State University, [4]*Colorado State University*

Twelve Angus steers (BW 694.1 ± 47.4 kg) fitted ruminal cannulae were used to examine the effect of molybdenum (Mo) supplemented in drinking water or feed on apparent absorption and retention of Mo and copper (Cu). Steers were fed a low-quality grass hay diet (DM basis: 6.5% CP; 0.13% S, 3.4 mg Cu/kg, 2.4 mg Mo/kg) for 14 d. Steers were then housed in individual metabolism stalls for 3 d to determine DMI. Steers were then blocked by BW and DMI and randomly assigned within block to one of three treatments (n = 4 steers per treatment). Treatments consisted of: 1) Control (no supplemental Mo); 2) 5.0 mg Mo/kg DM from sodium molybdate dihydrate (Mo-diet), and 3) 1.5 mg Mo/l from sodium molybdate dihydrate delivered in the drinking water (Mo-water). After the 3d DMI determination period, total fecal and urine output was collected for 5 d. Dry matter intake and DM digestibility were similar across treatments. Data were analyzed using a mixed effects model (PROC MIXED, SAS) for a completely randomized block design. Apparent absorption of Cu was greater ($P < 0.05$) in Control and Mo-water steers when compared to Mo-diet steers. Apparent retention of Cu was greater ($P < 0.05$) in Control steers when compared to Mo-diet steers. Steers receiving Mo-water had a similar apparent retention of Cu when compared to Control and Mo-diet steers. By design, treatment was a significant ($P < 0.01$) source of variation for Mo intake. Control steers had lesser ($P < 0.05$) Mo intake when compared to Mo-diet and Mo-water supplemented steers. Apparent absorption and retention of Mo were greater ($P < 0.05$) in Mo-diet steers compared to Control and Mo-water steers. These data indicate that Mo metabolism and apparent absorption of Cu are different when Mo is supplemented in water relative to feed.

Key Words: molybdenum, copper, water

PSXII-14 **Fiber content in diets for feedlot lambs: performance.** Evandro M. Ferreira[1], Nathalia R. Eckermann[2], Janaina S. Biava[3], Jamile Comelli[4], Thamires U. Sturion[5], Daniel M. Polizel[6], Gabriela B. Oliveira[7], José P. R. Barroso[8], Lairana A. Sardinha[9], Terezinha T. de Souza[10], Rhaissa Garcia de Assis[11], Alexandre Vaz Pires[12], [1]*University of São Paulo,* [2]*ESALQ/University of São Paulo,* [3]*University of Sao Paulo,* [4]*ESALQ/University of São Paulo,* [5]*University of Sao Paulo,* [6]*University of Sao Paulo,* [7]*University of Sao Paulo,* [8]*FMVZ/University of Sao Paulo,* [9]*University of Sao Paulo,* [10]*UFAM/Federal University of Amazonas,* [11]*State University of Ponta Grossa,* [12]*University of São Paulo*

High-grain diets have been used with great success in the feedlot systems for lambs production in Brazil. Then it became important to define the ideal dietary fiber content in the diet when the goal is to produce heavy lambs for early slaughter. The objective in this trial was to evaluate the levels of fiber on performance of lambs feed high-grain diet. Fifty-eight Dorper x Santa Inês ram lambs (initial BW 20.7 ± 1.19 kg and 75 ± 10.83 d old) were assigned to a randomized complete block design. The treatments were defined by the fiber ("Coastcross" hay) content in diets (CP: 16,12% ± 0.92): 0F: no forage diet (NDF: 10.4%); 5F: 5% of forage (NDF: 12.1%); 10F: 10% of forage (NDF: 15%); 15F: 15% of forage (NDF: 15.5%); 20F: 20% of forage (NDF: 20.8%) and 25F: 25% of forage (NDF: 23.5%). The experiment lasted 89 days and lambs were weighted after 16 hours fasting on days 0, 31, 57 and 89. DMI, ADG and FE were determined in each period. There was no interaction effect between diets and periods. There was a quadratic effect in DMI (0F: 0.96; 5F: 0.97; 10F: 1.04; 15F: 1.00; 20F: 1.02; 25F: 0.88 kg/d; $P = 0.02$), ADG (0F: 0.27; 5F: 0.26; 10F: 0.28; 15F: 0.28; 20F: 0.26; 25F: 0.21 kg/d; $P = 0.01$) and FE (0F: 0.28; 5F: 0.28; 10F: 0.28; 15F: 0.29; 20F: 0.26; 25F: 0.25; $P = 0.05$). Consequently, the increased levels of forage result in quadratic effect on final BW (0F: 44.5; 5F: 44.7; 10F: 46.1; 15F: 45.5; 20F: 43.9; 25F: 39.7 kg; $P < 0.01$). In conclusion, the inclusion of 10–15% of forage improves the performance of feedlot lambs feed high-concentrate diets, but it was proved the real possibility of finishing lambs with diet without forage source.

