334 Moment and allocation of corn silage on dry matter intake and milk production of grazing dairy cows. D. A. Mattiauda*[1], M. Carriquiry[1], S. Tamminga[2], F. Elizondo[1], and P. Chilibroste[1], *[1]Departamento de Produccion y Pasturas, Facultad de Agronomia, UdelaR, Paysandu, Uruguay, [2]Department of Animal Science, Wageningen University, Wageningen, the Netherlands.*

Thirty-three multiparous Holstein cows were used in a randomized block design to study the effects of feeding strategies (corn silage allocation during the day) in early lactation (48 ± 17.8 d). All cows (separated by treatment) had access to an ungrazed daily strip of pasture (1535 ± 289 kg DM/ha; forage allowance: 15 kg DM/cow) from 0900 to 1500 h and received 2.7 kg DM of concentrate at each milking (0430 and 1530 h). Corn silage (3.9 kg DM/d) was offered 100% at 1700 h (T1), at 0800 h (T2) or equally distributed at 1700 and 0800 h (T3). Experimental period lasted 7 wk with 1 wk of adaptation and 6 wk of measurements. Milk yield was recorded daily and milk samples were collected weekly (2 consecutive days) for fat, protein, and lactose composition. Cow BCS was recorded every 2 wk. Individual herbage DMI was determined during 4 d at wk 7 in 12 cows (4 complete blocks), using n-alkanes. Data were analyzed with a mixed model including treatment, week of treatment and their interaction (if corresponded) as fixed effects and block as a random effect. Herbage DMI was greater ($P < 0.04$) for T1 and T3 than T2 cows (10.3, 8.5, and 11.0 ± 0.68 kg/d for T1, T2, and T3, respectively) which defined a difference between treatments in total DMI (19.5, 17.7, 20.0 ± 0.68 kg/d for T1, T2, and T3, respectively). There was no difference in milk yield among treatments (25.2 ± 0.62 kg/d) but fat percentage was greater ($P < 0.04$) for T3 than T2, being intermediate in T1 cows (3.85, 3.66 and 3.89 ± 0.072% for T1, T2, and T3, respectively), resulting in a trend ($P = 0.10$) for greater 4% fat-corrected milk yield (24.6, 23.7 and 25.3 ± 0.84 kg/d for T1, T2, and T3, respectively). Protein (2.97 ± 0.048%) and lactose (4.74 ± 0.045) percentages did not differ among treatments. Cow BCS was greater ($P < 0.03$) for T3 than T2, being intermediate in T1 cows (2.42, 2.37, 2.52 ± 0.063 for T1, T2, and T3, respectively). Corn silage allocation related to grazing session had an effect on DMI and productive performance, probably due to the integration of the animal grazing strategy and rumen fermentation.

Key Words: feeding strategy, corn silage, grazing

335 Predicting dry matter intake of Holstein calves. J. C. M. Lima[1], J. P. P. Rodrigues[1], M. I. Marcondes*[1], M. M. Campos[2], T. E. Silva[1], A. S. Treece[1], N. C. S. Gonzaga[1], and A. F. W. Oliveira[1], *[1]Universidade Federal de Viçosa, Viçosa, Minas Gerais, Brazil, [2]Embrapa Gado de Leite, Juiz de Fora, Minas Gerais, Brazil.*

