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Economics for Feeding Distillers Grains to Finishing Cattle

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Summary

Cattle CODE, an economic budget model for predicting feeding returns for distillers grains, was updated and four new economic scenarios were evaluated. Feeding WDGS resulted in larger economic returns compared to MDGS and DDGS when the hauling distance from the ethanol plant to the feedlot was less than 60 miles and the dietary inclusion was up to 40% DM. However, these economic returns were dependent on the price paid for the products. If MDGS and DDGS were priced based on their drying costs, then economic returns decreased compared to WDGS.

Introduction

Cattle performance is different for each of these DGS when fed in finishing diets (up to 40% of diet DM). Equations from meta-analysis summaries (*2011 Nebraska Beef Cattle Report*, pp 40-41) were used in an updated version of Cattle CODE (*www.beef.unl.edu*) to predict cattle performance when feeding distillers grains plus solubles (DGS) as wet (WDGS), modified (MDGS), and dry (DDGS). This model evaluates marginal feeding returns for feeding DGS compared to a traditional corn diet (*2008 Nebraska Beef Cattle Report*, pp. 42-44).

Economic returns can vary depending on the price paid for the DGS, dietary inclusion level of DGS, days on feed (DOF) to reach the same final BW, location of the feedlot relative to an ethanol plant, and additional feeding costs associated with feeding wetter diets at the feedlot. New scenarios were conducted to evaluate some of these relative differences.

Procedure

Cattle CODE uses the individual's actual DMI and F:G for a conventional corn-only diet to predict DMI and F:G for diets containing DGS using the meta-analysis equations. The model then calculates ADG and DOF based on the user's feeder and finished cattle weights. The individual also enters their feed costs and DM content, trucking cost and miles of hauling DGS to the feedlot, daily yardage costs, processing and health costs per head, cattle death loss, and interest rate. Feeding costs at the feedlot are calculated assuming that these costs are one-third of the yardage costs.

The following general inputs were used for the corn-based diet and remained the same for feeding any inclusion of DGS: 740 lb feeder steer valued at \$117.70/cwt, 1,300 lb finished cattle valued at \$96.00/cwt, \$20.00 per head for processing and health costs, \$0.35 per head daily for yardage costs, 1.5% cattle death loss, and 8.1% cattle loan interest rate. Corn was priced at \$3.30/ bushel for DRC (88% DM) and \$2.95/bushel for HMC (78% DM), and brome grass hay (88% DM) was priced at \$88.00/ton and used at 7% of diet DM. Dry supplement (95% DM, 4% of the diet DM) and urea (100% DM) were priced at \$190 and \$320/ton (as-is basis), respectively. These inputs generate \$0 profit for the corn-only diet.

Byproduct feeding scenarios were predicted by using 24 lb DMI and 6.5 F:G for cattle fed the 89% corn-only diet, which results in 3.69 lb/day (ADG). This calculates to 152 DOF, which is about the industry average for cattle on feed.

Results

Using the meta-analysis equations in this model, cattle performance (particularly ADG and F:G) improved when feeding WDGS, MDGS, or DDGS up to 40% of diet DM. Compared to a corn-only diet, these improvements were greater for WDGS, intermediate for MDGS, and lower for DDGS. Therefore, fewer DOF were needed, making WDGS the most advantageous product to use from a cattle performance standpoint. However, WDGS contains more moisture and would require more hauling costs. Therefore, the following four economic scenarios were conducted to evaluate additional DGS economic feeding differences.

The first scenario evaluated (spring 2010) DGS prices and corn price (\$3.30/bu for DRC). These DGS prices were \$34/ton for WDGS, \$46/ton for MDGS, and \$100/ton for DDGS. On an equal 100% DM basis, these costs were \$106.25, \$95.83, and \$111.11/ ton for WDGS, MDGS, and DDGS, respectively. Surprisingly, MDGS was priced cheaper than WDGS on an equal DM basis, while MDGS requires more costs for production due to some partial drying costs. All byproducts were assumed to be shipped 50 miles from the ethanol plant to the feedlot. This scenario is presented in Figure 1. Economic returns from feeding DGS increased with increasing DGS inclusion in the diet, regardless of drying type. However, the returns were greater for WDGS and MDGS (\$30/head or more for inclusions of 20% to 40% of diet DM) compared to that of DDGS, largely due to the cattle performance advantages of feeding the wet products. We would have expected the economic returns for WDGS to be greater than that of MDGS; however, these were quite similar. The MDGS was, at the time, priced cheaper than WDGS on the same DM basis, resulting in a positive economic return for MDGS. This may reflect greater demand for WDGS because of higher feeding value or because of lack of appropriate accounting for DM in pricing. On a wet basis, WDGS was \$10/ton less expensive but on a dry basis was \$5/ ton more expensive.

