

**788 Effects of continuous milking, bST and early-lactation milking frequency on mammogenesis, milk yield and composition in primiparous cows.** A. C. Fitzgerald\*, E. L. Annen, P. C. Gentry, L. H. Baumgard, and R. J. Collier, *University of Arizona, Tucson.*

Continuous milking (CM) of bST-supplemented primiparous cows results in production losses of 20 to 25%, suggesting mammary growth was inhibited. We hypothesized continuous (throughout late gestation and early lactation) bST supplementation and/or early-lactation increased milking frequency (IMF) would alleviate production losses in CM glands through improved mammary epithelial cell (MEC) functionality and proliferation. Primiparous cows were randomly assigned to either continuous bST (+bST; n = 4) or no bST (-bST; n = 4) treatment throughout the experiment. Within each animal, udder halves were randomly assigned to either CM or a 60-d dry period (CTL) treatment. CTL halves were dried -60 d relative to expected parturition date. CM glands were milked twice daily until parturition or spontaneous dry-off. At parturition all cows were milked four times daily (4X) until 30 d postpartum. Time points for mammary biopsies averaged -19, -7, +2, +7, and +20 d relative to parturition. Average d dry for CTL glands was 59.5 and 49.3 d for 4X+bST and 4X-bST treatments. Due to spontaneous dry-off, CM halves were dry for an average of 1.0 and 13.5 d for 4X+bST and 4X-bST treatments. Prepartum half-udder milk yield was greater (P < 0.01) in +bST cows than -bST cows (11.7 vs. 9.2 kg/d). Postpartum milk yield was reduced (P < 0.01) in CM udder halves regardless of bST treatment (15.0 vs. 25.0 kg/d; CM vs. CTL). Milk composition (fat, protein, SCC linear score) was not affected by CM or bST. MEC proliferation (Ki67 antigen index) was greater (P < 0.01) in CTL glands at d -7 (6.2 vs. 3.4%, CTL vs. CM), but was not affected at d -19, +2, +7, or +20. MEC proliferation was unaffected by bST. Decreased milk yield in CM halves was not overcome by bST in primiparous cows milked 4X. Further, MEC proliferation was reduced in CM halves near parturition (-7 d).

**Key Words:** Continuous Milking, bST, Mammary Cell Proliferation

**789 The anticancer effects of vaccenic acid in milk fat are due to its conversion to conjugated linoleic acid via  $\Delta^9$ -desaturase.** A. L. Lock\*<sup>1</sup>, B. A. Corl<sup>1</sup>, D. E. Bauman<sup>1</sup>, D. M. Barbano<sup>1</sup>, and C. Ip<sup>2</sup>, <sup>1</sup>Cornell University, Ithaca, NY, <sup>2</sup>Roswell Park Cancer Institute, Buffalo, NY.

*Cis-9, trans-11* conjugated linoleic acid (CLA) has been shown to be anticarcinogenic in a number of animal tumor models. Dairy products are the principal source of CLA in human diets and endogenous synthesis from vaccenic acid (*trans-11* 18:1; VA), the major biohydrogenation intermediate produced in the rumen, is the predominant source of CLA in milk fat. Foods rich in CLA are therefore also rich in VA. We previously reported that dietary VA caused a dose-dependent increase in the accumulation of CLA in the mammary fat pad; this was accompanied by a parallel decreased risk of tumorigenesis in the mammary gland. In an attempt to delineate a direct versus an indirect action of VA, the objective of this study was to determine whether treatment with sterculic oil (SO), a potent inhibitor of  $\Delta^9$ -desaturase, would reverse the cancer-protective effect of VA derived from milk fat. Female Sprague-Dawley

rats (9 per diet) were injected with a single dose of carcinogen (methyl-nitrosourea), and fed one of 4 diets: 1) low VA, 2) low VA + SO, 3) high VA, and 4) high VA + SO. After 6 wk, the mammary glands were evaluated histologically for the appearance of premalignant lesions, and tissues analyzed for fatty acids. Total premalignant lesions were 83, 80, 43 and 68 for treatment 1, 2, 3 and 4, respectively (P<0.05). In the same order, the CLA concentrations (g/100g fatty acids) in the mammary fat pad were 2.13, 2.14, 4.75 and 2.98, while the VA concentrations were 0.54, 0.74, 4.89 and 8.20 (P<0.001). Thus the feeding of VA increased mammary tissue level of CLA and reduced the risk of developing premalignant lesions in the mammary gland. Treatment with SO reversed the effects of VA. It is most likely that the anticarcinogenic effect of VA is mediated through its conversion to CLA via  $\Delta^9$ -desaturase, and when this conversion is blocked by sterculic oil, the biological response to VA is altered.

