UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION TULARE COUNTY

UCCE

Beef Roundup

September 2000

The Use of Livestock Medications

Ralph Phillips
Farm Advisor, Kern County

Many producers are very aware of the proper use of livestock medications, but all producers must be aware of the proper use of medication according to the label. I would like to relay an incident that happened in another state. A state extension veterinarian relayed the story.

A cattle producer was using nitrofurazone puffers to treat calves for pinkeye. The FDA was called in on the producer's use of medications and found a problem. The original nitrofurazone puffer was labeled for food animals. The producer had run out and picked up a new supply of puffers at a farm store outlet. The containers for the old and new puffers looked very similar. The problem was that the FDA had changed the label on the puffers. The new puffers could not be used on food animals. The producer had to make arrangements for the treated calves to be buried or incinerated. He could not send the animals to be rendered.

The producer was lucky in that he only lost the value of the treated calves; he could have been fined heavily for using a non-food animal medication on a food animal.

The point of this discussion is to read the label on any medication to be used on food animals and follow the label closely. Using medication for purposes not described on the label is illegal. Also, giving larger doses than the label states is illegal. It appears that the FDA is becoming more strict on the enforcement of using labels for food animal medications. ***Again, read the label carefully before using any medication on food animals.***

Riparian Grazing Project

Rangeland managers often hear comments and opinions about the correct and incorrect methods for grazing to ensure riparian success.

Over the past several decades, site-specific research has been conducted on most types of management methods under many range types and conditions. Despite this, the manager is often still left with the question of which grazing management tools will safeguard riparian areas for a specific ranch or allotment.

This is a question that both the CCA and the University of California Cooperative Extension (UCCE) have faced and are addressing through the Riparian Grazing Project.

This statewide study of rangeland riparian areas simultaneously examines riparian area health, specific-site watershed conditions and site-specific management. For instance, the management survey includes 60 questions that pertain to both past and present grazing methods.

"The project is focusing on real-world rangeland riparian areas and management in an attempt to make the results more applicable to answering manager's questions," said Dr. Ken Tate, UCCE Rangeland Watershed Specialist and project developer.

The project is entering its second year, with more than 100 sites enrolled in the project so far. The target for the project over the next two years is to increase that number to 300. Not only is this project creating results for managers, but it is also getting enthusiastic support from groups and agencies beyond the CCA and UCCE.

"The California Department of Forestry and Fire Protection, U.S. Environmental Protection Agency, California Department of Fish and Game and numerous other groups have been supportive and are glad to see the livestock industry taking a lead role in identifying grazing management that supports healthy riparian areas," Tate said.

The U.S. Bureau of Land Management and the U.S. Department of Forestry's local and regional offices have contributed much of their time and energy to the project. Theresa Ward became project coordinator in July 1999 and Dr. Rob Atwill, School of Veterinary Medicine, UC Davis, then joined the project as a co-project leader. UCCE Range and Livestock Advisors, livestock industry leaders and ranchers throughout California have been incredibly active and supportive in the project and crucial to its success thus far, Tate noted.

History

Planning for the project started in 1998, following Tate's involvement in a science team that reviewed literature on the impacts of grazing in the Sierra Nevada. From this literature review they found that, although there was a huge amount of research on the subject, many of the daily questions asked by rangeland managers were not well answered. This lack of answers led to the Riparian Grazing Project.

The CCA took a lead role by helping to jump-start the project when a joint resolution was made from the Public Lands and Range Improvement Committees at the 1998 annual convention. Funding from the CCA Memorial Livestock Foundation was critical in getting the project off the ground.

The project now has more than $50,000 in funding from the California Department of Forestry and Fire Protection, U.S. Bureau of Land Management, the UC Renewable Resources Extension Act Program and UC Division of Agriculture and Natural Resources to complete the three-year program by fall 2002.

