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Bovine Coccidiosis

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Coccidiosis

Bovine coccidiosis is a major problem in the dairy industry. While approximately 15 species of coccidia may infect cattle the most significant disease problems are caused by only two species, *Eimeria bovis* and *Eimeria zuernii*. Infection is by the ingestion of oocysts in the environment. Ingested oocysts rupture releasing sporozoites which penetrate intestinal cells. Within the cell the sporozoite transforms to a merozoite, and begins to multiply thousands of times. Ultimately the cell ruptures, releasing the merozoites to find another cell in which to multiply further. After the second generation of merozoites escape from the cell they will penetrate cells in the large bowel and begin to reproduce sexually, producing a zygote. The most significant damage to the animal is caused when the zygote-containing cell ruptures, releasing an oocyst. The oocysts are passed out in the fecal material and contaminate the environment. Coccidian oocysts are highly resistant to environmental factors and the area will remain contaminated for many months. The young calf is very susceptible to this infection and a control program is important to keep the calf from developing a clinical infection. A significant degree of resistance develops as a result of the infection if the animal is able to survive.

In general, clinical coccidiosis occurs in animals three weeks to six months of age. The young animal is immunologically naive and very susceptible to infection, particularly when the number of infecting oocysts are high. As the calf is exposed to the infection it begins to develop resistance and thus may not develop clinical disease on next exposure. Massive numbers of oocysts may also cause infection in any age animal. The disease is most commonly seen in dairy herds, especially where large numbers of susceptible calves are kept in confinement. Older cattle often serve as carriers and continue to shed oocysts, contaminating the environment, yet show few if any signs of clinical disease. Even these animals may develop clinical coccidiosis under stressful conditions, as

observed in lactating dairy cows.

It is important to keep the life cycle and dynamics of the coccidians in mind as one tries to understand the infection. Even where adult animals are shedding few oocysts, there may be a significant build up of infective oocysts in the pasture or paddock over time with several infected animals. When a young susceptible or stressed animal is exposed to these high numbers of oocysts a clinical infection may develop. Likewise when an apparently healthy animal is stressed, e.g. shipping, calving or harsh weather conditions, and there are infective oocysts in the environment disease may result.

Control of Coccidiosis

Severity of coccidiosis is generally related to numbers of oocysts ingested. The new born calf should always receive colostrum, and proper sanitation and good husbandry are very important. When removed from the dam, the calf should be moved to clean, dry quarters. Feed and water utensils should be clean and raised, so they are not contaminated with fecal material. Bedding should be changed frequently and one should avoid overstocking.

Sanitation is very important in removing the coccidians from the environment. Prevention is often more profitable for the producer than treatment of the disease (Soulsby, 1982; Herrick, 1990). Several products available for use are preventatives, and these must be used with an understanding of both the life cycle of the organism as well as the limitations of the compounds. Most preventatives are administered admixed with the feed and initiation and duration of this treatment method must be determined.

References

- Herrick, JB. 1990. Hidden losses: Conquering coccidia. *Large Animal Veterinarian* Sept/Oct: 29-30.
- Soulsby, E.J.L. 1982. Helminths, Arthropods and Protozoa of Domesticated Animals. Lea & Febiger, Philadelphia.

Most Common Parasites of the Milking Cow and Replacement Heifer

Internal parasites

Nematodes

Abomasum

Ostertagia ostertagi

Haemonchus placei

Trichostrongylus axei

Small Intestine

Bunostomum phlebotomum

Cooperia oncophora, *C. punctata*

Nematodirus helvetianus

Trichostrongylus colubriformis

Oesophagostomum radiatum

Large Intestine

Trematodes

Liver

Fasciola hepatica

Cestodes

Muscle

Taenia saginata

Protozoa

Intestinal Tract

Eimeria bovis, *E. zuernii*

Cryptosporidia spp.

External parasites

Lice

Damalinia bovis

Haematopinus eurysternus

Linognathus vituli

Solenoptes capillatus

Grubs

Hypoderma bovis, *H. lineata*

Mites

Sarcoptes

Chorioptes

Demodex

Psoroptes

**Chemicals Available for Treatment or Prevention
of Bovine Coccidiosis**

Compound	Trade name	Dose
<i>Treatment</i>		
Amprolium	Amprol 50 / Corid	10 mg/kg for 5 days
Sulfaquinoxaline days	various	6 mg/lb/day, 3 to 5
<i>Prevention</i>		
Amprolium days	Amprol 50 / Corid	5 mg/kg/day for 21
Decoquinate	Deccox	0.5 mg/kg/day
Lasalocid	Bovatec	1 mg/kg/day
Monensin	Rumensin	10 to 30 gm/ton

**Chemicals Available to Remove Nematodes
from the Lactating Dairy Cow**

<i>Compound</i>	<i>Trade name</i>	<i>Dose</i>
Coumaphos bwt/day	Baymix	2.0 mg/kg
Morantel tartrate	Rumatel	0.44 g/100lb
Thiabendazole	TBZ	3 g/100lb

**Chemicals Available to Remove Nematodes
from Replacement Heifers**

<i>Compound</i>	<i>Trade name</i>	<i>Dose</i>
Albendazole	Valbazan	10 mg/kg
Fenbendazole	Panacur / Safe-Guard	5 mg/kg
Ivermectin	Ivomec	10 mg/50 kg
Levamisole	Tramisol / Levasole	check insert
Morantel tartrate	Rumatel	0.44 g/100lb
Oxfendazole	Synanthic	4.5 mg/kg
Thiabendazole	TBZ	3 g/100lb

**Chemicals Available to Remove Flukes
and Tapeworms from Replacement Heifers**

<i>Compound</i>	<i>Trade name</i>	<i>Dose</i>
Albendazole	Valbazan	10 mg/kg
Clorsulon	Curatrem	7 mg/kg
Fenbendazole	Panacur / Safe-Guard	10 mg/kg*

* requires prescription from licensed veterinarian