

# Combating the Rising Cost of Feeding Cows

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## ■ Introduction

The profitability of any enterprise is determined by the balance of income and expenses. The dairy industry has experienced significant swings in the factors that influence both income and expenses. Feed costs have been a major factor contributing to the volatility of dairy farm profitability. As illustrated in Table 1, feed costs contribute to more than 60% of the production costs associated with milk production. The feed costs reported in this budget include all feed costs, including the milking herd, the dry cows, calves and heifers. It is clear that controlling feed costs contributes to financial success of the dairy farm. Feeding the milking herd contributes the largest portion of feed costs. Therefore, it is important to make decisions that optimize milk production efficiency and control the cost to feed the milking herd.

## ■ Feed Costs of the Milking Herd

The first step in evaluating any management area is to evaluate the current situation on the operation. In other words, what does it cost to feed the milking herd? And how does one evaluate the feed costs? Managers will often provide an array of different measures. Feed cost per cow per day is often reported. Feed cost per unit of milk from the diet formulation report is another measurement reported. And in some cases, farms are able to report the ideal ratio of feed costs per unit of milk shipped from the farm. For US dairy farms, this value is reported as feed cost per hundred pounds of milk (\$/per cwt). Table 2 illustrates the differences in costs per cow per day, versus cost per cwt. Additionally, Table 2 shows the impact of the change in the cost of one ingredient (corn). Corn was selected given the volatility in corn prices that has occurred during the past 4 years.

**Table 1. Projected Budget for 2009 for Conventional Dairy Operation (150 cow herd, replacements raised).**

	Production Level			
	18,000 lbs. <i>Per cow</i>	Milk sold <i>Per cwt.</i>	22,500 lbs. <i>Per cow</i>	Milk <i>Per cwt.</i>
<b>ESTIMATED INCOME/COW</b>				
Milk sales @ \$17.75/cwt.	\$3,195.00	\$17.75	\$3,993.75	\$17.75
Government payment		0		0
Calf sales: 47.5% x \$100/hd.	47.50	0.26	47.50	0.21
Cull cow sales:				
1450 lbs. x 28% x \$50/cwt.	203.00	1.13	203.00	0.90
<b>Estimated Total Income/Cow</b>	<b>\$3,445.50</b>	<b>\$19.14</b>	<b>\$4,244.25.</b>	<b>\$18.86</b>
<b>ESTIMATED OPERATING COSTS/COW</b>				
Feed	\$2,193.59	\$12.19	\$2,458.37	\$10.93
Labour	371.35	2.06	371.35	1.65
Veterinary, drugs & supplies	100.00	0.56	110.00	0.49
Utilities and water	55.00	0.31	55.00	0.24
Fuel, oil and all vehicle expenses	61.59	0.34	61.59	0.27
Milk hauling and promotions	171.00	.95	213.75	0.95
Building and equipment repair	144.86	0.80	144.86	0.64
Breeding/genetics charges:				
Semen, A.I. services, supplies	45.00	0.25	45.00	0.20
Interest on breeding herd	153.00	0.85	153.00	0.68
Insurance on breeding herd	18.00	0.10	18.00	0.08
Professional fees (legal, accounting etc.)	22.00	0.12	22.00	0.10
Miscellaneous	20.00	0.11	25.00	0.11
Operating interest (1/2 of selected operating costs x 8.5%)	128.83	0.72	140.73	0.63
<b>Total Operating Costs</b>	<b>\$3,484.22</b>	<b>\$19.36</b>	<b>\$3,818.65</b>	<b>\$16.97</b>

**ESTIMATED OWNERSHIP COSTS/COW**

Depreciation on bldgs. & equip.	\$258.66	\$1.44	\$258.66	\$1.15
Interest on land, bldgs & equip.	193.29	1.07	193.29	0.86
Insurance & taxes on land, bldgs. equip.	64.60	0.36	64.60	0.29
<b>Total Ownership Costs</b>	<b>\$516.55</b>	<b>\$2.87</b>	<b>\$516.55</b>	<b>\$2.30</b>

**ESTIMATED TOTAL COSTS/COW**

<b>Income over Operating Costs</b>	<b>- \$38.71</b>	<b>- \$0.22</b>	<b>\$425.60</b>	<b>\$1.89</b>
<b>Income over Total Costs</b>	<b>- \$555.27</b>	<b>- \$3.08</b>	<b>- \$90.95</b>	<b>- \$0.40</b>

Prepared by Joe Horner, Ag. Economist, Dairy and Beef, and Melvin Brees, Ag. Economist, FAPRI. Prepared 10/29/08

**Table 2. The effects of corn price on feed costs for a Holstein consuming 41.8 kg of TMR (as fed) and producing 40.9 kg of milk containing 3.8% milk fat.**

<b>Corn (\$/bushel)</b>	<b>\$/Cow/Day</b>	<b>\$/CWT/Day</b>
2.00	3.43	3.81
3.00	3.76	4.18
4.00	4.57	5.08

This value of \$/CWT/Day has limitations as it does not take into consideration the composition of the milk. Milk component yield affects the value of the milk shipped and is not considered in the value of \$/cwt.

Further evaluating the costs of feeding the milking string illustrates the importance of accurately calculating the feed costs for the milking string. Table 3 illustrates the effects of milk production, intake and change in ingredient costs. A decrease in feed intake decreases the feed cost per cow per day. However, the decrease in milk production increases the overall cost per cwt. The cost of feeding the cow for maintenance increases as the milk yield decreases and results in a loss of efficiency. This scenario illustrates the importance of using the right variable in evaluating the cost of producing milk.

