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**A SEROLOGICAL SURVEY OF EPERYTHROZOOON OVIS
ANTIBODIES IN QUEENSLAND SHEEP**

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SUMMARY

A serological survey was carried out to gauge the distribution of *Eperythrozoon ovis* infection in Queensland. A complement fixation test was done on sera as they became available and results showed the infection to be widely distributed. There were 3 518 sera tested of which 594 or 16.9% were positive. These came from 85 of the 125 properties from which sera were obtained.

I. INTRODUCTION

Since *Eperythrozoon ovis* was first reported in Australia by Littlejohns (1960), it has been reported from all Australian States. It was first recognized in Queensland sheep in 1966 and later reported by Laws and Daddow (1976).

Until the description of a complement fixation test (CFT) for detecting *E. ovis* antibodies (Daddow 1977), there was no convenient serological means of gauging the distribution and prevalence of *E. ovis* infection.

As sera became available a serological survey using the CFT was done to gauge the distribution and prevalence of the infection.

II. MATERIALS AND METHODS

The CFT method has been described by Daddow (1977). Sheep which were either seropositive or serosuspect were termed positive as were properties yielding such samples. Similarly properties from which only seronegative sera were obtained were termed negative.

Material was drawn from two sources. The first was sera or bloods sent to the laboratory for testing for conditions other than eperythrozoonosis. This material formed the bulk of the material used in the survey. The second source was sera or bloods sent to the laboratory to aid in the diagnosis of *E. ovis* infection. When tests could not be performed soon after arrival of material at the laboratory, blood samples were stored at 4°C or were centrifuged to obtain serum. Sera were stored at either 4°C or -12°C. Altogether samples were taken from both sexes and over a wide age range from widespread areas of Queensland. Because of the manner in which samples for the survey were obtained, no detailed statistical treatment of the results was possible.

TABLE 1

SUMMARY OF RESULTS OF CF TESTS FOR *E. ovis* ANTIBODY ON 3518 SERA FROM 125 PROPERTIES

No. Properties sampled and total sera	Batch (property) range (sera)	No. & % Positive sera	No. & % Positive sera in positive batches	No. & % Negative sera in negative batches	Highest and lowest proportion and % for positive batches of 20 or more sera	No. & % positive properties
125; 3518	1-315	594; 16.9	3212; 18.5	306; 8.7	26/34; 76.5: 5/315; 1.6	85; 68

III. RESULTS

The results are summarized in table 1. There were 3 518 sera tested from 125 properties of which 430 sera were anticomplementary. The number of sera from individual properties ranged from one to 315. Overall, there were 594 or 16·9% positive serums, while 85 properties yielded positive samples. The proportion of positive serums from properties from which 20 or more serums were received in one batch varied from 5/315 or 1·6% to 26/34 or 76·5%.

Figure 1 shows the locations of positive and negative properties and figure 2 shows the distribution of percentage positive samples per positive property.

