted weaning weights and ratios can be calculated to rank calves based on growth performance. This information can then be used to make culling decisions and selecting replacements. Anything that can be measured to help make more informed selection decisions can make herd improvements over time.

For more information or resources for weaning weight ratios, please visit or call the Cheyenne County Extension Office at (785)332-3171.



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