The scope and products that were expected from the project have increased since it was initially proposed to CCA in 1998, mainly due to the efforts of Theresa Ward, Tate said. The project coordinators originally planned to examine only 20 to 50 riparian areas, but they have examined 100 areas. The new goal is to examine 300 sites and they plan to reach 200 by the end of this summer. This large number of sites will give a more complete picture of rangelands across California and allows for more concrete conclusions when the complete data set is analyzed.

"By examining so many riparian areas, we are confident we can produce information on the effects of riparian grazing practices that are unique to certain parts of the state or types of ranges," Tate said. "The rancher or manager can then use these results to make informed management decisions about their riparian grazing system."

"There will be no one-size-fits-all solution out of this work. Rather, there will be a set of real world, data driven recommendations demonstrated to be correlated with high riparian health under specific watershed conditions and past management scenarios," Tate said.

The Future of the Project

Using the information collected in this project, UCCE also plans to develop a simple Rangeland Riparian Health Assessment that ranchers can use to determine the current condition of their riparian areas.

They also plan to develop a simple set of guidelines to allow ranchers to monitor riparian area response to grazing over time. For example, these guidelines will walk managers through the steps of documenting pre- and post-grazing changes so that they can observe the impacts of their decisions over a period of time.

These methods will continually be incorporated into the existing Rangeland Water Quality short course as well as field days and seminars throughout the state and nation.

"The key to all of these methods is that they will be developed from real data, field tested, and kept as simple and time-efficient as possible," Tate said.

The final product will be a *Handbook of Riparian Friendly Grazing*, which reports all the results of the project, provides examples, and will be designed specifically for the grazing manager. This handbook will include the riparian health assessment and guidelines for monitoring riparian areas and will incorporate all the funding of the research.

The handbook will consolidate the results in a way that people can understand. The individual rangeland results in the handbook and other published material will be confidential and the information displayed will only include area specific or rangeland type results.

The project has a lot of merit for it will be looking at streams in the annual rangeland as well as perennial rangeland. Also, it will be comparing the different riparian evaluation systems used by different agents.

Producers do not have to have a stream that runs the year round to participate. The only criteria is that the stream is running at the time of evolution. This project is an excellent chance to have someone evaluate intermittent streams on your property.

If you have any questions or interest in the project, please call Ralph L. Phillips at 661-868-6219. The following discussion was taken, in part, from the California Cattlemen's Association magazine.

Control Measures for Pinkeye in Cattle

Wayne Jensen
Farm Advisor, Santa Barbara County

I received this information from Dr. Lisle George, from the School of Veterinary Medicine, at UC Davis. He has an active research program, addressing this disease, and provided the following information at the annual beef field day at the Sierra Foothill Research & Extension Center (SFREC).

Infectious bovine keratoconjunctivitis (IBK), commonly known as pinkeye, is a serious disease in California beef cattle, affecting more than 90 percent of calves in some herds. IBK causes red, teary eyes, and ocular ulcers. The infection suppresses appetite and weight gain, resulting in economic loss. Healed infections leave scarring, which rarely leads to total blindness but affects the value of purebred breeding animals and those intended for the show ring.

The infectious agent is the bacterium *Moraxella bovis*. Cattle older than one year become quite resistant to IBK but often harbor the bacterium in their tears and nasal secretions. The disease is often spread by the face fly, which is MOST abundant from midsummer to early autumn. Another factor influencing the seasonal occurrence of pinkeye is a large number of young, susceptible cattle in the herd.

M. bovis can be treated with a number of antibiotics. Most treatment recommendations, however, are based on anecdotal field observations. Over several years, Dr. George conducted scientifically controlled trials to find the most cost-effective way to treat pinkeye. Recently, he also tested a vaccine candidate for IBK developed in his laboratory.

While the laboratory work was carried out at the Davis campus, the Sierra Foothill Research and Extension Center was chosen for the field work because pinkeye is endemic among the SFREC cattle, affecting most of the weaning calves each year. While this high incidence is not welcomed by management, it provided an excellent research opportunity.

