

The effect of the length of grazing sessions on the performance of automatic milking systems (AMS), and the milking behavior of a whole herd of Holstein cows transitioned for first time to pastures was evaluated. Two groups of cows ($n = 49 \pm 3$, DIM = 213 ± 1 d, Age = 3.8 ± 0.1 yr, BW = 611 ± 6 kg) voluntarily milked with single-stall AMS at rates of 4 to 2 milkings/day (based on DIM and milk yield), were exposed to 1-wk adaptation periods of 0, 2, 4, 6, and 8 h of grazing followed by 6 1-wk periods of voluntary grazing for 12 h. Groups grazed at moderate levels ($46 \pm 8\%$ utilization) on grass-legume strips located within 400 m from the barn. Exit to pasture was permitted via computer-operated gates if prescribed milking intervals (range: 6 to 12 h) were not exceeded. Fetching of cows with 12-h intervals since last milkings was conducted twice per day. Cows received once a day declining amounts of a forage-based TMR (5% orts) in addition to 1 kg of concentrate per 4 kg of milk. Contrast of linear and quadratic effects ($P < 0.05$) of the length of grazing periods on AMS performance and milking behavior of cows was conducted. Total milk, milking visits and the time AMS spent milking decreased linearly as grazing sessions extended. Performance of AMS was likely increasingly limited by lower milkings and milk yield of individual cows exposed to longer grazing sessions. Length of grazing sessions did not affect milk speed or duration of milking visits, but milking time and yield per milking dropped when the length of grazing session was intermediate. Optimization of AMS in pasture-based systems may require strategic planning of dynamic stocking rates to efficiently lessen declines in milking frequency and milk yield per cow.

Table 1. Automatic milking (AMS) performance and milk production of cows

	Grazing session, h						Contrast	
	0	2	4	6	8	12	L	Q
AMS								
Total Milk	1479	1394	1320	1239	1203	1189	**	
Milking visits	143	132	137	125	120	110	**	
Time milking, h/d	17	15	15	14	14	13	*	
Time free, h/d	5	7	7	8	8	9	*	
Time cleaning, h/d	2	2	2	2	2	2		
Cows								
Milk yield, kg/d	30.7	28.6	28.0	26.2	25.6	26.2	**	
Milkings	3.0	2.7	2.9	2.7	2.6	2.4	**	
Yield/milking, kg	10.3	10.5	9.6	9.8	10.0	10.8		**
Milking time, min	3.5	3.6	3.4	3.4	3.4	3.7		*
Milk speed, kg/min	2.5	2.5	2.4	2.4	2.4	2.4		
Fetch rate, %	7	7	7	8	10	12		*

* = $P < 0.05$; ** = $P < 0.01$.

Key words: automatic milking, grazing

T140 Corn and forage yield on degraded pasture recovered by integrated crop-livestock-forest system in the central region of Minas Gerais, Brazil. M. C. M. Viana^{*1}, M. H. T. Mascarenhas¹, W. M. Albernaz², F. M. Freire¹, R. C. Alvarenga³, E. A. Silva¹, M. M. Gontijo Neto³, and M. F. F. Teixeira^{4,5}, ¹EPAMIG - Minas Gerais Agricultural Research Corporation, Belo Horizonte, Minas Gerais, Brazil, ²EMATER MG - Minas Gerais Agricultural Assistance and Rural Extension, Belo Horizonte, Minas Gerais, Brazil, ³Embrapa Maize and Sorghum, Sete Lagoas, Minas Gerais, Brazil, ⁴FEAD, Belo Horizonte, Minas Gerais, Brazil, ⁵FAPEMIG, Belo Horizonte, Minas Gerais, Brazil.

