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A COMPARISON OF THE PERFORMANCE OF DORSET, CORRIEDALE AND ROMNEY SHEEP DURING LACTATION

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SUMMARY

The milk production of Dorset, Corriedale and Romney ewes was compared while they reared twins during a 12-week lactation. Total average milk yields were 188 ± 8.61 , 160 ± 4.22 and 135 ± 6.80 kg, respectively. Breed differences were significant. Lamb liveweight gains were positively related to milk yields for the Dorsets and the Romneys but there was a negative correlation for the Corriedales. At weaning the mean total weights of lamb per ewe were 55.2 ± 1.67 , 52.4 ± 1.78 and 49.0 ± 1.25 kg for Dorsets, Corriedales and Romneys, respectively.

The advantages of the Dorset in terms of milk production and lamb growth rates were highlighted. With other characteristics such as a long breeding season and above-average prolificacy, the suitability of the breed's use for intensified lamb production is discussed. The considerable difference in performance between the Corriedales and the Romneys under the environmental conditions of this experiment is also discussed.

INTRODUCTION

The milking ability of the New Zealand Romney ewe has been the subject of numerous investigations and it has been shown by Barnicoat *et al.* (1949), Coop (1950), Barnicoat *et al.* (1957), Coop and Drew (1963) and Jagusch *et al.* (1972) that ewes of this breed have to be fed liberally if maximum milk production is to be achieved. The only breed comparison of any significance conducted in New Zealand is that of Scales (1968) who found that the milk yields of Romney, Corriedale and Merino ewes differed little when they suckled single lambs under South Island high-country conditions.

In the experiment described here the milk production and lamb growth performance of Dorset (Dorset Horn and Poll Dorset), Corriedale and Romney sheep were compared under prime lamb producing conditions typical of the Canterbury Plains. This was carried out as part of a long-term sheep breed evaluation programme currently in progress at the Templeton Research Station.

EXPERIMENTAL

Ten mixed-aged ewes of each breed were used and each suckled twin lambs. They had lambed over a restricted period of 16 days during late August, 1972, and were drawn from an experimental flock containing approximately 300 ewes of each breed. The ewes in this study were run in a separate mob following lambing and were allowed to graze ryegrass-white clover and lucerne-based pastures *ad lib.* during the first eight weeks of lactation. The availability of pasture decreased as lactation progressed to 12 weeks because of dry weather. Milk yield was measured by the oxytocin method (McCance, 1959; Corbett, 1968). Ewes were separated from their lambs for the emptying milking then retained on feed without their lambs until milk yield was measured 4 hours later. A tubular-framed cradle was used to immobilize the ewes during hand milking. They were milked during the first 16 days following lambing and thereafter at 5 times during lactation at intervals varying from 8 to 21 days.

Lambs were weaned when they were 12 weeks old.

RESULTS

The mean values for milk yield, total weight of lamb per ewe and ewe liveweights for each breed during lactation are illustrated in Fig. 1. There was a similarity between breeds in the shape of the lactation curves. However, although Dorsets and Corriedales reached a peak yield 3 weeks after parturition, Romneys did not peak at all. At 3 weeks the mean daily yields of milk (with standard errors) were 3.1 ± 0.13 , 2.7 ± 0.04 and 2.3 ± 0.11 kg for Dorsets, Corriedales and Romneys, respectively.

All lamb liveweights were adjusted to ram equivalents. At birth the breed means were 3.6 ± 0.17 , 4.1 ± 0.12 and 3.8 ± 0.15 kg per lamb for Dorsets, Corriedales and Romneys, respectively. Dorset lambs grew at the fastest rate and at weaning were 6% heavier than Corriedale lambs and 13% heavier than Romney lambs. The relationship between total milk yield and total lamb liveweight gain from birth to weaning was positive in the cases of Dorsets ($r = +0.63$) and Romneys ($r = +0.46$) but negative for Corriedales ($r = -0.38$).

Dorset ewes were lighter than the other two breeds at the start of the experiment and gained 3% of their post-partum liveweights during the course of lactation whereas Corriedales gained 18% and Romneys 6%.

The results for the whole lactation period of 12 weeks are summarized in Table 1.

