

Reproductive Failure Impacts Profitability of Retained Beef Heifers

Andrew P. Griffith and Chris N. Boyer

Research ideas are a dime a dozen, but good research ideas are much less rare. Sometimes, my colleagues and I at the University of Tennessee have an original research idea that garners some press while most of the good ideas stem from questions from cattle producers. One common question from producers relates to keeping a breeding female that failed to produce and market a calf. Sometimes the question is if the producer should keep the female and breed her the next year while others ask about rolling her from one breeding season to the next.

Undoubtedly, cattle producers understand that cows that fail to produce and market a calf each year reduce profitability because there is a cost to owning the cow but no revenue from a calf. However, there is less understanding of how big of an impact reproductive failure has on herd profitability and the individual cow's lifetime profitability.

On an annual basis, producers make decisions about culling cows, retaining heifers to breed, or purchasing bred heifers. These decisions require a large investment, and they tend to carry risk. The risk stems from not knowing the number of calves a cow will produce during her productive lifetime and how prices may vary. Due to the risk and uncertainty of these decisions Drs. Chris Boyer, Karen DeLong, and I set out to determine how profitability is impacted by reproductive failure when retaining beef heifers. To be perfectly clear, Dr. Boyer did the heavy lifting on this project.

In this study, we evaluated the profitability of spring and fall calving cows that missed no calves, missed one calf, or missed two calves over a ten-year productive life. We determined that the expected profitability of a cow that produces ten consecutive calves was \$671 for the spring calving cow and \$683 for the fall calving cow. In other words, the average annual profits were \$67 to \$68 per cow. A cow that missed one calf over that ten-year period would result in total profits decreasing \$472 and \$483 for the spring and fall calving cow, respectively. This means the average annual profit for a cow that missed one calf over ten years would only be \$19 to \$20. Missing two calves over that ten-year productive life resulted in major financial losses.

This information alone may make it sound reasonable to keep a cow that misses a calf since she still has a chance at being profitable, but this is not the entire story. From a probability standpoint, there is a 77 percent chance for a spring calving cow and 75 percent chance for fall calving cow to return a positive profit over a ten-year productive life if she produces a calf each year. This means there is still a one in four chance that a cow having a calf every year will result in a loss over her productive life. Missing one calf decreased the likelihood of a profit to 52 percent and 50 percent for spring and fall calving cows, respectively. This means a cow missing one calf will result in a loss half of the time. The likelihood of a negative return to a cow missing two calves out of ten is 81 percent for spring calving and 76 percent for fall calving.

The first observation from this research is that the cow-calf sector is working on thin profits. The second observation is that reproductive success is a key to profitability in the cattle business, and the room for error is small. The third observation is that a cow that fails to breed even a single time should be culled and replaced, because the odds of her being profitable shrink quickly. Some readers may disagree with the last statement, but there is a reason the cow failed to breed. It would make me think she has greater propensity to fail to breed again which is sure to result in losses.

This analysis points to the importance of pregnancy evaluation shortly after the breeding season. Culling open heifers and cows shortly after the breeding season provides a producer the opportunity to capture the salvage value of the open female, forego input costs in a cow that will not produce a calf, and the opportunity to replace the open female with a bred animal. For a more in depth talk on this study please see the following sources.

Griffith, A.P., C.N. Boyer, and K.L. DeLong. 2019. "Reproductive Failure Impact on Retained Beef Heifer Profitability." University of Tennessee Extension Publication, W 850.

Boyer, C.N., A.P. Griffith, and K.L. DeLong. 2020. "Reproductive Failure and Long-Term Profitability of Spring and Fall Calving Beef Cows." *Journal of Agricultural and Resource Economics* 45(1).