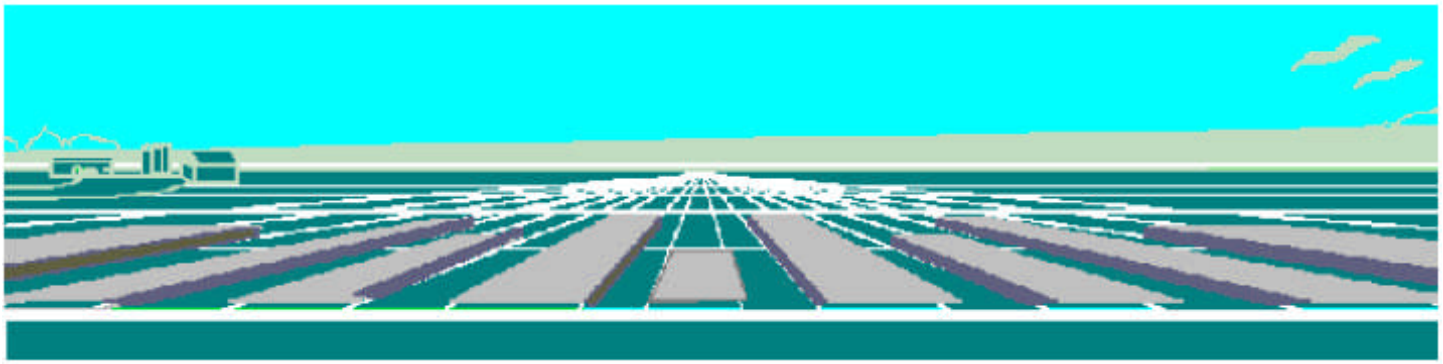
Iowa Farm Outlook



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Impact on Hog Feed Cost of Corn and DDGS Prices

Rising corn prices this fall have resulted in higher feed cost for hog producers. Depending on feed efficiency and cost of facilities, feed cost is typically 50-60% of total cost of production for pork producers. Corn is currently the largest ingredient cost item in the feed costs. This Iowa Farm Outlook will address three key questions pork producers are facing.

1. What is the impact on cost of production of higher corn prices?
2. How does higher feed cost impact the optimal marketing weight for hogs?
3. Can including distillers dried grains and solubles (DDGS) reduce feed cost for pork producers?

Corn Price and Feed Cost…

Typically, approximately 79-80 percent of the feed that grow-finish hogs consume is corn. Table 1 lists four diets for grow-finish hogs based on a University of Minnesota research trial evaluating the impact on hog performance and carcass characteristics of different levels of DDGS. These results are based on research published in the *Journal of Animal Science*, July 2006. The first column is similar to a commercial ration without DDGS.

Table 1. Grow-Finish Hog Diet, Average Over Five Diets:
Percent of Feed Consumption at Four Levels of DDGS

	DDGS 0	DDGS 10	DDGS 20	DDGS 30
Corn	79.4	72.1	64.9	57.7
SBM	15.6	13.5	11.4	9.1
SBO	2.3	1.9	1.4	0.9
DDGS	0.0	10.0	20.0	30.0
Other	2.6	2.5	2.4	2.3
Total	100.0	100.0	100.0	100.0

Based on University of Minnesota research, Whitney, Shurson,. Johnston, Wulf, and Shanks, JAS, July 2006.

The impact of higher corn prices in conventional diets can be estimated using the DDGS0 diet as a proxy for a commercial corn-SBM diet. Table 2 lists three input price scenarios. The Current scenario

represents prices in early November 2006. The Lower scenario is prices from August 2006. The Higher scenario is potential prices that may occur as the corn market tries to encourage more corn plantings in 2007.

