

NUTRITION AND HOLISTIC ANIMAL HEALTH

In 1951 I had the good fortune to study the rudiments of soil science at the University of Missouri under the late Dr. William Albrecht. I must confess that at the time I took his course, I did not fully appreciate the correlation between soil fertility and animal health. I wanted to get on with the real veterinarian's job of treating sick animals. It was only after I had completed my animal disease education in Veterinary school and began to receive my animal health education from some dedicated "organic farmer" clients that I came back to Albrecht's work and finally began to understand his wisdom.

His book "Soil Fertility and Animal Health" ¹ is still a classic, and should be required reading for anyone aspiring to be a holistic herdsman. As one could guess from the title, his premise is that it takes a fertile healthy soil to grow healthy nutritious crops to sustain healthy productive animals or people. Incidentally, soil vitality and crop or feed vitality, as well as animal vitality can be plotted on the "Vitality Chart" discussed in the previous issue.

Stated another way, an animal can only be as healthy as the feed it eats and the feed can only be as healthy as the soil upon which it was grown and the soil to be healthy must be highly fertile and biologically active. Within the broad framework of this concept, in this article I would like to illustrate four main points.

Good nutrition can prevent disease.

Good nutrition can cure disease.

Nature is a better judge of nutrition than nutritionists.

Healthy production is the most profitable.

**Good nutrition can prevent disease
.. most of the time, but not always!**

Another candidate for a required reading list is the book "An Agricultural Testament" by Sir Albert Howard, published in 1940.² Sir Albert was formerly the Director of the Institute of Plant Industry in Indore, India and the British Agricultural Advisor to States in Central India and Pajutana. This book is the summation of decades of his work to improve soil fertility and plant and animal health by composting agricultural residues and returning them to the soil. It is also reputed to be one of the sparks that inspired J. I. Rodale to begin publication of the great magazine "Organic Gardening and Farming".

Most of this work is related to soil fertility and the intricacies of composting, but I would like to quote one paragraph that forever changed the way I looked at animal health and disease.

"My work animals were most carefully selected and everything was done to provide them with suitable housing and with fresh green fodder, silage, and grain, all produced from fertile land. I was naturally intensely interested in watching the reaction of these well-chosen and well-fed oxen to diseases like rinderpest, septicaemia, and foot-and-mouth disease which frequently devastated the countryside. None of my animals were segregated; none were inoculated; they frequently came in contact with diseased stock. As my small farm-yard at Pusa was only separated by a low hedge from one of the large cattle-sheds on the Pusa estate, in which outbreaks of foot-and-mouth disease often occurred, I have several times seen my oxen rubbing noses with foot-and-mouth cases. Nothing happened. The healthy well-fed

animals reacted to this disease exactly as suitable varieties of crops, when properly grown, did to insect and fungus pest -- no infection took place."

Once my mind was opened to the possibility that good nutrition could prevent disease I found evidence of it almost every place I looked.

Good nutrition can cure disease
... often but not always!

Eugene M. Poirot wrote a book in 1950 called "Our Margin of Life".³ This book details his experiences in the restoration of soils and the health benefits to animals when fed crops grown on high vitality soils. His son-in-law, a veterinarian who practiced in the same town as I did, confirmed the accuracy of this account, here quoted from Poirot's book.

"Once Bang's disease, which causes abortion, was so serious, and the blood test showed so high a percentage of infected cows, that the entire herd was threatened with liquidation. Fourteen years later, another test of all animals, including both the old infected cows and their offspring, more than four hundred head, failed to show a single reactor or suspect. When Bang's disease is transmitted to humans by cows or their products it is called undulant fever. In this case it was controlled at the soil level in some yet unknown way, long before it had a chance to reach a human as undulant fever.

A significant part of this story is that early in the restoration period this disease was eradicated by blood-testing cows and selling all reactors and suspects. The herd was clean for a period of three years. Then the infection hit again in January, when an immediate blood test disclosed only six head of reactors or suspects. These were sold at once, but by June the infection had reached eighty percent of the cows!

So none were sold, and soil restoration was continued. In two years calf crops became normal again.

Later, blood testing became required by law, but no reactors or suspects were found in any of the tests, nor has the disease reappeared after thirty-five years, even though all animals are offspring of infected cows, born on once infected pastures and living in an area where Bang's disease was present on other farms before blood testing eradicated it.

I don't know how to "cure" these many diseases - but Mother Nature does. That is why I like to give her the "tools" and keep her on my side."

**Nature is a better judge
of nutrition than nutritionists
... if the proper choices are available!**

My good friend and client Carl lived down the highway about 3 miles from our home. He was a good farmer and dairyman who milked about 30 cows. My vet calls to his place were mostly for routine jobs like dehorning or vaccinating with an occasional milk fever or dystocia. His cows were well cared for and healthy. For many years he supplied our family with fresh milk right from the bulk tank. One year inclement weather made planting and harvesting hay and grain crops a great gamble with the result that feedstuffs that fall and winter looked good but had low nutritional value. By late winter Carl consulted me with two seemingly unrelated problems. One, his cattle were eating almost 2 pounds of a mixed mineral per head per day! Two, about 10 days before they were due to calve, his heifers would abort a live calf. The calf, with some care, would live, but in spite of all we could do the heifer would die within two or three days. After the third one in a row had died, I did what every smart vet would do ... I passed the buck and sent a dying heifer to the University Vet School for autopsy. Their diagnosis came back as starvation! Carl took good care of his animals and was feeding them almost all they could eat. This diagnosis was like

an insult to Carl and difficult for either of us to accept. We could have accepted a diagnosis of malnutrition because of the poor crops that year but starvation seemed a little too harsh.

