Colostrum:
Factors Influencing Production

Feeding newborn calves colostrum within the first hours of life is a well-known management practice. Colostrum contains a dense concentration of nutrients, especially immunoglobulin G (IgG), an immune building protein. We know how crucial feeding adequate amounts of high-quality colostrum is to both the calf's short-term survival and long-term productive life. To support this critical management practice, we must ensure we have sufficient stores of colostrum for use. Colostrum quality and production is not solely based on nutrition, it is also affected by genetics, environment, and management. Finding a balance between all aspects will help maximize quality colostrum production.

Nutrition

Dry cow nutrition poses the unique challenge of meeting the cow's nutritional needs, while supporting fetal growth and colostrum production. When feeding dry cows, it is better to feed them at their energy requirements rather than above. Dry cows fed over their energy requirements produced less IgG than cows fed at requirements according to recent studies. Sugar intake also appears to play a role in colostrum production. Cows fed a higher level of sugar tended to have higher colostrum yields.

Interestingly, protein intake does not appear to affect colostrum yield or IgG concentration. However, calves born to cow fed protein deficient diets appeared to have decreased IgG absorption.

Genetics

Research into genetic impacts on colostrum production is relatively new. However, there are some indications that a genetic component may be at work. Much of this work has been done in Jersey cattle, so further investigation is warranted.

Environment

Much time is spent focused on heat stress in cattle, but cold stress can be an issue as well. This is especially true for dry cows. Recent research shows that cows produced less colostrum when ambient temperatures were $<40^0$F. The decrease in colostrum production is attributed to the decreased blood flow to the mammary glands as blood vessels constrict in the cold. It is also suggested that colder temperatures may reduce the circulating levels of Prolactin, the hormone needed for lactation. Overall, dry cows should be kept at a comfortable temperature as heat and cold stress can impact not only colostrum production, but also the health and vitality of the newborn calf.

Management

Dry cow management is a major determinant of colostrum yield and quality. Proper dry off treatments to prevent mastitis in the dry period are one management strategy to maximize colostrum production. When comparing infected vs non-infected quarters, non-infected quarters produced more colostrum, and more IgG and total protein compared to infected quarters.

Dry period length is also a key factor in colostrum production. During the 2010s, the idea of having no dry period gained in popularity. However, this had negative impacts on colostrum production with cows not provided a dry period producing a third as much IgG as those allotted a 60 day dry period. Not only can IgG levels be affected, but cows with a shortened dry period also produced less colostrum overall compared to those with a longer dry period.

Curious to know more about colostrum and calves?
Look for Colostrum article at www.famofeeds.com

Famo Feeds • 446 Industrial Dr • Freeport, MN • 800-450-2145