

Updated

# Economic Index Promotes Profitability

By: Angie Coburn, Dairy Procurement Manager, Genex

Striving to be profitable... it's any dairy producer's goal. In recent times, it has required hard work, thoughtful control of expenses and creative use of inputs. Often overlooked is the way genetics impacts farm profitability. The genetic level of your service sires can help determine how efficient and profitable you may be. I often repeat a practical statement made many years ago by Bennett Cassel, Virginia Tech Extension Dairy Scientist; **"The one purpose of a breeding program is to increase the frequency of genes that contribute to a profitable herd."**

Many factors influence income and expenses on the farm. Since 1994, the United States Department of Agriculture (USDA) has evaluated the measurable factors of farm profitability and published the economically-based genetic selection index, Lifetime Net Merit (LNM).

The goal of LNM is to maximize a cows' profit potential through genetic selection. The index weights 13 individual traits relative to their overall lifetime impact on the profit of a dairy herd. The relative trait weightings highlighted in the pie chart are derived by using industry estimates of current and future economic statistics related to milk income, feed costs, dairy replacements, health and veterinary care, and breeding expenses. Using this approach, LNM ranks bulls based on their ability to improve net return to your dairy.

## LNM Formula Revised

Table 1 displays the changes to the USDA economic statistics since the 2006 revision to LNM. The current and future estimates of farm income and expenses have changed significantly. Future estimates of milk value are fortunately higher than the most recent year. However, feed costs have risen to 41 percent of the milk price. While the price of corn and soy may decrease slightly from today's value, future trends remain higher than five years ago. Additionally, fuel costs have increased milk hauling deductions. The cost to raise a replacement is also greater, mostly due to feed expenses. Furthermore, the USDA has applied a more accurate estimate of the value of a heifer calf and somatic cell premiums included in the milk check.

The biggest drivers of change to the formula are first and foremost the increased feed costs. Not only does this reduce the profit margin on milk production, it leads to the need to breed for greater feed efficiency and less feed

**Table 1.** Changes in USDA Economic Statistics.

	2006	2010
Value of Fat (per lb.)	\$1.50	\$1.63
Value of Protein	\$1.95	\$1.94
Feed Cost to Milk Price Ratio	31%	41%
Average Milk Hauling Costs	\$0.50	\$0.57
Replacement Costs	\$1,800	\$2,100
Value of Heifer Calf	\$450	\$250
Value of PTA Somatic Cell Score	\$58	\$62

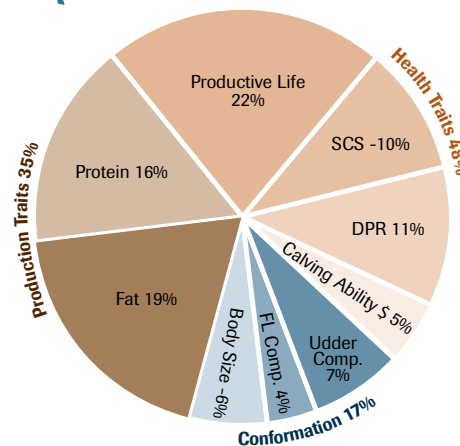
energy required for body maintenance. For many years, cows have increased in total body size which is now less than optimum for farm profitability. Not only does it require more feed to maintain the cow, but cows are having more difficulty fitting into today's parlors and housing systems. Therefore a negative weighting is applied to body size to stop the trend of ever-increasing stature.

The increased rearing costs are, of course, directly tied to higher feed expenses. Ultimately by improving cow reproductive efficiency, cow longevity and calving ability, there is greater potential for higher net margins on farms that can reduce involuntary culling.

Increased fuel price similarly reduces the margin on a hundredweight of milk. Additionally, the ratio of milk pounds to fat and protein allows for dairy producers to breed for higher component milk that fits the U.S. utilization statistics for cheese, fluid milk and other dairy product production.

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## the new Lifetime Net Merit



### Three Indexes for Optimal Results

The USDA also publishes two profit indexes specific for cheese and fluid milk processing markets, simply named Cheese Merit (CM) and Fluid Merit (FM). Table 2 outlines the relative weight of each trait in the indexes which differs slightly based on the value of fat and protein and as a result of how the traits are correlated to one another.

**Table 2.** Trait Weightings for Each USDA Profit Index.

Trait	Relative Value (%)		
	LNM	CM	FM
Protein	16	25	0
Fat	19	13	20
Milk	0	-15	19
Productive Life	22	15	22
Somatic Cell Score	-10	-9	-5
Udder	7	5	7
Feet & Legs	4	3	4
Body Size	-6	-4	-6
Daughter Pregnancy Rate	11	8	12
Calving Ability \$	5	3	5

For example, greater value is given to protein in the production of cheese. The need to reduce the water carrier in milk is more optimal. Because lower milk pounds are related positively to cow health and conformation, there is a lower net weighting for Productive Life, Daughter Pregnancy Rate (DPR) and the other various traits. The expected genetic progress remains the same for these traits. For fluid milk markets, protein receives little value in the milk check. High quality milk is still required, but lower total somatic cell premiums are generally reflected in the processor payments.

For dairy producers paid greater than \$2.65 per pound of protein, CM will provide the greatest net profit. FM is more suitable when paid less than \$1.35 per pound of protein. LNM is the optimum selection index for the majority of U.S. dairy producers.

### Striving for Progress and Profitability

Using LNM to choose service sires provides opportunity for progress in all traits of priority. The expected genetic trend per decade is shown in Table 3. Even with reduced weighting on production, significant progress will result

for Milk, Fat and Protein. Using LNM will reverse the trend for DPR and allow dairy producers to make significant gains in reproductive efficiency. Body size should stabilize to reflect a 57- to 58-inch cow as feed efficient, healthy and of optimum size for parlor and housing conditions.

**Table 3.** Expected Genetic Gain Per Decade.

Trait	Breeding Value Change Per Decade
Protein	43
Fat	76
Milk	1,374
Productive Life	10
Somatic Cell Score	-0.45
Udder	0.8
Feet & Legs	0.8
Body Size	-0.98
Daughter Pregnancy Rate	3.5
Calving Ability \$	30

The three USDA indexes are equally applicable to all dairy breeds. Because there are slight differences in the type and calving traits summarized, each dairy breed has its individual LNM formula calculation and relative trait weightings. Although, separate breed genetic base levels result in individualized PTA gain per decade, the overall genetic trend for each trait should be similar.

At Genex, we've always strived to breed for a profitable cow. Simply stated, Genex procurement programs focus on cows that are healthy, long-lived, with correct udders and feet & legs. Our selection of bulls and cows for contract matings is designed to be diverse in pedigree, represent a variety of production levels and be size neutral. The common theme among Genex sires are improving traits that contribute to a profitable herd.

LNM is a very forward-looking and extremely comprehensive tool to help you be more profitable by using top genetics. As you strive for profitability, use LNM. Cow longevity will improve. You will continue to breed for healthy udders. You can expect reduced health care and feed expenses while maintaining modest improvement for yield. Most importantly, LNM will set the way to generate more profit per cow for your dairy.

## AUTHOR BIO

*Angie Coburn is a graduate of Virginia Tech with a bachelor's degree in dairy science. She is currently pursuing her master's degree in dairy genetics from the University of Wisconsin-Madison. She has worked in dairy sire procurement at Genex since 1999. She serves as the Dairy Procurement Manager overseeing the procurement of all dairy sires.*