He devised four different trials testing different antibiotics and combination of antibiotics as well as different dosages and application methods. Each trial consisted of three groups of about 20 to 40 calves. Two groups received treatment, and the third group was left untreated as a control. Over the past three years, he also began a separate study with his experimental vaccine.

Treatments Studied

(1) Oxytetracycline versus *furazolidon*

- Intramuscular injections of a long-acting oxytetracycline (LA-200, 20mg/kg body weight) 72 hours apart.
- A topical application of furazolidone spray daily for 3 days.

(2) Penicillin G versus oxytetracycline/tetracycline

- Injecting Procaine penicillin G just beneath the thin layer of tissue on the surface of both eyeballs; repeated daily until healed.
- Injecting oxytetracycline intramuscularly (LA-200, 20 mg/kg body weight) on day 1 and 3; also feeding oxytetracycline (2 grams/calf daily) from day 4 to day 14. Re-treated if ulcers recurred or occurred in previously unaffected eye.

(3) Penicillin G combined with dexamethasone

- Injecting procaine penicillin G (1 ml) with a fine needle through the skin of the upper eyelid so that a small "blip" was visible just under the tissue of the inner eyelid.
- Injecting penicillin G the same way together with 1 ml dexamethasone.

(4) Florfenicol

- Injecting florfenicol (Nuflor, 20 mg/kg body weight) intramuscularly on days 0 and 2.
- Injecting one dose of florfenicol at 40 mg/kg on day 0.

The following is a summary of the results of these treatments.

1) The calves treated with oxytetracycline healed faster, had fewer diseased eyes, smaller corneal ulcers and fewer recurrences. *M. bovis* was isolated from ocular secretions less frequently than from the control group. The furazolidone-treated group did better than the control, but did not do as well as the oxytetracycline-injected group.

2) Both penicillin and oxytetracycline/tetracycline combinations were similarly effective in treating acute cases. Both treatments resulted in shorter healing times and decreased severity and extent of corneal ulcers over the controls.

   The tetracycline combination was more effective in preventing recurrences and new cases of the disease than the penicillin.

3) With or without dexamethasone, penicillin neither speeded healing nor reduced the size of corneal ulcers. Injecting the drugs through the upper eyelid seems to be ineffective.

4) Calves in both florfenicol treatment regimes healed faster and had fewer lesions and recurrences than controls.

Based on this work, Dr. George provided the following recommendations:

Injecting 20 mg/kg body weight of long-acting oxytetracycline intramuscularly is the most effective treatment for pinkeye. Two injections over a two- to three-day period are recommended. ***Long-acting oxytetracycline should be used sparingly in herds with endemic anaplasmosis because treated animals lose their immunity to anaplasmosis.***

Intramuscular injections of oxytetracycline combined with 10 days of oral tetracycline can reduce the incidence of pinkeye for the entire summer. This long-lasting protection may be desirable in herds with very high incidence of the disease.

Procaine penicillin G is an effective treatment. When using this option, calves should be treated

daily for at least 3 days. The penicillin should be injected directly under skin of the eyeball, not into the upper eyelid. Dexamethasone did not improve the effectiveness in our trial.

Florfenicol (at 40mg/kg once or 20mg/kg twice 24 hours apart) is an effective treatment option.

Vaccine Tests and Results

In his lab, Dr. George has isolated and purified a cellular factor (cytotoxin) from *M. bovis* that may stimulate an immune response and protect calves from infection with the bacterium. He combined the cytotoxin with three different adjuvants–water-oil emulsion, immunostimulating complexes (ISCOMS) and aluminum hydroxide–into experimental vaccines. Trials have proven the aluminum hydroxide preparation to be ineffective in protecting against pinkeye. At SFREC, the ISCOMS plus the toxin preparation yielded the lowest incidence of corneal ulcers and other clinical scores. Those ulcers that did appear seemed to heal more rapidly after treatment (with oxytetracycline) than those in control animals. However, ISCOMS alone also protected at low levels. Calves vaccinated with the water-oil vaccine preparation had worse disease than the controls.

