The costs of nutrients, comparison of feedstuffs prices and the current dairy situation[1]

Dr. Normand St-Pierre[2]
Dairy Management Specialist
Department of Animal Sciences
The Ohio State University

The good news: prices of most feeds have fallen from their highs of last summer. The bad news: milk prices have fallen much faster than feed prices. The result: the worse economic situation in the U.S. dairy industry ever

As usual in this column, I used the software SESAME™ that we developed at Ohio State to price the important nutrients in dairy rations to estimate break-even prices of all major commodities traded in Ohio, and to identify feedstuffs that currently are significantly underpriced. Price estimates of net energy lactation (NEl, $/Mcal), metabolizable protein (MP, $/lb – MP is the sum of the digestible microbial protein and digestible rumen-undegradable protein of a feed), non-effective NDF (ne-NDF, $/lb), and effective NDF (e-NDF, $/lb) are reported in Table 1. Compared to January 2009, the cost per unit of net energy is down (-1.5¢/lb), MP is up (+9 ¢/lb), ne-NDF is up (2¢/lb), while e-NDF is slightly down (-0.3¢/lb). Compared to historical averages (i.e., since January 2005), NE_L is now priced below average (10¢/lb). For MP, these figures stand at a premium of about 22¢/lb, or a 110 % premium over the 4 year average. Thus, although dietary energy has been traded at a very high premium last year, the drop in corn and "energy" feed prices last fall has resulted in a somewhat "discounted" energy prices in February. Over the last 20 years, dietary energy (NE_L) has been priced at about 5¢/Mcal. Thus, the current dietary energy cost is still above the long-run average. The cost of ne-NDF is currently discounted by the markets (i.e., feeds with a significant content of non effective NDF are price discounted), but the discount is at about the four year average. Meanwhile, unit costs of e-NDF are historically high, with a premium of about 3 ¢/lb over the 4-year average. Home-grown forages can be inexpensive sources of this important nutrient.

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[2] Contact: st-pierre.8@osu.edu

Based on mid February wholesale prices, central Ohio, feed commodities can be partitioned into the three following groups.

Bargains	At Breakeven	Overpriced
Blood meal	Alfalfa hay	Bakery byproducts
Brewers grains, wet	Citrus pulp	Beet pulp
Corn, ground, shelled	Corn silage	Canola meal
Distillers dried grains	41% Cottonseed meal	Fish meal
Feather meal	Whole cottonseed	Gluten meal
Gluten feed	48% soybean meal	Meat meal
Hominy	Tallow	Molasses
Soybean meal – expeller	Wheat bran	44% soybean meal
	Wheat middlings	Soybean hulls
		Roasted soybeans

As usual, I must remind the readers that these results do not mean that you can formulate a balanced diet using only feeds in the bargain column. Feeds in the "bargains" column offer savings opportunity and their usage should be maximized within the limits of a properly balanced diet. In addition, prices within a commodity type can vary considerably because of quality differences as well as non-nutritional value added by some suppliers in the form of nutritional services, blending, terms of credit, etc. In addition, there are reasons that a feed might be a very good fit in your feeding program while not appearing in the "bargains" column. For example, molasses is often used to reduce ingredient separation in TMR. Molasses is also an excellent source of sugars. Some nutritionists balance rations for sugars. In those situations, molasses might not be at all overpriced.

One must remember that SESAME compares all commodities at one point in time, mid February in our case. Thus, the results do not imply that the bargain feeds are cheap on a historical basis.

In Table 2 we report the detailed results for all 28 feed commodities. The lower and upper limits mark the 75% confidence range for the predicted (break-even) prices. Feeds in the "Appraisal Set" were either deemed outliers (completely out of price), or had an unknown price (e.g., alfalfa hay of different qualities).

Table 1. Prices of dairy nutrients, and actual, breakeven (predicted) and 75% confidence limits of 28 feed commodities used on Ohio dairy farm.

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Ohio

Price Prediction Reliability	39.691

Estimate of Nutrient Unit Costs		
Nutrient name	Estimate	
NEI - 3X (2001)	0.075448	**
Metabolizable Protein (MP	0.423278	**
ne-NDF	-0.057091	*
e-NDF	0.053082	~

- A blank means that the nutrient unit cost is likely equal to zero
- ~ means that the nutrient unit cost may be close to zero
- * means that the nutrient unit cost is unlikely to be equal to zero
- ** means that the nutrient unit cost is most likely not equal to zero