The integrated crop-livestock-forest (iCLF) system has been used to recover degraded areas of crop and pastures in Brazil. To evaluate the influence of different eucalyptus arrangements and clones on the corn grain yield and pasture production in the first year of iCLF system a trial was carried out at Belo Horizonte, Brazil ($19^{\circ}28' \text{ SE } 45^{\circ}15' \text{ W}$, 732 m) on *Brachiaria decumbens* degraded pasture. The experimental design was a randomized complete block in a split plot, with three replications. Eucalyptus arrangements: double rows (3×2) \times 20 m; (2×2) \times 9 m and single rows (9×2 m) were distributed in the main plots, with 20 and 9 m between rows and 2 m between tree spacings. Eucalyptus clones: VM 58, GG100 and I144 were tested in the subplots. A corn (hybrid BRS3060) was intercropped with eucalyptus clones and cultivated as monoculture (control). Data were analyzed by ANOVA and means were compared by Tukey test ($P \leq 0.05$). Soil liming (2 t/ha), basal (300 kg/ha 08-28-16) and topdressed (350 kg/ha 20-00-20) corn fertilizations were accomplished. At the corn harvest, plant height, first ear height, number and weight of ears and grain yield were evaluated. Forty days after corn harvest dry matter (DM) production and chemical composition (CP, ADF, NDF and lignin contents) of *B. decumbens* regenerated from the soil seed bank were evaluated. There was no difference ($P \geq 0.05$) between corn in monoculture and corn intercropped with eucalyptus in all arrangements. The average corn grain yield in the iCLF system and as monoculture was 4.76 and 4.28 t/ha, respectively. Also there was no difference ($P \geq 0.05$) between the corn and forage growing under the eucalyptus clones. The DM yield and chemical composition of *B. decumbens* was not affected by the eucalyptus arrangements and clones. The soil liming and fertilizer applied to corn intercropped with eucalyptus contributed to the recovery of the pasture of *B. decumbens*. In the first year of iCLF establishment, the influence of eucalyptus shade is not a limitation to corn and pasture development. (Research supported by FAPEMIG/CNPq, Brazil)

Key words: agroforestry, forage, eucalyptus

T141 Supplement and stocking strategies for heavy-weight fall-born calves backgrounded on Tifton 85 bermudagrass. F. Rouquette*, J. Kerby, G. Nimr, and K. Norman, *Texas AgriLife Research, Overton.*

Fall-born calves weaned at 340 kg in early summer present management challenges for gain on bermudagrass (*Cynodon dactylon*) pastures (BG). Our objectives were to quantify gain/animal and gain/ha due to stocking rates (SR) and supplement (SUP) source and quantity. Simmental-sired calves with F-1 (Angus \times Brahman) dams were allotted to SUP treatments in successive years (YR). In YR 1, a 2:1 soybean meal:cracked corn (SBM) 36% protein ration containing Rumensin 80, salt, and minerals was group-fed daily at 0.4% BW (4-SBM) to 3 steers and 2 heifers on each of 2 replicate pastures of Tifton 85 BG stocked at 12, 18.5, and 22 320-kg calves/ha. Calf average daily gain (ADG) from 28 June to 28 September increased ($P < 0.05$) with SUP (0.7 kg/d) compared with pasture only (PAS) at 0.31 kg/d. The ADG differed ($P < 0.01$) between each SR of low (LO) (0.75 kg/d), medium (ME) (0.52 kg/d), and high (HI) (0.32 kg/d). Resultant gain/ac for SUP was 980, 1300, and 1118 kg/ha, respectively, for LO, ME, and HI SR; and for PAS was 690, 470, and 241 kg/ha, respectively. The SUP:extra gain was 3.3:1 for calves on ME or HI SR and 6.2:1 for LO SR. In YR 2, the 4-SBM ration was compared with daily 0.4% BW and 0.8% BW each of 8% protein cracked corn (CRN) (4-CRN, 8-CRN) and pelleted 23% protein corn gluten (GLU) (4-GLU, 8-GLU). Two replicate pastures of the 6 treatments were stocked at LO to ME SR from 22 June to 14 October. With 13.5 320-kg calves/ha, ADG was similar for 8-CRN (0.97 kg/d) and 8-GLU (0.86 kg/d), and similar for 8-GLU, 4-CRN