In a second scenario, the same prices for DGS and corn were used, but these prices were quoted as pur-

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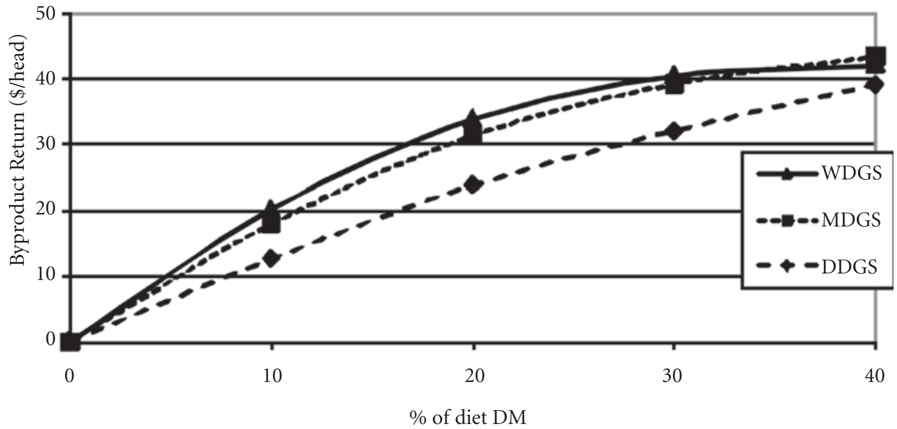

Figure 1. Economic returns for feeding WDGS, MDGS, and DDGS using current prices and hauling these products 50 miles to the feedlot.

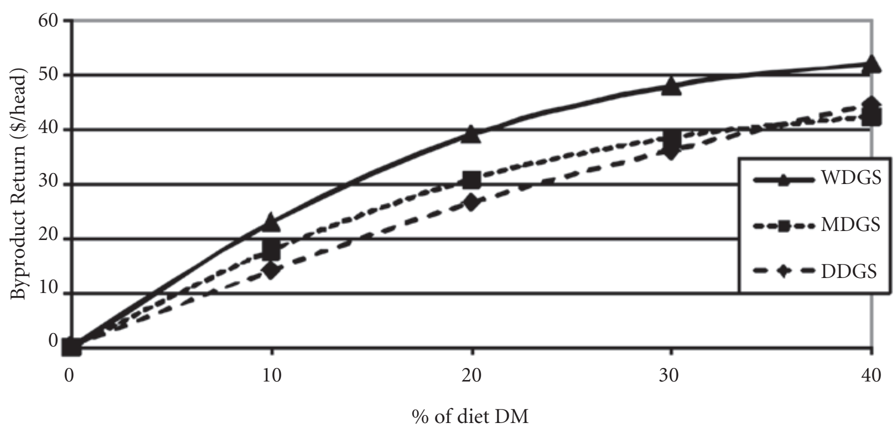

Figure 2. Economic returns for feeding WDGS, MDGS, and DDGS using current prices delivered to the feedlot (0 miles hauling).

chased and delivered prices at the feedlot (hence, no trucking costs to the yard). This prediction is illustrated in Figure 2. The economic advantage to feeding any type of DGS improved compared to the first scenario due to no trucking costs for delivering to the feedlot. Although MDGS was still priced cheaper on a DM basis than WDGS, there was a greater advantage to feeding WDGS due to no costs of hauling a very wet product to the feedlot. The economic returns for MDGS and DDGS were similar to each other and were more profitable than a corn-only diet, but they remained less than the returns for WDGS. These results closely resemble the cattle performance response due to feeding these products.

To evaluate hauling differences to the feedlot between WDGS and MDGS, a third scenario was conducted. Hauling distances of 10 or 60 miles from an ethanol plant to a feedlot were used along with DGS and corn prices (as previously stated). This economic scenario is presented in Figure 3. As expected, hauling either product for 10 miles to the feedlot resulted in greater economic returns compared to hauling for 60 miles. The profitability for these products at 10 miles for hauling continued to increase as inclusion of WDGS or MDGS increased in the diet. Hauling these products 60 miles to the feedlot remained profitable (up to $40/head) compared to a corn-only diet. Generally, more economic returns are possible when feeding WDGS up to 40% of diet DM and up to 60 miles from the ethanol plant, even when MDGS is priced cheaper than WDGS. However, these returns for WDGS were similar to MDGS at 30% to 40% of diet DM when DGS was hauled 60 miles. The improved cattle performance for feeding WDGS and MDGS often offsets costs associated with hauling the wet feeds. For instance, WDGS and MDGS can be hauled 265 and 350 miles to the feedlot, respectively, when including these DGS at 30% of diet DM before the scenario becomes a break-even compared to feeding a corn-only diet.