This study aimed to develop a model to predict dry matter intake (DMI) in dairy calves. Thirty-two male Holstein calves, with 3 d of age and average live weight of 35.56 ± 5.86 kg, were used. The animals were distributed into a completely randomized design and allocated in individual houses. The treatments consisted of different amounts of raw milk (12.43% DM; 3.19% fat; 2.68% CP on natural matter basis), which were: 2, 4, 6 and 8 L/day, fed twice a day, in 8 replications. All calves were fed starter (19.75% CP) ad libitum and feed intake was registered daily from 3 to 59 d old. Total dry matter intake (TDMI; kg/day) was obtained summing milk dry matter intake (MDMI) and starter dry matter intake (SDMI; kg/day). TDMI equations were regressed for each treatment by days according to the model: $TDMI = \beta_0 + e^{(\beta 1 \times d)}$. SDMI was regressed by milk intake (MI; liters/day) and day according to the model: $SDMI = \beta_0 \times MI + \beta 1 \times e^{((\beta 2 \times MI + \beta 3) \times d)}$. The TDMI equations obtained for each treatment was: $TDMI = 0.2405(\pm 0.0165) \times e^{0.0279(\pm 0.0010) \times d}$; $TDMI = 0.3156(\pm 0.0135) \times e^{0.0262(\pm 0.0007) \times d}$; $TDMI = 0.4957(\pm 0.0227) \times e^{0.0173(\pm 0.0007) \times d}$ and $TDMI = 0.7068(\pm 0.0215) \times e^{0.0125(\pm 0.0005) \times d}$ for 2, 4, 6 and 8 L/day, respectively. The β_0 values indicate that initial intake was greater with greater milk amounts, while β_1 suggests that the rate of increasing in dry matter intake was more expressive for calves fed lower milk amount. Afterward, β_0 and β_1 of each equation were linear regressed on milk intake to compose a single equation to predict TDMI in calves. The equations to predict TDMI and SDMI according to milk intake and age were, respectively: $TDMI = (0.079 \times MI + 0.0449) \times e^{((-0.0028 \times MI + 0.0348) \times d)}$ and $SDMI = -0.013 \times MI + 0.125 \times e^{((-0.003 \times MI + 0.034) \times d)}$. Negative value obtained for parameters linked to milk intake (β_0; β_2) suggests that initial starter intake was lower for greater milk intake. Considering that when using 2 prediction equations the sum of random errors might be greater, it is suggested to estimate SDMI by the equation: SDMI = DMI – MDMI. It can be concluded that TDMI and SDMI can be explained by calf age and milk intake. Supported by CNPq/Fapemig.

Key Words: calf, milk, starter

336 Abrupt changes in forage dry matter of one to three days affect intake and milk yield in lactating dairy cows. J. Boyd*[1] and D. R. Mertens[2], *[1]US Dairy Forage Center, Madison, WI, [2]Mertens Innovation & Research LLC, Belleville, WI.*

Our objective was to determine the effects of 1, 2, and 3d changes in forage DM on lactating cow performance across stage of lactation or parity. Data was compiled from 2 studies: Study A (fall 2009) early lactation cows averaging 65 DIM and 43.3 kg milk/d and Study B (fall 2012) late lactation cows averaging 192 DIM and 40.7 kg milk/d (total of 44 primiparous and 44 multiparous Holstein cows) housed in a tie stall barn. Within parity, cows were assigned to 1 of 11 blocks based on production and days in lactation. Study design was replicated 2 × 2 Latin Squares for each set of 1-, 2-, or 3-d treatments. Each period consisted of a 3-d pre-treatment, 1- to 3-d treatment, and a 3-d post-treatment phase. Diets were control (Ctrl) with no water added and treatment (Trt) with water added to decrease forage DM by 8%-units, to mimic rainfall events on a bunker silo and feeding an imprecise ration based on as-fed ratios of ingredients. Ctrl rations were adjusted daily to maintain DM ratios of ingredients. Feed offered was adjusted daily for both Ctrl and Trt based on the previous day's refusal. Milk yield was recorded daily and samples were taken 2× daily. Forages, TMR, and refusals were sampled daily and concentrates sampled 2× weekly. Chemical composition (DM, CP, aNDF) of samples were determined by NIR. Data was analyzed using Proc MIXED of SAS with cow within parity-block as a random variable. On d 1, DMI was reduced 2.3 ($P < 0.0001$), 1.5 ($P < 0.0001$), and 0.91 kg ($P < 0.0001$), for the 1-, 2-, and 3-d treatments, respectively, but DMI recovered during the following 1 to 3 d even during Trt phases. Although daily milk decreased slightly on d 1 of each Trt, the decrease was largest on d 2: −1.06 ($P = 0.003$), −1.48 ($P = 0.0003$) and −0.79 kg ($P = 0.03$), for the 1, 2, and 3d treatments, respectively. No parity effect was observed, but late lactation cows were not as susceptible to diet DM change as early lactation animals. We concluded that abrupt changes in forage DM causes economically significant reductions in daily milk yield, but the duration of the change does not worsen the losses if offered ration amounts are adjusted daily.

Key Words: DM changes, silage, feeding

337 Dry matter intake in crossbred dairy calves. A. L. Silva[1], M. I. Marcondes*[1], M. M. Campos[2], T. E. Silva[1], A. S. Trece[1], J. S. A. A. Santos[1], S. G. S. Moraes[1], and J. P. P. Rodrigues[1], *[1]Universidade*

Duen SP 6366