**Key Words:** Vaccenic Acid, Conjugated Linoleic Acid, Mammary Cancer

**790 Relationships between somatic cell count and bacterial infection in Italian buffaloes.** P. Boettcher\*<sup>1</sup>, A. Stella<sup>2</sup>, G. Pisoni<sup>3</sup>, C. Sgoifo Rossi<sup>3</sup>, R. Fedeli<sup>3</sup>, M. Rinaldi<sup>3</sup>, and P. Moroni<sup>3</sup>, <sup>1</sup>IBBA-CNR, Seagrata, Italy, <sup>2</sup>CERSA-FPTP, Seagrata, Italy, <sup>3</sup>University of Milan, Italy.

The objective of this study was to examine factors affecting somatic cell count (SCC) and bacterial infection in Italian buffaloes. The data used in the study were 1930 test-day records of SCC and bacterial presence in each of the four udder quarters of 48 buffalo cows in two Italian herds. Nearly 65% of the records showed presence of bacteria. Fourteen different species were observed. Staphylococcus species were the most commonly observed bacteria, detected in 47% of the samples. Streptococcus uberis was the next most common, observed in approximately 8% of the samples. Various linear mixed models were used to determine the statistical significance of the effects of various factors on SCC. For this analysis, SCC was transformed to somatic cell score (SCS) using the standard log 2 transformation. Fixed effects in the model included herd, parity number (1, 2, 3, 4, 5, and > 6), days in milk, location of the quarter (e.g. left-front, right-rear, etc.), and infection status. Infection status was defined in two different ways. In the first, two classes were established: 1) free from bacteria and 2) infected with any species. The second approach had four groups: 1) uninfected, 2) infected with Strep uberis, 3) infected with a Staphylococcus species, and 4) infected with any other species. Cow and quarter-nested-within-cow were random effects in the model. No significant difference in SCS was observed across herds. Mean SCS tended to increase with age up until third lactation, and then decreased during later lactations. Consistent with previous studies in other species, SCS tended to increase as lactation progressed. Significant differences in SCS were observed among the different quarters of the udder, as SCS was highest in the front-left quarter (mean = 3.16) and lowest in the right-rear quarter (mean = 2.22). When infection status was defined as "infected" or "healthy", SCS was slightly higher in infected quarters, but the difference was not significant. The analysis based on different bacterial groups indicated that only Strep uberis was associated with significantly (P #8804 0.0006) elevated levels of SCS (3.29 vs. 2.37) with respect to uninfected quarters.

**Key Words:** Somatic Cell Score, Mastitis, Buffalo

## Nonruminant Nutrition: Sow Feeding

**791 A new sow model to study amino acid arterio-venous differences and uptake by the mammary gland before and after farrowing.** Z. Mroz\*<sup>1</sup>, W. Krasucki<sup>2</sup>, and S. J. Koopmans<sup>1</sup>, <sup>1</sup>Wageningen University and Research Centre, Division Nutrition and Food, Lelystad, The Netherlands, <sup>2</sup>Agricultural University of Lublin, Poland.

A new sow model was developed to study the post-absorptive kinetics of amino acids in the mammary gland during pre- and postfarrowing periods. For this purpose, six multiparous sows at late pregnancy were fitted with three blood catheters (*A. epigastrica cranialis superficialis*, *A. iliaca externa*, *V. epigastrica cranialis superficialis*) to measure: 1) arterio-venous differences (AVD), extraction rate (ER) and uptake

of essential amino acids in the mammary gland, and 2) blood acid-base characteristics as affected by two factors - sampling time (pre-prandial versus post-prandial) and phase of the reproductive cycle (pre- and post-farrowing). The AVD, ER and amino acid uptake in the mammary gland of sows as affected by the post-farrowing phase are presented in Table 1. In general, we found that this new sow model can be useful for studying dynamics of essential amino acids uptake for colostrum or milk synthesis. Also, the requirement of the mammary gland in pregnancy and lactation for specific amino acids can be estimated.

