

The Colostrum Counsel



How much is failure of passive transfer costing your operation? An economic model estimates the value of lost opportunity that could be capitalized on if colostrum feeding practices are improved.

Economic impact of insufficient IgG consumption

Influence of good colostrum feeding practices and long-term productivity

The economics of lower morbidity and mortality by improving colostrum-feeding practices are obvious, easily quantifiable, and almost universally accepted. However, the financial benefits of good colostrum feeding practices due to improvements on tangible production parameters are often overlooked. The effect of good colostrum feeding practices on average daily gain, reduce culling rate, and increase milk production are 3 tangible examples of the financial benefits that could be obtained by feeding more colostrum.

More colostrum = Increased daily gains

A significant correlation between serum levels of IgG in calves 24-48 hours after birth and average daily gain has been shown in several investigations (Robison J. D. et al. 1988, Massimini G. et al. 2006 and Dewell R.D. et al. 2006) and the growth rate of heifers from birth to sexual maturity has been shown to influence the age at first calving (Clark RD and Touchberry RW 1962, Virtala AM et al. 1996, Zanton GI, Heinrichs AJ 2005). Thus, the link between good levels of passive transfer on growth and age at first service has been well established. Recently a study from Poland more directly confirmed this and established that the higher the passive transfer level the better the performance in terms of age to first insemination



(Furman-Fratczak K et al. 2011). In this study 175 heifer calves were divided into 4 groups based on serum IgG concentrations at 30-60 hours of life and followed from birth to first insemination. The study clearly revealed the benefits associated with serum IgG concentrations of ≥ 10 g/L. It was very notable that heifers in with the highest IgG level (>15 g/L) reached insemination weight (407 Kg) by 454 days of age a full month before those heifers that suffered FPT (IgG <5 g/L) and 21 days sooner than heifers that suffered partial FPT (IgG 5 to 10g/L). Heifers with good levels of passive transfer (IgG 10-15g/L) also reached insemination weight before cohorts categorized in the FPT or partial FPT but 4 days later than the group categorized with the highest level of passive transfer. Thus the higher the IgG level the better performance. How

much economic impact does this represent? Using a dynamic programming model of a dairy replacement herd, Tozer and Heinrichs showed that the average age at first calving affected the net costs of raising replacement heifers; reducing the age at first calving by 1 month lowered the cost of a replacement program of a 100 cow herd by \$1400 or 4.3% (Tozer PR and Heinrichs AJ 2001).

More colostrum = Decreased culling rates

It has also been shown that feeding larger volumes of colostrum has an effect on culling-rate. In one study there was a 16% increase in survival of heifer calves to the end of the second lactation when fed four liters of colostrum compared to cohorts fed 2 liters (Faber S. N. et al. 2005). What is the economic impact of this improvement on herd-culling rates? Using the same model described previously Tozer and Heinrichs calculated that the costs of rearing replacements could be reduced by approximately \$1000 to \$1500 per 1% reduction in the milking herd-culling rate (Tozer PR and Heinrichs AJ 2001).

More colostrum = Increased milk production

The benefits of good colostrum feeding practices on long term productivity do not end there: early studies of the effect of neonatal serum IgG levels have also shown that higher levels of IgG also correlate with higher milk production later in life (DeNise SK et al. 1989). In that study it was estimated that for every unit of serum IgG above 12 mg/mL (measured at 24 to 48 hrs after colostrum feeding) there was an 8.5 Kg increase in milk production and a 0.24 Kg increase in fat production in the first lactation. This finding has been corroborated by a more recent study that showed that heifer calves fed 4 liters of colostrum at birth produced significantly more milk (an average of 1 kg more milk per day across two lactations) than cohorts fed 2 liters. What is the economic impact? In this particular study the calves fed the 4 L of colostrum produced 2,263 lbs more milk by the end of the second lactation (Faber S. N. et al. 2005).

How much colostrum should you feed to gain these benefits?

From the studies mentioned above and cited here, it is clear that the more colostrum that is fed the greater the benefit to the calf and overall operation. Therefore the answer is: **as much as you can and as soon after birth as possible.** Aim to achieve high levels of passive transfer in your calves. Taking short cuts when it comes to colostrum management practices can cost an operation big dollars in the end. We often concentrate our efforts on the older animals in the milking herd, however investment in our younger animals will result in payback for years to come.



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