

# A survey of coccidia shedding among small ruminants on St. Kitts and the Appalachian region

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## Introduction

A study was conducted on the island of St. Kitts to determine management practices and the issues of small ruminant producers. A disease survey was also conducted to determine disease presence. Fifty farms were studied at each location. This project was later repeated in the Appalachian region surrounding Harrogate, Tennessee. The objective of this abstract is to compare and contrast the shedding of coccidia in sheep and goats by age group by site.

## Materials and Methods

Small ruminant producers, at both locations, were contacted in person by telephone or email until 50 farms in both locations agreed to participate. A convenience sample of the small ruminants, stratified by age group, were sampled on each of 50 farms. A modified McMasters test was performed to determine the coccidia oocysts per gram. Age groups were: < 6 months (group 1), 6 months to < 1 year (group 2), yearlings (group 3) and 2 years and older (group 4). Data were analyzed using IBM SPSS Statistics 26 for significance. All tests used 95% confidence intervals with significance levels of  $\alpha = 0.05$ . One-way ANOVAs were used to determine if there was a significant difference in oocyst count between individuals of different age groups. There was no significant difference between location, so data were combined by species.

## Results

Average oocyte shedding was numerically highest for group 1 in both regions (5319 oocysts/gm, Appalachia and 1722 oocysts/gm, St. Kitts). The next highest average oocyst shedding was in group 2, and values were less than half of that seen in group 1 (2610 oocysts/gm, Appalachia and 547 oocysts/gm, St. Kitts). Overall, coccidia shedding on St. Kitts was lower across all species and age groups (except group 4) when compared to the Appalachia region. For all goats, there was a significant difference in oocyst shedding between group 1 and each of the other age groups ( $P = 0.006$ ,  $P = 0.003$  and  $P = 0.001$ , respectively as age group increases). For all sheep, there was a significant difference in oocyst shedding between the group 1 and groups 3 and 4 ( $P < 0.001$  for both groups). The same was true for group 2 compared to groups 3 and 4 ( $P < 0.001$  for both groups).

## Significance

Because shedding of coccidia decreases substantially from young to old, it appears that a natural immunity may develop by adulthood. Young small ruminants may benefit from coccidiosis control measures, but this benefit appears to be less likely as small ruminants become yearlings and older.