Table 2 Feed Price Scenarios and Feed Cost for 200 Pounds of Gain at 3.0 Feed Efficiency

Prices	Lower	Current	Higher
Corn $/bu	2.00	3.00	4.00
SBM $/T	175.00	185.00	195.00
SBO $/lb	0.28	0.28	0.28
Feed cost $/hd	33.88	42.86	51.84

Comparing the feed cost per hog between the Current and Lower columns show the impact of a $1/bu and $10/ton increase in corn and SBM prices, respectively. This difference is approximately $9/head for the 200 pounds of gain assumed in this example, or about $4.50/cwt of carcass weight sold. The hogs in this research trial were quite efficient with feed:gain ratios under 2.8 for the control group (Table 3). Whole pen closeouts in a commercial setting and hogs sold at a heavier weight are not likely to be as efficient. When the feed cost for the nursery and breeding herd is included the feed cost increase is closer to $5/cwt of carcass. Producers with different diet formulations or different efficiencies will have different results.

Optimal Marketing Weight…

Although the change is not dramatic, efficiency of gain decreases as hogs grow larger. For example, the average feed:gain ratio from 50-260 pounds may be 3.2, but the ratio from 250-260 pounds is closer to 4.1. The economically optimal time to sell is when the cost of the last pound is equal to the revenue from the last pound.

Feed prices obviously impact the cost of the additional pound. In our 4.1 feed:gain example, the feed cost of one more pound of live weight gain at $.06/lb. feed is $.246. If hog prices are $.40/lb live it makes sense to put on the additional pound. However, the revenue side is not typically that simple. First, the lean premium and sort discounts change as hogs change weight. The net price may increase initially, but decrease at heavier weights as more hogs exceed the top of the weight range and put on more fat. Second, market prices may change before the animals are sold. Seasonal price patterns can help predict the probability of price changes at a particular time of the year. It is also important to note that the price change and discounts are applied to all pounds and not just the last pound added.

The bottom line is that if the hogs were marketed at the optimal weight with $2/bu corn, the optimal marketing weight with $3/bu corn will be less. A spreadsheet tool to help producers evaluate optimal marketing weight is available at http://www.econ.iastate.edu/faculty/lawrence/Hog%20Market%20Calculator%20Advanced.xls

Feeding DDGS to Reduce Costs…

The impact of replacing a portion of the corn and SBM in the diet with DDGS is summarized in Tables 3, 4, and 5. The U of MN researchers found no difference in performance or carcass traits with DDGS at 10% of the diet throughout the grow-finish phase. Average daily gain was lower at the 20% and 30% levels than at the 0% and 10% levels, and the 30% ADG was lower than the 20% ADG. The DDGS30 also required more feed per pound of gain than did the other three diets that were alike. As a result of the lower ADG, the DDGS20 and DDGS30 had lower selling weights for the same number of days on feed.

There was no statistical difference in carcass lean, but the DDGS20 and DDGS30 had a lower dressing percentage. There was no statistical difference in muscle color, water holding capacity, or tenderness due to the level of DDGS in this trial. While not reported here and not currently discounted at packing plants, belly fat became more unsaturated as the dietary concentration of DDGS increased. The more unsaturated the fat, the softer the belly fat, causing problems for bacon slicers and some export customers.

Table 3. Performance and Carcass Traits by DDGS in Diet

	DDGS 0	DDGS 10	DDGS 20	DDGS 30
ADG, lbs	1.90[a]	1.89[a]	1.82[b c]	1.78[b d]
Feed:Gain	2.78[a]	2.78[a]	2.78[a]	2.94[b]
Final BW	257.2[a]	258.7[a]	250.6[b]	246.2[b]
No. of days	103.5	103.5	103.5	103.5
Dressing, %	73.4[c]	72.8[c]	72.1[d]	71.9[d]
Lean, %	52.6	52.0	52.6	52.5

a,b Means within row with unlike superscripts differ ($P < 0.05$).
c,d Means within row with unlike superscripts differ ($P < 0.10$).

