

Research Note

INCIDENCE OF COCCIDIA (EIMERIDAE) IN ADULT EWES AND LAMBS ON ST. CROIX¹

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J. Agric. Univ. P.R. 85(3-4):197-199 (2001)

In the tropical regions of the world, few studies have examined local sheep for intestinal protozoan parasites, and most of these have been in Africa. Reports of coccidia of domestic sheep have been recorded from Tunisia (Balozet, 1932), Nigeria (Voh and Bida, 1982; Anene et al., 1994), Turkey (Arslan et al., 1999), Kenya (Nedarthi et al., 1989), Tanzania (Kusiluka et al., 1996) and India (Rao and Hiruedegar, 1954; Ray 1961). No reports of coccidia from sheep in the Caribbean exist, except to note that they are present and may at times cause disease (Swartz and Hunte, 1991; Rastogi et al., 1991). This study was conducted to determine species of *Eimeria* found in sheep on the United States Virgin Island of St. Croix.

One hundred thirty-eight fecal samples were taken from adult ewes. A further 178 fecal samples were taken from lambs. Samples were collected during the period from 15 December 1999 to 2 March 2000. This period is considered the early dry season on St. Croix with only 208 mm rain during this time. This amount may be compared with 574 mm rain from 1 November to 14 December 1999, the end of the wet season on St. Croix. The adult ewes were from the A and B flocks at the University of the Virgin Islands—Agricultural Experiment Station (UVI-AES) located on the island of St. Croix. These flocks have been maintained on the UVI-AES for the past 15 years. The ewes were St. Croix White and Barbados Black Belly Hair sheep. Lambs were the offspring of these ewes plus an additional 49 lambs obtained locally for a forage study.

Fecal exams were conducted with McMaster sodium nitrate floats at 100× and 200× magnification. Davis (1973) maintains that the McMaster method is probably the most sensitive method for oocyst detection. Oocysts of various species of *Eimeria* were identified by measurements and distinctive morphological characteristics. Descriptions by Christensen (1938), Shah (1963) and Joyner et al. (1966) were used as a basis for identification. Species not easily identified were allowed to sporulate (in 2% potassium dichromate) and examined for unique characteristics under higher magnification (400×, 1000×). Quantity of each species of *Eimeria* present was estimated on a per gram basis.

Five species of *Eimeria* were found in adult ewes (Table 1). Seven species were identified from the lamb samples (Table 2).

Among the ewes there were a total of 43 mixed and 23 single species infections (Table 3). The incidence ranged from 1.45% for *E. pallida* to a high of 14.49% for *E. parva*. Among the lambs there were 121 mixed and 38 single species infections. The incidence

¹Manuscript submitted to Editorial Board 15 November 2000.

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TABLE 1.—Incidence of *Eimeria* in adult St. Croix White and Barbados Black Belly Hair sheep ewes on St. Croix.

Species	Number positive samples/number examined	Percentage infected	Average number of oocysts/gram of infected animals	Number of samples with multiple infections
<i>E. arloingi</i>	16/138	11.6	78.13	4
<i>E. faurei</i>	18/138	13.04	125.00	15
<i>E. intricata</i>	10/138	7.25	120.00	9
<i>E. pallida</i>	2/138	1.45	75.00	0
<i>E. parva</i>	20/138	14.49	85.00	15

ranged from 0.56% for *E. ovinoidalis* and *E. pallida* to 77.53% infected with *E. faurei*. It is not known whether *Eimeria* species occur with any seasonality on St. Croix. This research note presents the first report of *Eimeria* species from hair sheep in the Caribbean. Whereas coccidiosis as a disease is not often seen on St. Croix, the presence of *Eimeria* species known to cause disease suggests that periodic monitoring of sheep for various species of coccidia would be worthwhile.

TABLE 2.—Incidence of *Eimeria* species in St. Croix White and Barbados Black Belly Hair lamb ewes and wethers.

Species	Number positive samples/number examined	Percent infected	Average number of oocysts/gram of infected animals	Number of samples with multiple infections
<i>E. arloingi</i>	135/178	75.84	532	121
<i>E. crandallis</i>	4/178	2.47	50	4
<i>E. faurei</i>	133/178	77.53	431	118
<i>E. intricata</i>	72/178	40.45	231	64
<i>E. ovinoidalis</i> ¹	1/178	0.56	100	1
<i>E. pallida</i>	1/178	0.56	850	1
<i>E. parva</i>	66/178	37.07	579	60

¹According to Duszynski et al., from their records on their internet site at the University of New Mexico. *E. ovinoidalis* MacDougald 1979 is a synonym of *E. ninakohlyakimovae* 1930

TABLE 3.—Number of ewe and lamb samples infected with various numbers of species of *Eimeria*.

Number	0	1	2	3	4	5	6	7
Ewes	72	23	32	11	0	0	N/A	N/A
Lambs	19	38	51	49	20	1	0	0

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