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SYMPOSIA AND ORAL SESSIONS

ADSA Southern Branch Graduate Student Competition

8 Effects of protein sources on growth and hormonal status of weaned dairy calves. C. A. Sissell*, C. C. Williams, C. F. Hutchison, D. T. Gantt, L. R. Gentry, A. J. Bridges, and J. E. Chandler, *Louisiana State University Agricultural Center, Baton Rouge.*

Eight weaned Holstein calves approximately 6 months of age (mean BW 185.15 ± 16.16 kg) were used in a replicated 4 x 4 Latin Square designed experiment to study the effects of protein sources on performance of weaned dairy calves. Dietary treatments consisted of 16% CP diets with three sources of ruminally undegradable protein (RUP). Experimental diets were corn-silage based, with soybean meal (SBM) as the source of ruminally degradable protein (control) and 3 sources of RUP including heat treated SBM (SoyPlus), animal protein blend (ProLak), and extruded-expelled SBM, all included at 45% of the dietary CP. The animals were fed their respective diets twice daily at ad libitum levels during each 14-d adjustment period and 4-d sample collection period. Animals were housed in individual stalls for 14 days for dietary adjustment and feed intake measurements. Steers were housed in metabolism crates during the last 4 days of each experimental period for sample collection. Total fecal and urine output was collected, weighed, and sub sampled for laboratory analysis of nitrogen during the 4-d collection period. On day 4 of the collection period, animals were fitted with jugular catheters. Blood samples were collected at 15-minute intervals for 6 hours for analysis of growth hormone (GH). Also on day 4, blood samples were collected at the beginning of the 6 hours for plasma urea nitrogen (PUN) and at 30-minute intervals for analysis of IGF-I and insulin. On day 18 of each experimental period body weight, wither height, hip height, and body length were measured. Treatment did not affect dry matter intake ($P > 0.05$). There were also no effects ($P > 0.05$) of protein source on nitrogen balance, PUN, or on any growth parameters measured. There was a treatment effect ($P < 0.01$) on GH, with calves fed extruded-expelled SBM having the lowest concentrations. Plasma IGF-I concentrations were greater ($P < 0.05$) in calves consuming extruded-expelled SBM and Prolak. Treatment did not affect ($P > 0.05$) insulin concentrations. These data suggest that feeding diets with sources of RUP does not improve performance in weaned dairy calves.

Key Words: Weaned Calves, Rumen Undegradable Protein, Hormones

9 Impact of feed management software on whole farm nutrient balance and feeding management. B. G. Cox*, R. E. James, K. F. Knowlton, M. L. McGilliard, and C. C. Stallings, *Virginia Polytechnic Institute and State University, Blacksburg.*

The impact of precision feeding utilizing feed management software on whole farm nutrient balance (WFNB) and feeding management was assessed from January through December 2006. Nine treatment and six control farms were selected in four regions of the Chesapeake Bay Watershed of Virginia. Herd sizes averaged 271 and 390 lactating cows for treatment and control farms while milk yield averaged 30 and 27 kg/d per cow, respectively. Crop hectares grown averaged 309 and 310 ha for treatment and control farms, respectively. Treatment farms purchased and installed feed management software (TMR Tracker™, Digi-Star LLC, Fort Atkinson WI) between May and October 2006. Data were collected for calendar year 2005 and 2006 to compute WFNB using software from the University of Nebraska. On treatment farms, up to five feed samples were obtained monthly including each total mixed ration fed to lactating cows. Control farms submitted total mixed ration samples every 2 mo. Standard wet chemistry analysis of samples was performed. Data stored in the software were collected monthly from each treatment farm concurrent with feed sampling. Daily overfeeding of all ingredients across treatment farms averaged $1.25\% \pm 5.86$, ranging from -67.28% to $+54.57\%$. This corresponded to average daily overfeeding of CP and P of $2.26\% \pm 6.88$ and $1.91\% \pm 6.39$, respectively. Whole farm nutrient balance did not differ between treatment and control farms. In conclusion, WFNB was not reduced after 3 to 6 mo of using feed management software; however, the large variation in daily over or under feeding indicates potential for future reductions through reduced variability.

Key Words: Precision Feeding, Whole Farm Nutrient Balance, Phosphorus