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THE EFFECT OF CHORIOPTIC MANGE (CHORIOPTES BOVIS)  
ON RAM FERTILITY

A thesis presented in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Veterinary Science at Massey University, Palmerston North, New Zealand.

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1971

## ACKNOWLEDGEMENTS

I am indebted to Dr. A.N. Bruere for the opportunity to undertake the study and for his continual encouragement and guidance. The facilities provided by Professor E.D. Fielden, especially for the housing of experimental sheep, and his constructive criticism of the manuscript was much appreciated.

I am particularly grateful to Ivon Watkins-Dow Limited, New Plymouth, New Zealand who provided the financial support for the project.

It is only possible to mention a few of the large number of staff members and colleagues who have helped in numerous ways during the study. Professor R.E. Munford checked the statistical analyses, Dr. B.E. Goulden and staff helped with hemicastrations, Mrs. W.J. Lang and her staff produced the numerous histological sections and Mr. J.D. Austin was responsible for much of the photography. The Library staff, especially Miss E.K. Green and Miss M.G. Campbell obtained many of the references cited in this thesis, Mrs. R. James assisted with the translation of the French references while Dr. M.E. Andrews and Mr. J. Harvey kindly translated the German articles. Mr. J.H. Thompson and his staff cared for the experimental sheep, Mr. P.H. Whitehead provided facilities for the sheep run on pasture and Mr. A.R. Clarke assisted with semen collections.

A large proportion of the work reported in this thesis involved rams obtained from various sources with extensive scrotal mange. Veterinarians who brought such rams to my notice and farmers who donated these animals are especially thanked. Mr. A.M. Day and his staff of the Ashburton Veterinary Club kindly helped

with the investigation of a flock of rams with an outbreak of chorioptic mange.

Especial acknowledgement is made to Mrs. Betsy Bruere for her constructive criticism of the initial drafts of this thesis.

Mrs. Gaylene Percy typed the final draft and final copy of the manuscript.

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ABSTRACT

Chorioptic mange of the scrotum was induced in 14 of 27 rams during a study of the effects of scrotal mange on ram fertility. Scrotal lesions varied from those of only a few sq. mm in size to those which covered virtually all of the scrotum in an inflammatory exudate which was up to 5 cm thick. Beneath the scabs there were usually smaller areas of broken skin which exuded small amounts of clear fluid and scab removal usually caused petechial haemorrhages. The scrotal lesions were usually associated with similar lesions in the vicinity of the accessory digits and manipulation of chorioptic lesions in both regions often produced a characteristic nibbling response. The dermatitis, which was non specific and typical of an allergic exudative dermatitis, did not penetrate the tunica vaginalis sac nor did it involve the scrotal contents. Scrotal mange had no apparent effect on the general health of rams and limb movement was affected in only one of approximately 200 rams examined with this disease. This ram had extensive lesions on both the lower legs and scrotum. The scrotal lesions on all but one of the rams with induced mange, and many of the rams introduced with extensive scrotal mange, cured spontaneously during the observation period. In most of these cases there was no sign of a prior scrotal dermatitis after resolution of the disease while in a few there was a permanent increase in skin thickness.

In vivo mite assessment provided a simple and accurate method of detecting scrotal mites and the

technique also gave a clearer understanding on the host-mite-mange relationship.

Data collected from 24 rams with lesions of scrotal mange involving less than 10 sq. cm of the scrotum demonstrated that lesions of this extent had probably no effect on spermatozoa production. On the other hand lesions involving more than a third of the scrotum of 30 rams examined were invariably associated with seminal degenerations. Some cases of extensive scrotal mange had little effect on spermatozoa production while other relatively mild cases caused severe testicular degeneration. The degeneration varied from a mild, transient decrease in semen quality through to complete spermatogenic arrest at the spermatogonial stage of spermatogenesis. There was a close relationship between testes size, seminiferous tubule size and spermatogenic activity in rams with extensive scrotal mange. The seminal and testicular degenerations were similar to those seen in rams whose testes had been exposed to elevated temperatures.

The average testicular temperature of 11 rams with extensive scrotal mange with severe testicular atrophy was  $1.8^{\circ}\text{C}$  (range  $0.6^{\circ}\text{C}$  -  $3.1^{\circ}\text{C}$ ) above that of 11 control rams and there was a similar drop in testicular temperature in 6 rams following successful treatment of the disease. As no other factor could be incriminated, it was concluded that scrotal mange caused the testicular degeneration by raising the temperature of the scrotal contents.

Scrotal mange had little if any effect on androgenic status, as assessed by changes in sexual behaviour, seminal plasma fructose, seminal vesicle weight, seminal vesicle fructose, Leydig cell numbers or Leydig cell affinity for the Sudan black stain.

In all cases examined, recovery of reproductive function followed successful treatment or spontaneous cure of scrotal mange. Recovery from mild seminal degenerations often occurred within a few weeks while cases of longstanding testicular atrophy took more than six months to recover.

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