

Lingering Effects of Cold Stress

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Winter weather in West Virginia can be extremely harsh causing cattle to expend more energy to maintain body temperature; this is known as cold stress. Both weather and animal factors contribute to cold stress. The primary weather factors are air temperature, air movement, precipitation and humidity. External and internal insulation (i.e., hair, coat and body condition), dietary energy level, surface area and coat color also contribute to cattle's ability to withstand cold. Animal factors are primarily related to heat generation through solar radiation and evaporative heat loss. The effects of cold stress are hard to quantify, but can be impactful long after winter is over.

The most severe effect of cold stress on calves is death from hypothermia, but there are other factors that can have lasting effects on the calf. Producers may experience calves that are slower at birth and not as vigorous. This could be the result inadequate nutrition for the dam, which can impact the quality and volume of colostrum. Slower calves may not consume adequate amounts of colostrum either. Research suggests that calves from cows and heifers that were underfed protein during late gestation may have an impaired ability to absorb the components of colostrum responsible for passive immunity. This effect is magnified when the calves themselves experience cold stress immediately after birth, suggesting that immune function may be impaired, or at least reduced, in some calves born during cold weather.

The effects of cold stress on cows are hard to quantify, but can include abortions, weak calves and retained placentas. These impacts are primarily the result of inadequate nutrition during late gestation; however, the most significant impact of cold stress on cows is fertility during the subsequent breeding season. Cows that experienced cold stress and/or were lacking in available nutrition at, or around, the time of calving will often have a longer postpartum interval. Because calving causes significant damage to the uterine tissue, it has to be repaired before the cow successfully conceives again. Protein, energy and other nutrients are necessary for the cow to heal effectively. Furthermore, fertility is known to be lower

in the first cycles after calving, so it is necessary for the cow to cycle two to three times to achieve maximum fertility before being exposed to a bull.

Consider the following to minimize the effects of cold stress. First, provide constant access to a balanced mineral supplement for both cows and calves. With mineral supplementation, it is important to have adequate concentrations of trace minerals because they play a large role in both reproduction and immunity. Grazed forages are often deficient in the trace minerals copper, selenium and zinc, which are critical for immune function and reproduction. Secondly, implement and utilize a comprehensive herd health and vaccination program. Consult your local veterinarian before implementing a program. Third, analyze stored feeds to understand where nutrient deficiencies may be and to make the most efficient use of feed resources. Finally, monitor body condition score on cows through late gestation and early lactation. If more than 5 to 10 percent of the cow herd is below a body condition score of five, then adjustments should be made to the feeding program.

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