Amino acid arterio-venous differences (ADV), extraction rate (ER) and amino acid uptake in the mammary gland of sows as affected by the post-farrowing phase

Lactation day:	ADV ( $\mu\text{mol/L}$ )			ER (%)			Uptake (g/4 h)		
	3	10	P-value	3	10	P-value	3	10	P-value
Lys	97.5	34.8	<0.001	78.9	43.8	<0.001	13.0	4.8	<0.001
Met	25.5	11.0	<0.001	65.9	28.9	<0.001	3.2	1.2	<0.001
Try	26.2	8.3	<0.001	39.9	19.7	<0.001	4.6	1.7	<0.001
Arg	106.9	41.6	<0.001	78.6	35.1	<0.001	15.0	5.4	<0.001
His	30.8	10.8	<0.001	45.0	16.9	<0.001	3.2	1.3	<0.001
Ile	81.5	33.0	<0.001	67.8	44.1	<0.001	9.1	3.3	<0.001
Leu	161.5	57.9	<0.001	59.0	37.9	<0.001	17.1	6.6	<0.001
Phe	55.7	21.8	<0.001	65.4	28.0	<0.001	8.0	2.7	<0.001
Thr	82.0	32.2	<0.001	54.8	24.7	<0.001	8.0	2.7	<0.001
Val	113.6	39.9	<0.001	45.3	25.6	<0.001	10.2	3.5	<0.001

**Key Words:** Sow, Mammary Gland, Amino Acid Uptake

**792 Changes in composition in various body tissues in pregnant gilts and its nutritional implication.** F. Ji<sup>\*1</sup>, G. Wu<sup>2</sup>, J. R. Blanton Jr.<sup>1</sup>, and S. W. Kim<sup>1</sup>, <sup>1</sup>Texas Tech University, Lubbock, <sup>2</sup>Texas A&M University, College Station.

Thirty-five gilts (158.2±3.8 kg) were randomly assigned to seven slaughter groups: d 0, d 45, d 60, d 75, d 90, d 102, d 112 and were fed 2 kg/d gestation diet (3.1 Mcal/kg ME and 0.56% lysine) until their slaughter. Soft tissue, gastrointestinal tract (GIT), liver, uterus, fetus, mammary gland, and remaining viscera (RV) were separated, weighed, ground, sampled, freeze dried, and chemically analyzed. Dry matter and crude fat contents in soft tissue increased linearly ( $P<0.01$ ), whereas crude protein content in soft tissue increased cubically ( $P<0.05$ ) during gestation. Dry matter, crude protein, and crude fat contents in uterus including placenta increased linearly ( $P<0.01$ ) during gestation. Dry matter, crude protein, and crude fat contents in entire mammary gland increased quadratically ( $P<0.01$ ) during gestation. Dry matter and crude fat contents in RV increased quadratically ( $P<0.01$ ) during gestation. Dry matter, crude protein, and crude fat contents in fetal litter increased cubically ( $P<0.01$ ) during gestation. Dry matter and crude protein contents in GIT decreased cubically ( $P<0.01$ ) during gestation. Crude protein content in liver decreased linearly ( $P<0.05$ ), whereas crude fat content increased quadratically ( $P<0.01$ ) during gestation. Dry matter, crude protein, and crude fat contents in total increased quadratically ( $P<0.01$ ) during gestation. The ADG of conceptus, fetal litter, individual fetus, entire mammary gland, and crude protein in fetal litter were significantly different before and after d 70 of gestation. The protein daily gain from all the maternal and fetal tissues was 40 g/d before d 70 of gestation and 103 g/d after d 70 of gestation suggesting that pregnant gilts may require different amounts of dietary protein during gestation. Considering the needs of maternal and fetal gains as well as maintenance, we suggest that the diet of pregnant gilts should provide 6.8 g/d (or 147 g/d) before d 70 and 15.3 g/d (or 330 g/d) after d 70 of gestation to support the accurate true ileal digestible lysine (or true ileal digestible protein) needs.

