

# DAIRY HERD MANAGEMENT HEALTH TECH<sup>®</sup>

Sponsored Editorial - Remove and retain for permanent reference

## Get Peak Performance from Your Super Athletes with USA Lysine<sup>®</sup>

By Joann Pipkin

She is a champion. And like an Olympic athlete, today's dairy cow deserves every opportunity you can give her to reach peak performance.

Imagine the demands you place on your cows. The nutrients required for her to maintain lactation and reproduction alone make the picture clearer.

Athletes train to increase their own adaptive capacity and tolerance to stress. For an athlete to reach optimal performance, nutritional supplements are included in the diet. Managing dairy cows is the mirror image of that. You carefully plan dairy cow diets. And those rations are used to ensure dairy cows receive the nutrients needed to fuel their bodies and maintain health.

Just as star athletes have different stages of training, the dairy cow has multiple stages of lactation. Each requires its own level of nutrition. With the help of modern technology, you can ensure each cow receives a perfect balance of protein, fat, fiber, vitamins and minerals to stay healthy. After all, healthy cows are happier cows — and they produce better-quality milk.<sup>1</sup>

### The Right Balance Affects the Bottom Line

Feed a cow what she needs, when she needs it. While that basic goal might sound a bit simplistic, putting those words into action on a dairy operation can complicate the task. Feed on hand is supplemented with additional ingredients that can be affordably purchased to meet the cow's nutrient requirements.<sup>1</sup>



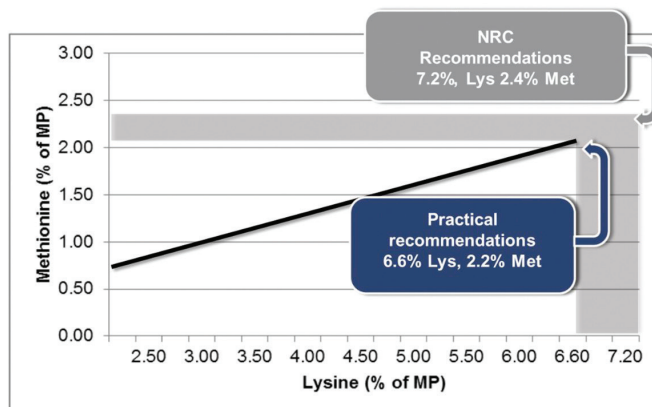
Image provided by Kennin

Just like additional training helps build a super athlete, giving a cow an extra boost of lysine in her diet is needed for optimum performance.<sup>2</sup> Today's dairy cow is a champion. She produces a lot of milk, calves regularly and is expected to perform in an efficient and cost-effective manner compared to her decades-old counterparts.<sup>2</sup>

Metabolizable-protein lysine (MP Lysine) intake and milk protein response is evident in a number of industry studies.

Previous research in the amino acid field laid the groundwork for the need of additional supplementation of lysine and methionine. This research led to the National Research Council (NRC)'s recommendation of requiring MP lysine at 7.2% of total MP and MP methionine at 2.4% of total MP. While this was a good starting point, more recent research has now shown this

### National Research Council's Lysine and Methionine Recommendations<sup>3</sup>



outlook to be dated. Rather than viewing individual amino acid requirements strictly on an MP basis, relating these amino acids to Mcals of metabolizable energy (ME) has been shown to greatly increase the accuracy of prediction models. The optimal ratio of grams of methionine and lysine to one Mcal of ME has been shown to be at 3.03 grams and 1.14 grams, respectively. These ratios of grams of MP methionine and lysine to Mcal of ME will lead to the greatest milk and component yields for the dairy, while being as efficient with amino acid use as possible.

The figure below illustrates the relationship of energy-corrected milk (ECM) yield versus MP Lysine daily intake in 12 studies published from 1998 to 2012. Regardless of milk yield, cows respond to increased levels of lysine in the diet.