Calibration set							
Name	Actual [/T]	Predicted [/T]	Lower limit	Upper limit	Corrected	75.0% CI	75.0% CI
Alfalfa Hay - 44 NDF 20 C	172.000	160.412	133.011	187.813	160.412	133.011	187.813
Bakery Byproduct Meal	205.000	185.179	173.010	197.349	-	-	-
Blood Meal, ring dried	605.000	640.582	607.535	673.628	-	-	-
Brewers Grains, wet	35.000	43.790	39.433	48.147	-	-	-
Canola Meal (2008)	247.500	232.956	222.609	243.302	-	-	-
Citrus Pulp dried	155.000	151.282	141.595	160.968	-	-	-
Corn Grain, ground, dry	152.860	192.151	181.057	203.244	-	-	-
Corn Silage, 32-38% DM	63.000	63.522	54.811	72.234	63.522	54.811	72.234
Cotton Seed Meal, 41% C	293.000	286.765	273.688	299.842	-	-	-
Cotton Seed, Whole w lint	235.000	245.463	210.095	280.832	-	-	-
Distillers Dried Grains w S	147.000	223.529	206.611	240.447	-	-	-
Gluten Feed, dry	143.000	183.788	171.523	196.054	-	-	-
Gluten Meal, dry	589.000	511.038	488.497	533.579	-	-	-
Hominy	138.000	168.857	158.244	179.470	-	-	-
Meat Meal, rendered	320.000	363.618	348.580	378.655	-	-	-
Molasses, Sugarcane	195.000	132.160	122.358	141.962	-	-	-
Soybean Hulls	145.000	103.412	74.181	132.643	-	-	-
Soybean Meal, expellers	377.500	410.127	394.888	425.366	-	-	-
Soybean Meal, solvent 44	338.500	288.951	278.895	299.006	-	-	-
Soybean Meal, solvent, 48	347.500	338.316	326.223	350.410	-	-	-
Soybean Seeds, whole ro	366.330	326.729	314.042	339.416	-	-	-
Tallow	400.000	404.786	366.218	443.353	-	-	-
Wheat Bran	134.000	118.094	98.689	137.499	-	-	-
Wheat Middlings	127.000	138.786	122.212	155.359	-	-	-

Appraisal set			
Name	Actual [/T]	Predicted [/T]	Corrected
Alfalfa Hay - 38 NDF 22 C	0.000	181.253	200.034
Alfalfa Hay - 48 NDF 17 C	0.000	151.584	139.063
Feathers Hydrolyzed Meal	350.000	490.115	-
Fish Menhaden Meal, mec	895.000	505.597	-

Calculation log	
Action	Reason
Feedstuffs "Fish Menhaden Meal, mech." removed	Outlier
Feedstuffs "Feathers Hydrolyzed Meal" removed	Outlier

Sesame 3.03: Regression results (Sesame [Administrator])

We can use estimated nutrient costs to benchmark feeding costs. In fact, these estimates are used to calculate the Cow-Jones Index (**CJI**), an index constructed here at Ohio State to measure the difference between milk revenues and the costs of providing the required nutrients at a production level of 65 lbs/cow per day. The Cow-Jones is conceptually very similar to income-over-feed costs, but is calculated without making reference to any specific diet (Table 2).

Table 2. Calculation of the Cow-Jones Index (CJI), February, 2009.

Date:	Feb-09		
Animal inputs			
Cow weight (lbs)	1500		
Milk (lbs/d)	65		
Fat %	3.6		
Prot %	3		
Other solids %	5.7		
Milk component prices inputs			
Fat ($/lb)	$ 1.0941		
Protein ($/lb)	$ 1.9139		
Other solids ($/lb)	$ (0.0437)		
Nutrient costs inputs			
NE_L ($/lb)	$ 0.0754		
MP ($/lb)	$ 0.4233		
e-NDF ($/lb)	$ 0.0531		
ne-NDF ($/lb)	$ (0.0571)		
Nutrient Requirements Calculations			
NE_L (Mcal)	31.33		
MP (lbs)	4.64		
e-NDF (lbs)	10.15		
ne-NDF (lbs)	3.38		
Milk Income	***$/cow d***		***$/cwt***
Fat	$ 2.56	$	3.94
Protein	$ 3.73	$	5.74
Other solids	$ (0.16)	$	(0.25)
TOTAL	$ 6.13	$	9.43
Nutrient Costs	***$/cow d***		***$/cwt***
NE_L	$ 2.36	$	3.64
MP	$ 1.96	$	3.02
e-NDF	$ 0.54	$	0.83
ne-NDF	$ (0.19)	$	(0.30)
TOTAL	$ 4.67	$	7.19
Income over nutrient costs			
	$ 1.46	$	2.24
(Cow-Jones Index)		$	2.24

From this table, one can see that the cost of supplying the nutrients required to produce 65 lbs/d amounts to a sizeable portion of milk income. We currently estimate that it costs on an average $7.19/cwt ($4.67/cow/day) – or about 76% of the milk income - to provide all the nutrients required by a 1,500 lb cow producing 65 lbs of milk per day at 3.6% fat and 3.0% protein. The result is a disastrous Cow-Jones at $2.24/cwt – the lowest value for this profitability index since January 2000 when the index was first calculated.

