Reducing Greenhouse Gas Emissions from Ethanol with Byproduct Feeding

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Abstract.
Using a new life-cycle evaluation tool called the BESS model, the impact of producing and feeding dry (90% DM), wet (35% DM), or modified (45% DM) distillers grains plus solubles will be tested. Before accurate modeling of these three different processes can be conducted, cattle performance must be compared within the same experiment. Current models use averages from multiple sites and experiments to compare performance of dry and wet distillers grains. Comparing across experiments is problematic, at least for cattle performance. Interestingly, for states such as Nebraska with a thriving ethanol and cattle industry, synergy exists not only for economics of ethanol production and distillers grains use, but environmental synergies also exist. We hypothesize that greenhouse gas emissions will be reduced for the entire life-cycle when ethanol plants produce and cattle feeders use wet distillers grains compared to dry distillers grains. Ethanol plants and cattle feeders need more information on modified (partially dried) distillers grains as it appears to be more similar to dry distillers than wet distillers. However, data are limited on feeding value of modified distillers grains, and no data exist comparing this modified feed to dry or wet distillers grains. The first year of experimentation will compare cattle performance of these three major types of distillers grains. During year two, a life-cycle analysis on greenhouse gas emissions will be performed as well as another cattle experiment to determine the impact of drying on performance and emissions.