Impacts of Rising Feed Costs on the Costs of Producing Milk

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Recent increases in the prices of corn, soybean meal, and hay have put pressures on dairy producers' profit margins. Fortunately milk prices have been high enough that dairy producers could cope with these higher feed costs. But now milk prices are declining and dairy producers' profits are being squeezed further. So the financial pain of rising feed prices is becoming more acute for dairy farmers.

The purpose of this paper is to give dairy producers and others an idea of how the costs of producing milk are likely to vary in response to changes in the prices of corn, soybean meal, and hay. Hopefully this information will help dairy producers gain a perspective of the profits that are currently at risk. Producers can try to preserve some of these profits by locking in a portion of their feed costs or they can roll the dice and hope that feed prices do not rise to even higher levels.

Table 1 shows how per hundredweight costs of producing milk rise given various increases in the prices of corn, soybean meal (SBM), and hay. The cost variables presented in the table were computed using a modified version of a computerized spreadsheet, entitled Pricer.XLS, that was developed by Terry Howard and Randy Shaver of the UW-Madison Department of Dairy Science.

Table 1

Average Daily Milk Production Per Cow, In Pounds	Increase in Per Hundredweight Cost ($) of Producing Milk With Increase In:		
	Corn Price of $0.50 per Bushel	Soybean Meal Price of $1.00 per Hundredweight (CWT)	Hay Price of $20 per Ton
60.00	$0.25	$0.09	$0.60
65.00	$0.25	$0.09	$0.55
70.00	$0.25	$0.09	$0.51
75.00	$0.25	$0.09	$0.47
80.00	$0.26	$0.09	$0.45
85.00	$0.27	$0.10	$0.43
90.00	$0.27	$0.10	$0.40

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The cost of production values in the above table can be used to estimate how much milk production costs, per CWT, could change given changes in the prices of corn, soybean meal, or hay. For example assume that one is concerned about what might happen to the per hundredweight cost of producing milk if the price of corn increases $1 per bushel. To estimate this change in the cost of producing milk, one can take the per CWT cost of approximately 26 cents related to corn and double it. This doubling accounts for the fact that the cost of production values related to corn are for 50 cent per bushel changes in the price of corn. So a $1 increase in the price of a bushel of corn (two, 50 cent increases) should result in roughly a 52 cent increase in the per CWT cost of producing milk. Similarly, a 25 cent per bushel increase in the price of corn (one half of a 50 cent increase) would only be expected to drive the cost of producing milk up about 13 cents per CWT.

Changes in the per hundredweight costs of producing milk related to changes in the prices of SBM and hay can also be estimated using the cost of production values in Table1. The per hundredweight changes in the cost of producing milk are computed on the basis of : (1) a $1 per CWT increase in the SBM price resulting in roughly a 9 cents per CWT increase in milk production costs; and (2) a $20 increase in the price of a ton of hay which pushes milk production costs up somewhere between 40 and 60 cents per CWT.

The extent to which milk production costs rise as a result of increasing hay prices depends of whether a cow is milking at a high or low rate. For a cow producing milk at a rate of 60 pounds per day (about 18,000 pounds per year), a $10 increase in the price of a ton of hay would be expected to raise the per hundredweight cost of producing milk about 30 cents (half of $0.60). For a cow producing 80 pounds of milk per day (about 24,000 pounds of milk per year), the same $10 increase in the price of a ton of hay would only push the costs of producing 100 pounds of milk 22.5 cents (half of $0.45) higher. This inverse relationship between milk production and hay costs is explained by the fact that higher levels of milk production per cow are achieved by substituting corn and soybean meal for hay.

The prices of corn, soybean meal, and hay in March of 2008 were all substantially higher than they were in March of 2006. Corn prices were up $2.70 per bushel (from $2.10 to $4.80), soybean meal prices $7.85 per CWT higher ($8.75 to $16.60), and hay prices were up $45 per ton ($100 to $145). These increases in the prices of feed all elevated the cost of producing milk.

The cost variables in Table 1 can be used to estimate the impacts the price increases in corn , soybean meal, and hay each had on the per hundredweight costs of producing milk from March 2006 to March 2008. Consider, for example, the case where a cow is milking at an average rate of 80 pounds per day. According to the Table 1 values, the cost of producing 100 pounds of milk was pushed up: (a) $1.35 from the $2.70 per bushel increase in the price of corn ($2.70 *divided by* $0.50 *times* $0.25); (c) $0.71 from the $7.85 per CWT increase in the price of soybean meal ($7.85 *divided by* $1.00 *times* $0.09); and (c) $1.01 as a result of the $45 increase in the price of a ton of hay ($45 *divided by* $20 *times* $0.45). All total, the cost of producing 100 pounds of milk rose $3.07 due to the increases in corn, soybean meal, and hay prices from March 2006 to March 2008.

Dairy producers who raise some or all of their feed are not being forced to pay the high market prices for corn, SBM, and hay. But they are also having to cope with higher feed costs because the costs of producing feeds have risen as the prices of seed, fertilizer, fuel, and other crop production inputs have increased dramatically in the last year. The cost of producing corn could easily be up by as much as a $1 per bushel this year and the cost of raising hay could rise by as much as $20 per ton due to higher costs of inputs and cash rents for cropland. These higher costs for raised feed are going to erode dairy producers' profit margins the same way that increases in the prices of purchased feeds cut into producers' net returns. So the values in Table 1 can also be used to determine how changes in the costs of producing corn and hay may affect the costs of producing milk.

All dairy producers are being forced to cope with the problem high feed costs. Hopefully the information presented here will help them estimate how the cost of producing milk is likely to change depending upon the costs of purchased or produced feeds.