

Effects of increasing level of corn distiller's dried grains plus solubles on in situ disappearance in steers offered medium-quality grass hay.

J.L. Leupp*, G.P. Lardy, and J.S. Caton, *North Dakota State University, Fargo.*

Five ruminally and duodenally cannulated beef steers (446 ± 42 kg of initial BW) were used in a 5×5 Latin square to evaluate effects of increasing level of supplemental corn distiller's dried grains with solubles (DDGS; 25.4% CP, 9.8% fat, DM basis) on in situ rate of DM, NDF, and ADF disappearance and CP kinetic parameters of hay and DDGS. Dietary treatments consisted of grass hay (10.2% CP; DM basis) offered ad libitum, free access to water and trace mineral salt block, and one of five levels of DDGS (0, 0.3, 0.6, 0.9, and 1.2% BW DDGS; DM basis). Diets met or exceeded DIP requirements (microbial yield = 10.5%). All supplements were fed at 0600 before hay. Steers were adapted to diets for 14 d followed by a 7-d collection period. Hay DM disappearance responded cubically ($P = 0.02$) with the greatest rate of disappearance at 0.9% DDGS and least at 1.2% DDGS. Hay NDF and ADF disappearance were not affected ($P \geq 0.23$; $3.74 \pm 0.45\%/h$ and $3.72 \pm 0.46\%/h$, respectively) by treatment. Hay CP degradation rate increased (linear; $P = 0.0025$) with increasing DDGS while extent of CP degradation decreased quadratically ($P = 0.02$) with the lowest extent at 0.9% DDGS. Hay soluble and slowly degradable CP fractions were similar ($P \geq 0.93$; $25.5 \pm 1.7\%$ and $63.0 \pm 1.7\%$, respectively) across treatments. A cubic effect ($P = 0.03$) was noted for DDGS DM disappearance with the greatest disappearance at 0.9% and the least at 0.6% DDGS. No differences ($P \geq 0.45$) among treatments were observed for DDGS NDF or ADF disappearance ($3.04 \pm 0.71\%/h$ and $3.19 \pm 0.94\%/h$, respectively). Soluble CP degradation fraction decreased (linear; $P = 0.01$) and slowly degradable CP fraction increased (linear; $P = 0.002$) with increasing DDGS. A linear increase ($P < 0.0001$) was observed for CP degradation rate with increasing DDGS. Treatment did not affect ($P = 0.23$) extent of DDGS CP degradability ($99.8\% \pm 0.2$). Using moderate to high levels of DDGS in forage diets resulted in increased degradation rates of CP. Results indicate up to 1.2% BW DDGS can be fed in forage-based diets without adverse effects.

Key Words: Distiller's Dried Grains with Solubles, Medium-Quality Forage, Steers