

***PINKEYE—MAXIMIZING YOUR CHANCES TO MINIMIZE THE EFFECTS OF THIS FRUSTRATING DISEASE***

As was the case last year, the drier than normal 2012-2013 winter is likely to translate into a particularly bad pinkeye season. Even though we understand a lot about this frustrating disease and despite the fact that it has been studied for many years by many university researchers, California cattle producers still suffer significant economic losses due to pinkeye annually. In this month's vet views we will summarize the most recent research related to pinkeye and discuss ways to minimize losses from this disease. We hope that this information will assist our state's cattle producers in making sound decisions that will help minimize economic losses due to pinkeye.

**What causes pinkeye?**

Pinkeye, also called infectious bovine keratoconjunctivitis, is an infection and inflammation of the eye that involves the cornea and surrounding eye tissue which can, in severe cases, cause permanent blindness if the eyeball ruptures. The cause of this economically important eye infection in cattle is a bacterial agent called *Moraxella bovis*.

**Does *Moraxella bovoculi* cause pinkeye?** Some of you may have heard of *Moraxella bovoculi*. This organism was first isolated from eyes of pinkeye affected calves in northern California in 2002. Researchers at UC Davis subsequently discovered that this organism was a new species of bacteria. At this point no studies have proven that *M. bovoculi* can actually cause pinkeye in cattle, however, some research suggests that it may cause eye irritation and be a risk factor for pinkeye much like Mycoplasma or Infectious Bovine Rhinotracheitis (IBR) virus.

**What effects do trace mineral deficiencies have on pinkeye?**

The immune system can only function appropriately against foreign invaders such as bacteria when the body has an adequate supply of essential minerals. You should always consider your trace mineral supplementation program for your beef herd paying special attention to selenium and copper, 2 elements that are vitally important in the overall immune "health" of your cattle.

Adult cattle and calves need these trace elements in order to develop adequate immune responses to *Moraxella* antigens, whether they arrive in the form of a vaccine or a natural infection.

### **Can vaccination against *Moraxella* species prevent pinkeye?**

Results of using pinkeye vaccines by producers and veterinarians are mixed and no vaccine has been shown to be 100% protective. However, when the *M. bovis* in your herd has relatedness to the vaccine strains of *M. bovis*, it is likely that you can improve your chances of seeing a benefit from vaccination. Because pinkeye is a multifactorial disease, you should also focus attention on other aspects of pinkeye control besides just vaccination. These other areas include weed control (see below), fly control and trace minerals.

### **When should I start vaccinating against pinkeye?**

We recommend that you begin vaccinating at least 4-6 weeks ahead of the time when you typically might expect to see your first pinkeye cases. By vaccinating before you see the first pinkeye case in your herd you allow the calf's body enough time to develop the necessary antibody responses against *Moraxella*. If you wait until you have your first pinkeye cases before you vaccinate, you will probably not see the best responses to your vaccine program.

### **What vaccines are currently available against *Moraxella bovis*?**

Multiple vaccines are commercially available for controlling pinkeye, however, no vaccine has been shown to protect against all strains of *M. bovis*. Because of strain variability, one vaccine may work well for you, but not for another ranch in your particular area (or vice versa) if the strain of *M. bovis* in the two herds are different. Commercially available vaccines are made of inactivated cultures of *M. bovis* (bacterins); in some vaccines Clostridial antigens are also included. Some of the commercially available vaccines require a single dose whereas others require 2 doses.

Listed below are 2013 commercially available pinkeye vaccines:

Piliguard® Pinkeye + 7\*

Piliguard® Pinkeye-1 Trivalent

Piliguard® Pinkeye TriView®

Maxi/Guard® Pinkeye Bacterin

I-Site® XP

Pinkeye Shield® XT4

Ocu-guard® MB-1

20/20 Vision® 7 with Spur® \*

Alpha-7/MB™-1\*

SolidBac® Pinkeye IR/PR

\*also protect against some Clostridial organisms

### **What vaccines are currently available against *Moraxella bovoculi*?**

Currently there are no commercially available vaccines against *M. bovoculi*. In order to vaccinate against *M. bovoculi* (or other strains of *M. bovis* that are not present in one of the commercially available *M. bovis* vaccines) you will need to work with your veterinarian and a vaccine manufacturer to have an autogenous vaccine made against the specific organisms that are isolated from pinkeye cases in your herd. We recommend that you contact your veterinarian for vaccine advice if you have *M. bovoculi* infections in your herd or if a commercially available *M. bovis* vaccine is not working for you.