Key Words: lambs production, fiber requirement, high-grain diet, feed efficiency

---

PSXII-15 **Fiber content in diets for feedlot lambs: ruminal and cecal pH and short chain fatty acids.** Evandro M. Ferreira[1], Nathalia R. Eckermann[2], Janaina S. Biava[3], Matheus Avelino[4], Letícia Pasqualino[5], André S. Martins[6], Arnaldo C. Limede[7], Marcelo Baggio[8], Ancelmo Cunha[9], Francisco Montanaro Neto[10], Matheus F. F. V de Paula[11], Alexandre Vaz Pires[12], [1]*University of São Paulo,* [2]*ESALQ/University of São Paulo,* [3]*University of Sao Paulo,* [4]*ESALQ/University of São Paulo,* [5]*University of Sao Paulo,* [6]*University of Sao*

Paulo, [7]*University of Sao Paulo,* [8]*University of Sao Paulo,* [9]*UFAM/Federal University of Amazonas,* [10]*Paulista State University "Júlio Mesquita Filho",* [11]*State University of Goiás,* [12]*University of São Paulo*

Fifty-eight Dorper x Santa Inês ram lambs (initial BW 20.7 ± 1.19 kg and 75 ± 10.83 d old) were assigned to a randomized complete block design to evaluate the effects of fiber content on ruminal and cecal pH and SCFA. The treatments were defined by the fiber ("Coastcross" hay) content in diets (CP: 16,12% ± 0.92): 0F: no forage diet (NDF: 10.4%); 5F: 5% of forage (NDF: 12.1%); 10F: 10% of forage (NDF: 15%); 15F: 15% of forage (NDF: 15.5%); 20F: 20% of forage (NDF: 20.8%) and 25F: 25% of forage (NDF: 23.5%). The experiment lasted 89 days, at the end of the experiment the lambs were slaughtered without fasting. The forage inclusion linear decreased ruminal concentration of propionate (0F: 45.4; 5F: 39.7; 10F: 41.5; 15F: 39.4; 20F: 35.3; 25F: 30.5 mM/100mM; $P < 0.01$) and total SCFA (0F: 106.6; 5F: 96.4; 10F: 84.2; 15F: 90.6; 20F: 63.0; 25F: 71.2 mM; $P = 0.01$) and increased the ruminal concentration of acetate (0F: 43.4; 5F: 45.3; 10F: 47.8; 15F: 49.8: 20F: 51.8; 25F: 57.2 mM/100mM; $P < 0.01$). However, there was a quadratic effect on ruminal pH (0F: 5.61; 5F: 5.66; 10F: 5.98; 15F: 6.27; 20F: 6.05; 25F: 5.74; $P = 0.01$). There was no effect of fiber levels on cecal concentration of acetate, propionate, butyrate and acetate:propionate ratio. Nevertheless, there was a linear decrease in cecal concentration of valerate (0F: 3.28; 5F: 2.35; 10F: 2.39; 15F: 2.64: 20F: 2.12; 25F: 1.80 mM/100mM; $P < 0.01$) and total SCFA (0F: 173.9; 5F: 165.7; 10F: 153.2; 15F: 155.2; 20F: 139.9; 25F: 128.9 mM; $P < 0.01$). Similarly to rumen, cecal pH presented a quadratic response (0F: 5.92; 5F: 6.12; 10F: 6.15; 15F: 6.23; 20F: 6.30; 25F: 5.83; $P < 0.01$). In conclusion, cecal fermentation was different from rumen fermentation. However, pH variation was similar, with higher values for 15F diet.

