

# Dairy Calf & Heifer Conference fills niche

**T**HE 15th annual Dairy Calf & Heifer Conference was held April 4-5 in Lancaster, Pa. The Dairy Calf & Heifer Assn. continues to fill a niche with this conference but would like to see increased membership and attendance by dairy producers and their key calf/heifer employees. However, tough dairy economics tend to keep the focus on lactating cows, with an ongoing view of calves and heifers as primarily cost factors.

In an analysis of key economic factors in the dairy world (Siporski, 2013), the net return on cows per acre was similar to corn but more than soybeans. Exports have aided the U.S. dairy industry both in terms of products and also in heifers, which have primarily gone to Turkey, Mexico and Russia.

Costs to raise a replacement heifer into lactation can range from \$1,500 to \$2,500, which leads to the question of whether to raise all heifer calves, particularly if they can be initially pegged for potential milk yield through the use of genomics at an early age.

More recently, greater use of alternative proteins in milk replacers (Thornsberry and Wood, 2013) has been spurred by higher milk protein costs driven by not only milk prices but also the burgeoning human food market for whey proteins that are left over from cheese production.

Not all non-milk proteins can be assumed to be the same. Spray-dried bovine plasma protein can function not only as a non-milk protein source, but the immunoglobulins also can have beneficial effects in the intestinal tract.

Bovine plasma protein is typically used at about 5% inclusion to supply about 20% of the total protein in a milk replacer. This protein source may also be paired with another non-milk protein at a similar level, such as hydrolyzed wheat protein. Since whey proteins are increasingly used in human food applications, supply and price tend to make them too costly for use in calf milk replacers.

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## Bottom Line

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Feeding more than twice daily is an option when feeding greater levels of milk replacer than the proverbial 1 lb. per day and when feeding a 20% protein/20% fat (20/20) milk replacer.

In a calf trial done at a larger dairy in Wisconsin (Sockett and Earleywine, 2013a), two groups of calves were fed 1.8 lb. of a 28/20 milk replacer twice daily at 8 a.m. and 9 p.m. for days 1-7, followed by 2.5 lb. fed either two or three times daily (the third feeding was at 2:30 p.m.) for days 8-42 and then only 1.25 lb. fed once daily for days 43-49 before full weaning at day 50, when the calves were moved into group pens.

Statistically significant increases in bodyweight gain, hip height and feed efficiency were noted for calves fed three times versus two times each day.

There are several possibilities for this increased productivity, but often, a full analysis is not possible until all data are provided and submitted for peer review and then published in a scientific journal.

For instance, no data on volumes fed or concentrations of solids of milk replacer fed were provided. A solids level greater than 15% is problematic based on osmolality and predisposition to digestive upsets (Kertz and Lofton, 2013). Feeding the same amount of milk replacer powder but in different volumes with water can be beneficial for lowering the solids level to 15% or less.

## Environment

While more attention has been paid over the last several years to the effects of cold stress in calves (*Feedstuffs*, Nov. 7, 2011), calves are also subject to heat stress. Both of these areas were addressed at the conference (Thornsberry, 2013), but the paucity of data on heat stress in calves is obvious.

Heat stress can increase energy demands for coping as it relates to panting, excessive fluid loss, sweating, inadequate water intake, lack of shade and scours. There is a clear need for research in the area of how to feed and manage calves undergoing heat stress.

Air quality issues in calf pens were addressed (Sockett and Earleywine, 2013b) with an instrument used for measuring air quality. The degree to which this is an issue was reported in a previous Wisconsin study (Lago et al., 2006). Based on 7,236 plate readings that had been done, 75% of calf barns had air quality issues.

## Colostrum

In a 2005 study (Faber et al., 2005), calves were provided either two or four quarts of colostrum at the very first post-calving feeding during one year in a commercial registered Brown Swiss herd. The amount was the only difference between these two sets of calves, which went through two lactations in that single herd. Calves that received four quarts of colostrum had lower treatment costs, greater daily gain, produced 11% more milk in the first lactation and produced 17% more milk in the second lactation.

Last year, a large data set of calves raised through two or more lactations provided evidence that growth rates in the first two months of life could increase milk production by about 2,000 lb. over multiple lactations by doubling the calf's birth weight at two months of age (Soberon et al., 2012). Could this be additive with the colostrum effect noted previously?

Soberon (2013) addressed whether the value of colostrum can be more than just providing passive immunity alone — the benefit most often associated with colostrum — and how this fits with his expressed overall goal to provide the management and nutrition that allows for optimum growth, health and milk yield in the first and subsequent lactations in the most profitable manner.

Twelve categories of bioactive factors were listed out of more than 200 identified in one report (Blum and Baumrucker, 2002). Soberon briefly reviewed a study in which two levels of colostrum were fed, with two levels of milk replacer fed for each of those colostrum treatments. The effects of colostrum and milk replacer levels fed were additive.

Studies in pigs have shown benefits of colostrum factors in mammary gland development, glucose regulation, intestinal development and reproduction.

Twelve studies were combined in a meta-analysis and revealed that a 1 lb.

difference in daily gain during the first two months of a calf's life resulted in about 1,500 lb. more milk in the first lactation.

There appears to be no compensatory mechanism for a lack of colostrum and low nutrition during the first several months of a calf's life.

## Residues

Edwards (2013) capped off the conference by addressing the issue of antibiotic residue in milk and meat. As an example of the problem, in 2008, the Food Safety & Inspection Service found, through carcass sampling, that dairy cattle (cows and bob veal) made up 8% of the total number of slaughtered animals but 90% of the residue violations.

To prevent residues, follow label directions, keep good treatment records and develop and follow science-based treatment protocols.

## The Bottom Line

To summarize:

- Some non-milk protein sources may have benefits beyond nutrition.
- Feeding more milk replacer more frequently may improve calf performance.
- Little is known about countering the

effects of heat stress on calves.

- Air quality in calf pens is worse than many think.
- Colostrum has benefits beyond simply immunoglobulin transfer.
- More progress is needed on preventing antibiotic residues in dairy calves and cows.

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