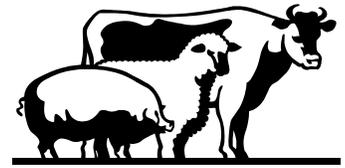




**LIVESTOCK LINES**



**Stanislaus & San Joaquin Counties**

**February 2010 ♦ Volume 16 No. 1**

**DID YOU KNOW...**

Obviously, maternal diets are crucial to the birth of healthy offspring. But did you know that the diet of the dam might have life-long health and reproductive impacts on her offspring?

by  
Theresa Becchetti

Livestock and  
Natural Resources  
Farm Advisor

**BEEF QUALITY ASSURANCE: WHAT'S THE WEAKEST LINK?**

UCD VET VIEWS, CALIFORNIA CATTLEMEN'S MAGAZINE, NOVEMBER 2009

We have been conducting quite a few Beef Quality Assurance (BQA) programs over the past year in California. These have been put on to certify producers for the first time as well as for re-certification to comply with national guidelines to re-certify on a three year basis. The programs are always a two-way street with many good points and comments brought up by attendees. A number of topics were discussed that warrant emphasis in this column. Therefore, this month we will discuss some factors that affect the immune response of the calves when we vaccinate them as part of the BQA programs we all put in place. A large part of BQA is prevention of disease so the animals do not have to be treated after weaning, shipping, or in the feedlot. Vaccination against the common diseases is an important part of disease prevention. For vaccination and the animal's immune response to work appropriately a number of steps (links in the chain) have to all work together. First we need to present an appropriate antigen (vaccine) to the animal via injection or intra-nasal inoculation. The vaccine antigen has to have been properly stored and mixed before presentation. Secondly, the animal's immune response has to respond to the vaccine to produce protective immunity. Many factors are important in the proper working of the immune response; but, two of the most important are trace mineral nutrition and parasitism. So what are some of the weak links in the chain of protecting cattle from disease and what can we do about them?

**Can storage conditions affect vaccines?**

Definitely! Most vaccines should be stored at 35-45° F. The recommended storage conditions are on the vaccine label. Vaccines should be stored at the recommended temperatures from the time they are manufactured until the time you use them chute side. Overheating vaccines can cause obvious problems, as the proteins in the vaccine will breakdown (denature) and will not produce the desired immune response. Worse than overheating, freezing vaccines will decrease their effectiveness even faster. So the recommended storage conditions of 35-45° F is a strict range on both ends. Both modified live vaccines and killed vaccines are affected by improper storage temperatures. Almost all

To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products which are not mentioned.

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killed vaccines contain an adjuvant that aids in the immune response, as do some live vaccines. High or low storage temperatures cause these mixtures to separate and lose their effectiveness to prevent disease.

#### ***What about refrigerators and their effectiveness?***

It turns out that many of the refrigerators we use for storing cattle vaccines and drugs are cast-offs from some other use and may not be functioning properly. A survey by Dr. David Thain at the University of Nevada, Reno found 25% of ranch refrigerators failed to maintain temperatures to keep vaccines in the safe range and most of the failures had to do with freezing the vaccines (temperatures as low as 10° F for extended periods). Many of the old refrigerators we use tend to freeze items stored in the back near the coils and overheat items stored near the front or in the door because the rubber seals no longer work. Additionally, some of the older refrigerators cannot insulate well enough when placed outside in the winter and the vaccines simply freeze inside the refrigerator.

#### ***How can I tell if my refrigerator is working correctly?***

You can buy a thermometer which records minimum and maximum temperatures and place it in your refrigerator for several days. Put it in different locations to be sure you don't have cold spots or hot spots. These thermometers can be purchased for less than \$20. They are made in both electronic form and magnetic form (the high/low thermometers we use to record daily temperatures). Simply go on the web and type in recording thermometers and browse the various offerings until you find one that suits your needs. Leave a thermometer in your storage refrigerator and monitor it from time to time.

#### ***What affects the immune response of the calves?***

Many things will affect the calves' ability to respond to vaccines or disease challenges. These include the presence of the BVD virus in the herd, stress, previous vaccination history, the products used, parasites, nutrition, and vaccine handling. The storage of vaccines was discussed above, as an important part of vaccine handling. Cattle that are parasitized do not respond normally to vaccines. Also, calves deficient in trace minerals such as selenium (Se) or copper (Cu) respond poorly to vaccines and infectious diseases.

#### ***Why do parasites affect the immune system?***

Most parasites have complex life cycles and depend on

evading the host's defenses to be able to survive. Part of this evasion is to affect the host's immune system, so there is not a large reaction against the parasites. Therefore, most parasites make chemicals that decrease the animal's ability to make a full immune response. While this helps the parasite, it harms the host in terms of handling other infections.

