



Factors that Influence Colostrum Yield: Mastitis, Calf Size, and Udder Size

This is the fifth article in the series.

The purpose of this review is to go over how mastitis, calf size, and udder size affect colostrum yield. This fact sheet will complement the other fact sheets in the series which cover dry period length, prepartum nutrition, hormones, environmental temperature and photoperiod.

Mastitis

It has been speculated that if prepartum subclinical mastitis happens during the production of colostrum, it will reduce the yield of colostrum.¹ This has been shown in research where noninfected quarters produced almost 12 oz more colostrum than infected quarters. The same study also showed that uninfected quarters produced 33 g more immunoglobulin G (the IgG necessary for passive immunity in calves) and total protein.¹ In another study looking at *Staph aureus*-infected cows, the researchers found less of the protein α -lactalbumin. This protein is a component of the enzyme lactose synthase, the essential enzyme for the production of milk sugar (lactose).² When lactose is increased, water enters the udder aiding in the formation of milk, and in this case colostrum which must be fluid (watery) to harvest. If lactose is low, colostrum yield is likely low as well. Therefore, producers are advised to work with their veterinarian to develop a dry-off protocol.

Calf Size

The size of the calf appears to have a positive effect on colostrum yield. Irish researchers evaluated colostrum yield and found that when calves weighed over 88 pounds at birth, their dam



produced an additional 2.2 pounds of colostrum compared to dams of calves that weighed less than 88 pounds.³ Therefore, other researchers confirmed that usually when twins are born, or bulls, the dam will produce more colostrum.^{4,5,6} While not desirable to have either most of the time, the extra colostrum produced could be beneficial for the farm's colostrum bank as long as it met the minimum 50g/L IgG or 22% Brix.

Udder Size and Quarter Effects

Udder size and quarter location affect colostrum yield. Studies have shown that the rear quarters produce more colostrum than the front quarters (13.2 pounds vs. 10.6 pounds) and that larger glands will produce more colostrum than smaller glands (7.3 pounds vs. 6.0 pounds). These studies have also confirmed the variability in colostrum yield among cows.⁷ These studies support the previously discussed work on dry period length and colostrum yield. When cows are given an adequate dry period, the mammary gland shrinks and reconfigures and cells will redevelop helping to provide for adequate colostrum.

Take Home Messages

- 1) Producers should work with their veterinarian to develop a dry-off procedure.
- 2) While bulls and twins are not desirable, they may help supplement a farm's colostrum bank if the dam's colostrum is of good quality.
- 3) Cows should be provided an adequate dry period to allow the cells in the udder to redevelop.

References

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