He reported that great progress was made during 1998-99 in his investigations of the *M. bovis* cytotoxin and its potential use in a vaccine. Specifically, he successfully cloned the *M. bovis* cytotoxin gene. The vaccine demonstrated effectiveness in lab tests with rabbits. Proposed research will specifically address whether the novel recombinant *M. bovis* cytotoxin vaccine can prevent/reduce the severity of IBK.

Source: ***CENTRAL COAST AGRICULTURE HIGHLIGHTS - August 2000***

Anthrax in Nevada

State Veterinarian Reports Anthrax Outbreak

Thirty cows at a ranch north of Gerlach died as a result of an outbreak of the deadly disease anthrax. Nevada Department of Agriculture State Veterinarian, Dr. David Thain, reported that the outbreak occurred on a ranch northwest of Gerlach in Washoe County. "The Department's Reno Animal Disease Laboratory isolated a pure strain of anthrax," said Thain. Anthrax is an uncommon, highly contagious disease of livestock. "The spores of this bacteria can live in the soil for many years" continued Dr. Thain. "The current outbreak is believed to be due to recent ditch cleaning that released soil borne spores onto pasture grasses. The cattle became infected when they ate the grass." Anthrax is also recognized as a potential weapon used by bio-terrorists and was a significant threat in the war with Iraq in the early nineties.

Press release Wednesday, August 16, 2000 (David Thain, DVM)

Notes on Anthrax

1) What is anthrax?

a) Anthrax is a disease of animals and humans caused by an encapsulated, spore-forming bacteria, *Bacillus anthracis.*

i) Anthrax bacteria grow within the body tissues of infected animals.

(1) Sporulation occurs when the organism growing in the body tissues is exposed to the atmosphere.

(2) As a result, *B. anthracis* is found in the soil as a resistant spore for years.

b) There are areas of the world, including Nevada, in which anthrax is endemic. This results in chronic environmental contamination with resulting animal and human disease.

i) *Bacillus anthracis* is found most commonly in areas with neutral to mildly alkaline soil, following drought and

flooding, or following excavations that disturb the soil and bring *B. anthracis* spores to the surface.

ii) Anthrax is transmitted while animals graze in areas that previously experienced the disease and the spores contaminate the water or forage.

iii) Anthrax can be transmitted to neighboring ranches by birds, insects, or carnivorous predators.

2) What are the clinical signs of anthrax?

a) There are three forms of the disease.

i) Peracute.

(1) Death without any warning signs;

(2) Cattle, sheep and goats are the animals most commonly affected with the peracute form of anthrax.

ii) Acute/subacute.

(1) Fever, depression, convulsions, and labored breathing;

(2) Animals may hemorrhage from the mouth, nose, and anus;

(3) Death usually occurs within 24 hours of first signs of anthrax.

iii) Chronic.

(1) Swelling of the tongue and throat are noticed with chronic anthrax;

(2) The animals exhibit labored breathing and fluid discharges from the mouth;

(3) Death from asphyxia may occur;

(4) Most common in swine but also observed in horses, dogs, and rarely in cattle.

b) Necropsy findings (peracute and acute/subacute)

i) Rapid decomposition of the carcass;

ii) Blood-tinged discharge from the body openings;

iii) Hemorrhage and edema in many parts of the body;

iv) An enlarged, pulpy spleen having a "blackberry jam" appearance.

