ISAH 2005 - Warsaw, Poland
Vol 2

OVINE PRODUCTION AND CRYPTOSPORIDIUM SPP INFECTION LEVEL IN THE STATE OF MEXICO

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Key words: infection level, cryptosporidiosis, Zeihl-Neelsen.

Introduction

In Mexico there is estimation that 70,000 producers are involved in ovine breeding (Arteaga, 2003) with 6,560,000 heads, and a worldwide 138 position (FAO, 2004).

Most of them are criollos (Suffolk X Hampshire) and in a less proportion other breeds (Dorper, Kathadin and Pelibuey). 14% of the national production is concentrated in Mexico State, mainly in family faros and some big commercial farms (Medrano, 2000).
60% of Mexico's ovine inventory corresponds to small producers (Saltijeral y Cordova, 2004).
Cryptosporidium spp. is a protozoan that parasites a broad vertebrate spectrum, producing diarrhoea, anorexia and weight loss. It is zoonotic, with various infection cycles species specific as well as interspecies. It has been found associated in immunodeficient patients (Abrahamsen y col., 2004). The objective of this work was to find out the impact of the characteristics of different types of farms on cryptosporidiosis presentation.

Material and methods

37 farms were visited in order to investigate the impact of the different types of exploitations over cryptosporidiosis presentation. Personal interviews with the aid of a questionnaire were made in which questions regarding general farm aspects (exploitation system, animal origin and breeds) facilities (pen material, type of floor in pens, bedding and maternity), cleaning and disinfection (pens and maternity), water (water source, water given to lambs, watering, farm's liquid discharges, feeder, drinker and bottle washing) and management (praries and animals) were asked. Levels of infection were established by a single invitation sampling in which only farms with more than 20 animals were taken into consideration. 10% of the clinically healthy animals were sampled.

Faeces simples were taken from lambs aging less than 3 months old and ewes, using the modified Zeihl-Neelsen stain (Henriksen and Pohlenz, 1981) to identify the parasite. In

the laboratory, faeces were softened with sterile water, filtered through gauze and centrifuged at 1500 rpm for 10 min. Sediment was fixed using potassium dichromate and smears were made in which a positive control was run each time.

According to the gaussian theory, and to relate the farms characteristics with the different levels of infection, farms were grouped according to a low level of infection (<3.37%), intermediate level of infection (3.38 to 49.9%) and high level of infection (>50%). The results are reported in Table 1, in which the percentage corresponds to the number of farms which had those characteristics in that level of infection.

Results and discussion

Table 1 shows the statistically significant characteristics in the farms with different levels of infection to Cryptosporidiosis. 5 of the characteristics were important, in which we can notice than water use is cooperating with the infection levels in the farm, as *Cryptosporidium spp.* is a waterborne parasite (Atwill *et al.,* 2003). Another important finding is that those farms which store forage have different levels of infection. It is to be considered the role the forage plays in joint with noxious fauna in disseminating the disease. Sturdee *et al.* (2003) mention that a more likely environmental source is oocysts in faeces from infected mice or/and rats since their droppings contaminate bedding materials, pen floors and other accessible surfaces. Regarding parturition place, we observe that one third of the studied farms lied in the intermediate infection level; care should be taken in avoiding parturitions in the country. Grazing in prairies also represents a risk of infection; due to the fact that some of the prairies are communal and lambs can easily get infected (Miller, 2001).

We conclude that the presentation of the level of infection by *Cryptosporidium spp.* is multifactorial.

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Table 1. Statistically significant characteristics in the studied farms with different levels of Cryptosporidiosis.

VARIABLE	LOW INFECTION LEVEL (<3.37%)	INTERMEDIATE INFECTION LEVEL (3.38 to 50%)	HIGH INFECTION LEVEL (50%)	TOTAL (%)	P
DRINKING WATER FREQUENCY IN LAMBS					
Continuous	24.3	32.4	29.7	86.5	0.033
Periodical	0	13.5	0	13.5	
BOTTLE WASHING FREQUENCY					
Each time used	5.4	32.4	8.1	45.9	0.021
No	18.9	13.5	21.6	54.1	
FORRAGE STORAGE					
In bundles	3.1	6.3	15.6	25	0.044
Non bundle	21.9	40.6	12.5	75	
PARTURITIONS IN THE COUNTRY					
Yes	5.6	33.3	8.3	47.2	0.029
No	16.7	13.9	22.2	52.8	
GRAZING PLACE					
Prarie	0	22.9	14.3	37.1	0.046
Non prarie	22.9	25.7	14.3	62.9	