Key Words: animal production, feeding, rumen, SCFA, high concentrate

---

PSXII-33 Effects of feed additives on performance of yearling bulls fed high forage diet.

Alexandre A. Miszura[1], Daniel M. Polizel[2], José P. R. Barroso[3], André S. Martins[4], Gabriela B. Oliveira[5], Arnaldo C. Limede[6], Lairana A. Sardinha[7], Francisco M. Neto[8], Rodrigo S. Marques[9], Alexandre Vaz Pires[10], [1]*University of Sao Paulo,* [2]*University of Sao Paulo,* [3]*FMVZ/University of Sao Paulo,* [4]*University of Sao Paulo,* [5]*University of Sao Paulo,* [6]*University of Sao Paulo,* [7]*University of Sao Paulo,* [8]*Sao Paulo State University,* [9]*Elanco,* [10]*University of São Paulo*

The aim of this study was to compare the effects of three additives (narasin, lasalocid, and virginiamycin) on the performance of bulls fed a high-forage diet. One hundred and sixty Nellore (*Bos indicus*) yearling bulls were assigned to a randomized completed block design, according to initial BW (212.5 kg ± 3.1; 10 pen/treatment; 4 animals/pen). Yearling bulls were fed daily and diets were composed of 96% of coastcross haylage (12% CP) and 4% of concentrate, used as the delivery vehicle for the additives. Once a day, the concentrate and forage were offered separately. The forage was offered after the entire consumption of the concentrate. The experimental diets consisted of CON: Control (no additives); NAR: 13 ppm of narasin; LAS: 20 ppm of lasalocid; and VIR: 20 ppm of virginiamycin. The experimental period lasted 140 d and the yearling bulls were individually weighed at d 0, 28, 56, 84, 112 e 140 after 14h of feed and water restriction. The orts were recorded to determine the DMI. Data were analyzed as repeated measures over time using the MIXED procedure of SAS and the LSMEANS option was used to generate individual means. There was a treatment effect on DMI (CON: 5.26^{b}: NAR: 5.69^{a}; LAS: 5.16^{b}; VIR: 5.11^{b} kg/d; SEM = 0.14; $P = 0.03$), ADG (CON: 0.451^{b}; NAR: 0.557^{a}: LAS: 0.498^{ab}; VIR:0.459^{b} kg; SEM = 0.03; $P = 0.04$), FE (0.080^{c}, 0.095^{a}, 0.092^{ab} and 0.085^{bc}; SEM = 0.0044; $P = 0.05$) and final BW (CON: 273.9^{b}; NAR: 287.8^{a}; LAS: 277.1^{b}; VIR: 275.7^{b} kg SEM = 3.4; $P = 0.03$). In conclusion, the inclusion of 13 ppm of narasin improves the performance of yearling bulls fed high-forage diets.

Key Words: lasalocid, narasin, virginiamycin

PSXII-24 Effects of supplementing ruminally protected and non-protected active dried yeast on fecal bacterial community of finishing beef steers.

Tao Ran[1], Peixin Jiao[2], Ousama AlZahal[3], Xiaolai Xie[4], Karen A. Beauchemin[5], Wenzhu Yang[6], [1]*AAFC, Lethbridge Research and Development Centre,* [2]*College of Animal Science and Technology, Northeast Agricultural University. Harbin, Heilongjiang, 150081, China,* [3]*AB Vista,* [4]*College of Animal Science and Technology, Northeast Agricultural University,* [5]*Agriculture and Agri-Food Canada, Lethbridge Research and Development Centre,* [6]*Agriculture and Agri-Food Canada; Lethbridge Research and Development Centre*