In Vitro dry Matter and Fiber Digestibility of Different Varieties of Peanut Tops and Bermuda Grass Forage. Joseph J. Baloyi¹, Todd R. Callaway², Jeferson M. Lourenco², ¹University of Venda, ²University of Georgia  

Abstract: The objective of the current study was to evaluate the in vitro dry matter and fiber digestibility, gas, ammonia N and volatile fatty acid production of peanut tops from seven cultivars, CB91-1, 010-13, IAC322, 13-D, 13-1014, 886 and GA-06G, grown in the state of Georgia, USA, and Bermuda grass. The peanut top samples were harvested towards the end of the growing season at about 125 days after planting and the peanut pods removed. The Bermuda grass was harvested after 4 weeks regrowth. Fresh cut peanut tops and Bermuda grass samples were analysed for dry matter (DM) content and then in vitro DM and fibre digestibility. Hydrogen, methane, pH, ammonia, total gas and volatile fatty acids (VFA) production were measured after 24 hours incubation. Analysis of variance was performed using the General Linear Model procedures of Minitab Statistical package. The peanut top varieties contained an average of 165.4 g/kg DM crude protein, and greater calcium and potassium and less phosphorus than Bermuda grass. There were no significant differences (P > 0.05) in in vitro DM digestibility, pH, hydrogen, methane, ammonia-N production. However, NDF and ADF in the Bermuda grass was significantly more digestible (P < 0.05) than the peanut varieties. The peanut tops did not differ in NDF digestibility (P > 0.05). CB91-1, IAC322 and 886 peanut tops and Bermuda grass had significantly greater (P < 0.05) ADF digestibility. There was no significant difference in the acetate contents for all seven peanut varieties (P > 0.05). The GA-06G variety had the greatest propionate and butyrate content. Bermuda grass and CB91-1 variety had the least amount of propionate, isobutyrate, butyrate, isovalerate and valerate compared with other peanut varieties. Total VFA of all peanut varieties were similar, while that of Bermuda grass was the least (P < 0.05). The GA-06G had the lowest A:P ratio value compared with the other samples.  

Keywords: Bermuda grass, digestibility, peanuts, fiber, volatile fatty acids

The Ability of an Enhanced Zeolite-Based Flow Agent to Mitigate the Effects of Ergot-Like Alkaloids Consumed by Beef Cattle. Joshua M. Zeltwanger¹, Eric Bailey¹, Jerilyn Hergenreder¹, Landon Canterbury², Derek Brake¹, Emily Petzel¹, Benjamin Nelson¹, Du Xiangwei¹, Tim Evans¹, ¹University of Missouri, ²Kemin Industries Inc.  

Abstract: Aluminosilicate-based flow agents, like zeolites, may impact digestion of ergot-like alkaloids in the ruminant gut. Twenty-four steers (226 ± 27.6 kg) were used in a 21-d experiment to test the effects of an enhanced zeolite-based flow agent (KALLSIL, Kemin Industries, Des Moines, IA) on site of ergot-like alkaloid excretion, serum prolactin, rectal temperature, respiration rate, and nutrient digestibility. Treatments were control (E+) or enhanced zeolite inclusion (E+Z; 2 g/kg, DM basis). Steers were fed a TMR at 1.85% of BW (DM-basis). Tall-fescue seed was included in the diet at 11.14%, providing 465 μg of ergovaline/kg DM. Steers had no ORTS during the experiment. Rectal temperature and respiration rate were recorded daily at 0700 and 1200 h from steers housed tie stalls in a room kept at (18.5°C ± 0.33°C, 32.6% ± 2.19%). Serum was harvested from blood collected on d-1, 7, 14, and 21 to measure prolactin. On d-21 jugular catheters were placed to measure prolactin following the infusion of thyrotropin-releasing hormone (TRH; 1 μg/kg BW). Spot samples of feces and urine were collected every 8 h from d 17-20, with 2-hour advancement each day to determine digestibility, N balance, and recovery of ergot-like alkaloids. Digestion and N balance was not affected by treatment (P ≥ 0.16). Enhanced zeolite tended (P = 0.15) to increase recovery of ergovaline. Prolactin concentration decreased over time (P < 0.01), but was greater (P = 0.01) at each time point for E+Z steers. Following the infusion of TRH, prolactin tended (P = 0.11) to be greater for E+Z. Rectal temperatures and respiration rates were not affected (P ≥ 0.89) by E+Z. Results from this study indicate that enhanced zeolite inclusion tended to increase recovery of ergot-like alkaloids in feces and increased serum prolactin when offered to beef steers in a diet containing ergot-like alkaloids.  

Keywords: ergot-like alkaloid, prolactin, zeolite