### **What other prevention strategies can I use against pinkeye?**

Another aid in the prevention of pinkeye is to clip pastures before turning cattle out if grass is too long and already headed out. This will decrease irritation to the eyes that can initiate a pinkeye outbreak. The irritation of dust, plant pollen, or weed seeds can promote tearing from the eyes and may result in shedding of the bacteria (*M. bovis*; *M. bovoculi*) by “carrier cows”. These carriers may harbor *M. bovis* or *M. bovoculi* without actually showing signs of disease and serve as sources of bacteria that can then be spread by flies to susceptible cattle, especially calves.

Eye irritation can be caused by tall grasses as mentioned above; however, another common plant product (foxtails) can cause very severe irritation. Foxtails (or other weed seeds or awns that stick in the eye) become lodged in the eyes of cattle and cause significant damage, irritation, and watering (tearing) of the eye. This can lead to further spread of *Moraxella* bacteria. Face flies that are attracted to this tearing can easily spread the pinkeye organisms between animals. Cattle examined for pinkeye should also be examined for the possible presence of these foxtails or plant awns, and if found, they should be removed. One clue to the presence of foxtails is the location of the damage in the eye. With uncomplicated pinkeye the damage usually begins in the center of the eye and spreads outward. With a foxtail or other foreign body the damage will be “off-center”, starting at the edge of the cornea.

### **Which antibiotics are the most effective for the treatment of pinkeye?**

Oxytetracycline (BIO-MYCIN® 200 or Liquamycin® LA-200®) and tulathromycin (Draxxin®) are labeled for the treatment of pinkeye in cattle. Experimentally, florfenicol (Nuflor®) has also been shown to be effective at treating cattle pinkeye. The use of this drug would be considered “off label” and would require a veterinarian’s prescription.

Another very common pinkeye treatment is the injection of penicillin under the bulbar conjunctiva. Whenever giving penicillin injections under the conjunctiva of the eye, you should wear gloves and have the calf’s head safely restrained with a halter. These injections can be difficult to do correctly and potentially dangerous to the calf if the needle goes into the eye instead of the conjunctiva.

To achieve good results, give 1 ml (1 cc) of penicillin under the conjunctiva covering the sclera (white part of the eyeball) once a day in both eyes for at least 3 days. If you are using procaine penicillin, place several drops topically on the eye first, wait 1-2 minutes and then place the needle under the conjunctiva. Procaine is a local anesthetic that can help numb the eye before placing the needle. This method can achieve fair to good results, but is more difficult and potentially more dangerous to the animal than simply giving an intramuscular or subcutaneous dose of a systemic antibiotic.

### **What treatments for pinkeye are illegal?**

For many years Furox sprays or powders (Nitrofurazone, Furox®, Topazone®, NFZ Puffer, P.E. 7, etc.) placed into the eye were used for the treatment of pinkeye. In 2002 this treatment became illegal in cattle and is illegal whether or not you have a prescription or if a drug supply company sold you a furacin-containing product. Never use furacin-type drugs in cattle.

### **Are eye patches OK to use?**

Eye patches can help keep a calf with pinkeye more comfortable in bright sunlight. It is important when using an eye patch to leave the area at the bottom open for drainage. In addition, you should check the eye under a patch at least 2-3 times a week. Just because you don’t see the eye under a patch does not mean that the eye is healed.

### **Can I become a *M. bovis* carrier and spread the disease within my herd?**

Yes, you can transmit *Moraxella* bacteria from one animal to another through your hands, clothing or equipment you are using on infected cattle. Pinkeye causing bacteria will cover your hands and clothes which may help spread

the disease within your herd if you are not careful. Always wear disposable gloves when treating or examining infected eyes. Also, use of a new disposable needle is recommended whenever injecting your cattle. Because pinkeye agents can contaminate your clothing it is recommended that you treat pinkeye or potential pinkeye cases **after** you have done all other routine animal handling chores on healthy animals. Alternatively, change clothes after handling pinkeye cattle and before handling normal cattle, or wear a plastic apron that you disinfect between animals.

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