

determined at Dairyland labs (Arcadia, WI). The pef was calculated as percentage of sample retained above 4.0-mm and 1.18-mm screens for PSPS4mm and Ro-Tap, respectively. The peNDF (%DM) of each sample was calculated as pef x NDF. Dry matter intake, milk yield, and milk protein and fat content were recorded for each herd. The REG procedure of SAS was used to determine the relationship between pef and peNDF estimated using PSPS4mm and Ro-Tap. The Stepwise Selection procedure was used to determine variables that affect herd milk components. The PSPS4mm was a good predictor of pef and peNDF in TMR and forages ($R^2 = 0.93$ and 0.98 ; slope = 0.86 and 0.91 , respectively). For the CS, AS, and TMR samples, average pef estimated with Ro-Tap was (mean \pm SD) 87.4 ± 3.99 , 83.5 ± 4.34 , and 64.3 ± 6.24 , respectively, and average pef estimated with PSPS4mm was (mean \pm SD) 88.4 ± 4.58 , 87.6 ± 2.92 , and 64.2 ± 6.35 , respectively. Significant variables for predicting herd milk fat content were pef, concentrate intake, and milk yield (model $R^2 = 0.55$). Significant variables for predicting milk protein content were pef and forage intake (model $R^2 = 0.42$). The PSPS4mm is a useful tool to estimate pef and peNDF of forages and TMR. The pef within and across sample type varied, so estimating pef of individual samples on-farm will allow for more precise formulation of ration peNDF, which affects herd milk components.

Key Words: physically effective NDF, Penn State Particle Separator, milk component

W376 The effects of choice feeding during preweaning period on preweaning and postweaning growth performance of dairy calves. Mohammad Wakil Hassani and Murat Gorgulu*, *Cukurova University Agriculture Faculty Department of Animal Science, Adana, Turkey.*

The aim of the study was to investigate the effects of choice feeding in preweaning period on growing performance of calf performance pre and postweaning period. Twenty-eight male and 28 female Holstein calves were used to test 2 feeding systems (TMR, total mixed ration, containing 10% alfalfa hay and choice feeding) and 2 sex (male and female) in a factorial arrangement. Before weaning TMR calves were fed with TMR containing 90% calf starter and 10% alfalfa hay and after weaning all calves were fed with the same TMR containing 50% calf grower and 50% alfalfa hay. Choice fed calves were fed with feed ingredients in TMR ad libitum and simultaneously. The choice fed calves before weaning preferred the diet containing lower alfalfa (10% vs. 5.78%, $P < 0.05$) and barley (52.29% vs. 15.87%, $P < 0.05$), and higher wheat bran (17.28% vs. 30.07%, $P < 0.05$) and SBM (17.73 vs. 45.39%, $P < 0.05$). Sex had no significant effects on diet preferences ($P > 0.05$). Choice feeding increased feed and nutrient intake (protein and fiber) and daily gain significantly ($P < 0.05$). After weaning, sex and feeding system during preweaning period had no effects on any parameters investigated ($P > 0.05$). But sex and feeding system interaction had significant effects on daily gain, feed and nutrient intakes ($P < 0.05$). The male calves fed TMR before weaning consumed more feed and nutrients and had higher daily gain than females but, choice fed calves in both sex had similar daily gain, feed and nutrient intake after weaning. When overall performance were evaluated, male calves had higher daily gain than females ($P < 0.05$). Sex x feeding system interaction had significant effects on feed and nutrient intake ($P < 0.05$). The male calves fed with TMR consumed more feed and nutrients than the females ones but this differences disappeared in choice feeding group. In conclusion, the results revealed that choice feeding may improve growth performance of calves by increasing protein intake before weaning and this effect may disappear after weaning. The female calve gave better response to

choice feeding in respect to feed intake. This work was supported by Research Fund of the Cukurova University.

Key Words: choice feeding, calf, feeding system

W377 Effects of day of gestation and feeding regimen in Holstein x Gyr cows on apparent total-tract digestibility, nitrogen balance, and fat deposition. Polyana P. Rotta*^{1,2}, Sebastiao C. Valadares Filho¹, Terry E. Engle², Luiz Fernando Costa e Silva^{1,2}, Marcos I. Marcondes¹, Fernanda S. Machado³, Tathiane R. S. Gionbelli¹, Breno C. Silva¹, and Marcos V. C. Pacheco¹, ¹Universidade Federal de Viçosa, Viçosa, Minas Gerais, Brazil ²Colorado State University, Fort Collins, CO, ³Embrapa Gado de Leite, Juiz de Fora, Minas Gerais, Brazil.

This study investigated how feeding regimen (FR) alters apparent total-tract digestibility, performance, N balance, excretion of purine derivatives, and fat deposition in Holstein x Gyr cows at different days of gestation (DG). Forty-four pregnant multiparous Holstein x Gyr cows with an average initial body weight of 480 ± 10.1 kg and an initial age of 5 ± 0.5 yr old were allocated to 1 of 2 FR: ad libitum (AL; n = 20) and maintenance level (ML; n = 24). Maintenance level was considered to be 1.15% of body weight on a dry matter (DM) basis and met 100% of the energy requirements, whereas AL provided 190% of total net energy requirements. Data for hot and cold carcass dressing, fat deposition, average daily gain, empty body gain, and average daily gain without the gravid uterus were analyzed as a 4×2 factorial design. Intake, apparent total-tract digestibility, N balance, urinary concentration of urea, and purine derivatives data were analyzed as repeated measurements taken over the 28-d period. Pregnant cows were slaughtered on 4 different DG: 139, 199, 241, and 268 d. Overall, DM intake decreased as DG increased. This decrease observed in DM intake may be associated with the reduction in ruminal volume caused by the rapid increase in fetal size during late gestation. We observed an interaction for DM and organic matter apparent total-tract digestibility between FR and DG; at 150, 178, and 206 d of gestation, ML-fed cows had greater DM and organic matter apparent total-tract digestibility values than AL-fed cows. Rib fat thickness, mesentery, and kidney, pelvic, and heart fat were greater in AL-fed than in ML-fed cows at all DG, with the exception of rib fat thickness on d 139. Ad libitum-fed cows excreted more N in their feces and urine compared with ML-fed cows. Pregnant cows that were fed at maintenance had greater digestibility during some DG, excreted less N in feces and less N and urea in urine, and deposited less fat in the body. We therefore recommend ML (1.15% of body weight with 93% of roughage) as a FR for pregnant dry cows; however, during the last month of gestation, AL seems to be the most appropriate FR to avoid loss of body weight.

Key Words: ad libitum, maintenance, performance

W378 Effects of day of gestation and feeding regimen in Holstein x Gyr cows on maternal and fetal visceral organ mass. Polyana P. Rotta*^{1,2}, Sebastiao C. Valadares Filho¹, Terry E. Engle², Luiz Fernando Costa e Silva^{1,2}, Marcos I. Marcondes¹, Mariana M. Campos³, Tathiane R. S. Gionbelli¹, Luis H. R. Silva¹, Edilane C. Martins¹, Flavia A. S. Silva¹, and Faider A. C. Villadiego¹, ¹Universidade Federal de Viçosa, Viçosa, Minas Gerais, Brazil, ²Colorado State University, Fort Collins, Colorado, ³Embrapa Gado de Leite, Juiz de Fora, Minas Gerais, Brazil.

This study investigated the influence of day of gestation (DG) and feeding regimens (FR) on maternal and fetal visceral organ mass in Holstein



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