THE EFFECT OF LAMBING DATE ON LAMB GROWTH RATE, EWE LIVEWEIGHT AND SOME OBSERVATIONS ON EWE MILK PRODUCTION

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SUMMARY

An interim report is presented where date of lambing has been varied in an attempt to synchronize feed requirements with pasture growth. Lamb growth and ewe liveweights are presented for ewes suckling twins. The ewes were stocked at either 21.3 or 27.7 ewes/ha and had average lambing dates of September 1 or October 1. Later lambing ewes were heavier, had higher intakes, and had higher lamb growth rates in the first month of lactation than did early lambing ewes. Low-stocked ewes also performed better than high stocked ewes.

INTRODUCTION

In an attempt to match feed requirements of the breeding ewe to pasture production, the consequences of varying average lambing date according to onset of spring growth were examined at two contrasting stocking rates. This is an interim report of lamb growth rates, ewe liveweights, pasture production and intakes over the lactation periods during 1973 and 1974. Some estimates of milk production are also given.

TABLE 1: SUMMARY OF EXPERIMENTAL DETAILS

Treatment	*LE Low Early*	*HE High Early*	*LL Low Late*	*HL High Late*
No. of ewes	56	56	56	56
Area (ha)	2.63	2.02	2.63	2.02
No. of paddocks	14	15	14	15
Ewes/ha[1]	21.3	27.7	21.3	27.7
Ave. lambing date[2]	Sept. 1	Sept. 1	Oct. 1	Oct. 1
No. of ewes milked (Twin-suckling)				
1973	8	8	8	7
1974	7	5	8	3

[1]Twelve month stocking rate.
[2]Maximum spread—17 days.

EXPERIMENTAL

Five-year-old Romney ewes mated to Dorset Horn rams were rotationally grazed on ryegrass-white clover pastures. The experimental details are summarized in Table 1.

Lambs were docked at about 3 weeks and weaned at 12 weeks of age. Pasture production and intakes were measured on 5 sample paddocks for each treatment using a technique similar to that of Campbell (1969). Milk secretion rate was measured using the oxytocin technique (10 i.u.) and machine milking with twin-suckling ewes (McCance, 1959). In the first year of the experiment, udder covers were used to prevent the lambs suckling during the measurement period (of approximately 4 h) but in the second year the ewes were kept separate from their lambs over this period. Milking was twice daily and the ewes were first milked within 10 days of lambing and then at weekly intervals for 10 weeks. Milk samples were analysed using an infra-red milk analyser.

RESULTS AND DISCUSSION

The liveweights of the lambs and ewes are shown in Table 2 at various stages of lactation.

TABLE 2: LIVE WEIGHTS OF THE LAMBS AND EWES DURING LACTATION (kg)

Year	1973				1974			
Group	*LE*	*HE*	*LL*	*HL*	*LE*	*HE*	*LL*	*HL*
Lambs:								
Birth	4.0	3.8	4.2	4.2	4.7	4.4	4.4	4.7
4 weeks	9.8	9.1	10.2	10.5	10.5	9.6	10.8	10.1
Weaning	18.5	18.1	19.0	19.8	20.5	19.3	21.4	19.0
Ewes:								
Week 1	48.0	47.2	54.6	53.7	56.7	52.1	60.9	54.7
Week 4	50.9	47.6	55.5	52.2	57.0	50.2	57.1	49.3
Week 10	48.4	49.0	50.8	50.1	56.1	50.7	55.2	48.7

Consistently in both years the late lambing groups had heavier lambs at 4 weeks of age than did the early lambing ewes. However, for the 1974 HL group this initial advantage was lost by weaning. The low-stocked lambs generally had higher weights at 4 weeks and at weaning than did the high-stocked ewes (with the exception of the 1973 HL group). Although all of these lambs were twins and belonged to the ewes that were milked, the overall group averages were ranked in a similar order.

The birthweights in 1974 were higher than in 1973.

The late lambing ewes were heavier in early lactation than the early lambing ewes, but lost more weight during lactation. High-stocked ewes were lighter than low-stocked ewes, and in 1974 the ewes were heavier than in 1973.

In 1973 differences were less marked between treatments as the respective stocking rates had commenced in early August—*i.e.*, the start of the trial—whereas in 1974 the stocking rates had been in existence thirteen months.

TABLE 3: AVERAGE PASTURE GROWTH, AVAILABLE DRY MATTER AND APPARENT INTAKES DURING LACTATION

Year	1973					1974				
Group	*LE*	*HE*	*LL*	*HL*	*Ave*	*LE*	*HE*	*LL*	*HL*	*Ave*
Pasture Growth (kg/ha/month):										
Sept.	1630	1100	1290	1325	1336	2020	2210	2520	2320	2268
Oct.	3165	2300	2930	2325	2680	3335	3560	3185	3355	3359
Nov.	3375	2305	2640	2615	2734	2960	3275	2925	2890	3012
Dec.	2230	2165	2015	1865	2069					
Available DM for grazing (kg/ha):										
Sept.	1660	860				2675	2040			
Oct.	2145	1750	2725	1405	—	2830	2855	2900	3500	—
Nov.	4455	1890	3720	2500	—	2360	2895	2915	3315	—
Dec.			4850	2917	—			2705	2980	—
Apparent intakes[1] (kg DM/ewe plus lamb/day):										
Wks 1-4	2.4	2.0	2.6	2.9	—	3.1	2.8	3.3	2.9	—
Wks 5-8	2.8	2.3	2.2	2.2	—	3.3	3.3	3.5	2.9	—

[1]DM disappearance ÷ No. of ewes (56).