Table 4 shows the impact on the price per pound of feed and cost per pound of gain at different levels of DDGS across three feed price levels shown in Table 2. Increasing the level of DDGS in the ration reduced the feed price per pound under each of the price scenarios. It is possible that DDGS can be priced higher than the corn and SBM it replaces and in that case it would not be beneficial to use DDGS. Each 10% increase in DDGS in the ration reduced the feed price per 100 pounds by approximately $.25 to .28.

The lower part of Table 4 is the estimated feed cost per 100 pounds of live weight gain. This calculation takes into account the feed price from the top part of the table and the performance difference from Table 3. Feed cost of gain decreased at DDGS10 and again at DDGS20, but was steady to higher at DDGS30 because of reduced animal performance.

Table 4. Feed Price and Feed Cost per 100 Lbs

	DDGS 0	DDGS 10	DDGS 20	DDGS 30
	Feed price per 100 pounds of feed			
Lower	5.65	5.38	5.10	4.82
Current	7.14	6.89	6.62	6.35
Higher	8.64	8.39	8.14	7.88
	Feed cost per 100 pounds of live weight gain			
Lower	15.69	14.94	14.17	14.17
Current	19.84	19.13	18.39	18.68
Higher	24.00	23.31	22.61	23.18

The final analysis is to look at return over feed cost, as the level of DDGS in the ration impacts revenue through carcass weight. Table 5 assumes pigs start at equal weight of 60 pounds and are 103.5 days on feed as in the trial. This live weight was multiplied by the reported dressing percent resulting in different carcass weights. From Table 3 dressing percent was not different between DDGS0 and DDGS10 and they were both larger than DDGS20 and DDGS30 that were alike. The carcass price for treatments in this example is $60/cwt, similar to mid November prices.

These results indicated lighter carcasses for diets with higher levels of DDGS and less revenue per head. The lower part of Table 5 shows the estimated return over feed cost for the four treatments. The DDGS10 had slightly higher returns than DDGS0 because it has lower feed prices and feed cost. Returns were lower at DDGS20 and DDGS30, but the lower feed cost offset part of the decreased revenue.

Table 5. Revenue and Return per Head Over Feed Cost by Treatment

	DDGS 0	DDGS 10	DDGS 20	DDGS 30
Carcass wt	187.4	186.9	178.9	175.8
Revenue with $60.00 carcass price	112.47	112.17	107.34	105.47
	Return Over Feed Cost Per Head			
Lower	81.64	82.91	80.62	79.36
Current	73.47	74.72	72.67	71.07
Higher	65.30	66.52	64.72	62.77

60 Pound starting weight, same days on feed, no difference in percent lean. Dressing percent DDGS0=DDGS10 and DDGS20=DDGS30

Summary…

Pork producers can effectively feed DDGS in grow-finish diets. Research indicates that there is no statistical difference in efficiency, growth, or carcass traits at the 10% inclusion rate compared to no DDGS in the diet. At higher levels, there is lower ADG (at 20 and 30%), higher feed:gain (at 30%), and lower dressing percentage (at 20 and 30%) compared to diets without DDGS. There was no difference in percent lean or muscle quality at the levels evaluated, but bellies were softer due to more unsaturated fat at the higher levels. There is currently not a discount on soft pork bellies, but it is a concern of packers and the industry.

At three different feed price scenarios with corn prices at $2, $3, and $4 per bushel, adding DDGS lowered feed prices and feed cost of gain. However, the reduced carcass weight resulted in less return over feed cost at the two higher inclusion rates.

John Lawrence

Crop Report Tightens Corn Supplies, Shows Slightly More Adequate Soybean Supply

Corn Highlights

USDA's November crop report followed the pattern of other years when estimates declined from September to October. The U.S. crop estimate declined by 160 million bushels or one percent from a month earlier, further tightening an already tight supply for the current marketing year. Indicated production is 10.745 billion bushels, down three percent from 2005. USDA economists slightly reduced their feed use and export projections to reflect an anticipated rationing of demand through higher prices. The official projections show U.S. corn carryover stocks dropping to about a 4.1 week supply at the end of August 2007. That would be a decline from a 9.1 week supply on 8/31/06 and 10.3 weeks supply on 8/31/05. Normally, about four to four and a half weeks supply is needed for feeding, processing, exporting, and merchandising activities before the new crop is available in marketing channels. Thus, excess corn carryover stocks are expected to be gone by the end of this marketing year.

