
Preparing for Calving Season

While most people are thinking of holiday plans and family get-togethers, beef producers still have to be concerned with the rising price of feed ingredients and how winter storms are impacting their cow herds. With nearly 90% of fetal growth occurring in the last three months of the cow's pregnancy, we look at body condition score as one of the best measures of how the cow will perform during calving, but late-gestation cow nutrition is important for the health of the newborn calf, too, because the nutrition of the cow impacts the eventual calf's immune status and survivability.

Calves are different than people. The survival of the calf is dependent on its receiving high-quality colostrum within the first 24 hours of life, because the structure of the placenta prevents the fetus from receiving immunoglobulins (IgG) in the uterus. This is very different from most species, such as humans, which receive IgG across the placenta, and are born with the ability to mount an immune response to pathogens. As a result, newborn calves can't fight a bacterial or viral challenge until they have acquired passive immunity through the IgG in colostrum. The IgG are a specialized form of antibodies, gamma globulin proteins, that fight bacterial and viral infections by binding to pathogens and neutralizing them. With cattle, the newborn calf's small intestine can only absorb IgG during the first 24 hours of life. Furthermore, within the first 24 hours of life, the timing of the calf receiving colostrum is critical as the ability to absorb IgG from the small intestine starts to decline after the first 6 hours, and is essentially stopped after 24 hours (Rogers and Capucille, 2000). Therefore, for optimum immunity, the calf needs to nurse well within the first 6 hours. With first-calf heifers, this timing is an important management issue, as heifers that don't let their newborn calves nurse immediately are in a much greater danger of losing them, or having them get sick.

The effects of poor immunity in newborn calves have real economic impacts. Calves with inadequate serum immunoglobulin at 24 hours of age were found to be up to nine times more likely to become sick, and five times more likely to die before weaning, compared with calves that received adequate immunity, and calves that became sick within the first 28 days, after calving, were 35 pounds lighter at weaning than calves that were healthy (Wittum and Perino, 1995). As this research showed, colostrum quality and quantity can have a major impact on profitability. In a recent study, 6% of calves between 2 and 8 days of age had inadequate immunity, 10% of calves had a marginal immunity, and one-third of the calves were below the adequate immunity level based on a blood serum IgG level of 24g/L (Waldner and Rosengren, 2009). For producers who need to know how much colostrum a calf needs, research has found that an adequately nourished beef cow should be able to provide an adequate supply of IgG in about 3 liters of colostrum, which means that a calf should consume one pint of colostrum for every 20 pounds of calf weight (Rogers and Capucille, 2000).

As cattle go through the winter, they can body condition due to the nutrient demands of the growing fetus, plus dealing with winter weather, unless nutrition is excellent. From an energy standpoint, body condition scoring is an excellent way to assess the cow herd. In areas where forages are protein deficient, protein supplementation during late gestation has been shown to have several positive effects on reproduction (Martin et al., 2007). In all cases, the health of the newborn calf is impacted by the quality of colostrum consumed, based on the levels of IgG in the colostrum, and the quantity of colostrum consumed. The nutrition of the cow in late gestation determines these, with the production of colostrum beginning approximately 5 weeks before calving (Field et al., 1989). Work with your feed man to develop good rations, but always look to providing that good ration at low cost, which may be done with less expensive feeds available at home or from local suppliers. While energy and protein status have received the most attention in colostrum research, both selenium and vitamin E have been shown to affect the quality, and quantity, of colostrum, and in one study by Swecker et al., (1995), higher concentrations of IgG were seen in the colostrum of cows grazing selenium-deficient pastures, and supplemented with a trace mineral salt containing selenium compared with those receiving a selenium injection prepartum, or control cows not receiving selenium.

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