**Key Words:** Gestating Sows, Composition, Lysine Requirement

**793 Ideal protein to improve lactation performance of primiparous sows.** S. W. Kim<sup>\*1</sup>, F. Ji<sup>1</sup>, and Y. G. Kim<sup>\*2</sup>, <sup>1</sup>Texas Tech University, Lubbock, <sup>2</sup>CJ Corporation, Seoul, Korea.

The objective was to validate the ideal dietary amino acid pattern in lactation diets to improve the performance of primiparous sows during lactation. Twenty four primiparous sows (Camborough-22, PIC) and their litters were used for this study. On d 109 of gestation, sows were allotted to one of four dietary treatments representing: low protein (LC), low protein with ideal protein (LI), high protein (HC), and high protein with ideal protein (HI). Low protein diets contained 17.5% CP and high protein diets contained 19.5% CP. Ideal amino acid patterns among lysine, threonine, and valine were 100:63.0:78.1 for the LI diet and 100:62.3:77.5 for the HI diet when it was calculated based on ileal digestible amounts. To match amino acid pattern to ideal ratios, crystalline amino acids were supplemented. Crude protein content in the diets with ideal protein pattern were matched to the control diets by adjusting SBM content as crystalline amino acids were added. Weight and backfat thickness of sows as well as the weight of each piglet were measured at farrowing and weekly until weaning at d 21 of lactation. All sows had free access to feed and water during lactation. The body weight of sows after farrowing (207.5±7.6 kg) and litter size at farrowing (10.3±0.3 pigs) were the same ( $P=0.361$  and 0.544, respectively)

among the treatments. Voluntary feed intake of sows (4.95±0.22 kg/d) did not differ ( $P=0.879$ ) among the treatments. For the sows fed the low protein diets, there were no differences in weight loss and backfat loss during 21-d lactation between the LI and LC. However, litter weight gain of the LI was greater ( $P<0.05$ ) than the LC. Litter size at weaning was greater ( $P<0.05$ ) for the LI than the LC. For the sows fed the high protein diets, there were no differences in weight loss and backfat loss during 21-d lactation between the HI and HC. Litter size at weaning and litter weight gain were the same between the HI and HC. For all the sows, litter weight gain was improved ( $P<0.05$ ) and litter mortality was reduced ( $P<0.05$ ) whereas body weight loss was not affected ( $P=0.841$ ) by the utilization of ideal protein.

**Key Words:** Lactation, Ideal Protein, Primiparous Sows

**794 Supplementation of sow diets with a mixture of carvacrol, cinnamaldehyde and capsicum; effects on sow performance and piglet gut morphology.** S. Illey<sup>\*1</sup>, H. Miller<sup>1</sup>, and C. Kamei<sup>2</sup>, <sup>1</sup>University of Leeds, Leeds, UK, <sup>2</sup>AXISS France SAS, Bellegarde-sur-Valserine, France.

