

Vitamin And Mineral Feeding Headache Explained

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NEWARK, Del. — When one of our better cows milks 80 pounds, she gives up daily in that milk alone at least 45 grams (28 grams equal 1 ounce) calcium, 34 grams phosphorus, 4 grams magnesium, 56 grams potassium, 25 grams sodium, 16 milligrams (1 milligram equals 1/1000 gram) vitamin B₁ (thiamin), 64 milligrams vitamin B₂ (riboflavin), 34 milligrams niacin, 126 milligrams pantothenic acid (vitamin B₅), as well as many other minerals and vitamins that are equally essential.

And this daily excretion in milk is only part of the total daily loss, because minerals and vitamins are also excreted in urine and feces.

How well are we doing in daily replacement of these minerals and vitamins by way of feeds? A cow may eat 50 pounds of corn silage and 5 pounds of alfalfa hay a day for basic roughage. This usually supplies about 45 grams of calcium, 24 grams of phosphorus, 23 grams of magnesium, 123 grams of potassium, 5 grams of sodium, 163 milligrams of vitamin B₁, 61 milligrams of vitamin B₂, 406

milligrams of niacin and 242 milligrams of pantothenic acid.

In terms of her milk secretion, this roughage should supply the cow with adequate calcium and more magnesium, potassium and B vitamins, except for B₁, than she needs, but she will be 50 percent short on phosphorus and 80 percent short on sodium, plain salt.

Supplementing her forage ration with grain would be simple for our example cow, if we knew that all these minerals and vitamins would get into her metabolic system in the amounts present in the feed trough. And here's where the headache starts.

Recent research has shown that intestinal absorption of calcium may only be between 10 to 40 percent; absorption of magnesium, 25 to 75 percent; phosphorus, 70 percent; with iron, zinc and manganese less than 10 percent of the amounts eaten. Niacin in grains is almost totally unavailable. This holds true for heat-processed soybean oilmeal, as well.

Vitamin B₁ deficiency has been observed in cattle and nursing calves, while their feeds appeared to have excess amounts of this vitamin. The deficiency was

caused by antivitamin B₁ factors produced in the rumen that destroyed or blocked absorption of this vitamin.

Sulfur supplementation, with calcium sulfate, for example, aggravated this destruction, as did a change of ruminal pH. Preventing acidosis of raising rumen pH helped prevent vitamin B₁ destruction. Acidosis is a likely consequence of high grain feeding, especially when large amounts of grain are given at one time, rather than over many meals in small amounts per day.

Poor mineral absorption during digestion can be due to several causes. Some feed compounds such as phosphates, fats, oxalic acid and phytic acid render some minerals such as calcium, zinc, iron and magnesium insoluble and thus unavailable. An excess of one mineral, such as copper or lead, can inhibit absorption of another, such as iron or zinc. On the other hand, vitamin D enhances calcium absorption, and vitamin C enhances that of iron.

High roughage diets with large

amounts of indigestible fiber — as important as this is to maintain milkfat — have the disadvantage of decreasing absorption and increasing fecal excretion of calcium, magnesium, zinc and phosphorus. Most B vitamins are normally synthesized in the rumen in sufficient amounts. However, niacin and vitamin B₁, B₂, and B₁₂ supplementation has been beneficial to dairy cows under certain conditions, such as early lactation peak yield periods or when nursing calves.

How do we get rid of this headache? Analyses of cattle hair have given mixed results so far, except for a few really serious long time deficiencies. Blood analyses of minerals like calcium can show low levels when feed supplies are poor or phosphorus intake is high. However, this analysis will fluctuate, since bone mobilization replenishes blood levels.

Low phosphorus blood levels are somewhat related to diet but also undergo normal daily up-and-down cycles. Sodium and potassium levels in cattle blood are normally

in a close range, so abnormal analyses do indicate problems. Other elements and vitamin levels in blood have been studied too little to know if they can serve as useful indicator values.

This takes us back to the feed trough and the application of common sense calculations that incorporate these research findings, and observation of each cow — more than once a day. That glossy coat and alert gleam in her eyes are still good indicators of sufficient mineral and vitamin status, as unscientific and unmodern as this approach may sound. That's why good personal management with top cow-sense has not yet been replaced by computers.

Textbook assumptions about adequate B vitamin supplies for our high-producing cows must be treated with considerable caution and scepticism. Certainly, our 80-plus pound cows, like today's high-performance athletes, routinely require dietary supplements above the average norms. It's up to us to see that they get them.

Shiner, Wagner Named Lebanon's Top 4-H'ers

LEBANON — The Lebanon County 4-H program named two Outstanding 4-H'ers during 4-H Achievement Night held Oct. 15 at the Lebanon County Municipal Building.

