A study was conducted to determine effects of different fat and protein levels in commercial milk replacers on the growth performance and rumen development of neonatal Holstein calves. Fifty-three calves (23 male; 30 female) were assigned to one of three dietary treatments which included three milk replacers (20% CP: 20% fat; 25% CP: 15% fat; 28% CP: 20% fat) fed once per day at 10% of birth weight through weaning on day 42. Calves were offered a 20% CP calf starter and water free choice beginning on day 5. All calves were weaned on day 42. Body weights were measured at birth and weekly through weaning. Additionally, hip height, wither height, and body length were measured weekly. Feed intake and fecal scores were recorded daily. Beginning on day 7 and continuing weekly through weaning, blood samples were collected prior to morning feeding for analysis of IGF-I and on days 14, 28, 42, and 56 for PUN and beta-hydroxybutyrate concentrations. On days 28, 56, and 84 rumen fluid was collected for analysis of pH and short chain VFAs to evaluate possible differences in rumen development. Calves fed 28:20 milk replacer had greater (P < 0.01) average daily gain, starter intake, PUN, and beta-hydroxybutyrate concentrations when compared to the other treatments. Also, a treatment by week interaction was observed (P < 0.01) for starter intake, with calves on 28:20 milk replacer increasing after week 3 and maintaining the greater starter intake through week 8. No differences were observed (P > 0.05) in fecal scores among any treatments. Average weekly wither height and body length were greater (P < 0.05) in calves fed 28:20 milk replacer. There were no effects (P > 0.05) of treatment on IGF-I concentrations, rumen pH, or concentrations of VFA. Acetate and propionate, as a percent of total VFA, tended (P < 0.13) to increase in calves fed 28:20 milk replacer without reducing fat content improved growth in young dairy calves without compromising health or rumen development.

Key Words: Milk Replacer, Growth, Rumen Development

A trial was conducted to evaluate effects of ThermalCare-D® v1 (T1), ThermalCare-D® v2 (T2), and ThermalCare-D® v1 with glycerol (T1G) on milk yield, efficiency of yield, and nutrient digestibility in hot weather. Thermal Care D® is comprised of proprietary additives selected for the potential ability to improve physiological response to heat stress. Forty-eight Holstein cows averaging 183 DIM and 43.9 kg/d of milk were used. The study was conducted June to Aug. 2007. Cows were fed a common diet during a 2 wk standardization period, blocked into groups of 4 based on parity, milk yield, and ECM and randomly assigned within block to one of 4 treatments for 8 wks. Experimental design was a randomized complete block. Diets were corn silage based and balanced to be iso-caloric and iso-nitrogenous. No effects on DMI, milk yield, or energy corrected milk (P>0.53) were noted. Yet, multiparous cows offered T2 and primiparous cows on T1G treatments showed similar milk yield which was greater than cows fed C or T1 diets (P<0.02). An increase (P<0.01) in milk yield was observed for primiparous versus multiparous cows on T1G. Decreased (P<0.02) milk fat percentage was observed for T1 versus C while T2 and T1G had numerically lower fat percentage versus C. An increase in NE balance by week was observed for T1G (42.2 Mcal/d) compared to C, T1, and T2 (22.8, 20.6, and 36.1 Mcal/d, respectively). Cows fed T1G had numerically the greatest weekly weight gain compared with other treatments. No effect on respiratory rate, skin temperature, body temperature or concentrations of serum glucose, urea N, or non-esterified fatty acid was noted. Cows offered Thermal Care-D® treatments tended (P<0.13) to increase DMI versus C when digestibility measurements were recorded. Cows fed T1 and T2 exhibited (P<0.05) improved digestion of DM, NDF and ADF compared with C or T1G. Results suggest Thermal Care-D® may improve feed DMI and nutrient digestion by cows during hot weather. The addition of glycerol to ThermalCare-D® v1 was more beneficial to primiparous cows than multiparous cows.

Key Words: Heat Stress, ThermalCare, Glycerol

A study was conducted to determine effects of different fat and protein levels in commercial milk replacers on the growth performance and rumen development of lactating Holstein cows. A. J. Bridges*, C. C. Williams, C. F. Hutchison, J. M. Laborde, A. N. Howard, and C. Leonardi, Louisiana State University, Baton Rouge.

Forty-eight Holstein cows averaging 183 DIM and 43.9 kg/d of milk were used more efficiently if starch absorption is enhanced.