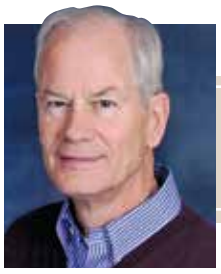
REGARDLESS OF OUR MILK FEEDING PROGRAM, calf growth will falter if we don't enable them to meet their intake needs postweaning.

Heifer performance is multi-faceted

When it comes to colostrum, weaning and heifer growth, there is a great deal we have yet to learn.

by A. F. Kertz

THERE was high attendance at the 2014 joint annual meeting of the Animal and Dairy Science Associations in Kansas City in July. Four calf and heifer abstracts from posters, oral or other presentations have been selected to briefly review below.



KERTZ

The author is the principal in ANDHILL, LLC, a St. Louis-based consulting firm. Kertz is also serving as president of the American Dairy Science Association.

Freeze/thaw impacts IgG readings. Fifty-eight first-lactation colostrum samples from a single Northeast Iowa Jersey dairy were collected and analyzed within two hours for immunoglobulin G. On-farm refractometry was used to rapidly determine IgG concentrations. Samples were also analyzed for percent Brix and by colostrometer. Samples were then transported to Iowa State University and placed in a -4°F manual defrost freezer.

Samples were exposed to freeze thaw cycles with subsequent analysis by radial immunodiffusion (RID) and refractometry. After seven days, 14 days and one year, all samples were thawed and reanalyzed by RID, percent Brix, refractometry and colostrometer before being refrozen.

Fresh colostrum IgG averaged 72.9 mg/ml by RID, 21.2 percent Brix and had a refractometry reading of 1.37. Freeze/thaw affected results. IgG concentrations by RID were greater in fresh and one freeze/thaw sample compared to those undergoing two or three freeze/thaw cycles (72.9, 75.4, 67.2 and 67.3 mg IgG/mL, respectively).

Colostrometer readings were lower in one freeze/thaw sample compared to fresh and two freeze/thaw samples. Multiple freeze/thaw cycles did not affect refractometry or percent Brix readings. In fresh samples, IgG concentrations were moderately correlated with refractometry, percent Brix and colostrometer readings.

Take-home message: This study supports use of refractometry and percent Brix to accurately and relatively quickly determine IgG concentrations in fresh Jersey colostrum. In addition, freeze/thaw cycles impacted RID values, while refractometry values were not affected.

Contact: Howard Tyler, Iowa State University, Phone: 515-294-6434, Email: htyler@iastate.edu

Later weaning improved intake, gain. There are a myriad of feeding programs for dairy calves with a more generally accepted goal of doubling birth weight by the end of 8 weeks of life. The 2007 NAHMS found that the most popular age to wean calves was 8 weeks, followed by 6 weeks. How this difference in age at weaning plays out was studied by a group at the University of Guelph.

Twenty female calves were randomly assigned at birth to be weaned either at 6 or 8 weeks of age. A 26 percent protein/16 percent fat milk replacer was fed twice daily at 2.6 pounds per calf until a week before weaning. At that point, one meal was eliminated followed by full weaning at that week's end. A pelleted starter along with straw and water were fed free-choice with daily measurements until the end of 10 weeks of age.

During the week before weaning, calves weaned at 8 versus 6 weeks of age averaged 3.0 and 0.9 pound daily starter intake and 1.74 compared to 0.77 pound daily gain, respectively. At the end of 10 weeks, the 8-week calves weighed 220 pounds while the 6-week calves weighed 200 pounds.

These data illustrate several points. If the milk replacer feeding rate is very high, starter intake will be too low to wean at 6 weeks. The trade-off greatly favors more milk replacer in terms of energy and feed efficiency. As calves grow faster and get bigger, this will result in more starter intake.

Take-home message: Milk or milk replacer feeding programs must account for the amount of starter intake in determining when or how to wean calves. If not, overall performance will not be what is desired.

Contact: Hana Brown, University of Guelph, Phone: 519-362-5342, Email: hana@uogeulph.ca.

Particle size impacts eating behavior. Eight ruminally-cannulated dairy heifers were fed either long (2.5 inch) or short (0.24 inch) cut corn silage at 1.65 percent of body weight to determine eating behavior and digestion. A TMR containing 70 percent corn silage was fed once daily. Particle size of the TMR was measured at zero and two hours after feeding. Two hours after feeding, the feed particles in the long corn silage ration greater than 3.58 inches rose 91 percent with no change in feed particles on the short cut diet.

Overall eating rate was similar between treatments (6.1 versus 5.2 pounds per hour short cut and long cut, respectively). During the day, rumen pH changed from 7.1 at feeding to 4.7 eight hours postfeeding, but it was the same for both treatments. This is not surprising since heifers were limit-fed and the diet was consumed by four hours after feeding. Dry matter digestibility of diets was similar at 75.2 percent.

There were no differences in rumen pH, eating rate and DM digestibility with these different particle size diets. However, TMR particle size differences two hours after feeding suggested that heifers did sort the diets with selective consumption of small particles and selective refusal of the long feed particles.

Take-home message: These heifers were individually and restrictive fed. In group ad libitum feeding, sorting could promote competition and selective consumption of feed particles by more dominant heifers. This could lead to inappropriate and variable nutrition for heifers among group fed animals.

Contact: Jud Heinrichs, Penn State, Phone: 814-863-3916, Email: ajh@psu.edu

Predicting heifer growth by genomics

A Wisconsin study was done using type traits and PTA milk from the heifer's first genomic test to predict her 24-month body weight. This would provide an adjusted growth curve to assess how an individual heifer was doing relative to its genetic potential.

A database of 802 heifers was used, with genotypes on 561 animals and 2,373 body weights. A model was developed for heifer growth by age for all of the body weights to fix the growth curve shape.

The terms that resulted in the best fit were: PTA milk, final score, stature, body depth, rear leg rear view, udder height, udder depth, front and rear teat placement, and teat length. Using this genomic model, some improvement versus the growth model was made, but this did not provide the desired level of body size prediction for use as an on-farm heifer assessment tool.

Take-home message: The next step would be a genomic study of multiple farms across multiple areas and use of the SNP data to create a true genomic prediction of mature body weight.

Contact: David Cook, University of Wisconsin, Phone: 920-979-7150, Email: dcook@uwalumni.com