Many plant extracts contain bioactive compounds that can affect pig performance and health. This study investigated the effects of a combination of 5% carvacrol, 3% cinnamaldehyde and 2% capsicum oleoresin (XTRACT) on sow and piglet performance. Forty-four hybrid sows of mixed parity and fatness were housed in indoor farrowing crates from d107 of gestation to weaning. Sows were allocated, by parity, fatness and history, to one of 2 dietary treatments: Control (C) or XTRACT(XT, 100mg/kg feed). Diets were otherwise identical, with 14 MJ DE/kg and 1% lys. Before farrowing, sows received 2.5kg/d but were thereafter fed ad libitum with feed intake (FI) recorded daily. Piglet liveweight and sow P2 backfat were recorded and milk sampled at birth and d21. On d24 (weaning), 16 piglets per treatment were slaughtered. Data were analysed using the GLM procedure of Minitab 12.2. Sow FI was similar between treatments, however P2 backfat loss was lower in XT sows (0.98 v 2.1mm,  $P<0.1$ , SEM=0.5). Lactose levels in colostrum and milk were greater for XT sows (d 0: 2.8 v 2.4%  $P<0.1$ , SEM=0.1; d 21: 5.4 v 4.9%  $P<0.01$ , SEM=0.1) but fat and protein concentrations did not differ. Milk IgG was lower in XT sows (d0: 94 v 106mg/ml,  $P<0.1$ , SEM=5.9; d21: 0.65 v 0.72mg/ml,  $P<0.1$ , SEM=0.02). Piglet pre-weaning gain was not affected by sow treatment. However in the distal small intestine, villus height was greater in pigs suckling XT sows (413 v 312 $\mu\text{m}$ ,  $P<0.05$ , SEM=32) and villus-crypt surface area was higher (165 v 134 $\mu\text{m}^2 \times 10^3$ ,  $P<0.1$ , SEM=14). Reduced P2 loss in XT sows and increased milk lactose suggest an effect on nutrient partitioning. Lower milk IgG levels may indicate decreased immune stimulation due to reduced microbial challenge in XT sows. Changes in piglet gut morphology were not reflected in performance but may indicate a carry-over from sow to piglet in the XT group.

**Key Words:** Plant Extracts, Lactation, Piglet

**795 Comparison of ad-libitum and hand-fed sow lactation feeders.** J. Peng<sup>\*</sup>, S. Somes, D. Kirkpatrick, A. Snedegar, and D. Rozeboom, Michigan State University, East Lansing.

A study was conducted to compare the performance of lactating multiparous sows when feed was made available to them using either a hand-fed (HF) or ad libitum (AL) feeder. Both feeders were made of stainless steel and mounted to the head-gates of individual farrowing crates. Sow head space was similar. The bottom of the HF feeder was rounded, whereas the bottom of the AL feeder included a flat surface area, located below a plastic hopper and sow-operated dispensing mechanism, and a shallow bowl area, located below a water nipple. Water for HF sows was provided using a nipple-cup combination independent of the feeder. Sows (n=120) were assigned to feeder treatment based on parity and breed, and moved into farrowing rooms within 7 d prior to parturition. Sows were fed a common lactation diet that met or exceeded NRC (1998) recommendations. Feed was manually added to the hoppers of AL feeders 1 to 2 times daily so that fresh feed was constantly available, while HF sows were fed to appetite (an amount slightly exceeding disappearance in previous meals), twice each day (800 and 1600 hr). A system for collection of wasted feed and water was installed under half of HF and AL farrowing crates which had individual water tanks for measuring water intake. Cross-fostering was used to standardize litter size at a minimum of 10 by d 3 of lactation. Average lactation length was 19.8 ± 0.2 d. Average daily feed disappearance (6.3 ± 0.3 vs. 5.9

± 0.3 kg) and litter wt gain from d 3 until weaning (42.7 ± 2.0 vs. 39.2 ± 2.2 kg) were greater (P < 0.01) with AL feeders than with HF feeders, respectively. Number of pigs weaned did not differ (P > 0.05, 9.7 ± 0.1). The AL sows tended to have greater (P = 0.07) wt gains during lactation (12.2 ± 3.1 vs. 8.2 ± 3.2 kg, AL and HF, respectively). Backfat change during lactation and wean-to-estrus interval did not differ (P > 0.05). Sows with AL feeders wasted less (P < 0.01) water than sows with HF feeders (12.7 ± 14.8 vs. 236.0 ± 20.7 kg, respectively), but water intake and feed waste was similar (P > 0.05). Sows given ad libitum access to feed during lactation responded with productivity.

**Key Words:** Sow, Lactation, Feeder

**796 Interactive effects of milk supplementation, parity and season on preweaning mortality and growth performance of piglets on a commercial farm.** B. W. Ratliff<sup>1</sup>, A. M. Gaines<sup>1</sup>, G. L. Allee<sup>1</sup>, M. O'Brien<sup>2</sup>, and J. A. Coalson<sup>2</sup>, <sup>1</sup>University of Missouri, Columbia, <sup>2</sup>Merrick's, Inc., Union Center, WI.