The latest crop estimate and USDA utilization projections indicate the 2006 crop estimate, despite the second highest yield on record, is a billion bushels below potential use. Our latest balance sheets show a 1.1 billion bushel production-use gap. That's based on indications that it may be a little harder to ration U.S. livestock feeding and export demand than indicated in the official numbers. Either way, these numbers and the 1.6 to 1.7 billion bushels of new ethanol plant capacity under construction signal that a lot more corn acres will be needed next year and for the next few years. The need for more corn acres will be the dominant influence on corn prices from now to planting time. Some private analysts indicate recent corn prices may have been high enough to cause a 10 to 12 percent increase in 2007 plantings. However, the corn price needed will depend on

crop prospects in South America and soybean prices, as well as fertilizer prices. Thus, corn prices will be more sensitive to South American conditions than usual this winter. At this writing, planting conditions there have been very favorable. Our Brazilian contacts indicate the rise in bean prices since mid-September is encouraging South American farmers to plant more beans than expected earlier.

Soybean Supplies Ample – for Now

In contrast to corn, the November 9 U.S. soybean crop estimate increased about 16 million bushels or 0.5% from last month. The crop is now indicated to be 3.204 billion bushels, 4.6% above last year. Yield estimates increased from the Dakotas and Minnesota to Michigan, but decreased by one bushel per acre from last month in Missouri. USDA also increased its soybean crush projection by five million bushels. That brought a very modest 10 million bushel increase from last month in the projected carryover stocks for August 31, 2007. Soybean carryover stocks at the end of this marketing year are now expected to be about a 9.5 week supply, considerably more than is needed for normal working stocks. By past standards, these stocks would be very negative for soybean prices. However, the rapid expansion in corn processing for ethanol is virtually certain to pull land out of soybeans in the next few years unless world crude petroleum prices collapse. For that reason, U.S. soybean carryover stocks are very likely to decline in the next few years. Our early and very tentative projections of U.S. corn and soybean supplies, use, and carryover stocks for the 2008 and 2009 marketing years are shown on our web site: http://www.econ.iastate.edu/faculty/wisner. They are in the right-hand column, just below the "Balance Sheets" link. Our long-term soybean projections show two sets of carryover stocks. One is based on crushings primarily for meal. In most years, the meal crush has usually been the driving force in soybean crushings. However, because of expanding demand for biodiesel, the more appropriate carryover for the years ahead appears to be the one that is based on crushings for oil. Soybean meal in the years ahead will face increased competition from distillers grain and solubles. Prospects for declining soybean carryover stocks in later years will be a supporting influence on this season's soybean prices, despite the current large supplies.

Corn Export Sales Exceptionally Strong

So far, export sales have not indicated that current corn prices are rationing export demand. Cumulative U.S. corn export sales through November 9 were 40% higher than at the same time last year. As shown in the table below, they were well above levels of the last three years. However, they were well below sales levels of 1995-96, the year that corn prices were at or above $5.00 per bushel in Iowa for six months.

Cumulative Export Sales to Date
Vs.