Damian Shiner, Myerstown and Sharon Wagner, Lebanon, were honored with the highest county 4-H awards based on the excellent quality and variety of their 4-H projects and activities. Damian, a 10-year member of the Myerstown Raider 4-H Club, is president of the Lebanon County Teen Council; Sharon is a nine-year member and teen leader in the Cedar Valley 4-H Club.

Mike Kunkle, Jonestown, received the Susan Heilinger Werner Memorial Award. The award is based on involvement in the 4-H dairy program, county, state, and national 4-H activities, and leadership ability. An 11-year member of the Norlecco Dairy Club, Mike is a member of the county dairy judging team which placed second in state competition earlier this year.

4-H leaders of the various clubs selected a "Club Outstanding 4-H'er" based on member participation in projects and activities. The 1986 Club Outstanding 4-H'ers are: Keith Blaich, Sharon Wagner, Sheri Pierce, Stephanie Wolfe, Janet Kleinfelter, Joey Rittel, Jenny Ungemach, Heather Sowers, Brigitta Bergman, Charity Farrell, Lisa Hammer, and Alan Auman.

The Honor 4-H'ers award recognizes junior members between the ages of 8 and 13 for their efforts and achievements. The following members were selected as "Honor 4-H'ers": 8 year olds- Christopher Blaich, Karen Henry, Stephen Major; 9 year olds- Elizabeth Steckman, Jennifer Ungemach, Michelle Ungemach; 10 year olds- Melanie Bushong, Michelle Bushong, Donald Kleinfelter; 11 year olds- Tony Ebling, Shannon Geesaman, Heather Sowers; 12 year olds- Allison Doll, Charity Farrell, Ralph Major; 13 year olds- Chris Harding, Emily Swanger, and Tara Weyand.

Winners of the Outstanding Club Community Service Award were the Mill Acres and Kelly Helpers 4-H Clubs. Their projects included an outdoor beautification project for the Hershey Museum of American Life, roadside litter

collection, and assisting the Lebanon County Christian Ministries Food Bank. Honorable mention certificates were awarded to the South Mountain, Saddlelites, and Cedar Valley 4-H Clubs.

Three clubs received top honors in the scrapbook contest— Saddlelites Horse and Pony, Lebanon County Tractor, and Norlecco Dairy Clubs.

Beth Shearer, Annville, a member of the Bellegrave Clovers 4-H Club, was the winner of the news reporter contest.

Members who served as teen leaders assisting younger members and adult leaders in their clubs received pins and certificates. The teens recognized were: Alan Auman, Joan Bashore, Jennifer Greenlee, Dawn Hawryluk, Jeff Wagner, Andrew Smith, Rebecca Sonnen, Eric Funk, Damian Shiner and Sharon Wagner.

County winners in the National Awards Program were: Damian Shiner, Sharon Wagner, Rebecca Grumbine, Regina Roof, Rebecca Sonnen, Krista Hetrick, Daryl Grumbine, Daryl Hackman, Jeff Wagner, Jennifer Allwein, Steve Wagner, Dawn Hawryluk, Andrew Smith, Heather Sowers, Beth Frazier, Eric Funk, Charity Farrell, Tony Ebling, and Darren Grumbine.

Keystone winners were named in the following categories: Regina Roof, Citizenship and Safety; Andrew Smith, Consumer Ed; Sharon Wagner, Foods & Nutrition and Food Preservation; Rebecca Grumbine, Gardening; Damian Shiner, Health and Leadership; and Eric Funk, Home Management.

State winner in the 4-H Leadership Program, Damian Shiner, will represent the state as a delegate to National 4-H Congress held in Chicago during December.

Top salespersons in the Lebanon County 4-H cookie sale, Paul Longenecker, Elizabeth Steckman, and Tara Weyand, were awarded prizes. 4-H'ers and chaperones who participated in county, regional, and state activities were also recognized.

The Consumer Education Presentation team presented their state winning program with practical advice for the first time car buyer. The evening concluded with a candlelight ceremony.

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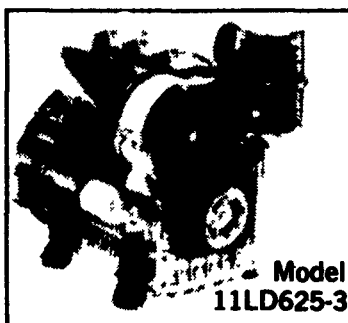


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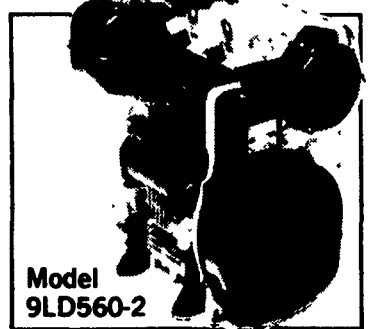
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