3) How can anthrax be diagnosed?

a) If anthrax is suspected in a field case where the animal is found dead, it is best not to perform a necropsy since doing so allows the bacteria to sporulate when exposed to oxygen (ambient air) and thus contaminates the premises.

b) Call a veterinarian as soon as possible. If you cannot find an available local veterinarian, contact a state veterinarian, CDFA Animal Health Branch, (559) 237-1843.

c) The specimen must be fresh. The effects of putrefactive bacteria in an unopened carcass at temperatures of 77°-86°F decimates the anthrax and recovery is difficult.

d) Blood can usually be collected in a disposable syringe and transported to the laboratory.

e) It has been suggested that an ear be removed and submitted. **Diagnosticians have found the ear to be unsatisfactory because the ear in cattle is relatively avascular.**

4) What is usually done for a farm or ranch in which there is an anthrax outbreak?

a) Remove the animals from the source of infection.

b) Antibiotic treatment should be initiated for the survivors.

i) Penicillin and oxytetracycline have been reported most consistently as being effective;

ii) Therapy should be continued for at least 5 days and the daily dose administered in two equal parts at 12-hour intervals for the first 2 days.

c) There is an effective vaccine. **Vaccines are for prevention and not for treatment**.

5) How can anthrax be prevented?

a) The Sterne vaccine (Anthrax Spore Vaccine, Colorado Serum) is reported to induce immunity within 7-14 days. It is a live avirulent vaccine and is inactivated if injected at the same time that antibiotic is administered.

i) It is usually recommended to repeat vaccination in two weeks;

ii) Yearly vaccination is recommended just before the anticipated time of exposure.

iii) It may not be economically justified to vaccinate cattle or other livestock in non-endemic areas;

iv) Consult with neighboring ranchers, local veterinarians, or the state animal health officials to determine if a ranch or farm is classified as an endemic anthrax area. The spores are infective for countless years;

v) Food animals should not be vaccinated within 60 days of slaughter.

b) Prevention also involves preventing the release of the organism into the environment.

i) Animals that have died from anthrax should be burned or deeply buried and covered with lime;

ii) If an animal is necropsied in the field, the carcass should be destroyed as discussed, the instruments autoclaved, and the surrounding soil should be removed and buried with the animal or decontaminated with a 5% solution of lye.

c) Vaccination is the method of choice for preventing future cases of anthrax on affected ranches.

6) How is anthrax transmitted to humans?

a) Bacillus anthracis spores can gain access to the human body resulting in different symptoms of the disease.

i) The most common form is cutaneous anthrax;

(1) Results when a penetrating traumatic injury results in deposition of spores under the skin.

ii) A second form of the disease is caused by inhalation of spores from contaminated dust, wool, or hair;

(1) After inhalation the spores localize in the lymph nodes associated with the lungs;

(2) Septicemia follows;

(3) Despite treatment, death usually follows within 24 hours.

iii) A third form of the disease is intestinal anthrax.

(1) Results from ingestion of spores from infected animals, ingestion of raw meat, blood or inadequately cooked meat.

b) Human-to-human transmission is possible but unlikely.

c) If the disease is not in its advanced stages, antibiotic treatment is effective. Penicillin or ampicillin are drugs of choice in humans.

Bill Kvasnicka, DVM
Extension Veterinarian
College of Agriculture, Biotechnology and Natural Resources, University of Nevada, Reno

Control of Livestock Epidemic Outbreaks Project

Jim Sullins
County Director, Tulare County

The report of anthrax in Nevada highlights a joint project being conducted by the University of California School of Veterinary Medicine, CDFA Animal Health Branch and USDA APHIS Veterinary Services. This project is an effort to document the locations, numbers, and movement patterns of livestock so that should we have an emergency such as an anthrax outbreak, the animal health agencies could properly coordinate their efforts to minimize the spread, and if possible contain the outbreak. With today's increased travel of both people and animals, the risk of an exotic outbreak is increasing.

Dr. Jim Simm, USDA APHIS, has responsibility for collecting the data on beef cattle in Tulare, Kings and Fresno Counties. He has met with the TCCA Board of Directors and they have approved the format and participation in this survey. You may receive a call from him soon; however, should you want to participate sooner, you can call him at (559) 237-1843; cell phone (559) 960-8909; pager (877) 987-8983.