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A STUDY OF THE REPRODUCTIVE PERFORMANCE OF TWO YEAR-OLD ROMNEY  
AND BORDER LEICESTER X ROMNEY EWES AFTER DIFFERENTIAL  
FEEDING AND GONADOTROPHIN TREATMENT

A thesis presented in partial fulfilment of the requirements for  
the degree of Master of Agricultural Science  
in Animal Science  
at  
Massey University

KENNETH CHARLES EASTWOOD

1975

ABSTRACT

The reproductive performance of 207 first-cross Border-Leicester x Romney (Border-Romney) and Romney 2 year-old ewes was compared after they grazed in the autumn for 2 months at 2 levels of feeding and treatment with 0, 600 or 1200 i.u. Pregnant Mare's Serum Gonadotrophin (PMSG).

To induce and synchronise oestrus at the start of the breeding season, intravaginal progestagen sponges were inserted for 14 days. PMSG was injected on day 12 or 13 after first heat and ewes were then run with entire Southdown rams. Each ewe was laparotomised within a week of PMSG injection to record the ovarian activity. Peripheral blood was collected from a sample of ewes at intervals throughout pregnancy and progesterone concentration determined. The number and weight of lambs at birth and at weaning were recorded.

High-plane ewes gained 1.39 kg and low-plane ewes lost 1.51 kg over the 2-month period of differential feeding.

Following sponge withdrawal and at the next cycle 80% and 90% of all ewes were in oestrus and of these 77% and 80% were mated over 2 and 3 consecutive days, respectively. PMSG did not affect the degree of synchronisation of oestrus but treatment with the drug, improved feeding and injection on day 12 rather than 13, each reduced the mean cycle length.

Border-Romney ewes had higher natural ovulation rate, lambing performance and response to PMSG than Romney ewes.

PMSG reduced (16%) the conception rate at first service, proportionately more ewes returned to service at prolonged intervals (>20 days), and this "carry-over" effect reduced the incidence of ewes that later became pregnant. There was marked variation in ovarian response to PMSG. However, litter size increased with up to 5 ovulations per ewe despite an increasing percentage of potential lambs lost.

Uterine capacity in terms of both number and weight of lambs born was greatest in Border-Romney ewes but exceeded natural ovulation rate in both breeds. Potential reproductive performance is, therefore, limited by the number of eggs released and in practice management factors before and at mating and selection of ewes with a propensity for higher ovulation rates should be emphasised.

Lambs born to Border-Romney ewes were heavier at birth and grew more rapidly to weaning. It is likely that part of this superiority of growth rate was related to a greater milk production by these crossbred ewes and this possibility should be investigated further.

Diagnosis of ewes with either single- or multiple-bearing pregnancies on the basis of blood progesterone levels (measured either early or late in pregnancy) was found to be no more accurate than other methods (rectal-abdominal palpation, ultrasonics and radiography) currently available. Variation in lamb birthweight within birth rank appeared to limit the accuracy of diagnosis of single- or multiple-bearing ewes late in pregnancy. Liveweight of the ewe and weight of lamb born were antagonistic in their effects on blood progesterone concentration.

### ACKNOWLEDGEMENTS

The author is specially indebted to his supervisor Dr M.F. McDonald for his invaluable guidance and assistance in experimental work and advice during the preparation of this manuscript.

Special thanks are due to Professors A.L. Rae and R.J. Townsley for their advice and aid in statistical analysis and computer operation; Dr E. Payne and staff from the Chemical Servicing Section of Ruakura for assistance in the progesterone assays; Mr W.R. Fairhall for the care of the animals and to Mr C.G.R. Muir for technical assistance.

Acknowledgement is made to Mr P.H. Whitehead and farm staff and to Mrs A.F. Barton for the typing of this manuscript.

Gratitude is extended to Dr G.A. Wickham with whom the author had many helpful discussions.

Financial assistance from the Helen E. Akers Trust, the N.Z.P.O.W. Association and the Vernon Willey Trust, is gratefully acknowledged.

Finally, very special thanks are due to my wife Alison for her support and encouragement throughout this study.

PREFACE

This investigation was conducted at the Sheep Production Centre, part of the Department of Sheep Husbandry, Massey University. The experimental work was one of one year's duration commencing in January 1973 and represents original research by the author under supervision of Dr M.F. McDonald, Reader, Sheep Husbandry Department, Massey University.

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