A total of 703 (Genetiporc) sows and 7,301 piglets (PIC 337 × Genetiporc) were used on a commercial farm to evaluate the interactive effects of milk supplementation, parity and season on piglet growth performance and pre-weaning mortality. Data were collected over a 12 month period. Sow diets were formulated to meet all minimal NRC requirements. Sows were grouped according to parity as follows: parity 1 =

group 1, parities 2 and 3 = group 2, and all parities greater than 3 = group 3. Litters from sows within the same group were randomly allotted to either milk or no milk treatments. At 48 h post parturition, milk supplementation was initiated and piglets were counted and weighed. All cross-fostering and litter processing occurred prior to 48 h. Mortalities, their weights, and date of occurrence were recorded daily for each litter. At d 14 to 18, each litter was weighed, counted, and weaned. Data indicated that milk supplementation increased (P < 0.05) number of pigs weaned, weaning weight and total litter gain (includes mortality weights), while lowering (P < 0.05) pre-weaning mortality. Parity groups 1 and 2 weaned more (P < 0.05) pigs per sow and had lower (P < 0.05) pre-weaning piglet mortality than parity group 3. Furthermore, parity groups 1 and 3 had lighter (P < 0.05) weaning weights, piglet average daily gains and total litter gains than parity group 2. Warm season decreased (P < 0.03) piglet average daily gain. Treatment by parity group interactions (P < 0.05) were present for number of pigs weaned, litter weaning weight, pre-weaning mortality and total litter gain, with milk supplementation being most beneficial for parity group 2 and 3 sows. Milk supplementation did not affect (P > 0.05) any parameters measured in parity group 1 sows. Collectively, these data indicate that milk supplementation will improve litter growth performance and decrease pre-weaning mortality in parity 2+ sows.

**Key Words:** Milk Supplement, Piglets, Sows

## Production, Management and the Environment: Nutritional Management

**797 Blood metabolites during the transition period of Holstein cows receiving a monensin controlled-release capsule.** P. Melendez<sup>\*1</sup>, J. Goff<sup>3</sup>, C. Risco<sup>1</sup>, L. Archbald<sup>1</sup>, R. Littell<sup>2</sup>, and A. Donovan<sup>1</sup>, <sup>1</sup>College of Veterinary Medicine, University of Florida, Gainesville, <sup>2</sup>Institute of Food and Agricultural Sciences, University of Florida, Gainesville, <sup>3</sup>National Animal Research Center, USDA, Ames, IA.

Monensin increases the rumen molar proportion of propionate. This change might affect energy metabolic dynamics in transition dairy cows. The objective of this study was to determine the effect of a rumen monensin-controlled release capsule inserted at dry-off on energy blood metabolites in Florida transition cows fed diets containing citrus pulp. The study was conducted on a Holstein farm with 3600 milking cows in north central Florida, with a RHA of 10,700 kg. Cows were housed in a dry-lot system and fed the same TMR 3X. In March, 2002, 24 cows dried-off 50 to 70 d before expected parturition (BEP) were randomly assigned either a treatment or a control group. The treated group (n=12) received orally a capsule of monensin (300 mg/d for 95 d, CRC Rumensin<sup>®</sup>). Control cows (no capsule, n=12) were randomly matched by parity. At assignment, on day 21 BEP, at calving, and at 7, 14, and 21 d postpartum (pp) a blood sample was obtained from the coccygeal vein and body condition scoring (BCS) was conducted (scale 1-5). Serum non-esterified fatty acids (NEFA), beta-hydroxy butyrate (BHB) and glucose were measured. Metabolites were analyzed by ANOVA, mixed model for repeated measures. BCS changed over time, and treatment increased BCS significantly in multiparous cows at calving (P ≤ 0.01). BHB was lower in treated primiparous cows at calving (0.52 ± 0.2 vs 0.90 ± 0.1 mmol/L) (P ≤ 0.1) and 14 d pp (0.36 ± 0.2 vs 0.90 ± 0.1 mmol/L) (P ≤ 0.05) and NEFA were lower in treated primiparous cows at 7 d pp (0.78 ± 0.3 vs 1.42 ± 0.2 meq/L) (P ≤ 0.05) and 14 d pp (0.44 ± 0.3 vs 0.91 ± 0.2 meq/L) (P ≤ 0.1). Independent of treatment, NEFA, BHB and glucose increased dramatically at 21 d BEP, indicating that cows around 3 wks prepartum started to change their metabolic status. It was concluded that transition primiparous cows under the influence of monensin and fed a TMR containing citrus pulp had lower levels of BHB, and NEFA at certain times of the transition period. BCS at calving was significantly higher in multiparous treated cows.