Amino acids, though, cannot be interchanged. A set sequence of amino acids determines the function of

**“When you can feed less protein by supplementing with rumen-protected (RP) lysine, then you can lower the total cost of the diet. And, you can make more money per unit of milk.”**  
**— Dr. Glen Broderick**

A dairy cow’s level of production, as well as her number of lactations, body weight and breed, influence ME and metabolizable protein (MP) requirements. This data in the Metabolizable Energy and Metabolizable Protein Requirements can be used as a guide for the amount of MP lysine and MP methionine required by cows in a variety of settings.<sup>1</sup>

With protein likely the most expensive ingredient in a cow’s ration, feeding less of it and supplementing with RP Lysine can lower the total cost of the dairy cow diet.<sup>6</sup>

Cornell University’s Ruminant Center determined in a nine-week trial the impact blood meal quality had on dairy production. Milk production was quickly impacted by low-quality blood meal. The average difference in energy-corrected milk between low-quality vs high-quality blood meal was 4.2 pounds per head per day.<sup>4</sup>

Selecting the right feedstuff to help your cows reach their genetic potential through proper nutrition is crucial. Without that, you are not maximizing profits. Bottom line, amino acid nutrition,

such as supplemental lysine, helps the cow be all she can be.<sup>2</sup>

A cheap diet is just that: cheap. You might not be losing money, but how much money are you leaving on the table by not maximizing milk production?<sup>2</sup>

### At a Glance: Lysine at Work

- Cooperates in production of milk protein.
- Partners in growth and in the production of carnitine, which turns fats into energy.
- Upholds calcium absorption.
- Helps with injury and disease recovery.

### Metabolizable Energy and Metabolizable Protein Requirements Overview<sup>7</sup>

Lactation	Body Weight (lbs)	Milk Production (lbs/d)	ME (Mcal/day)	MP Lysine Requirement (g/d)	MP Methionine Requirement (g/d)
1st Lact	1250	70	51	154	58
	1350	70	52	157	59
	1400	70	52	158	60
	1250	80	56	169	64
	1350	80	57	172	65
	1400	80	57	174	65
2nd Lact	1250	90	61	184	69
	1350	90	62	187	70
	1400	90	62	189	71
	1400	100	67	204	77
	1500	100	68	207	78
	1600	100	69	210	79
3rd Lact	1400	110	72	219	82
	1500	110	73	222	83
	1600	110	74	225	84
	1600	95	66	202	76
	1700	95	67	205	77
	1800	95	68	208	78
3rd Lact	1600	105	71	217	82
	1700	105	72	220	83
	1800	105	74	223	84
	1600	125	82	247	93
	1700	125	83	250	94
	1800	125	84	253	95

2. By protecting essential amino acids from rumen degradation while delivering them in a highly bioavailable form to the small intestine
3. By masking odors and taste to improve palatability and handling<sup>1</sup>

Not all RP Lysine is created equal. Kemin Industries has built the RP Lysine market, providing a safe and effective product for the dairy industry with its USA Lysine. Backed by three decades of encapsulation expertise, USA Lysine is consumed by more cows than any other RP Lysine on the market today. USA Lysine is manufactured using the proprietary GEMS process including specialized pan coaters. Production includes a multi-step process for the creation of lysine cores and multiple coatings applied that requires precise control of temperature, pressure and timing of manufacturing cycles resulting in a true encapsulated product. Formulated to a small particle size with specific gravity, USA Lysine passes very quickly through

the rumen, enabling the cow access to much more digestible lysine for productive purposes.<sup>5,7,8</sup>

USA Lysine undergoes rigorous quality control before it ever leaves the Kemin production facility, ensuring a high level of consistency. In bioavailability trials, in vitro and in vivo methods found 100 grams of USA Lysine supplied 44 grams of MP Lysine — that’s nearly twice the amount supplied by the nearest competitor and eight times greater than the average blood meal.<sup>4</sup>

Consistent, concentrated and cost-effective. USA Lysine delivers every time, and it delivers RP Lysine by both improving efficiency of use of the protein in the diet and enabling the cow to produce more milk — giving the producer the best of both worlds.

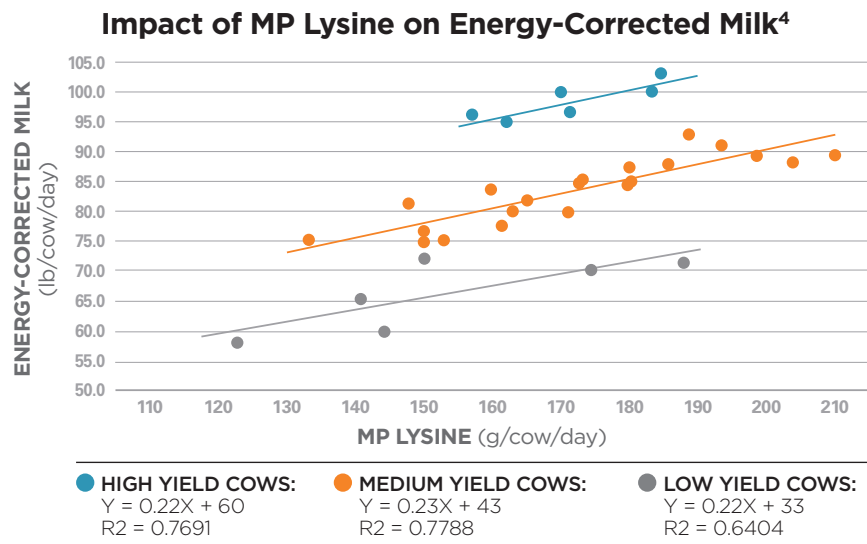
But don’t just take our word for it. Let the cows do the talking™. Their milk will prove USA Lysine is the premium choice.<sup>1</sup>

