



Cattle Producer's Handbook

Animal Health Section

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Coccidiosis in Beef Cattle

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Coccidiosis is caused by a parasite that lives inside the cells of the infected animal's intestinal tract. Some coccidia live in the intestine but do not cause disease. Some are highly pathogenic. A high rate of infections not seen (subclinical) may occur in cattle. The disease may appear as clinical cases with diarrhea and anemia due to the loss of red blood cells, or in the chronic form that causes a decrease in growth rates and an increase in the amount of feed required to put on a pound of gain.

The disease affects cattle in most countries, from the tropics to temperate zones. Coccidia cause a greater economic loss among domestic animals in temperate climates than any other protozoa.

In addition to subclinical infections, resulting in large economic losses, 2 to 3 million cattle in the U.S. are treated annually for clinical coccidiosis. It is reported that up to one in five of these animals dies.

Cause of Coccidiosis

The two important species of the protozoa that cause disease in cattle are *Eimeria* and *Isospora*. They are commonly found in the intestinal cells, though they also attack the liver and other organs. The organism passes in the feces as a free living form. With favorable temperature and humidity, this form, known as the oocyst, develops to an infective form.

Until digested by the host animal, the infective form is protected from adverse environmental conditions by a double cyst wall. Development into an infective form can occur in 5 to 10 days if a moist, cool temperature exists. Coccidia oocysts have survived up to 2 years under favorable environmental conditions.

Development of Disease

Cattle ingest the infective oocyst that then liberates an infective form called a sporozoite. This form penetrates the cells of the intestine. They then go through a cycle of rapid growth and reproduction known as the asexual phase. One infective oocyst produces up to 900

asexual forms, each invading a cell in the intestine. The asexual phase is repeated several times during a 21- to 28-day cycle. Eventually the asexual form becomes a precursor of a sex cell that results in an oocyst that is passed in the feces.

Thus, coccidia harm the host by destroying the cells and tissues in the lower intestines, cecum, and the colon. The loss of intestinal lining may lead to blood and fluid loss and may alter food absorption. Bacterial invasion of the intestine may follow.

Clinical Signs

Clinically apparent coccidiosis in cattle is deceptive. Signs are often not demonstrated until 3 to 8 weeks after initial infection, if at all. Observation of one clinical case in a pen indicates oocyst cycling in other animals in the pen or feedlot and also means that most of the damage to the intestinal tract has already occurred.

If the infection is slight, the most characteristic sign is foul smelling, dark, and watery feces. Usually no blood is seen in these less severe infections. The animal may have a mild fever, but in most cases its temperature is normal or possibly below normal.

Severely affected animals may develop a diarrhea that is thin and bloody. Some cattle will pass formed feces that contain streaks or clots of blood and shreds of mucus. The diarrhea usually lasts 3 to 4 days but may continue for a week or more. The area around the anus and tail is often stained with blood and straining is common. The animals lose their appetites, become depressed and dehydrated, and lose weight.

Cattle can also suffer a central nervous disorder from coccidiosis. Affected animals show muscular tremors, convulsions, and bending of the neck and head. Infected calves may die within 24 hours after the onset of dysentery and nervous signs, or they may live for several days, usually unable to rise. Even with intensive treatment, the death rate in these calves is high.

Diagnosis

A clinical diagnosis is usually made when the characteristic coccidial symptoms, dysentery, straining, mild systemic involvement, and dehydration are present. Coccidial oocysts can be diagnosed by routine fecal microscopic examinations. The passage of oocysts lags behind the onset of clinical signs. The presence of oocysts in the feces is not a reliable indication of clinical disease. When large numbers of oocysts appear in feces, the disease has run its course, and the animal will probably recover if supportive therapy is given and secondary bacterial infection is controlled.

Treatment and Control

Control of coccidiosis in cattle has been based on good hygiene, treatment of clinical cases as they appear, and use of preventive medications.

Good hygienic practices provide benefits, but control of coccidia is not one. The oocyst wall provides protection against chemical disinfectants. Coccidia are ubiquitous and unlikely to be destroyed in nature. Therefore, it is not feasible to expect control by treating the external environment.

Various combinations of sulfa drugs or amprolium are used to control an outbreak. Symptomatic treatment is necessary to stop the bacterial infections that accompany clinical coccidiosis. Treatment of clinical signs is not very rewarding, since clinical signs are the result of the final stage of the parasite cycling in the host.

The most acceptable method of control is **prevention** achieved by continuous medication of the drinking water or feed. The approved drugs for prevention of coccidiosis in cattle are Amprolium, Deccox, and Bovatec.

Amprolium is a coccidiostat used as a feed additive or in the drinking water. It is administered continuously

for 21 days. It is well tolerated and must be withdrawn at least 24 hours before slaughter.

Deccox is a feed additive that is effective against the pathogenic bovine coccidia. It can also be used as treatment to reduce the effects of an acute outbreak. The clinically affected animals should be treated with sulfa drugs, and then the coexistent cattle should receive Deccox to prevent further cycling of the oocysts. The medication should be fed for 28 to 56 days or longer, if deemed necessary from past experience. All incoming cattle should be given Deccox for at least 28 days to prevent coccidiosis.

Bovatec and Rumensin are growth promotant feed additives that are also effective coccidiostats. These products should be used only to prevent subclinical and clinical coccidiosis and not for treatment.

Summary

Coccidiosis is a serious production limiting disease of cattle caused by a protozoa. Coccidiosis is commonly a disease of young cattle. Coccidia are opportunistic pathogens and their virulence may be influenced by various stressors including poor nutrition, poor sanitation, overcrowding, or after the stresses of weaning, shipping, sudden changes of feed, or severe weather.

Older cattle usually are resistant to clinical disease but may have sporadic inapparent infections. Such clinically healthy, mature animals can be sources of infection to young, susceptible animals.

The most acceptable method of control is **prevention**. Cattle producers should anticipate when outbreaks might occur and consult with a veterinarian to outline a management program to prevent the disease including using the correct dose of an approved and effective coccidiostat used at the right time. Treatment after an outbreak is not cost effective.