**Table 3. The effect of corn price, feed intake and milk production on feed costs of a lactating Holstein.**

Corn Price	\$ Per Cow Per Day *			\$ Per CWT **		
	33.2	38.2	41.8	29.5	34.1	40.9
2.00	2.74	3.17	3.43	4.88	4.23	3.81
3.00	3.12	3.42	3.76	5.26	4.56	4.18
4.00	3.82	4.12	4.57	6.34	5.49	5.08

\*The \$ per cow per day is reported based on three levels of TMR intake (as fed basis) and corresponds with the three levels of milk yield. For example, a cow consuming 33.2 kg of TMR daily produces 29.5 kg of milk containing 3.8% butterfat. As corn price increases, the price per cow per day and corresponding feed cost per CWT increase accordingly.

## ■ Reducing Feed Costs

To establish feed costs, the farm must have an accurate measure of feed consumed and milk produced per cow per day. The farm must also have accurate costs or economic values of the feeds. The market value is important for both purchased feeds and home raised feeds. The purchased feeds are more easily tracked. Home raised feeds must be assigned an accurate market value and should be adjusted using current feed costs.

Once feed costs have been established, the focus turns to ways to improve the profitability by decreasing feed cost per cwt. Discussions typically focus on reducing purchased feed costs. Before focusing on purchased feed costs, farm managers must begin by placing emphasis on forage quality. Managing forage quality includes forage source (variety), forage storage and forage feeding systems. Plant breeders have made significant progress in developing forages that offer dairy farm managers important benefits. Forage hybrids have been developed that offer agronomic advantages and include improved pest resistance, decreased lodging and increased yields per acre. These hybrids have also been found to have a higher dry matter digestibility, including increased protein and fiber digestibility. Farm managers should investigate hybrids that have been developed for the growing environments unique to their region that also provide the traits important to optimizing animal performance. Feed costs can be reduced through increased forage quality. Decreased costs can be due to decreased supplemental feed purchased to supplement the forage base of the diet and an overall increase in diet digestibility due to positive effects of reduced grain feeding on rumen fermentation. So, focus on forages first!

While focusing on forage quality, farm managers should also pay close

attention to forage harvest and storage system management as well. Proper harvest and storage decreases storage losses. These losses do not contribute to the calculation of the feed costs per cwt of milk shipped, but forage harvest and storage does impact forage quality available for feeding. Silo management is also an important factor that must be managed. Secondary fermentation of silage can result after exposure of silage to oxygen. Silage that is “heating” is releasing energy from the forage that would have been available to the cow. Heating not only releases energy, but it also decreases the digestibility of the remaining nutrients.

Managing forage inventory can be combined with grouping strategies to control feed costs. By grouping cows by production, diets can be formulated to more closely match nutrient requirements and feed intake. Grouping cows also allows farm managers to be strategic in forage inventory allocation. Rather than utilizing a “last in – first out” forage inventory system, forage inventory can be allocated by quality based on animal requirements. This management approach can create important savings estimated to be as much as 3 to 5% on feed costs per unit of milk shipped.

Diet formulation is also an opportunity to optimize feed costs. The appropriate balance of level and types of carbohydrates supports optimal rumen fermentation and helps control rumen pH. The use of grain processing co-products can help optimize rumen fermentation. With the increase in competing demands for certain cereal grains, use of co-products can help control cost while improving production efficiency. Improved efficiency is the result of improved fermentation.

With quality forages combined with other dietary ingredients to construct an optimal diet for production groups, the topic of feed additives should be addressed. Feed additives can and should be used to address specific needs of the dairy herd and the diets formulated for the production groups. Feed biotechnology has been greatly expanded during the last two decades. Specialized ingredients and feed processing technology provide the dairy industry with important nutritional management tools. Feed ingredients have been designed for unique production situations. Transition dairy cow nutrition, nutrition of cows exposed to heat stress, diets that are at risk of mycotoxin contamination, and cows at increased risk of mastitis can benefit from specialized feed ingredients.

Several ingredients have been designed to control rumen fermentation. These ingredients help the cows extract more of the digestible nutrients from the diet. Other ingredients have been developed to enhance immune function and can result in decreased risk of mammary gland infections. Still other ingredients have been developed to improve the metabolic status of cows during transition that can improve health and reproduction in high producing cows. To realize the benefits of these ingredients, they must be incorporated

in diets of cows that will benefit. Improved health, production and reproduction can improve the feed cost per unit of milk shipped.

## ■ Summary

Farm managers must know what and how much the cows are eating. The farm should track feed costs using a cost per CWT. Managers should develop a plan to control risk of increasing feed costs. The first step in controlling feed costs involves focusing on forage quality. The feeding management system should be integrated into the housing system that allows the best diet to be fed to the right cows. Some ingredients can be used to improve digestive function and as a result improve efficiency of production, meaning more milk from less feed. Managers should also use feeding technology as part of risk management that optimizes production while reducing the risk of poor health including mastitis, lameness, and impaired reproductive function. Ultimately, nutrition management strategies can be designed to help dairy farm managers reduce financial risks that are so prevalent in the volatile markets the industry has experienced over the last twenty years.