#### ***How do you minimize the parasites' damage?***

Having a good comprehensive parasite control program for the entire herd is the first step. Deworming the cow herd before they enter clean pastures will help keep the parasite load low in the herd and keep the number of parasite eggs on the pastures to a minimum. The use of effective products will also have a positive impact. Your veterinarian can advise you on the use of appropriate products and the timing of use in your herd.

#### ***What are the best dewormers to use?***

Again, your veterinarian can best advise you on this topic for your herd's particular situation. However, I recommend using the brand name products at this time. There have been a number of situations in the recent past where generic ivermectin products have been associated with significant parasitism, i.e., the generic ivermectin were used and clinical problems remained. If you have any indication that a dewormer did not work have your veterinarian investigate the problem and analyze fecal samples to determine if patent parasitic infections are present.

#### ***How do trace minerals affect the animal's immune system?***

Many trace minerals and vitamins are now referred to as "antioxidants". As part of their antioxidant function they are very important in the immune system. In California, most of the beef cattle are deficient in either Se or Cu (or often both) unless they are supplemented. These minerals are very important in the calves' immune system for a normal response to vaccines and to ward off diseases such as pneumonia. Also, neither Se nor Cu are well transferred to the calf via milk, so near weaning the calves are often at their lowest level in terms of Se and Cu—at greatest risk for deficiency.

#### ***How do I know if my calves are deficient?***

A few blood samples taken from your calves at or near weaning will tell the story. They can be analyzed for the

trace minerals and will reflect how well your supplementation program is working. There are a number of effective ways to supplement Se and Cu and your veterinarian can help you work through the options that will work best for you.

### ***What's the bottom line?***

With regard to handling vaccines—make sure your refrigerator and vaccine storage system is working. Be sure to store your vaccines and other animal health materials according to label instructions. For vaccines this is usually between 35 and 45° F. For parasite control—use brand name products recommended by your veterinarian at an appropriate time to make sure calves to be vaccinated are not heavily parasitized. With regard to trace minerals—have a good supplementation program that includes occasional monitoring of calves' blood levels to be sure the program is working efficiently. Strengthen these weak links and combine them with good BQA practices and your calves will be healthier with minimal disease problems.

John Maas, DVM, MS Diplomate, ACVN & ACVIM, Extension Veterinarian  
School of Veterinary Medicine, University of California-Davis

As a side note, at this year's Cattle Industry Convention and Trade Show two were recognized for their work on BQA. Jim Warren of 101 Livestock Inc. was the beef industry person recognized out of the entire United States. California beef producers need to continue our good work with BQA and if you are not already certified, please consider taking the short course when it is offered next.

## **Maternal Diets are Forever**

Beth Burritt, BEHAVE Program  
Utah State University

Obviously, maternal diets are crucial to the birth of healthy offspring. But did you know that the diet of the dam might have life-long health and reproductive impacts on her offspring? Cattle and sheep often forage on poor quality dormant rangeland in fall and winter causing them to lose large amounts of weight from early to midpregnancy. Even if these animals are supplemented near the end of pregnancy, damage to the health and growth of their calves and lambs may have already happened.

In a study conducted at the University of Wyoming, ewes fed a restricted diet (50% of requirement) from day 28 to 78 of pregnancy had lambs with enlarged hearts, decreased kidney function and less muscle mass compared to lambs born to ewes fed a normal diet during pregnancy.

The study has human implications as well. Lambs born with decreased muscle mass were less able to process glucose leading to problems with diabetes and obesity later in life.

Proper diet at the end of pregnancy has long-term implications for replacement heifers as well. In another study conducted at the University of Nebraska, cows in their third trimester of pregnancy grazed dormant upland range in the Sandhills. Cows were either not supplemented (NS) or fed a pound of a protein supplement per head three times per week (PS). Heifers from PS cows were heavier at weaning, prebreeding, pregnancy diagnosis and before their second breeding season compared with heifers from NS cows. Also, heifers from PS cows had higher pregnancy rates (93% vs. 80%) and more of them calved during first 21 days of their first calving season (77% vs. 49%) compared with heifers from NS dams.

## **Carbon Sequestration on Rangelands**

Carbon sequestration has been a topic of interest lately. Whether you believe in global warming or not, there has been an increase in carbon dioxide in the atmosphere. Carbon credits are being sold. Are rangelands a good way to store carbon? Is there any possibility to sell carbon credits for your ranch? There are many unknowns, but research has been providing some answers to rangeland's potential.

More research has been done on perennial systems than annuals, and common thinking was that annual grasses would not be able to store as much carbon as perennial grassland since roots are shallower. However a review of research projects in California by Whendee Sliver, a professor at UC Berkeley, has provided some insight.

