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Ethanol Byproduct Prices

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Market Report	Yr Ago	4 Wks Ago	3/21/08
Livestock and Products, Weekly Average			
Nebraska Slaughter Steers, 35-65% Choice, Live Weight.	$97.67	$90.26	$89.95
Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb..	124.72	128.47	120.81
Nebraska Feeder Steers, Med. & Large Frame 750-800 lb.	105.28	*	102.21
Choice Boxed Beef, 600-750 lb. Carcass.	161.66	149.39	141.98
Western Corn Belt Base Hog Price Carcass, Negotiated.	57.01	58.01	50.31
Feeder Pigs, National Direct 50 lbs, FOB..	69.67	50.79	53.57
Pork Carcass Cutout, 185 lb. Carcass, 51-52% Lean..	65.11	61.49	56.78
Slaughter Lambs, Ch. & Pr., Heavy, Wooled, South Dakota, Direct.	85.87	94.50	92.50
National Carcass Lamb Cutout, FOB.	247.14	256.45	262.10
Crops, Daily Spot Prices			
Wheat, No. 1, H.W. Imperial, bu..	4.42	10.37	9.62
Corn, No. 2, Yellow Omaha, bu.	3.78	5.03	4.73
Soybeans, No. 1, Yellow Omaha, bu.	7.29	13.28	11.09
Grain Sorghum, No. 2, Yellow Dorchester, cwt..	6.21	8.87	8.18
Oats, No. 2, Heavy Minneapolis, MN , bu.	2.97	3.83	3.28
Hay			
Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton.	*	135.00	135.00
Alfalfa, Large Rounds, Good Platte Valley, ton..	*	85.00	85.00
Grass Hay, Large Rounds, Good Northeast Nebraska, ton.	*	*	*

* No market.

Ethanol production has been increasing exponentially in recent years. Production in 2007 was at approximately 7.5 billion gallons, and is projected to grow to over 11 billion gallons within the next couple of years (Renewable Fuels Association). Not only is this growing industry producing increasing amounts of ethanol fuel, but the quantity of ethanol byproducts is rapidly increasing as well. The Renewable Fuels Association estimates that more than 14.6 million metric tons of distillers grains were produced in 2007. As a byproduct of dry mill ethanol production, both dry distillers grains plus solubes (DDGS) and wet distillers grains plus solubes (WDGS) are good protein and energy sources and are commonly used in livestock rations, particularly cattle. Research has shown that feed conversion, average daily gain, and final body weight all improve for feedlot cattle consuming byproducts, as compared to cattle fed a conventional diet containing no byproducts (Buckner et al., 2007). As both the supply of distillers grains and the demand for them as a livestock feed increased in recent years, the market for these ethanol byproducts has clearly emerged (and may be maturing), requiring both sellers and buyers to understand historical and seasonal trends, pricing basis for various types of byproducts, and contracting opportunities and risk management strategies.

Distillers grains typically enter feedlot cattle rations as a substitute for corn, and as a result are often priced based on the corn market. Various ethanol plants have different byproduct pricing relationships relative to corn, and offer different contracts where the byproduct price is some function of corn price, so comparing stated spot prices for byproducts is not always straightforward. Because byproducts vary significantly in moisture content (e.g., DDGS is typically 90% dry matter while WDGS is generally about 35% dry matter), it is important to compare prices on a dry matter basis. For example, the average price of DDGS across plants in Nebraska is currently $160-$167/ton, while the average price for WDGS is $51-$66.50/ton. Given the significantly different levels of moisture, these prices can't be directly compared. One way to

compare these prices is to express the dry matter price for distillers grain as a percentage of the dry matter price of corn. This can enable livestock feeders to more appropriately compare prices of various types of byproducts, and even for the same type of byproduct offered at different plants (because dry matter content can vary from plant to plant). It will not, however, account for differences in transportation costs for the wet versus the dry product (which must be added to the price before converting to dry matter units).

The average daily prices for DDGS, WDGS and modified distillers grains plus solubes (MDGS, 50% dry matter) for Nebraska plants during 2007 and 2008 expressed as a percentage of the plant average corn price (all on a dry matter basis), is shown in Figure 1 (on next page). During this time, WDGS has averaged 87 percent of the corn price, while DDGS has averaged 94 percent of the corn price (daily prices for DDGS were not available in this series before November 2007, so this average reflects prices since then, during which time WDGS averaged 82 percent of corn price). Because both DDGS and WDGS typically trade at a discount to corn price, and because both significantly improve cattle feeding performance, it is an economically feasible substitute for corn. Further University of Nebraska-Lincoln research has shown that the benefit to substituting distillers grains into the ration increases as corn prices increase (Buckner et al., 2008). In fact, Buckner et al. (2008) found in some circumstances that rations containing byproducts priced *higher* than the price of corn could still result in a marginal profit improvement over conventional corn-only diets. However, byproduct prices have typically been trading at a discount to corn prices, possibly due to the uncertainty of additional expenses associated with feeding these products (e.g., transportation, mixing and handling, shrink, etc.).

