

## Feed Cost Savings of Distillers Grains in Feedlot Rations

by Glynn T. Tonsor, Agricultural Economist,  
Michigan State University, December 2006

Expansion of ethanol production is occurring rapidly generating considerable discussion regarding the ability of numerous affected parties to respond and adjust to changes in associated markets. Among these discussed adjustments is the ability of livestock producers to incorporate ethanol by-products in their feed rations in an attempt to off-set increasing feed costs associated with higher corn prices. This short article is designed to provide producers information regarding feed cost savings of incorporating distillers grains (DGS) in feedlot rations.

### Ration Substitution and Diets Assumed

Cattle, unlike swine and other livestock species, can utilize wet distillers grains plus solubles (WDGS) and dried distillers grains plus solubles (DDGS). In general, incorporation of DGS in feedlot rations involves a substitution of DGS and limestone for corn and soybean meal. Each producer's substitution should reflect unique nutritional needs. Table 1 presents three example diets used in this article to evaluate cost savings available by utilizing DGS products.

*Table 1. Diet Composition of example rations containing 0%, 20%, and 40% DGS*

<b>Ingredient</b>	<b>% of Diet Dry Matter</b>		
Corn	78.03%	61.85%	41.85%
Soybean Meal	4.00%	0.00%	0.00%
DGS	0.00%	20.00%	40.00%
Urea	0.52%	0.00%	0.00%
Corn silage	15.00%	15.00%	15.00%
Limestone	1.00%	1.70%	1.70%
Salt	0.35%	0.35%	0.35%
Vitamin/Mineral premix	0.10%	0.10%	0.10%
Ionophore mix	1.00%	1.00%	1.00%

### Feed Cost Impacts

Utilizing the competing rations presented in Table 1 it is straightforward to identify the cost savings available to producers at alternative input prices and by-product inclusion rates. Tables 2 and 3 presents the cost savings (\$/head) of incorporating DDGS and WDGS, respectively, in rations fed to steers from 700 lbs to finishing weights of 1,300 lbs. Furthermore, assumed prices not directly presented in tables 2 and 3 include \$200/ton, \$275/ton, \$22.50/ton, \$0.05/lb, \$0.05/lb, \$250/ton, and \$500/ton for soybean meal, urea, corn silage, limestone, salt, vitamin/mineral premix, and ionophore mix, respectively. In addition to these prices, assumptions regarding feed-to-gain (F/G) performance need to be noted. Feeding DDGS (table 2) is assumed to not affect F/G (held at 6.5 lbs). Conversely, feeding WDGS (table 3) is assumed to improve F/G. In particular, 20% and 40% inclusion rates are assumed to improve F/G to 6.25 and 6.0, respectively.

*Table 2. Cost Savings (\$/head) of Incorporating 20% and 40% DDGS (Relative to 0% DDGS)*

DDGS (\$/ton)	DDGS Inclusion	Corn (\$/bu.)						
		\$ 2.00	\$ 2.50	\$ 3.00	\$ 3.50	\$ 4.00	\$ 4.50	\$ 5.00
\$ 75	20%	\$ 12.77	\$ 19.40	\$ 26.03	\$ 32.66	\$ 39.28	\$ 45.91	\$ 52.54
\$ 75	40%	\$ 13.04	\$ 27.87	\$ 42.69	\$ 57.51	\$ 72.33	\$ 87.15	\$ 101.97
\$ 100	20%	\$ 1.94	\$ 8.57	\$ 15.19	\$ 21.82	\$ 28.45	\$ 35.08	\$ 41.71
\$ 100	40%	- \$ 8.62	\$ 6.20	\$ 21.02	\$ 35.84	\$ 50.66	\$ 65.48	\$ 80.31
\$ 125	20%	- \$ 8.90	- \$ 2.27	\$ 4.36	\$ 10.99	\$ 17.62	\$ 24.25	\$ 30.87
\$ 125	40%	- \$ 30.29	- \$ 15.47	- \$ 0.65	\$ 14.17	\$ 29.00	\$ 43.82	\$ 58.64
\$ 150	20%	- \$ 19.73	- \$ 13.10	- \$ 6.47	\$ 0.16	\$ 6.78	\$ 13.41	\$ 20.04
\$ 150	40%	- \$ 51.96	- \$ 37.13	- \$ 22.31	- \$ 7.49	\$ 7.33	\$ 22.15	\$ 36.97

*Table 3. Cost Savings (\$/head) of Incorporating 20% and 40% WDGS (Relative to 0% WDGS)*

WDGS (\$/ton)	WDGS Inclusion	Corn (\$/bu.)						
		\$ 2.00	\$ 2.50	\$ 3.00	\$ 3.50	\$ 4.00	\$ 4.50	\$ 5.00
\$ 20	20%	\$ 25.44	\$ 33.04	\$ 40.64	\$ 48.25	\$ 55.85	\$ 63.45	\$ 71.06
\$ 20	40%	\$ 37.86	\$ 54.00	\$ 70.14	\$ 86.28	\$ 102.42	\$ 118.56	\$ 134.70
\$ 40	20%	\$ 0.44	\$ 8.04	\$ 15.64	\$ 23.25	\$ 30.85	\$ 38.45	\$ 46.06
\$ 40	40%	- \$ 10.14	\$ 6.00	\$ 22.14	\$ 38.28	\$ 54.42	\$ 70.56	\$ 86.70
\$ 60	20%	- \$ 24.56	- \$ 16.96	- \$ 9.36	- \$ 1.75	\$ 5.85	\$ 13.45	\$ 21.06
\$ 60	40%	- \$ 58.14	- \$ 42.00	- \$ 25.86	- \$ 9.72	\$ 6.42	\$ 22.56	\$ 38.70

Tables 2 and 3 reveal that the value of DGS to feedlot operations varies depending on the price of DGS, price of corn, and the DGS inclusion rate and type (DDGS or WDGS) being considered. Some example interpretations may be useful. For instance, table 2 suggest that feed cost can be reduced by approximately \$10.99/head by feeding a ration including 20% DDGS when DDGS can be delivered for \$125/ton and corn is available for \$3.50/bu. Likewise, a ration of 40% DDGS may save \$14.17/head at the same DDGS and corn prices. As for feeding WDGS, table 3 suggests that feed cost savings of \$38.28/head are available by feeding a ration of 40% WDGS delivered for \$40/ton when corn is available for \$3.50/bu. In general, tables 2 and 3 demonstrate that the value (cost savings) of DGS products in finishing rations increases as corn price increases and decreases as DGS price increases.

Care should be taken in direct utilization of the values presented in tables 2 and 3. In particular, these tables assume delivered prices. Furthermore, the tables assume that utilization of DGS has no impact on carcass composition, days on feed, or changes in other costs such as manure handling. Each of these issues are a point of current research and will be further understood in the future. Given the current state of knowledge producers should be aware that some of these issues are still not known with certainty and may vary based upon unique production situations.

### **Final Points**

Producers finishing steers are increasingly looking for ways to manage increasing feed costs. This article presents an overview of feed cost savings that may be available by utilizing dried and wet distillers grains in designing rations.