



# The Veterinary Link

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## Identify eye diseases of cattle

The two most common eye problems in cattle are pinkeye and cancer eye. Pinkeye is a painful eye disease that is found throughout the world in most, if not all, breeds of cattle; however, it is more common with certain breeds and certain environmental conditions. Herd outbreaks of pinkeye may occur at any time of year, but the incidence is highest during summer months.

### Pinkeye problems

The germs causing pinkeye generally follow another injury to the eye caused by bright sunlight, dust, wind, tall grass or weeds, plant seeds, pollen, flies, or diseases such as infectious bovine rhinotracheitis (IBR). If these injuries are not followed by an infection with pinkeye germs, the animal will only have a short period of irritation as evidenced by excessive tearing. In contrast, if injured eyes become infected, true pinkeye can result. A veterinarian may need to examine affected cattle to determine which eye disease is the problem.

Several different organisms cause

pinkeye infections, the most common being *Moraxella bovis* (*M. bovis*). This germ has hairlike structures, called pili, which enable the organism to become attached to the surface of the eye. In addition, *M. bovis* produces an enzyme that destroys cells on the eye's surface. It can be transmitted to other cattle by direct contact with eye and nasal discharges, or it may be carried from one animal to another by face flies.

Face flies are involved in the spread of pinkeye because they are very irritating to the eyes of cattle, making them more susceptible to infection. Flies pick up the germ organism while feeding on the faces of infected animals, spreading it to the eyes of other cattle as they move through a herd. Calves are more susceptible to pinkeye than older animals, partly because they have not developed immunity and also because their eyes are physically closer to dust, pollen, and tall grass or weeds.

Generally, cattle that have been infected with a particular type of *M. bovis* will not develop the disease

again for more than a year. However, there are various types, or families, of this germ, and immunity to one type does not mean the animal is immune to other types of the organism. In addition, a different germ, *Mycoplasma bovaculi*, can cause eye infections that look very similar or identical to pinkeye, and immunity to previous *M. bovis* infections will not protect against mycoplasma infections.

The earliest indication of pinkeye is increased tearing and excessive wetness around the eyes. When examined more closely, the inside lining of the eyelid and the white portion of the eye will appear red. As the disease progresses, the eye becomes cloudy or white. An ulcer often is formed in the center of the visual portion of the eye, and if the ulcer is deep enough, the eye can rupture. Without treatment, many animals will heal in three to six weeks. Some animals heal with no evidence of previous problems, while more severely affected individuals will have a white scar on the eye surface that may fade

over time. Eyes that have ruptured may become blind and extremely disfigured.

### Treating pinkeye

Antibiotic therapy and decreasing environmental hazards are the best methods of treatment. Most strains of *M. bovis* are susceptible to many available antibiotics that can be injected under the skin of the neck. Some veterinarians prefer to inject antibiotics into the eyelid. Covering the eye by gluing a cloth patch over the face or sewing the eyelid shut will help make the animal more comfortable by decreasing sunlight exposure. This also helps decrease the spread of disease by preventing flies from contacting the infected eye secretions.

Prevention and control of pinkeye involve reducing exposure to environmental risk factors such as dust, pollen, and tall grass and weeds through pasture management; reducing face fly burden through use of chemical pesticides; and isolating affected individuals from the rest of the herd. The number of animals affected during a pinkeye outbreak can be greatly reduced if affected animals can be identified early and sorted into a pasture away from the rest of the herd.

The fact that animals appear to be immune to *M. bovis* infection for up to 12 months after an infection and that older animals have a higher level of natural immunity would lead one to believe that vaccination would provide an effective method of prevention.

Experimental work has shown that animals vaccinated with one type of *M. bovis* will be immune to that type, but not to the others. Many vaccines on the market today contain several types of *M. bovis*. Although these vaccines have been shown to be partially protective, they may not be completely protective due to the ability of *M. bovis* to change type, the presence of other organisms, or environmental factors that allow the organism to overcome the animal's immune system.

### **Cancer eye in crosses**

Cancer eye is the general term for growths, or tumors, on or around the eye, more accurately called bovine ocular neoplasia. Some of these growths are benign and others malignant. Malignant growths will spread to other parts of the body and will invade surrounding tissue. Benign growths are not invasive and do not spread, but they can still cause problems with eye function.

It is important to identify cattle with eye tumors early. These animals can then be treated or sold for harvest as soon as possible. Advanced eye tumors will result in discomfort for the animal or condemnation at harvest, causing an economic loss to the producer. It may also create a poor public image for beef producers.

Exposure to sunlight increases the risk for cancer eye. Cattle are more likely to be affected if they have a white face, which reflects sunlight, and if they live at a high altitude or nearer the equator (where there are more daylight hours). Eye tumors are rare in Angus cattle but can occur in Angus-cross cattle with white faces. Within white-faced cattle, the risk can be reduced by selecting replacement heifers and bulls with pigment around the eyes.

Cancer eye is also more common in older animals, with the incidence peaking at 7 to 8 years of age. Some of the risk factors for cancer eye have a genetic component, and because the disease can occur frequently in some family lines, all affected animals should be culled and their offspring rejected as replacements for the herd.

Tumors on or around the eye start as small growths, with about half developing into malignant tumors. The growths can start as a plaque (a flat, white area), a papilloma (a wartlike growth), a keratoma (a horny growth on the eyelid) or a small ulcer on the eyelid. They can also arise very quickly without a noticeable early lesion. Some tumors will disappear, but this is more likely with small, early lesions than with more advanced tumors.

Plaques are white or pink growths at the edge of the colored part of the eye. On the eyeball itself, almost all tumors are located where the white joins the black part of the eye. Tumors of the eyelids most commonly begin on the third eyelid. On the upper and lower eyelids, the early lesions are known as keratomas. These small tumors are

often found on the lower lid, crusted over with scablike material.

Every time adult cattle are gathered, their eyes should be examined, and any cows or bulls with a growth should be separated from the rest of the herd for treatment. Eye tumors can be treated surgically, by use of freezing or heating techniques, or with a combination of techniques.

If an identified growth has already passed the early stages and the tumor is invading the surrounding tissues or other parts of the body, the animal should be humanely euthanized and not taken to market. Cattle with small growths on or around the eye will not be condemned at harvest if the animal is in good condition and there is no evidence the cancer has spread. However, an animal will be

condemned if the eye has been destroyed, if there is extensive infection in the area, if the animal is in poor body condition, or if the growth has spread to tissues around the eye or to other parts of the body.