The previous three scenarios were conducted using current DGS prices, which resulted in a lower price for

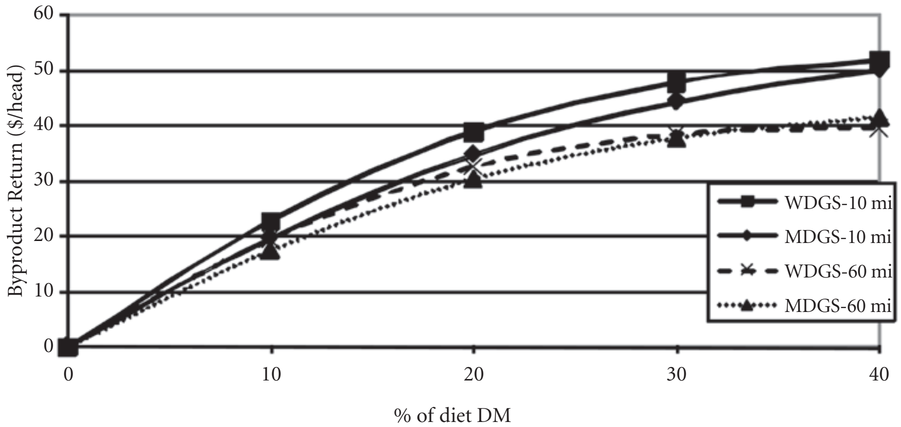

Figure 3. Economic returns for feeding WDGS and MDGS using current prices and 10 or 60 miles hauling distance from an ethanol plant to a feedlot.

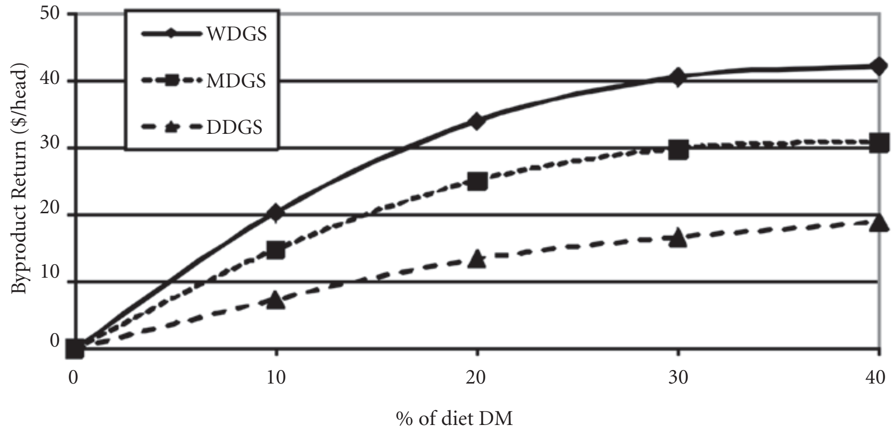

Figure 4. Economic returns when MDGS and DDGS are priced based on current WDGS price plus additional costs of drying the products.

MDGS than WDGS. Ethanol plants must incur more costs to dry WDGS to any higher DM content than 35%, so DGS would logically be priced based on the costs ethanol plants must incur to dry the products. Therefore, MDGS and DDGS should be priced higher than WDGS on an equal moisture basis. The additional costs to dry products include the capital costs of dryers and natural gas. An estimated $30/ton is the cost ethanol plants have in drying a ton of a 90% dry product. A fourth scenario (Figure 4) was conducted using the current price of WDGS at $34/ton (as-is, ~32% DM) and $55 and $126/ton for MDGS and DDGS, respectively, accounting for drying costs, both of which were greater than in previous scenarios. Each of the DGS was hauled 50 miles to a feedlot. The economic returns for WDGS were exactly the same as in the first scenario, resulting in profit potential of up to $40/head. However, the economic returns for MDGS and DDGS were less. These economic returns remained below $20 and $30/head at any dietary inclusion level up to 40% DM for DDGS and MDGS, respectively. Therefore, if DGS were actually priced based on the additional drying costs that ethanol plants must pay to dry MDGS or DDGS, there would be a greater advantage to feeding WDGS.

In conclusion, our scenarios provide some guidance for making economic decisions regarding feeding different types of DGS. Cattle CODE is available and the relationships in our study should be compared to evaluations conducted by feeders using their current prices and conditions.

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