Cryptosporidium and Other Parasites Found in Farm Calves Using Multiple Lab Techniques

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Background

What is Cryptosporidium?
Cryptosporidium parvum is a protozoan that is known for causing gastroenteritis in mammals.

Why Calves?
Calves that suffer from cryptosporidiosis have slower growth rates. Morbidity is low but these calves require intensive care. This results in a loss of profit on farms.

Research Question
Which is the best method for us to cheaply and efficiently identify Cryptosporidium?

Methods

Used water, fecal, and soil samples.

Multiple ways of staining samples for microscopy

Water samples were tested with Crypt-A-Glo a fluorescent dye and a Modified Ziehl-Neelsen (MZN) dye procedure.

Fecal and soil samples were tested using fecal floatations stained with Gram’s Iodine.

Fecal samples were taken from two calves Peach and Nemo

Results

- Crypt-A-Glo, 20X, White Light, Cryptosporidium Positive Control
- Crypt-A-Glo, 10X, DAPI, Puddle From Farm
- MZN, 100X, White Light, Puddle From Farm
- MZN, 32X, White Light, Puddle From Farm
- Nematode, MZN, 10X, White Light, Stagnant Stream
- Coccidia, Fecal Flotation, 20X, White Light, Calf Pen 5

Conclusions

The modified MZN Method is the best and easiest method for water samples.

Crypt-a-Glo can be seen with and without fluorescent microscopy but can be difficult to see.

Fecal Flotations using Gram’s Iodine is a fast and easy way to quickly find protozoa in feces.

Future Applications

Faster and cheaper research in the future involving Cryptosporidium and other protozoans.

Looking to continue research identifying Crypt with PCR as well.

References


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