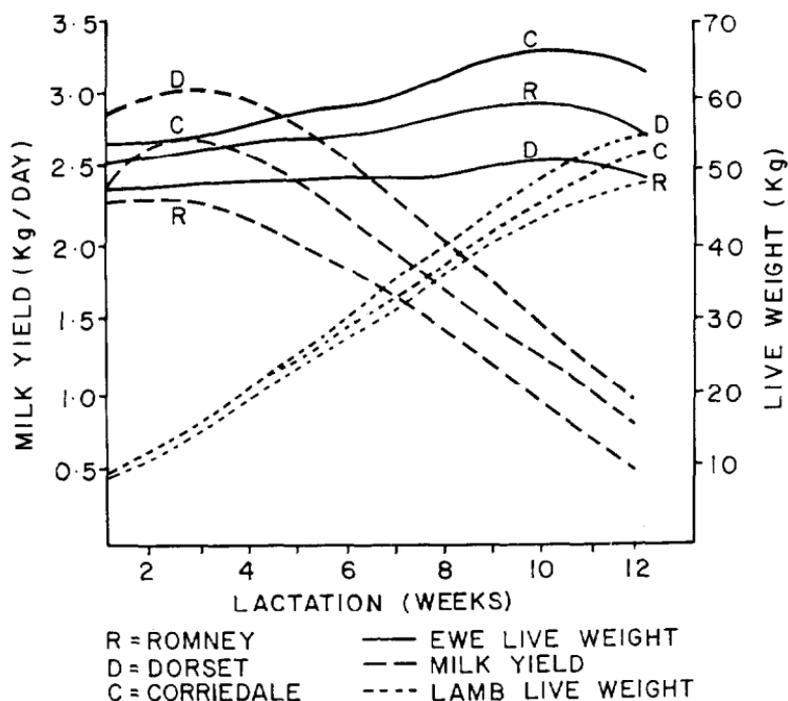


FIG. 1: Milk yields and liveweights during lactation.

TABLE 1: MEAN VALUES FOR TOTAL LACTATION MILK YIELD, LAMB WEIGHT AND EWE LIVELWEIGHT

Breed	Milk Yield (kg)	Weight of Lamb Weaned per Ewe (kg)	Liveweight of Ewe (kg)
Dorset	188 ± 8.61	55.2 ± 1.67	49.4 ± 1.69
Corriedale	160 ± 4.22	52.4 ± 1.78	59.6 ± 1.31
Romney	135 ± 6.80	49.0 ± 1.25	55.3 ± 1.71

DISCUSSION

Treacher (1971) investigated the effect of nutrition during pregnancy and lactation on the milk yield of Dorset ewes. He found at the highest level of feed intake that 75 kg animals eating 1.2 kg DOM per day (about 19 MJ ME, using the conversion factor of Jagusch and Coop, 1971) produced 63 kg of milk in the first 6 weeks of lactation and accommodated a liveweight loss of about 3 kg. In the present experiment the average weight of Dorset ewes was about 50 kg, they produced

a mean 120 kg of milk in the first 6 weeks of lactation and gained 1 kg in liveweight. Such production could partly reflect a superior strain of Dorsets but more probably reflects a high intake as well as the high quality of the ryegrass-white clover and lucerne pastures (11.5 and 11.9 MJ ME per kg DM measured by Fennessy *et al.*, 1972). Jagusch and Coop (1971) established that ewes in early lactation fed pasture *ad lib.* consume about 29 MJ ME per day, representing an intake of approximately 2.5 kg of dry matter.

The contribution of low ewe liveweights during lactation to efficiency of production has been shown by Large (1970) and Langlands (1973) and supports the hypothesis here that Dorsets are superior to the other two breeds in this respect. This apparent advantage in productive efficiency by the Dorsets compared with more commonly used ewe breeds indicates their suitability for inclusion in intensive systems. Other attributes such as a long breeding season (Hafez, 1952; Whiteman *et al.*, 1972; Orskov and Robinson, 1972) above average prolificacy (J. N. Clarke, pers. comm.) and superior lamb growth potential (Coop and Clark, 1952; Carter, 1968) suggest their use not only as a crossing breed but also as a straight breed. The fact that a high milk yield can promote good weights of lamb at 4 weeks lends the Dorset readily to early weaning systems (Jagusch *et al.*, 1970, 1971; Orskov *et al.*, 1973) so that ewes can be remated.

The Corriedales were markedly superior to Romneys in milk yield and lamb growth, a result not shown by Scales (1968), while Romney ewes actually produced less milk than that found by Barnicoat *et al.* (1949).

The Corriedale, traditionally a wool-producing sheep, is particularly well adapted to the dry land Canterbury environment. This is partly reflected by the comparatively low variation in milk production and average ewe liveweight (see SEs, Table 1) as well as the considerable ewe liveweight gains during lactation. The failure to obtain a positive relation between milk yield and lamb growth with the Corriedales could indicate a breed interaction with the environment.

These findings hold interest in the development of a Dorset-Corriedale cross ewe with both wool and meat potential. This cross, as well as all others produced by the three breeds in this experiment, is currently being evaluated at Templeton.

Caution is necessary in extrapolating from these results which are based on a small sample of animals in a single season. It may be noted, however, that the breed differences in lamb growth reported here were in line with those from the balance of the experimental flock (J. N. Clarke, pers.

comm.). Further information will be sought in subsequent seasons on milk yields of the three breeds and crosses among them.

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