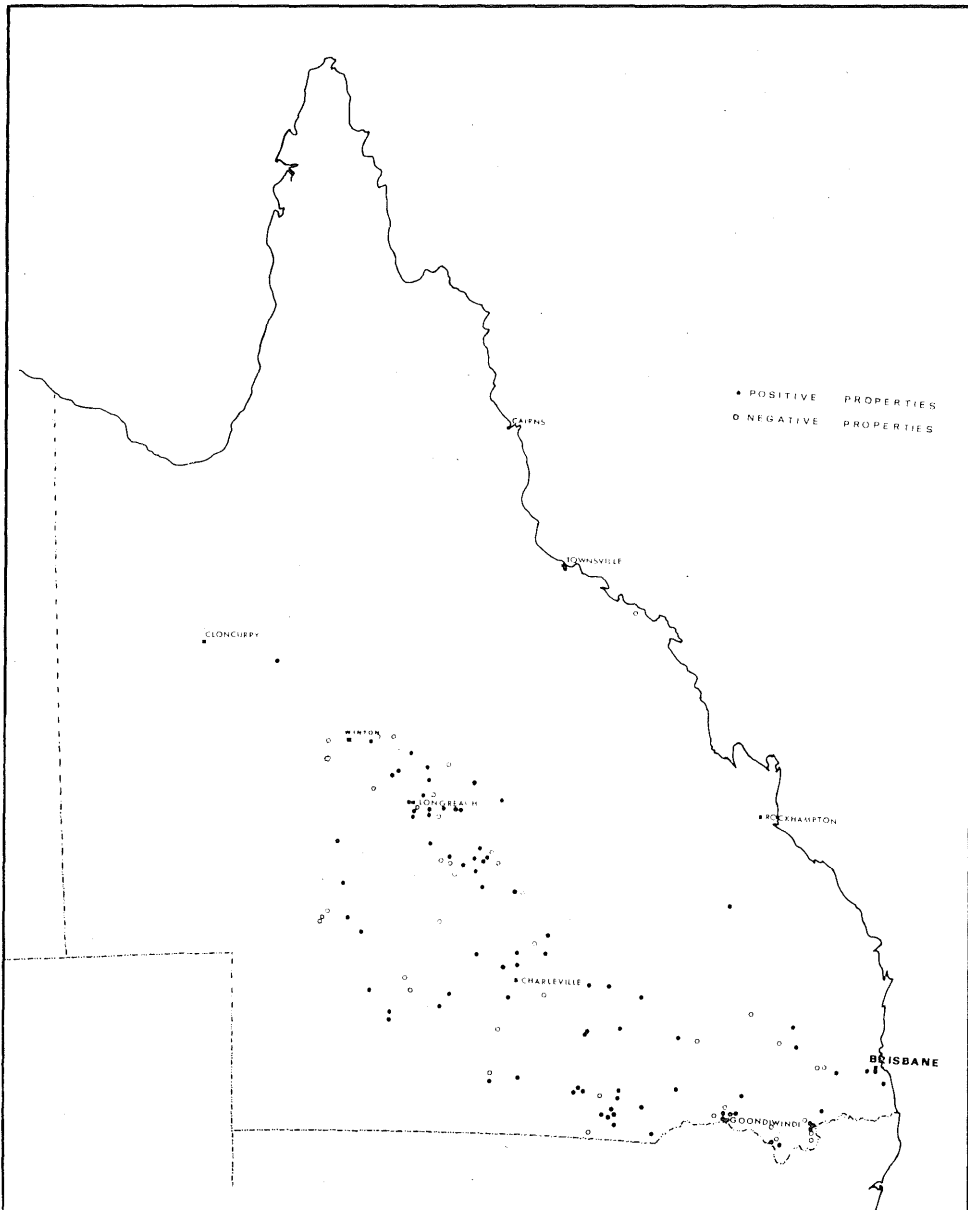


Figure 1. Map of Queensland showing the locations of positive and negative properties.

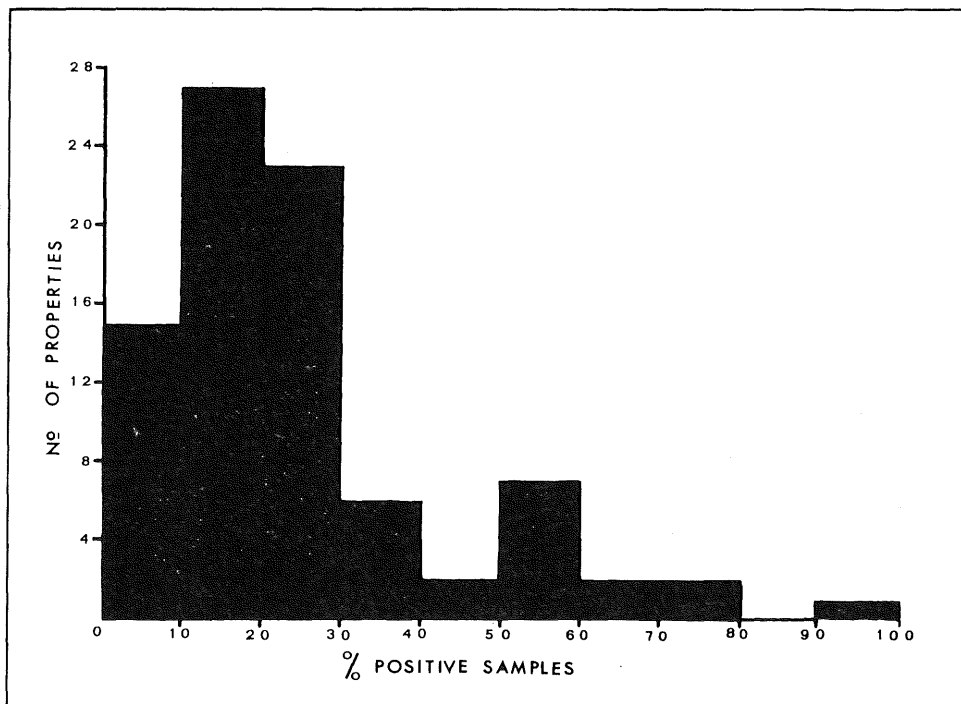


Figure 2. Histogram showing the distribution of per cent positive samples per positive property.

IV. DISCUSSION

The results show that antibodies to *E. ovis* have been detected throughout the major sheep grazing areas as shown in Queensland Resources Atlas (1976). Unfortunately only three properties north of Winton were sampled.

Twenty sera per batch are considered the minimum number of samples required to give a good chance of demonstrating antibodies in a flock where only carrier sheep are present, as CF antibodies in carrier sheep are often at an undetectable level. It was therefore taken as the arbitrary figure on which to calculate minimum and maximum per cent positive sera per property, even though, in one case where only two samples from one property were tested, both were positive.

As has been shown previously (Daddow 1977; Daddow and Dunlop 1977) some sheep have a transient CFT response to *E. ovis* infection so unless sufficient sheep are sampled an accurate assessment of flock status is unlikely. This is indicated in the number of sera tested from positive and negative properties, 3 212 sera being tested from 85 positive properties while 306 sera were tested from 40 negative properties. Thus it is likely that positive properties are more numerous than shown in figure 1.

Of the positive properties, 50% were in the 0 to 20% range (figure 2). This suggests that most of the sheep sampled on these properties were sheep maintaining a carrier state, hence the need to test 20 or more samples per flock to afford a good chance of detecting latent *E. ovis* infection in the flock. Sheep sampled on properties towards the other end of the scale were most likely sheep or lambs which were undergoing or had recently undergone their initial reaction to *E. ovis* infection.

V. ACKNOWLEDGEMENTS

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