



# Using Water and Supplemental Nutrition For Stressed Cattle

by Edward Duren

*Extension Agricultural Agent, Livestock Programs  
Caribou, Bear Lake and Franklin Counties*

Major economic losses in beef cattle herds can be traced to diseases and parasites that cause loss of body weight, inefficient feed conversion, death and carcass condemnation. With intensification of beef production, producers sometimes neglect management techniques to keep cattle thrifty and healthy. The importance of drinking water as an essential nutrient is often overlooked in beef cattle management.

Young cattle, from birth to yearlings, are susceptible to a local adaptation syndrome which often leads to a disease or parasite condition. Water medication has an important role to play. This report explores the use of water medication primarily during spring calving and fall weaning. However, the practices are applicable to management of mature cattle also.

Water provides the fluid medium within which the chemical reactions of the body take place. Since water has a high specific heat (ability to absorb or give off heat with a relatively small change in its temperature), it is an ideal temperature buffering system for the body.

Water is the lubricant for transporting nutrients and wastes within the body. Therefore, water can be a suitable vehicle for administering oral medication and supplemental nutrients. Drinking water is being used increasingly for this purpose when starting the young or during periods of stress or disease.

## *Stress Syndrome*

The stress syndrome, a set of symptoms or complex reactions which occur together, is a primary health problem in the management of young cattle. Stress may result from environmental factors such as handling or transporting with prolonged exposure to adverse seasonal temperature and weather variation. Stress may also result from physiological factors, including insect pests, infective pathogens and internal parasites. Cattle experiencing a stress syndrome have losses in their thriftiness and their ability to use feed efficiently. In essence, there is a shrink in body weight that is related to tissue dehydration.

The interrelated stress factors act unfavorably upon the body and lower the animal's resistance. This weakness allows pathogenic microorganisms to grow and develop and predisposes a disease or parasite condition. If permitted to continue, the condition may eventually develop into a herd epidemic.

At birth and weaning, calves are susceptible to infectious microorganisms associated with numerous diseases — particularly weak calf respiratory syndromes. These diseases become most complex and overlapping in diagnosis, with stress factors playing an unending role.

Infectious pathogens associated with the various diseases of the calf will influence the metabolism of nutrients in a great variety of ways. Typically, at the first signs of sickness, calves may go off feed and lose their appetites. Even mild or subclinical infections may reduce or completely inhibit appetite. The extent to which the appetite is reduced may well be an indication of the severity of the sickness. Likewise, an improvement of appetite is associated with recovery.

Frequently, calves are stressed with a high fever over prolonged periods and become extremely dehydrated. These calves require water containing electrolytes to restore the salt-mineral balance and turgidity of body tissues. If good water is not supplied, range beef calves are naturally inclined to satisfy this need by drinking polluted water or eating dirt within the calving area. This is substantiated by necropsy

Ed Duren (right), Idaho Cooperative Extension Service agricultural agent, and Caribou County ranchers demonstrate method of giving liquid to a dehydrated calf using an esophageal feeder.



on dead calves. Examination of the rumen contents will reveal an assortment of foreign material, including hair, straw, manure, dirty water combined with undigested milk or feed and often drug boluses. Invariably, enteritis is common within the lining of the gastrointestinal tract.

Infections that directly or indirectly affect the digestive system cause nutrient loss and slow growth. Inflammation throughout the digestive tract adversely affects nutrient absorption. Reduced absorption brings on excessive loss of metabolizable water, energy, protein and electrolytes, resulting in tissue dehydration. The large loss of water is accompanied by loss of soluble vitamins, minerals and perhaps some unidentified growth factors. Drinking water-electrolyte therapy supplemented with a quick energy diet is becoming an accepted method of medication to reduce the mortality rate of sick calves.

Cattle normally harbor extensive bacterial microflora in the rumen and intestines. Rumen microorganisms help the digestive process and also the chemical breakdown of energy. When an animal's energy supply is cut off, the rumen will continue to ferment and microorganisms will continue to use up available energy. Microorganism population will be reduced and an unfavorable acid condition may result. Continued administration of massive doses of antibiotics has a tendency to reduce and alter the number of desirable microorganisms present in the rumen and intestine. This often causes primary conditions of diarrhea and predisposes dehydration from scouring, which further reduces the body's resistance to invading infectious organisms.

