

Infectious Bovine Keratoconjunctivitis (Pinkeye) in Cattle

Summer is here, and that means Pinkeye season for cattle is here. Pinkeye is a general term to describe symptoms including excessive tearing, conjunctivitis, photophobia and corneal ulcers. Historically, pinkeye has referred specifically to eye lesions caused by *Moraxella bovis*. However, recently *Moraxellae* that do not key out as *Moraxella bovis* have been identified from cases of pinkeye. Therefore pinkeye should refer to the set of symptoms that may have multiple etiologies. Pinkeye is second only to calf scours as the most prevalent condition affecting unweaned calves. Annual costs for pinkeye are estimated to be over \$150 million in the U.S. from treatment, and decreased production. Additionally, calves with severe eye problems are usually discounted significantly at sale.

Factors Causing Pinkeye

A normal eye has adequate defense mechanisms to prevent the colonization and subsequent ulceration of the ocular surface. For *Moraxella bovis* or other bacteria to cause disease there needs to be some underlying irritation to the eye. There are 3 main sources of irritation for pasture cattle: flies, UV light and grass. Dust may be a contributor for cattle confined on dirt lots.

Flies are not only irritating to the eye while feeding on ocular secretions, but they can also transmit pathogenic bacteria between cattle. UV light causes inflammation and is especially a concern in animals without pigmentation around the eye. Grass or hay can cause irritation from pollen, chaff or can cause me-

chanical damage to the eye. Additionally, IBR virus or *Mycoplasma* can predispose animals for pinkeye infections. *Moraxella bovis* can persist in the nasal cavity which is probably the source of the bacteria. Face flies transmit the bacteria to the eye and if the eye has been irritated *Moraxella bovis* can colonize the surface of the eye.

Prevention

Prevention strategies include fly and dust control, and pasture management. There are several vaccines available on the market, but because of multiple strains of the bacteria the vaccine is not consistently effective. Most cases of pinkeye are usually responsive to a systemic antimicrobial treatment. More severe cases may benefit from sub-conjunctival antibiotics and protection of eye with patches or tarsorrhaphy.



Over the years, many cases of pinkeye in cattle have been blamed on *Moraxella ovis* even though there is no scientific evidence to support this. Recently a new species of *Moraxella*, *Moraxella*



bovoculi, has been associated with pinkeye in cattle and may have been confused with *M. ovis*. It is important in non-responsive cases or problem herds to culture eyes for the various bacteria that may be contributing to pinkeye in order to develop a comprehensive prevention and treatment program.

ISU VDL testing

Currently the ISU-VDL is using biochemical tests to differentiate the *Moraxellae*. Clients will note the classification to *Moraxella bovis*, *Moraxella ovis* and/or *Moraxella bovoculi* in reporting cases of pinkeye. A small number of isolates have been reported in the literature for which biochemical tests were unable to appropriately speciate *Moraxella bovoculi* from *Moraxella ovis*. Thus when differentiation of *Moraxella ovis* and *Moraxella bovoculi* is critical, confirmatory molecular differentiation of these isolates may be warranted.

Clients are asked to submit swabs from several affected animals to increase the likelihood of recovering a *Moraxella* from among the many contaminating organisms that are present at the site. It is important to use a swab with transport media such as a culturette with Stuart's transport media; to submit the swabs on ice-paks; and ship them next-day delivery. These organisms are susceptible to drying and overgrowth by contaminants.

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