

FEED FOR THOUGHT



News For Cattlemen From Suga-Lik® A Product Of U.S. Sugar Corp.

Vitamin Therapy

Patrick B. Whidden, PAS

The word, therapy, is related to therapeutic, which is defined: "of or relating to the treatment of disease or disorders by remedial agents." Vitamins, which were formally identified early in the 20th century, were helping eliminate symptoms of various diseases several hundred years before their formal identification. You may recall learning, that by including certain vegetables, fruits and oils in the diets of 1700's era sailors, the diseases scurvy, rickets, beriberi and others were eliminated. Those naval physicians didn't know at the time they were prescribing vitamins.

Since their formal discovery, vitamins have been listed as one of the six classes of nutrients. The others are water, carbohydrates, protein, fat and minerals. Vitamins are further classified as either water soluble (vitamin C and the B-complex vitamins) or fat soluble (vitamins A, D, E and K). The water soluble vitamins are not stored within body tissue and need to be supplied daily. Conversely, the fat soluble vitamins are stored within fat tissue (firstly the liver); and it may not be necessary to provide them daily if there are adequate body reserves. While it is true that vitamins are required by animals in very small amounts compared to other nutrients, they are nonetheless required and essential.

In general, grazing ruminant animals (beef cows) are not fed supplemental water soluble vitamins, and vitamin K, because the rumen microbes, in a healthy environment, synthesize these vitamins. In some stress situations, they are supplemented. However, it is always advisable to provide supplemental fat soluble vitamins. Therefore, vitamins A, D and E are formulated into almost every commercial feed product. Continuous vitamin deficiencies in the diet result in metabolism disorders and eventually disease.

Vitamin A. This vitamin plays two different roles in metabolism: one in eye health and the other in epithelial tissues and mucous membranes. In beef cows, vitamin

A helps resist disease invaders, improve reproductive performance and provide for improved vigor in calves at parturition.

Vitamin D. This vitamin is sometimes known as the "sunshine vitamin" because its activation is brought about by irradiation from the sun. However, it is generally limited in natural distribution to sun-dried forages and dead leaves from growing plants. Vitamin D is important for the proper metabolism of calcium and phosphorus and is also involved in maintenance of immune functions.

Vitamin E. This vitamin has three metabolic roles: a biological antioxidant, a synergist with selenium, and an immune system function. Muscle degeneration is the most frequently diagnosed symptom of vitamin E deficiency. However, research has demonstrated various disease problems, as well as significant production losses, related to its deficiency (see *Feed for Thought*, Fall 2002).

The absence (defined as either completely void or somewhat lacking) of one or more of these vitamins leads to a failure in reproduction and growth, or to characteristic disorders known as deficiency diseases. The occasional deficiency symptoms are striking and will get our attention. However, mild deficiencies, without obvious symptoms, cause much more significant economic losses than do severe deficiencies. Perhaps, the most frequent result of mild vitamin deficiencies is calves being born without adequate vitamin stores and then consuming colostrum of poor quality. These calves obviously can't perform as well as they could. Another commonly unnoticed vitamin deficiency symptom is mastitis in beef cows which leads to underperforming calves.

These vitamin deficiencies, and others, cost money in lost productivity. U.S. Sugar approaches its responsibility to providing effective, efficacious supplements with the philosophy that our cattlemen customers are in business to make as much money as they legitimately can.

Therefore, it is our responsibility to not cut corners. Our Fully Fortified® Suga-Lik® supplements are designed to provide at least 100% of the essential nutrients needed by

your cattle to perform at their full capability.

Fat soluble vitamins, A, D and E, can naturally occur in most feedstuffs that grazing beef cattle consume. However, be sure to know that the vitamins are not always present in those feedstuffs in adequate amounts. Research by Lynch (1991) demonstrated dramatic declines in alpha-tocopherol content in several grasses during the months April thru September. By the end of September, the grasses were virtually devoid of alpha-tocopherol. (Alpha-tocopherol is a biologically active chemical form of vitamin E.) Fully-Fortified® Suga-Lik® supplements are formulated with enough vitamins A, D and E to completely fulfill grazing cattle vitamin requirements. This is an investment. Is it a good investment? The vitamin cost,

utilizing our year-round nutrition program, would not exceed \$2.00 per cow.

Since fat soluble vitamins are stored in body tissue, then intuition would dictate that toxicity levels are possible. This intuition would be correct; however, in practicality toxicities of vitamins A, D or E would be nonexistent. Vitamins A and E have extremely wide margins of safety; and vitamin D is not effectively stored by mammals. Our supplements are formulated to provide daily intakes of vitamins A, D and E that meet the NRC Dairy requirements for grazing cattle...yes, dairy. Our philosophy is that you are, indeed, selling milk. Your customer is your calf crop. Help assure your calf crop's health and performance with appropriate vitamin therapy.

Daily Supplemental Vitamins A, D, & E

Recommendations for a 1,000 lb Cow on Pasture

	<u>NRC 2000^a</u> <u>Beef</u> (units per day)	<u>NRC 2001^b</u> <u>Dairy</u> (units per day)	<u>Suga-Lik^c</u> <u>Beef</u> (units per day)	<u>Competitors^{c,d}</u> (range in units per day)
Vitamin A	45,027	50,000	50,000	0 - 87,500
Vitamin D	3,175	13,600	13,600	0 - 25,024
Vitamin E				
Cows	N/E ^f	118 - 227 ^e	227	0 - 70
Yearling steers (growth)	50 - 100	N.A.		
Yearling steers (quality grade)	300			

^a Recommendations have been the same in the 1976, 1984, 1996, and 2000 NRC Beef publications.
^b Vitamin research reviewed and was updated in the 2001 Dairy publication.
^c When supplement is fed at the average rate recommended on the feed product label.
^d A survey of 30 competing products conducted in November of 2002 by U.S. Sugar Corp.
^e Lactating cow = 118; dry cow = 227
^f The NRC Beef has not established a vitamin E requirement or recommendation for beef cows.

We invite you to contact us to evaluate the nutrient adequacy of your existing nutrition program.

C. Fields USSC
03/22/06



FULLY FORTIFIED
Suga-Lik®

A product of U.S. Sugar Corporation
U.S. Sugar Corporation • An Employee-Owned Corporation
www.suga-lik.com • 800-940-7253

SUGA-LIK® DEALERS

ARCADIA
Walpole Feed & Supply
863-763-6905

BRANFORD
Mayo Fertilizer
& Farm Supply
386-294-2024

CHIEFLAND
Tex Lea Distributors
352-572-4787 or
352-493-1386

**DeFUNIAK
SPRINGS**
West FL
Farmers Co-op
850-892-5522

LAKE BUTLER
Lake Butler
Farm Center
386-496-3921

LAKELAND
Kathleen
Cash Feed
863-858-3123

MAYO
Mayo Fertilizer
& Farm Supply
386-294-2024

MYAKKA CITY
Myakka Farm Supply
941-322-1783

OKAHUMPKA
Lasher Milling Co.
352-787-4821

OKEECHOBEE
Walpole Feed & Supply
863-763-6905

