

# Surveillance of *Anaplasma marginale* in Arkansas beef cattle herds

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## Introduction

The objective of this study was to utilize both polymerase chain reaction (PCR) and competitive enzyme-linked immunosorbent assay (cELISA) tests to determine the general prevalence of *A. marginale* in Arkansas beef cattle within 6 different geographical regions of the state. Anaplasmosis is an economically devastating disease in cattle that is caused by the rickettsial parasite *Anaplasma marginale*. It is estimated that this parasite causes over \$300 million in expenses for the US cattle industry annually. In Arkansas, the beef cattle industry is the fifth largest agricultural commodity in the state. As a result, a better understanding of this disease and its prevalence within the state is needed.

## Materials and Methods

The work presented here is a collaborative effort between the University of Arkansas and the Kansas State University College of Veterinary Medicine. Ultimately, a total of 578 mature beef cattle, all over 2 years of age, were randomly selected from across Arkansas for sampling. Both whole blood and serum samples were collected from each animal. PCR testing was completed on each whole blood sample submitted at the KSU College of Veterinary Medicine, while cELISA testing was completed on each serum sample by the University of Arkansas Veterinary Diagnostic Laboratory.

## Results

A total of 335 (58.7%) blood samples were positive on at least 1 of the 2 tests. A majority of the animals that tested positive (229, 68.4%) were found to be positive on both the cELISA and PCR tests. Rates of regional seroprevalence and/or PCR prevalence ranged from 36.7% to 93.8%. Overall, the highest percent prevalence was found along Crowley's Ridge in the northeastern corner of Arkansas at 93.8%. The lowest percent prevalence was found in the Ozark and Ouachita Mountain regions at 37.4% and 36.7%, respectively.

## Significance

The information gathered by this study provides substantial evidence that *Anaplasma marginale* is endemic to the state of Arkansas. It appears that there is a significant correlation between geographic region and rate of infection. The sample analysis and regional percentages are being distributed to county extension agents and cattle producers for educational purposes.