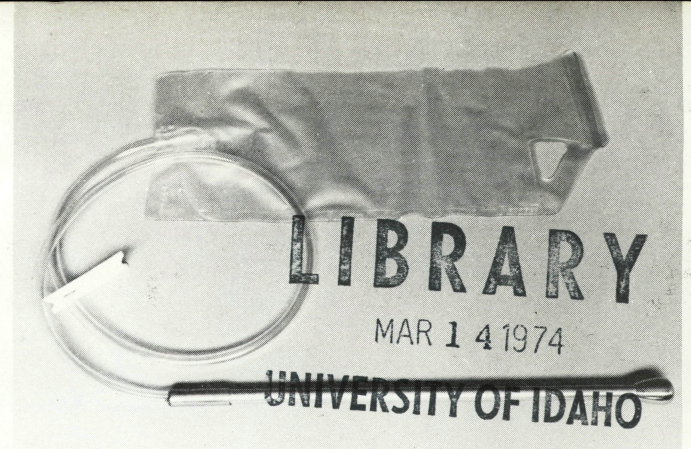
Various powders containing rumen bacteria have been administered by ranchers to sick calves in an effort to restore a proper balance of rumen organisms. This practice has had very limited success when the calves' energy deficiency has not been corrected.

### *Supplemental Nutrition*

During periods of stress, proper nutrition is basic to medication in restoring cattle health and thriftiness. An attempt to restore health entirely with drugs, without consideration of nutrition, is futile. All essential nutrients must be supplied in proper combinations to meet the needs of the animal's body. Water and energy are two nutrients most frequently deficient.

Adequate nutritional therapy for sick calves has been a difficult problem. Many ranchers use a mixture of kitchen ingredients such as table salt and baking soda to replace the mineral balance of the body tissues. These mixtures lack sufficient energy.

Rumen Booster is a commercial non-medicated feed product designed to be mixed with water and then administered orally into the rumen. The ingredients in Rumen Booster supply quick energy and help to restore the mineral and electrolyte balance. It is formulated specifically to help calves recover from stress and dehydration.



Esophageal feeder includes plastic bag for liquid, plastic tube and a steel probe designed for easy insertion into the rumen.

The feeding directions will depend upon the physical condition and size of the calf. The amount of supplement used can vary from  $\frac{1}{2}$  to 1 pound, dissolved in 1 gallon of water, and administered at a rate of 3 to 4 quarts per 150 pounds of body weight in a 24-hour period.

Clinical observations on 50 eastern Idaho ranches indicate an immediate response with sick calves when they received an energy supplement and water electrolyte therapy. Baby calves that are down will frequently be up on their feet within 12 to 24 hours, demonstrating a marked improvement. Withholding cows' milk and continued feeding of the supplement for a period of 2 to 4 days will provide supportive therapy for proper drug medication to restore health.

Many ranchers employing this system of treatment report a 20 to 30 percent reduction in baby calf mortality. A similar response has been observed in treating weaned calves and mature cattle under stress of dehydration and fever.

The oral administration of fluids to restore mineral and water balance in the body tissues is more difficult with sick calves. Many ranchers have been trained in veterinary techniques to pass a tube through the nose of a calf. This technique helps insure that the tube for administering fluids goes directly into the rumen. Ranchers are reluctant to adopt this technique for fear of drowning the calf. This can happen if the tube passes into the lungs instead of the rumen.

The use of a bovine esophageal feeder is a systems approach to treating sick calves with the water-electrolyte nutrient therapy. The bovine esophageal feeder consists of a stainless steel ball probe with an attaching plastic tube and disposable plastic bag for administering the solution directly into the rumen. This equipment is designed to prevent entry into the trachea and thus to avoid forcing fluids into the lungs. This technique is fast, safe and economical. The bovine esophageal feeder is a labor-saving device which replaces the oral stomach tube.

---

Reference to commercial equipment herein is for educational purposes and is not intended as an endorsement of nor discrimination against any similar product.

---

Published and Distributed in Furtherance of the Acts of May 8, and June 30, 1914,  
By the University of Idaho Cooperative Extension Service, James L. Graves,  
Director; and the U.S. Department of Agriculture, cooperating.