The effects of replacing dried distillers grains plus solubles with heat-treated soybean meal in forage-based growing calf diets

2023 Technical Report: North Dakota Soybean Council

Grady Gullickson, Madeliene Nichols, Yssi Entzie, Lydia Hansen, Sarah Underdahl, Lauren Hulsman Hanna, Colin Tobin, Kendall Swanson, and Zachary Carlson

North Dakota State University Department of Animal Sciences

Research Conducted

Seventy Angus-based steers were utilized in an 85-day growing study evaluating the partial replacement of 16% dried distillers grains plus solubles (DDGS) with heat-treated soybean meal by substituting 0, 4, 8, and 12% of DDGS (dry matter basis) with AminoPlus® (Ag Processing Inc., Omaha, NE). Steers were provided ad libitum access to feed and water in a monoslope barn with drylot access. Individual daily intake was measured using an automated feeding system. The objective was to evaluate the increasing concentrations of amino acids and metabolizable protein by feeding heat-treating soybean meal in forage-based growing cattle diets.

Why is the research important to North Dakota Farmers?

Dried distillers grains plus solubles has been an available protein source for beef cattle producers since the Renewable Fuel Standard in 2007. Lately, renewed interest in sustainable renewable fuels, has brought the idea that soybean meal may become an abundant protein source with costs competitive of that of DDGS. Incorporating soybean meal and heat-treated soybean meal into diets could help livestock producers navigate the fast-changing world of sustainability and remain profitable.

Results

Partial replacement of DDGS with heat-treated soybean meal supplementation does not affect growing cattle performance with the partial replacement of DDGS when included at 16% of the diet. However, substituting DDGS with heat-treated soybean meal could be an option for producers with consideration of availability and cost. Producers that utilize heat-treated soybean meal are advised to incorporate low inclusion rates to maximize return on investment through cattle growth performance.

Benefits and Recommendations

Soybean meal is a great protein source in beef cattle diets but is often not utilized due to cost relative to other protein feedstuffs. Heat-treating soybean meal could improve the utilization of traditional soybean meal in forage-based growing beef cattle diets and improve the efficiency of growing cattle. With soybean meal production increasing in North Dakota, locality adds to the convenience and availability of SBM as an additional feedstuff.