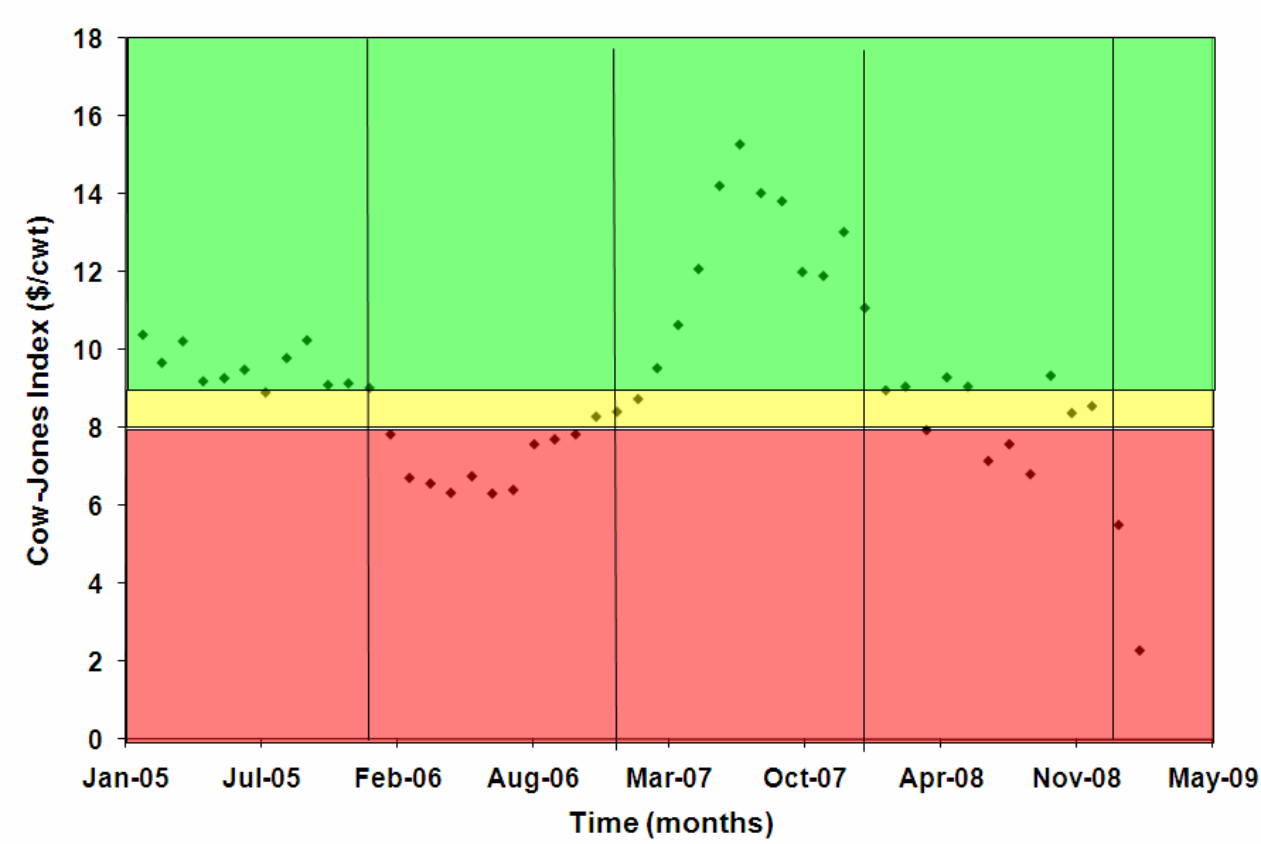

Figure 1. The Cow-Jones Index from January 2005 through February 2009.

The depth of the current financial mess in dairy production becomes evident when one looks at the Cow-Jones over the last 4 years (Figure 1). When the Cow-Jones falls below $8.00/cwt, dairy farmers loose money; when it exceeds $9.00/cwt, most dairy farms are profitable. In between $8.00 and $9.00/cwt is the grey area (some make money, others lose money). The year 2005 was a good year in dairy industry: the Cow-Jones averaged $9.60. We all remember 2006 when the Cow-Jones averaged $7.28, reaching its lowest point in June '06 at $6.30/cwt. The year 2007 was an excellent year in dairy, albeit that most of the "extra" profits were used to fill the financial holes left from 2006. The Cow-Jones averaged $11.98/cwt, close to $4.00/cwt above the lower profitability limit of $8.00/cwt. Although milk prices were historically very good in 2008, feed costs were also very high, resulting in a break-even year as the Cow-Jones averaged $8.60/cwt. From January 2005 through December 2009, the Cow-Jones never dropped under $6.00/cwt. This puts in perspective the $2.24 index value for February. The only comforting aspect is that the situation is so bad that it cannot last very long. We estimate that OH dairy producers are currently loosing between $5.75 and $6.75 per

hundredweight of milk shipped. A 100 cow herd shipping 1,800 lbs/cow per month is currently losing between $10,350 and $12,150 per month. A large 1,000 cow herd is loosing over $100,000 per month. Unfortunately, we will quickly loose some very good dairy farms not because of their inability to profit in the long-range but solely because of cash-flow and liquidity issues. We are just not big enough to require a Citibank-type bailout, and there is nothing wrong with our products that would require a GM-type bailout. Good thing that spring is coming; there is hope.