Nebraska prices for DDGS are typically higher than for WDGS, as shown in Figure 1. This likely results from both supply and demand factors. Nebraska historically has been a larger producer of WDGS, as ethanol plants have sought to reduce energy expenses by not drying distillers grains. However, the relative demand for DDGS may be higher because it results in less transportation cost per dry matter unit, can be stored for a longer period of time, can be used by swine and poultry operations, and is attractive to export markets (both domestically and internationally). Interestingly, research has found that cattle feeding performance responds more favorably to WDGS compared to DDGS, which suggests that demand from cattle feeders (the largest purchasers of byproducts) should be highest for WDGS. Prices in Nebraska for WDGS are often higher priced relative to corn, when compared to other states. However, the value of DDGS is likely being bid higher yet by the other competing users because it is the only feasible alternative. Additionally, for livestock feeders using relatively low levels of distillers grains (~10% of their ration on a dry matter basis), the byproduct is a protein substitute (and therefore has higher value) whereas feeders using larger amounts (~40% of the ration, dry matter basis) use the byproduct as an energy source (which has a lower value).

Because feeders using the lowest amounts are those farthest from the ethanol plants (and can't afford to ship wet byproduct), they have an incentive to bid DDGS prices higher.

Along with understanding the price differentials among byproducts, livestock producers feeding byproducts must also understand the seasonal trends for byproduct prices. Doing so could help them determine the optimal time to purchase or contract byproducts. Figure 2 (on next page) illustrates the seasonal price index for DDGS in Nebraska, and shows that DDGS price is usually lowest in the late summer months. Ethanol byproduct prices are relatively higher throughout the fall, winter and spring, and significantly decrease during the months of July and August. While the production (supply) of byproducts is relatively constant across the year (albeit trending upward), the demand for byproducts is not. The seasonal nature of the byproduct prices illustrated in Figure 2 is a function of demand from cattle feeders. When cattle on feed inventory is lowest, byproduct prices are lowest. The decrease in byproduct prices during late summer provides incentive for producers to purchase the byproducts during this period and store it until a later date. Ongoing research at UNL is examining both the feasibility of storing byproducts and the economic advantages to doing so.

As the ethanol byproduct market continues to grow, understanding the contracting opportunities, seasonal trends, and price differentials will be increasingly important – especially if corn prices continue to increase. Information regarding ethanol byproduct prices, along with downloadable spreadsheets, is available at: http://agecon.unl.edu/mark/ethanol_byproducts.html.

References

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Figure 1. DDGS, MDGS, and WDGS as a Percent of Corn Price, Dry Matter Basis, Nebraska, 2007-2008
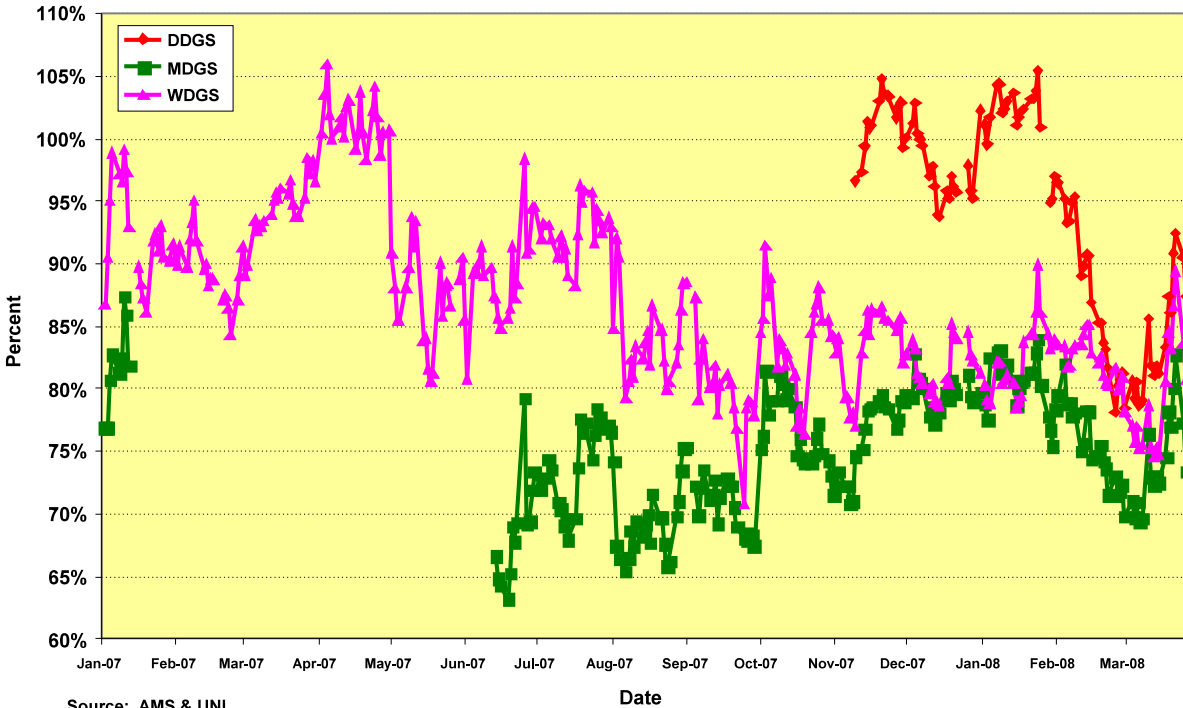
Source: AMS & UNL

Figure 2. Seasonal Index of Dried Distillers Grains, Nebraska, 2003-2006 And Cattle on Feed, All States, 1000+ Head Feedyards

Source: AMS & University of Nebraska-Lincoln