**Key Words:** Monensin, Blood Metabolites, Transition Dairy Cow

**798 Rumen and blood metabolites at 10 d postpartum in Holstein cows supplemented with monensin.** P. Melendez<sup>\*1</sup>, J. Goff<sup>2</sup>, C. Risco<sup>1</sup>, L. Archbald<sup>1</sup>, R. Littell<sup>3</sup>, and A. Donovan<sup>1</sup>, <sup>1</sup>College of Veterinary Medicine, University of Florida, Gainesville, <sup>2</sup>National Animal Research Center, USDA, Ames, IA, <sup>3</sup>Institute of Food and Agricultural Sciences, Gainesville, FL.

The objective was to assess the effect of a monensin controlled-release capsule inserted at dry-off on rumen and energy blood metabolites at 10 d postpartum (pp) in transition cows fed Florida typical diets. The study was conducted on a Holstein dairy with a RHA of 10,700 kg. In March, 2002, 24 cows were randomly assigned at dry-off to 2 groups. Treated cows (n=12) received an oral capsule of monensin (300 mg/d for 95 d, CRC Rumensin). Control cows (n=12) were not treated and matched by parity. At 10 d pp a rumen and blood sample was obtained at 7 A.M. before the first meal. Other samples were taken at 2, 4 and 6 h after feeding (AF). Rumen sample was taken by an orominal tube. Rumen pH was measured immediately after sampling. Serum non-esterified fatty acids (NEFA), beta-hydroxy butyrate (BHB) and glucose were measured by enzymatic colorimetric methods. Rumen samples were analyzed for concentration of VFA, lactic acid and NH<sub>3</sub>. Variables were analyzed by ANOVA, mixed models for repeated measures. Primiparous controls tended to have lower rumen pH at 4 h AF than treated cows (6.34 vs 6.62) (P ≤ 0.10). Multiparous treated cows tended to have lower NH<sub>3</sub> at 4 h AF (4.28 vs 5.01 mmol/L) (P ≤ 0.10) and had significantly lower NH<sub>3</sub> at 6 h AF (2.8 vs 4.01 mmol/L) (P ≤ 0.05) than controls. In treated primiparous, BHB tended to be lower at 2 h AF (0.65 vs 1.0 mmol/L) and 6 h AF (0.71 vs 0.99 mmol/L) (P ≤ 0.1) and was lower at 4 h AF (0.57 vs 1.0 mmol/L) (P ≤ 0.05) than controls. NEFA tended to be lower at time 0 (0.82 vs 1.14 meq/L) (P < 0.1) and glucose tended to be higher at 2 h AF (54.4 vs 45.9 mg/dL) (P ≤ 0.1) in treated than controls. In treated multiparous cows, BHB tended to be lower at 4 h AF (0.77 vs 1.05 mmol/L) (P ≤ 0.1) and was lower at 6 h AF (0.82 vs 1.18 mmol/L) (P ≤ 0.05) than controls. NEFA were lower at 2 h AF in treated than controls (0.59 vs 0.92 meq/L) (P ≤ 0.05). Glucose tended to be higher at 2 h AF in treated than controls (51.2 vs 46.3 mg/dL) (P ≤ 0.1) It was concluded that transition cows under monensin had improved energy status within 6 h AF.

**Key Words:** Monensin, VFA, Transition Dairy Cow

**799 Warm-season baleage crops for mid-lactation Holstein cows.** M. E. McCormick<sup>\*</sup>, Southeast Research Station, Louisiana State University, Franklinton.

Conserving forage as baleage is becoming widely accepted by Louisiana dairymen. In the present study, production-scale pastures of bermudagrass (*Cynodon dactylon*, L.), signalgrass (*Brachiaria decumbens*, S.)