### All RP Lysine is Not Created Equal

Today, Kemin and USA Lysine® are leading the charge as the dairy industry moves toward complete balancing of amino acids. Founded in 1961 by R.W. and Mary Nelson, Kemin is independently owned by the Nelson family. Kemin maintains manufacturing plants in nine countries and has more than 200 patents and applications.<sup>1</sup>

For more than 30 years, Kemin has invested in technology that has revolutionized encapsulation, improving the way animal feed, pet foods and nutraceutical products are manufactured. Today, GEM and MicroPEARL® technologies enhance product stability and efficiency in three ways:

1. By allowing for the targeted release of nutrients along the gastrointestinal tract



protein. When a diet is corrected for lysine, both milk production volume and lactation persistency increase.<sup>5</sup>

According to Dr. Glen Broderick, University of Wisconsin emeritus professor and retired scientist with the USDA’s Agricultural Research Service, providing the cow the right balance of lysine and other amino acids reduces the need for total protein in the diet.

Products like blood meal provide available lysine and extra protein. Yet that protein might actually not be usable by the cow and can contribute to excess nitrogen excretion.<sup>6</sup>

“When you’re trying to provide a certain amount of lysine by feeding blood meal, you’re providing a lot of other stuff that the cow might not need,” Broderick said.



Image provided by Kemin

Sources:  
 1 FJ & client-provided outline  
 2 Dr. Michelle Wieghart interview  
 3 NRC, 2001. 7th Revised Edition  
 4 00158\_USALysine\_Brochure\_v07\_PRESS.PDF  
 5 Dr. Nelson Lobos interview  
 6 Dr. Glen Broderick interview  
 7 Kemin.com  
 8 USA Lysine and MetiPEARL™ 8.2.18.pptx

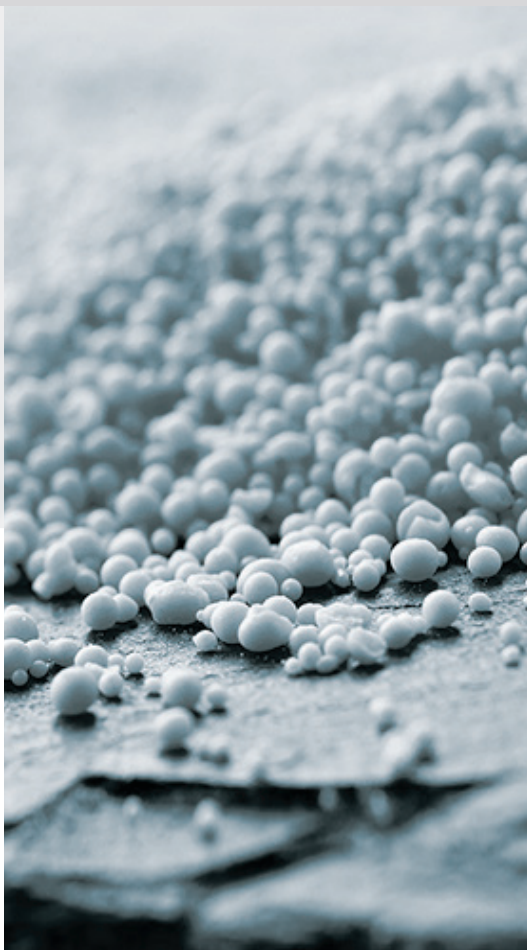




## TALL TALE #8



# COMMODITY PROTEINS ARE CONSISTENT SOURCES OF MP LYSINE?



### **ACTUALLY:**

Their variability costs you milk and money. USA Lysine® is the most consistent, concentrated, cost-effective way to meet MP Lysine requirements by supplying over 200 grams of MP Lysine per pound.

**USA**★  
**Lysine**®