Table 3 contains the average monthly pasture growth, the available dry matter (DM) for grazing, and apparent intakes for various stages of lactation. Pasture growth in September and October 1974, was markedly greater than in 1973 ($P < 0.01$) The available DM represents accumulated DM and is a function of the growth occurring both during the month of measurement and during the previous month and is also influenced by the grazing pressure and amount of conservation of hay and silage that occurred. The available DM estimates are given for the three

months of lactation for each group. The higher pastures growth in 1974 in turn led to higher estimates of available DM and higher intakes. In general, the lamb growth rates tended to parallel estimated intakes.

In both years late groups had more available pasture, especially in the first month of lactation, than did early groups. In 1973 low-stocked animals had much larger amounts of DM available in late lactation than did the high-stocked groups, and were in fact grazing pasture that had virtually reached hay stage. Although pasture growth in 1974 was better than in 1973, more of the surpluses from the LE and LL were conserved as hay and silage leading to lower estimates of available DM for grazing. Samples of pasture were taken for *in vitro* digestibility determination and the digestibility of the organic matter fell from approximately 80% in September and over 80% (up to 83%) in October to less than 70% in November. The decline was greatest for the late groups and also greatest for paddocks that had been neither topped nor cut for

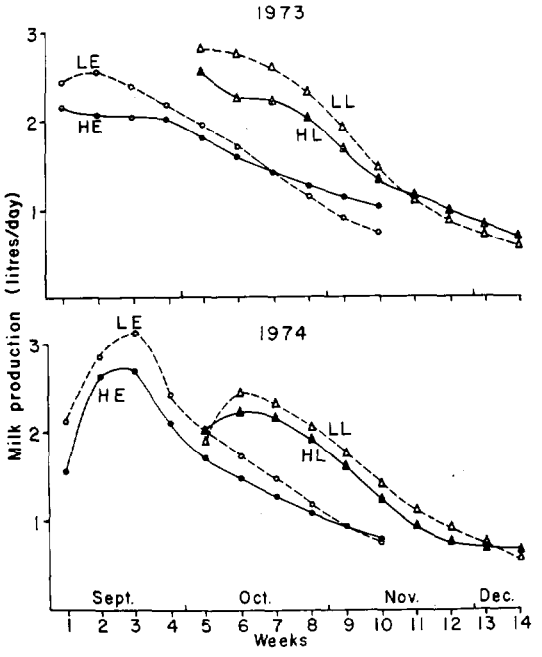

FIG. 1: *Patterns of estimated milk production*

silage. This probably accounts for the higher liveweight losses of the late-lambing ewes between weeks 4 and 12 of lactation.

In early lactation most of the apparent pasture intake is by the ewe, whereas in late lactation the lamb consumes a substantial amount—up to 1.0 kg DM/head/day (Jagusch and Coop, 1971). Similar to the conclusions of Langlands (1973), overall differences between treatments in lamb growth were quite small as lambs were able to adjust milk and grass intakes or grazing habits to maintain growth rates.

In an attempt to help interpret lamb growth rates, the milk production data were obtained. The 10-week patterns of milk production for the two years are shown in Fig. 1. While the 1973 milk production data showed similar trends to lamb growth, those for 1974 (especially in early lactation) did not. However, Wright *et al.* (1974) reported that the oxytocin method of estimating milk production substantially over-estimated actual milk consumption of the lamb in early lactation. Also, milk production levels in late lactation did appear to follow intake and ewe liveweight trends more closely than in early lactation. The average composition of the milk is shown in Table 4. There were no consistent trends in

TABLE 4: AVERAGE MILK COMPOSITION (%)

Year	1973				1974			
Group	*LE*	*HE*	*LL*	*HL*	*LE*	*HE*	*LL*	*HL*
Fat	11.3	9.3	10.6	10.5	8.5	8.5	8.5	8.7
Protein	5.0	5.2	5.0	5.0	5.1	5.2	4.9	5.2
Lactose	5.0	5.0	4.9	5.0	5.0	5.1	5.0	4.9

milk composition as lactation progressed. Within years there was no significant difference in composition though the fat levels in 1974 were significantly lower than 1973 ($P < 0.01$).

CONCLUSIONS

The main conclusions from this work are that lambs from later lambing ewes grow faster in the first month of lactation than early lambs. More pasture was available and ewe intakes appeared to be higher in this period. Alternatively, higher initial growth rates could have occurred amongst late compared with the early lambs at similar feed intakes provided less inclement weather conditions in the first month of life resulted in lowering of the energy needs for maintenance. If the summer decline in pasture quality could be arrested by such husbandry techniques as early conservation or

topping to keep the ryegrass vegetative, or if a high quality crop such as lucerne (which remains vegetative and highly digestible into the summer) could be available for grazing during late lactation and from weaning onwards, it is probable that the initial advantages of later lambing would not be lost. In this regard some preliminary results obtained at Ruakura with Dorset ewes lactating on ryegrass-white clover pasture and lucerne, have shown the milk production from the lucerne ewes to be 60 to 80% higher than those on rye-grass and clover in the last month of lactation, and their lambs were 2 kg heavier at weaning. Trial work planned is to expand examination of these possibilities.

ACKNOWLEDGEMENTS

The assistance of the staff of the Nutrition Centre, Chemical Services, Mrs C. Kevey and Miss R. Lynch are gratefully acknowledged.

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