We then turned our attention to the mineral consumption problem. Available in that area at that time was a "cafeteria" mineral program in which each mineral was fed separately on the theory that each animal could then eat only what it needed to balance its own needs. Carl decided to try this program. His mineral feeder was in the middle of his cow lot and he had to carry each bag of mineral through the lot to empty into the feeder. Things went well for the first few trips and then suddenly several of the normally docile cows suddenly surrounded him, tore a bag of mineral from his arms, chewed open the bag and greedily consumed every bit of the mineral, the bag and even some mud and muck where the mineral had spilled out ... astounding behavior for a bunch of tame dairy cows!

What was in the bag, you ask? ... a source of the trace mineral, zinc. During the next several days they ate several bags of this zinc source while completely ignoring all other minerals. Gradually they began eating normal amounts of the regular mineral. From that day on his heifers calved normally and things gradually returned to normal.

Apparently, the difficult growing season has resulted in crops that were deficient in zinc or perhaps high in zinc antagonists. The basic mineral mix had a small amount of zinc in it but to get the zinc they needed, they had to consume large amounts. This gave them too much calcium. Calcium interferes with zinc absorption, which in turn increased their need for zinc. Even though their quest for zinc impelled them to eat the mixed mineral, every mouthful they took increased the imbalance. Inevitably, symptoms began to show up in the most vulnerable group ... young heifers, still growing and in the last stages of pregnancy. Finally they just gave up and checked out ... all for want of a few grams of zinc. The decrease in feed conversion associated with zinc deficiencies coupled with the poor quality feed would result in malnutrition even when feed intake appeared to be adequate. I realize that other secondary factors may have been involved here, but the main factor was a zinc deficiency as evidenced by the remission of symptoms when zinc was supplied. (See "Zinc" side bar).

Carl had done as good a job as he could with the knowledge that was available at the time. When the essential ingredients were finally provided so that the animals could make their own choice, they picked out what they needed to regain their health. For me this incident epitomizes the concept that, given the chance, animals can balance rations better than computers or nutritionists can.

Many nutritionists tend to discount the ability of animals to balance their ration, asserting that by the time they feel the need to eat a certain item they are already in a deficient state. From their point of view, I suppose they have a point. The fallacy in their reasoning may be that they expect the animal to choose for the level of production that man desires while the animal chooses only what it needs to be healthy.

**Healthy production is the most profitable...in the long-term,
if not in the short-term!**

Many years ago I was associated with a feed company that formulated and sold premixes for dairy cattle. It was a good feed, based on "natural" ingredients and principles. Many of the users commented on the superb health experienced by the animals on this program ... better reproduction, less mastitis, low cull rate, healthy calves, low vet bills etc.

The down side was that production, although profitable, did not reach the high levels they had come to expect when feeding a more "conventional" ration designed mainly to increase production. Many dairymen who switched to such a feeding program often saw their production increase dramatically.

Unfortunately, in most of these cases, it wasn't very long and problems began creeping back into the herd ... cows didn't come in heat like they should, conception rate when down. There were more cases of

mastitis, calves didn't do as well, vet expense increased, more cows began leaving the herd for health reasons. Eventually even production began to slide. The short-term higher production had been gained only at the long-term expense of lowered herd health, proving that old saying "there is no free lunch".

There does seem to be a level at which animals can maintain health and have profitable production. The animals on the "natural" feeding program had achieved this happy state and the overall financial benefit associated with good health more than overcame the lower production and slightly higher feed costs. When a herd like this is switched to a "conventional" program concerned mostly with high production the increased production and slightly lower feed costs usually do not make up for the increased costs of poor health.

See everything you look at!

The above experiences, along with many others, confirmed for me what Dr. Albrecht, Sir Albert and Mr. Poirot had discovered years before. Building on the foundation they had provided, I subsequently learned a lot about nutrition and animal health just by paying attention to what animals ate and the effects on their health. You, too, can prove these things to yourself, by doing the same thing. I remember Dr. Albrecht saying, "Study books and observe nature, if nature and the books do not agree, throw away the books." I agree.

Footnotes:

1. Albrecht, Dr. William. Soil Fertility and Animal Health. Fred Hahne Printing Company. Webster City, Iowa. 1958, Has been reprinted as Volume 2 of a 4 volume set, "The Albrecht Papers", available from ACRES U.S.A., P.O. Box 8800, Metairie, LA. USA (505) 889 2100.
2. Howard, Sir Albert, An Agricultural Testament. Oxford University Press 1940
3. Poirot, Eugene M. Our Margin of Life. Acres, U.S.A. Raytown, MO 1978

ZINC

Stress (including parturition) appears to increase the zinc requirement of animals.

Zinc is required for the incorporation of cystine into keratin and thus plays an important role in maintaining hoof, horn and skin integrity.

Zinc plays an important role in wound healing, immune function and disease resistance. Some studies indicate that the first symptoms of a zinc deficiency is a decrease in immune function and a decrease in feed conversion.

Zinc plays a role in vitamin A transport and utilization and appears to play a role in vitamin E absorption. Reproductive performance after parturition improves with both zinc and vitamin E supplementation in late pregnancy.

High calcium and iron intake (including Ca and Fe in water). will increase the zinc requirement.

Deficiency symptoms may include general listlessness, poor growth, stiff joints and unthrifty appearance, hair loss, general dermatitis of head and neck and failure of wounds to heal properly.

THE MINERAL WHEEL

Based on research by several investigators, these mineral interrelationships appear to be well established.

HOW TO INTERPRET THE MINERAL WHEEL

If a mineral has an arrow pointing to another mineral, it means a deficiency of that mineral or interference with its metabolism may be caused by excesses of the mineral from whence the arrow originates.

