

Effectiveness of On-Farm Tools for Measuring Colostrum Quality

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Newborn calves must acquire their immunity through the consumption of colostrum. High quality colostrum contains at least 50 mg/mL of Immunoglobulin G (IgG), the primary antibody that protects calves from infection. Colostrum varies considerably in IgG content; therefore, it is critical that producers test colostrum quality before feeding it. The purpose of this study was to determine which on-farm tool, the colostrometer or the Brix refractometer, is better able to determine colostrum quality compared to the laboratory analysis (radial immunodiffusion [RID]) of IgG.

572 colostrum samples were collected between February and July, 2012 from 14 farms in central Alberta. Herd size ranged from 60 to 300 lactating cows. Samples were analyzed using a colostrometer and Brix refractometer, and results were compared to RID-determined IgG levels. The colostrometer had a greater correlation with RID results, indicating that it is more accurate than the Brix refractometer at predicting true IgG levels. Current literature suggests using 50 mg/mL on the colostrometer and 22° Brix as the cut point for identifying good quality colostrum, but our results suggest 80 mg/mL and 24° Brix would be better indicators of good quality.

Although the colostrometer is a better predictor of true IgG over a range of IgG values, it is not widely used on farms as it is very fragile, requires a full cup of colostrum, and the results vary with temperature of the colostrum. The Brix refractometer is less fragile, more user-friendly, and uses only 2-3 drops of colostrum. Our results showed that the Brix refractometer is most useful when looking at high quality colostrum. If the colostrum measures 28° Brix or higher, there is a 95% chance that it truly is good quality.

Implications: The cut points for identifying good quality colostrum may be different than previous literature suggests. This study also indicates that although the colostrometer is a more accurate tool over a range of IgG levels, the Brix refractometer is useful at confirming truly good quality colostrum. Overall, using either tool is more beneficial than not measuring colostrum quality at all prior to feeding.