	Yr. ago	2 yrs. Ago	3 yrs. Ago	'95-96
Corn	+40%	+25%	+19%	-24%
Beans	+36%	+4.3%	-18%	+45%

While soybean export sales are well above the year earlier level, they have not made the impressive gains relative to two and three years ago that corn is showing. Corn export sales will be an important market indicator to watch in the weeks ahead. A decline in export sales to 0.7 to0.8 million tons per week (28 to 32 million bushels) for several weeks would be a signal that high corn prices are starting to slow demand. Strength in corn exports reflects sharply higher feed wheat prices than a year ago because of foreign crop problems, including a very severe drought in Australia. In the international market 4.0 to 4.5 billion bushels of wheat are fed annually to livestock. Higher wheat prices tend to reduce wheat feeding, thus shifting some demand to corn. The latest USDA World Crop Report forecasts the Australian wheat crop (soon to be

harvested) at **55%** less than last year. U.S. corn exports also are being strengthened by weather-reduced production in Argentina and South Africa last spring. Early projections show a moderate recovery in production in these two countries next spring. These two countries normally are in the top three competitors of U.S. corn in export markets. The other major corn competitor usually is China. Rainfall in north China was above normal last summer, and its crop estimates have been increased in each of the past two months. Current estimates place the crop at 140 million bushels above last year. Its 2006-07 exports are projected to be about 10 million bushels larger than last season.

Ethanol Update – Will Current Corn Prices Halt the Boom?

Returns for processing corn into ethanol have been quite large for most of the past year. They were strengthened by high world crude oil and gasoline prices, as well as various government incentives. Ethanol processing returns reached a peak in early summer as the petroleum industry halted production of MTBE. MTBE was a clean-air additive used in pollution-prone areas of the country, especially on the east coast. Halting its production opened up a large premium market for ethanol at mid-year, and caused ethanol prices to move to a large premium to gasoline. That premium narrowed considerably this fall as ethanol production increased, although wholesale or rack ethanol prices still are well above those for unleaded gasoline. The 51 cent per gallon blending credit allows retail prices for ethanol blends to be lower than gasoline.

Cash corn prices have gone up about $1.50 per bushel since mid-summer. A $1 increase in the corn price raises the cost of producing ethanol by about $0.36 per gallon, provided other cost elements are unchanged. Thus, the rise in corn prices has raised ethanol production costs by about $0.54 per bushel. Ethanol processing margins reflected in spot wholesale prices were quite narrow in late September and early October. However, since then, Iowa wholesale ethanol prices have gone up about $0.50 per gallon. Each $0.10 increase in ethanol prices raises the maximum price ethanol plants can pay for corn by about $0.28 cents per bushel. Thus, the increase in ethanol prices in the last several weeks has raised the maximum price plants can pay for ethanol by approximately $1.40 per bushel. At this writing, the maximum price newer plants can pay for ethanol may be in the $4.50 per bushel range or higher.

Profitability of converting corn to ethanol is a key variable determining whether currently planned ethanol plants will actually be built. ***Current plant capacity, plants under construction, and planned plants would take Iowa's total annual corn processing capacity (for all corn products) to nearly 2.6 billion bushels. That's about 25% above the current Iowa corn crop, and does not allow for feed use and exports out of state.*** Other uses of Iowa corn from last year's crop were equivalent to about 58% of production. The largest part of Iowa's feed demand for corn comes from hogs and poultry. These species have limited ability to use distillers grain from ethanol plants, and will require continued large needs for corn for feeding. Beef and dairy animals are better able to use distillers grain, although they also will continue to need some corn for feed.

Without a sharp increase in corn production, the planned plants – if all are built – would shift Iowa to a large corn deficit position. However, it is highly unlikely that Iowa will become a net corn importer. That's because all other Corn Belt states also are aggressively expanding ethanol production and corn supplies almost certainly would not be readily available elsewhere. It is almost certain that the corn market will buy additional corn acres through higher prices. The market's biggest job this winter and next spring will be to encourage farmers to shift land from soybeans and minor crops to corn. With Iowa state average corn yields moving into the 190-192 bushel per acre range, acreage needed to supply all currently planned and existing plants at their rated capacity – along with feed needs and current shipments out of state—would need to be increased about 67%. That projection includes feeding distillers grain to all livestock and poultry in the state at currently recommended rates.

Robert Wisner