

SFC ($P=0.20$). Quadratic G:F responses in DRC-based diets ($P=0.03$) were observed, however no response was observed in SFC-based diets. Feed efficiency was 0.140, 0.164, 0.163 for 0, 20, 40 DRC-based diets and 0.158, 0.169, and 0.165 for 0, 20, 40 SFC-based diets, respectively. For steers fed SFC, increasing roughage level tended to increase DMI ($P=0.07$) and decrease G:F linearly (0.165, 0.153, 0.155 for 7.5, 11.25, and 15.0% roughage; $P=0.09$). In this study, G:F was similar as WDG inclusion increased from 20 to 40% in the diet. However, in corn control diets (0% WDG), steers fed SFC had 12.9% greater G:F than steers fed DRC. Additionally, increasing roughage levels in SFC-based diets containing WDG did not improve feed efficiency.

Key Words: Corn Processing, Feedlot, Wet Distillers Grains

730 Effects of distiller's grain and probiotic on growth and carcass characteristics of finishing beef steers. F. F. Korthaus^{*1}, E. S Vanzant¹, G. Rentfrow¹, K. K. Kreikemeier^{1,2}, D. L. Harmon¹, and K. R. McLeod¹, ¹University of Kentucky, Lexington, ²Vit-E-Men, NE.

To evaluate the effects of modified corn distiller's grain (MDG) and a direct fed microbial (DFM; Vit-E-Men probiotic 10G), 192 crossbred steers (initial BW 394 ± 1.2 kg) were used in a 112 day finishing study. Steers were assigned, within weight blocks, to 6 treatments in a 3x2 factorial arrangement and fed in pens of 4 (8 pens/treatment). Treatments included 0, 20 or 40% (DM basis) of MDG with or without DFM provided at $10 \text{ g} \cdot \text{hd}^{-1} \cdot \text{d}^{-1}$. The diet DM was comprised of 5% corn silage, 5% alfalfa haylage, 10% supplement and 80% concentrate, comprised of varying quantities of MDG, cracked corn, and high moisture corn. The 0 and 20% MDG diets contained 14.2% CP and the 40% MDG diet, 18.6% CP. Body weight measurements were taken on d 0, 1, 28, 56, 84, 111 and 112. Steers were harvested on d 113 and carcass data was collected. There were no interactions between the level of MDG and DFM ($P > .14$). Across the entire feeding period, steers fed 20% MDG consumed more DM (quadratic, $P = .01$; 11.1 kg) and gained more (quadratic, $P = .09$; 2.03 kg/d) compared with the 0% (10.59 kg and 1.91 kg/d) and 40% (10.76 kg and 1.96 kg/d) treatments, such that gain:feed was unaffected ($P \geq .63$) by MDG. Steers fed DFM had greater ADG ($P = .04$; 1.91 vs 2.02 kg/d), HCW ($P = .02$; 369 vs 378 kg), ribeye area ($P = .08$; 83.7 vs 85.6cm) and were more efficient ($P = .07$; gain:feed .186 vs .179). Including MDG at 20% of a finishing diet increased DMI and ADG by 4% and 6%, whereas at 40% MDG, these responses diminished to control levels. Administration of DFM resulted in a 4% increase in growth efficiency concomitant with a 6% increase in ADG which were both consistent across levels of MDG. These data demonstrate the efficacy of DFM and suggest that steer growth can be compromised by MDG inclusion above 20%.

Key Words: Distiller's Grain, Direct Fed Microbial, Carcass Traits

731 Effect of varying ruminally degradable to undergradable protein ratio on feed intake, nutrient digestion and N balance of buffalo calves. J. I. Sultan^{*1}, A. Javed¹, M. Yaqoob², and P. Akhtar², ¹Institute of Animal Nutrition and Feed Technology, University of Agriculture, Faisalabad, Pakistan, Faisalabad, Punjab, Pakistan, ²University of Agriculture, Faisalabad, Pakistan.

A 4 X 4 Latin Square design buffalo calves metabolism trial was conducted with buffalo calves to explore the effects of varying ruminally degradable protein (RDP) to ruminally undegradable protein (RUP) ratio on dry matter intake (DMI), nutrient digestion and N balance. Four Nili Ravi buffalo calves (avg wt, 100kg) were fed diets viz A, B, C and d, having RDP to RUP ratio of 70:30, 65:35, 60:40 and 55:45, respectively. All experimental diets were isonitrogenous (CP 16%) and isocaloric (ME, 2.74 Mcal/kg). Dry matter intake in calves fed diet C was higher ($P<0.05$) than those fed diet D and lower ($P<0.05$) than calves fed diet A, however, it was similar to those fed diet B. Total tract dry matter digestibility (DMD) was higher ($P<0.01$) in calves fed diet A and B than those fed diet C and D. There was a linear decrease in DMI and DMD with decreasing the RDP and RUP ratio. The N retention (g/d) was similar among the calves fed diet B, C and D; however, it was higher ($P<0.05$) than those fed diet A. Decreasing the RDP to RUP ratio resulted in linear increase ($P<0.01$) in N retention. N retention, as percent of N intake was significantly ($P<0.05$) different across all treatments. Decreasing RDP to RUP ratio resulted in linear increase ($P<0.01$) in N retention, as percent of N digestion. Decreasing dietary RDP to RUP ratio resulted in a linear decrease ($P<0.05$) in blood urea nitrogen concentration. A linear increase in weight gain was observed with decreasing RDP to RUP ratio. The diet containing RDP to RUP ratio 55:45 resulted in more weight gain compared to other diets.

