

Evaluation of dried distillers grains and roughage source in steam-flaked corn finishing diets

S. Uwituze*, G. L. Parsons*, M. K. Shelor*, B. E. Deppenbusch*, K. K. Karges**, M. L. Gibson**, C. D. Reinhardt*, J. J. Higgins***, and J. S. Drouillard*

* Department of Animal Sciences and Industry, Kansas State University, Manhattan 66506-1600; and ** Poet Nutrition, Sioux Falls, SD 57104-7111; and *** Department of Statistics, Kansas State University, Manhattan 66506-1600

Abstract :

Two studies were conducted to evaluate effects of dried distillers grains with solubles (DDGS) and alfalfa hay (AH) or corn silage (CS) on feedlot performance, carcass characteristics, ruminal fermentation, and diet digestibility in cattle fed steam-flaked corn (SFC) diets. In trial 1, crossbred heifers ($n = 358$; $BW = 353 \pm 13$ kg) were used in a finishing trial to evaluate interactions between corn-DDGS and roughage source (AH or CS) in terms of impact on feedlot performance and carcass characteristics. Experimental diets (DM basis) consisted of SFC and 11% CS without DDGS (SFC-CS), SFC and 11% CS with 25% DDGS (DDGS-CS), SFC and 6% AH without DDGS (SFC-AH), and SFC with 25% DDGS and 6% AH (DDGS-AH). Heifers were fed *ad libitum* intake once daily for 97 d. Results indicated no interaction between DDGS and roughage source with respect to animal performance. Feeding DDGS did not affect ADG ($P = 0.19$), DMI ($P = 0.14$), or feed conversion ($P = 0.67$). Heifers fed CS had greater DMI than those fed AH ($P = 0.05$), but ADG ($P = 0.56$) and G:F ($P = 0.63$) were not different. There were no differences among treatments with respect to HCW, dressing percentage, subcutaneous fat thickness, quality grades, or yield grades ($P > 0.20$). Cattle fed CS tended ($P = 0.10$) to have greater marbling scores than those fed AH. There was an interaction ($P = 0.02$) between roughage and DDGS with respect to incidence of liver abscess. The greatest incidence was observed in cattle fed diets without DDGS when CS was fed, and the least was observed in cattle fed diets without DDGS when AH was used. In the second trial, ruminal fermentation characteristics and diet digestibility were examined in 12 cannulated Holstein steers fed similar diets to those fed in the finishing trial. Ruminal pH for all treatments was below 5.8 for 14 h after feeding. Acetate:propionate ratios were less ($P = 0.02$) in steers fed 25% DDGS but had greater ($P = 0.02$) ruminal lactate concentrations compared with cattle fed 0% DDGS. Feeding 25% DDGS decreased ($P < 0.01$) ruminal ammonia concentrations, and digestion of DM and OM was less ($P < 0.01$) compared with diets without DDGS. The decrease in digestibility was largely attributable to decreases in digestion of CP ($P = 0.03$) and NDF ($P < 0.01$). Feeding strategies aimed at increasing ruminal pH and ruminally available protein may improve digestion of DDGS in steam-flaked corn-based finishing diets.

Key Word :

digestibility, dried distillers grain, feedlot performance, roughage source, ruminal fermentation, steam-flaked corn

Volume 88, Number 1, January 2010