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PINKEYE

(Infectious Bovine Keratoconjunctivitis)

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Photo courtesy Russ Daly, South Dakota State University

Pinkeye, or infectious bovine keratoconjunctivitis (IBK), is a painful eye disease that is common in cattle throughout the world. The economic impact of IBK in the cattle industry results from a loss in production due to increased medical treatment costs and injury from extra handling, reduced weight gain, decreased milk production and devaluation of sale animals due to eye disfigurement.

The bacteria *Moraxella bovis* is one of the primary agents cultured in cases of pinkeye. However, other bacterial agents such as *Moraxella ovis* and *Moraxella bovoculi*, and mycoplasma species, among others, also have been isolated from cases of pinkeye.

Numerous physical factors, such as breed and age of the animal, ultraviolet (UV) light exposure, wind and pollen, and pasture conditions, also have been shown to influence the appearance of pinkeye. The presence of other infectious organisms in the tissues surrounding the eye, as well as concurrent upper respiratory infections, can cause the pinkeye problem to be much more severe.

EPIDEMIOLOGY

Pinkeye is an infectious eye disease that is found in nearly all breeds of cattle throughout the world. However, some evidence indicates breed-related differences in susceptibility. *Bos indicus* breeds, such as Zebu and Brahman, seem to be more resistant than *Bos taurus* breeds such as Hereford and Angus. Some evidence also suggests that breeds with little or no pigmentation around the eye have a higher incidence of the disease.

Summer and early fall are the peak seasons for pinkeye, although it has been reported in all seasons. This is the time when implicated bacteria can be recovered from cattle eyes at the highest rates. It also is the time when environmental factors that influence the development of pinkeye are at their peak.

M. bovis has different strains of and several different types within each strain. Each type of *M. bovis* has slightly different physical properties, yet all are capable of causing disease. Immunity to one type does not mean the animal is immune to the other types of the organism. *M. bovis* has the ability to switch from one type to another and, in doing so, is able to evade the immune response that the animal may have to infection.

Calves are much more susceptible to pinkeye than older cows or bulls, and animals that have been infected once are not likely to develop the disease again for more than a year. Environmental factors such as UV light, wind, dust, tall pasture grasses and weeds will lead to a higher rate of disease within a herd.

Face flies are a very important factor in the spread of the disease within a herd. Flies pick up and spread the organism on their legs while feeding on the area around the eyes. The interaction of risk factors such as higher daily environmental temperatures and fly pressure tend to make cattle congregate into tighter spaces, allowing for easier transmission of offending organisms.

The presence of other organisms in the conjunctiva, the pink inside lining of the eyelid and covering on the eyeball, may increase the severity of the disease.

CLINICAL SIGNS

The clinical appearance and rate of progression of the disease will vary from animal to animal. One or both eyes may be involved.

The earliest indication of a problem is an increase in tearing and squinting. Animals will have excessive wetness around their eye

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and down the side of their face, and be reluctant to open their eye. If both eyes are involved, the animal may be hesitant to move.

When examined more closely, the inside lining of the eyelid (conjunctiva) and the white portion of the eye (sclera) may appear red and puffy. As the disease progresses, the clear surface portion of the eye (cornea) may become cloudy or white. An ulcer may develop in the cornea. This is when the eye is most painful.

Healing occurs when blood vessels move into the normally clear cornea and the healthy corneal cells slide across the ulcer. If the ulcer is severe and deep enough, the eye can rupture.

Most infected eyes will heal in three to six weeks. Eyes that have been severely affected will have a white scar on the surface. These scars may fade through time. Eyes that have ruptured may become blind and extremely disfigured.

TREATMENT

Antibiotic therapy, fly control and management of environmental factors are the best methods of treatment. Moving cattle to a new pasture may help decrease fly pressure and create more space between cattle.

Most bacterial pathogens implicated in pinkeye are susceptible to antibiotic therapy. Long-acting antibiotics with label claims for pinkeye include oxytetracycline and tulathromycin. No label claims are available for the treatment or prevention of pinkeye with the use of medicated feed antibiotics.

Eye drops or ointments are one method of treatment for animals that are in a confined space and accustomed to being handled. This might be used for dairy operations or show animals.

Eye preparations should be used three or more times daily for one or more weeks. This method of treatment is not practical for most beef producers or large dairy operations.

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Covering the eye with a cloth patch glued over the face may help make the animal more comfortable by decreasing the sunlight irritation. More importantly, it helps decrease the spread of the disease by preventing flies from getting to the infected eye secretions.

Good management practices may increase the rate of healing and decrease the spread of infection. Separating affected cattle and providing them a shaded area with accessible food and water lowers the animals' stress and allows them to heal more efficiently.

PREVENTION

Prevention of IBK via vaccination is difficult because of the different types of *M. bovis*, the bacteria's ability to change from one type to another and the predisposing environmental conditions. In addition, organisms other than *M. bovis* can be involved, which may not be included in a vaccine.

Here are some other preventive measures:

- **Control flies.** That is one of the most important factors. Insecticide-impregnated ear tags in both ears have been shown to decrease the spread of disease. Alternatively or additionally, insecticide sprays, pour-ons, dusters and back oilers can be used.
- **Provide shaded areas** to help decrease the amount of the animal's UV light exposure.
- **Mow or cut tall grasses or weeds** to reduce the irritation to the animal's eyes.

Vaccinations for infectious bovine rhinotracheitis (IBR) have been shown to increase the severity of the disease. Although vaccination for IBR is highly recommended for good herd management, it should be avoided during an outbreak of pinkeye.

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, could lead producers to believe that vaccination would provide an effective method of prevention. However, research has shown that animals vaccinated with one type of *M. bovis* will be immune to that type but not the others.

Commercial and autogenous vaccines on the market today may contain several types of *M. bovis*, along with *M. ovis* and *M. bovoculi*. However, controlled studies have not demonstrated protection. This may be due to the vaccine route of administration, the ability of *M. bovis* to change type, the presence of other organisms in the eyelid tissues or environmental factors that allow the organism to overcome the animal's immune system.

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