

IMPROVING FIBER BY-PRODUCT UTILIZATION IN HIGH CONCENTRATE DIETS

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ABSTRACT

The effects of starch and fiber combinations in feedlot diets were examined to determine maximum whole shell corn (WSC) inclusion rate in high fiber diets and determine the effects of fibrolytic enzyme addition to WSC diets with increasing fiber inclusion. Soybean hull (SH) diets with increasing WSC inclusion rates were compared in continuous culture fermenters and fiber digestibility was reduced as starch inclusion increased with an optimum balance between DM and fiber digestibility between 80 and 90% SH inclusion. A subsequent feedlot study determined maximum WSC inclusion for optimum digestibility was 80:20, SH:WSC. The ADG and G:F decreased as SH inclusion increased. Using an *in vitro* fermentation, 0.045% was determined to be the minimum dietary inclusion rate of a commercial proprietary mix of *B. subtilis*, *A. oryzae* and *T. viride* (ENZ; Cattlemace, R & D Life Sciences LLC, Menomonie, WI). In continuous culture, increasing SH inclusion in corn diets improved NDF digestibility and reduced DM and OM digestibility. Adding 0.045% ENZ caused greater acetate concentration, reduced propionate concentration and increased acetate:propionate, indicating a favorable shift in fiber fermentation. There was no difference in ADG or G:F for steers consuming 100% WSC diets versus 14-28% SH diets with ENZ included. An 80:20 SH:WSC diet optimizes fiber digestibility and animals can consume WSC diets containing 14-28% SH and 0.045% ENZ without negative effects on growth performance as compared to all WSC diets.