THE EFFECT OF NUTRITIONAL RESTRICTION DURING EARLY PREGNANCY ON NUMBERS OF LAMBS BORN

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I. INTRODUCTION

Ewes may be severely undernourished early in pregnancy, deliberately as part of a grazing regime, or unavoidably because of poor seasonal conditions. This paper reports an investigation of the effect of severe undernourishment in early pregnancy on the number of lambs born.

II. MATERIALS AND METHODS

A flock of 19 month old maiden Merino and five year old crossbred (Border Leicester x Merino) ewes were joined with rams harnessed with “Sire Sine” marking crayons to detect oestrus (Radford, Watson and Wood 1960). They were joined from the end of March until early May when all unmarked ewes were removed. They were then separated into two groups by stratified randomisation according to bodyweight within breeds so that each group consisted of 27 crossbreds and 32 Merinos. One group was confined to an area of approximately 0.6 acre which carried very little plant material. They were fed limited quantities of phalaris pasture hay (*Phalaris tuberosa*) so that they lost bodyweight as steadily as possible and reached approximately 76% of their mating weight by the end of June. In early July they joined the control group which had steadily gained weight and continued to do so until lambing. The control group grazed for the whole of gestation on a phalaris subterranean clover (*Trifolium subterraneum* L.) pasture, which from the animal performance figures was considered to have provided adequate nutrition. Eleven ewes in the restricted group died prior to lambing, they were autopsied to determine their reproductive condition.

III. RESULT AND DISCUSSION

There was a marked and significant (P<0.05) difference between control and restricted Merinos in the proportion of mated ewes which became pregnant (Table 1).

The same effect was not obtained with the crossbreds. All lambs born appeared normal and their birthweights indicate some effect of treatment, more so in the Merinos than in the crossbreds. Lamb losses in the Merinos were very high but could be expected at these levels of ewe bodyweight and lamb birth weight (Coop 1962).

Nalbandov (1961) in reviewing the effect of nutrition on reproduction cited experiments in pigs where low energy intake after coitus decreased embryonal mortality. He also stated that although this effect would not be nearly as clear cut in monotocous domestic animals, there would be no reason why they should not

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respond in the same way. In this experiment the opposite effect was noted, but periods varying from 0-6 weeks elapsed after coitus and before nutritional restriction. No relationship was apparent between the date of mating and the establishment of pregnancy in the undernourished Merinos. This could be because the numbers were too small.

Studies on greater quantities of data (Bennett and Dudzinski, unpublished data) have shown that in two year old Merino ewes, the number of lambs born is dependent on both the bodyweight at mating and the degree of restriction to mid-term. Losses appear to become serious when mating weights are below 36 kg and bodyweights at mid-term are 15% below mating weight. Further work is now in progress to more accurately define the effect of undernutrition during early pregnancy on lamb losses in ewes of different ages.

It may be possible to increase animal production per acre by pasture rationing where seasonal supply of edible plant material differs from seasonal demand. Under a September lambing regime in south-eastern Australia, losses of ewes in late pregnancy and lambs in early life, due to undernutrition, appear to be the major limitation to output at higher stocking rates (Clark, Bennett and Morley, unpublished data). By saving plant material during early pregnancy for later in pregnancy, these losses can be reduced. However, the findings from the experiment above would indicate that undernutrition in early pregnancy can cause some embryonic loss, and these two considerations will have to be balanced against each other in pasture rationing programmes.

IV. REFERENCES

