Photo courtesy of Sara Trojan

RECYCLING CO-PRODUCTS OF ETHANOL PRODUCTION

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The threat of running out of fossil fuels has increased demand for alternative fuel sources. Grain-based ethanol production is one such alternative fuel option, but it relies heavily on grains previously intended to be used for livestock feed. As a result of this competition for resources, there now exists an unpredictable market in feed commodity prices. Beef producers have been forced to introduce distiller's grains into feed rations, which are coproducts of ethanol production. Dr. Sara Trojan, Assistant Professor of Animal and Food Sciences, is studying the effects of adding these coproducts into beef cattle rations.

Ethanol is produced during the distillation of corn, sorghum, or wheat. Once the ethanol is purged, the whole stillage that remains is centrifuged and processed further into either wet or dry distiller's grain with solubles. Distiller's grains can vary in nutritional value depending on processing methods, which may affect the complete feeding value. Dr. Trojan incorporates both wet and dry distillers grains from corn and sorghum into beef cattle rations and evaluates animal performance.

Taking into account growth performance, carcass characteristics, and digestibility of the grain coproducts, Dr. Trojan says her goal is, "to better understand how processing technologies and biofuel feedstock sources impact the feeding value of the coproduct in feedlot cattle

Raised in Wyoming, Sara Trojan grew up on a commercial cow/calf ranch. Obtaining her PhD in animal nutrition from Oklahoma State University, her passion for beef cattle drives her research for sustainability in the industry.

diets." Her research showed that dry corn distiller's grains, de-oiled corn distiller's grains, blended corn/sorghum dry distillers grains and wet-sorghum distiller's grains, included at 25% of diet DM, resulted in similar performance as a steam-flaked corn-based control diet. She did observe that "the animal performance and nutrient digestibility of wet-sorghum distiller's grains was greater than dry-sorghum," she notes. Overall, blending the dry sorghum and dry corn distiller's grains produce the same performance as corn-based coproducts

Here in the Texas High Plains, water resources are continuously being pushed to the limit. Agriculture irrigation accounts for approximately 58% of Texas water usage. Dr. Trojan claims that the, "grain sorghum requires roughly two-thirds of the amount of water that corn does, so there is a place for grain sorghum and a tradeoff between crop water use and animal performance." The agriculture industry in the Texas High Plains evolved with the development of irrigation with water from the Oglala aquifer; this resource is declining in capacity in this region and forcing producers to seek alternative, low-water use crops.

In the United States, roughly 40% of the corn crop goes towards producing ethanol, increasing the cost of corn and overall food prices. Incorporating grain sorghum into beef cattle rations may provide an alternative to corn in areas with low water availability. With the growing legislative endorsement for alternative fuel sources, grain production is continually divided between animal feed and ethanol production. As the industry changes, feeding practices will change. Dr. Trojan declares that "continual research is needed to most efficiently and effectively utilize these coproducts in diets for finishing beef cattle." By pulling resources and utilizing the distiller's grain coproducts, there seems to be a remedied balance to offset the volatility of feed commodity prices.