Key Words: RDP, Digestibility, RUP

732 Effects of 20% corn wet distillers grain's plus solubles in steam-flaked and dry-rolled corn-based finishing diets. J. C. MacDonald^{1,2}, K. H. Jenkins^{*1}, F. T. McCollum III³, and N. A. Cole⁴, ¹Texas AgriLife Research, Amarillo, TX, ²West Texas A&M University, Canyon, ³Texas AgriLife Extension, Amarillo, TX, ⁴USDA- Agricultural Research Service, Bushland, TX.

Two hundred sixty four crossbred yearling heifers (354 ± 1 kg) were blocked by weight and used in a 2X2 factorial arrangement of treatments to determine effects of wet distiller's grains plus solubles (WDGS) derived from corn on animal performance, carcass characteristics, and the amount of manure harvested in steam-flaked corn (SFC) and dry-rolled corn (DRC) based finishing diets. Heifers were fed DRC or SFC based finishing diets with or without 20% WDGS (DM basis). Control diets with no WDGS were formulated to contain 13.5% CP. The WDGS replaced 15.2 percentage units of corn and 4.8 percentage units of cottonseed meal. All diets contained 10% alfalfa hay, 2% supplemental yellow grease, 4% glycerin, 1.2% urea, and 0.70% Ca. There were 24 pens ($n=6$ per treatment) that housed 8, 10, or 18 heifers with pen size serving as a blocking factor. Heifers were implanted once with Revalor-H[®] approximately 120 days before slaughter and were on feed for an average of 154 d. No corn processing method by WDGS inclusion interactions were found for any response variable ($P > 0.39$). Heifers consuming SFC-based diets had lower DMI ($P < 0.01$), similar ADG ($P = 0.71$), and greater feed efficiency ($P < 0.05$) than heifers consuming DRC-based diets. Corn processing method had no effect on any carcass characteristic ($P > 0.58$). There was a slight tendency for heifers consuming WDGS to have greater final BW ($P = 0.15$), ADG ($P = 0.18$), and hot carcass weight ($P = 0.16$). Inclusion of WDGS did not impact any other animal performance or carcass characteristic ($P > 0.22$). Feeding DRC resulted in increased manure OM harvested •heifer¹•d¹ ($P < 0.01$) compared to SFC and feeding WDGS resulted in a slight tendency

to increase manure OM harvested•heifer¹•d⁻¹ ($P = 0.16$). These data indicate that corn processing method has a greater impact on animal performance and amount of manure harvested than does the inclusion of WDGS when WDGS is included at 20% of diet DM.

Key Words: Corn Processing, Wet Distiller's Grains, Feedlot

733 Effect of supplementation frequency of soyhulls and corn gluten feed based mix on digestion and nitrogen balance of beef steers. M. E. Drewnoski* and M. H. Poore, *North Carolina State University, Raleigh.*

For small producers the labor cost of feeding is often very high. Feeding a supplement less frequently would reduce labor and could therefore have the potential to increase profit. Six ruminally cannulated beef steers were used in a replicated 3 × 3 Latin square design to determine the effect of supplement frequency (daily or alternate days) on digestion and ruminal parameters when feeding hay and supplementing with a mixture of soyhulls and corn gluten feed. Dietary treatments consisted of ad-libitum fescue hay (8.8% CP and 35.8% ADF) that was supplemented at 1% BW daily (SD), supplemented 2% BW on alternate days (SA) or

not supplemented (H). The supplement contained 47% soyhull pellets, 47% corn gluten feed pellets, 2% feed grade limestone and 4% liquid yeast and was 14.6% CP and 29.8% ADF. Each period consisted of a 14 d adaptation phase followed by 6 days of total fecal, urine and ort collection. All supplement offered was consumed within 2 h. Ruminal fluid was collected every 4 h over two days; therefore samples were taken on a day that both SD and SA were supplemented and on a day when only SD was supplemented. Hay intake was reduced by daily supplementation and further reduced ($P < 0.01$) by less frequent supplementation. Hay intake was 1.54, 1.19 and 1.02% BW (SE ± 0.036) for H, DS and SA, respectively. There was a significant ($P < 0.01$) a trt by day interaction for mean ruminal pH. Ruminal pH for SA (6.13), on the day of supplementation was lower ($P < 0.01$) than both SD (6.29) and H (6.52). However, on the day SA did not receive supplement ruminal pH of SA (6.53) did not differ ($P = 0.87$) from H and was higher ($P < 0.01$) than SD. Ruminal pH was lower ($P < 0.01$) for SD than for H on both days. Diet DM digestibility was increased ($P < 0.01$) by supplementation but did not differ ($P = 0.94$) due to frequency. DM digestibility was 57.93, 64.37, 64.42% (SE ± 0.71) for H, SD and SA, respectively. The amount of N retained was higher ($P < 0.01$; SE ± 4.81) for both supplemented trt (23.7 and 19.8 g for SD and SA, respectively) than H (4.22 g) but did not differ ($P = 0.35$) due to frequency.

Key Words: Supplementation Frequency, Cattle, Digestibility

- **Home**
- **Getting Started**
This CD-ROM
Adobe Reader
Navigation
Searching
- **Abstracts**
Tuesday, July 8
Wednesday, July 9
Thursday, July 10
Friday, July 11
- **Author Index**
Subject Index
- **Search**
- **Meeting Web Site**
- **ADSA Web Site**
- **ASAS Web Site**

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