Regardless of the system (annual or perennial), there is a relationship between climate and carbon storage as well as type of soil. Cool, moist climates and clay soils typically have the largest soil carbon. With California's Mediterranean climate, our rangelands are set to have cool, moist climate during forage growth. Moderate forage production typically has more soil carbon as well.

Annual grasses typically have shallow roots, and it has not been believed that carbon could be stored at deep levels. However California rangelands were found to have carbon stored to similar depths as perennial grasslands. The majority of the carbon was found stored in the top 8 -16 inches, but there was an increasing carbon content up to about 40 inches. Some of the annual grasses were found to have up to 30% of their root mass below 12 inches. Deeper storage of carbon in the soil profile can offset increasing carbon dioxide in the atmosphere.

Oak woodlands add more carbon to the soil. Annual grasses have been shown to have carbon levels down to 40 inches, oaks can store carbon down to 80 inches because of their deeper roots. Oak woodlands and savannas (a patchy appearance of oak trees) tend to also have higher levels of soil carbon than grasslands. The deeper roots allow oaks to more completely utilize all of the available water, and therefore store and keep more soil carbon. Coastal rangelands with other woody species also have been shown to increase soil carbon. However an increase in woody species results in a decrease in forage available to livestock.

So are there any management practices that can help increase soil carbon? Moderate stocking rates have been shown to significantly increase soil carbon in perennial grasslands. Timing of grazing affects composition, and can favor vegetation with deeper roots. There may be more management practices that can affect soil carbon in California systems that research has not discovered.

Want to learn more and ask questions from an expert – then be sure to mark March 2<sup>nd</sup> on your calendar and plan to attend the Oakdale Livestock Forum. Bill Stewart from UC Berkeley will be presenting on carbon sequestration on rangelands. In addition, Frank Mitloehner will also discuss livestock and air quality.

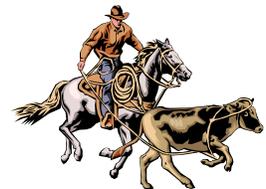


## 58<sup>th</sup> Annual Oakdale Livestock Forum

March 2, 2010

Oakdale Community Center

110 South Second Street, Oakdale, CA 95361



This meeting is sponsored by the University of California Cooperative Extension, the California Beef Cattle Improvement Association and the Calaveras, Tuolumne and San Joaquin/Stanislaus Cattlemen's Associations.

9:30 - 10:00 a.m. **Registration / Opening Remarks**

10:10 a.m. AgriTourism: What Options Do I Have?

*Holly George, Livestock-Natural Resource Advisor, Plumas and Sierra Counties*

10:40 a.m. Capeweed Risks and Opportunities in Weed Management

*Diana Waller, NRCS Stanislaus County*

11:00 a.m. Range Seeding: Clover varieties

*Theresa Becchetti, Livestock-Natural Resource Advisor, Stanislaus and San Joaquin*

11:15 a.m. Passion for the Land: Amplifying Rural Voices

*Holly George*

12:00 p.m. **Barbecue Lunch** / Prepared by the San Joaquin/Stanislaus Cattlewomen's Association

12:45 p.m. Digital Stories

1:00 p.m. Carbon Sequestration: Facts and Myths for Rangelands

*Dr. Bill Stewart, UCCE Forest Management Specialists*

1:45 p.m. Clearing the Air: Livestock's Contribution to Climate Change

*Dr. Frank Mitloehner, UCCE Livestock Systems Air Quality Specialist*

2:45 p.m. Pinkeye Treatment and Prevention

*Dr. John Maas, UCCE Veterinary Specialists*

3:30 p.m. **Closing Remarks**

# **58<sup>TH</sup> ANNUAL OAKDALE LIVESTOCK FORUM**

*REGISTRATION FORM*

**Tuesday**

**March 2, 2010**

**110 South Second Street**

**Oakdale, CA**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Daytime Phone: (\_\_\_\_) \_\_\_\_\_ Number Attending \_\_\_\_\_

Refreshments and lunch will be provided to all participants.

**Please return this form with payment of \$10.00 for each participant. Enclose a check or money order payable to U.C. Regents. Payments & Registration are due by February 19<sup>th</sup>, 2010 (or pay \$15.00 at the door).**

**Mail registration to:**

**Theresa Becchetti, Livestock Advisor**

**U.C. Cooperative Extension**

**3800 Cornucopia Way, Suite A**

**Modesto, CA 95358**

**(209) 525-6800**

*A Calaveras, San Joaquin, Stanislaus & Tuolumne Counties educational program*

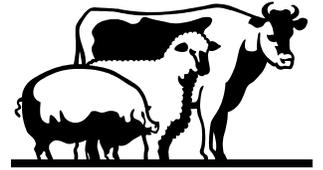
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**February 2010 ♦ Volume 16 No. 1**

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- ★ **Carbon Sequestration on Rangelands**

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