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Lamb production from Merino-type ewes lambing in May and August in Victoria

K.F. THOMPSON

Animal and Veterinary Sciences Group, Lincoln College, Canterbury

J.M. OBST

Pastoral Research Institute, Victorian Department of Rural Affairs Box 180 Hamilton, Victoria 3300, Australia

ABSTRACT

Lamb production from May or August lambing by Merino and Comeback ewes was compared from 1982 to 1985 in a factorial design experiment at Hamilton, Western Victoria. Groups of 50 ewes were stocked at 500 kg live weight/ha or 12.4 Merinos/ha and 10.8 Comebacks/ha. Natural fertility levels were similar for all treatments with an average of 5% ewes not lambing. Comeback ewes had a higher lambing rate (lambs born/ewes joined) at August compared with May lambing (1.28 *v* 1.19 sed 0.052) whereas the Merinos had similar lambing rates (1.03 *v* 1.07 sed 0.02), indicating that the Western Victorian Merinos were relatively insensitive to seasonal effects (photoperiod) on fecundity. Lamb mortality was higher at August compared with May lambing (18.5 *v* 14.5% sed 1.8%) and was associated with higher chill factors in August due to cooler, wetter weather. The effects of lamb mortality lead to similar weaning rates (lambs weaned/ewes joined) for Comebacks at May and August lambing and lower weaning rates for Merinos at August compared with May lambing. Lamb weaning weights were similar for both lambing times, except in 1985 when severe internal parasite infections before weaning in groups lambing in May restricted lamb growth. The lower stocking rate (ewes/ha) balanced the higher per head production for Comeback ewes and lead to no significant differences between breeds or lambing times in weight of lamb weaned per ha.

Keywords Sheep; autumn; lambing; spring lambing; lamb production

INTRODUCTION

Autumn and winter lambing has recently received attention in New Zealand as a means of producing heavier weight lambs, or lambs early in the killing season to achieve financial premiums. Research efforts have concentrated on the development of flocks that are fertile early in the breeding season (Andrewes, 1983; McQueen and Reid, 1988), or the development of strategies for use of early lambing within farming systems (Andrewes and Taylor, 1986; Reid *et al.*, 1988; Taylor and Andrewes 1987).

The Australian situation is in marked contrast. Autumn and winter lambing is common, particularly where a hot dry summer with little or no pasture growth is expected. To assess the apparent advantages of a better fit of feed demand to supply, lower supplementary feed requirement and higher lambing rates associated with spring lambing, a replicated experiment was conducted from 1982 to 1985 at Hamilton, Western Victoria. Lamb production results are discussed in relation to New Zealand practice.

MATERIALS AND METHODS

The experiment was of replicated factorial design with May and August lambing times, and Merino and Comeback genotypes. May lambing represented the common farm practice and August lambing was considered a more appropriate match between feed demand and pasture production. These treatments were achieved by mating for 6 weeks from the first week in December or second week of March respectively. The Merinos were of a Saxon strain producing 20 μ diameter wool, typical of those run in Western Victoria. The Comebacks were chosen as a larger body sized genotype and were a Polwarth x South Australian Merino cross (i.e. 7/8 South Australian Merino and 1/8 Longwooled breed) growing 23 μ diameter wool. These breeds averaged 40 and 47 kg live weight (LW) respectively at the start of the experiment. The experimental plots had 50 Merino ewes on 4 ha (12.5/ha) and 54 Comebacks on 5 ha (10.8/ha) to give similar initial stocking pressures of 500 kg live weight/ha for both breeds. Treatment groups had similar balanced age structure with ewes of 2 to 5 years.

The timing of husbandry events differed between the season of lambing treatments. After weaning in September (May lambing) and November (August lambing) ewes were shorn, old ewes culled and maidens entered each group. Ewes were crutched six weeks prior to lambing and lambs marked eight weeks after the start of lambing. Anthelmintic for internal parasite control was administered to ewes pre-mating and pre-lambing and to ewes and lambs at marking. Lambs were removed from the experimental area at weaning.

Ewes were set-stocked. No management was used to control pasture mass or sward composition. Ewe live weight and body condition score (Jefferies, 1961) were recorded at approximately monthly intervals. Oat grain and hay feed was fed to any group when 30% of the ewes in the group were below a body condition score of 2- and feeding continued until all the ewes in the group were over condition score 2. Pasture mass was assessed approximately monthly during the pasture growing season by use of a rising plate meter calibrated by quadrant cuts. Temperature, rainfall and pan evaporation was recorded at an adjacent climate station.

RESULTS

The variable annual climatic and environmental conditions influenced pasture production. The 1982/83 summer was hot and dry with drought conditions until April 1983. The Ash Wednesday fire of 16 February 1983 burnt the experimental area. The 1983, 1984 and 1985 springs were moist and warm followed by hot, dry summers. Pasture mass had a marked seasonal pattern with a peak of about 6000 kg DM/ha in November-December and lowest levels of 900-1600 kg DM/ha in

TABLE 1 Mean live weights (LW; kg) and body condition scores (CS) over 4 years for Merino and Comeback ewes (breed effect -B) lambing in May or August(lambing effect -L). Measurements were made at the start of each year two weeks pre-mating, mid-mating, mid-pregnancy, pre-lambing, at lamb marking and weaning.

	May lambing		August lambing		Significance of main effects			Interaction	
	Merino	Comeback	Merino	Comeback	L	B	SED	LxB	SED
Start									
LW	41	47	42	46	NS	**	0.4	**	0.5
CS	2.8	2.9	2.8	2.7	**	NS	0.02	**	0.03
Pre- mating									
LW	43	49	42	45	**	**	0.3	**	0.4
CS	3.0	3.0	2.6	2.4	**	NS	0.04	**	0.06
Mid- mating									
LW	44	49	39	43	**	**	0.1	**	0.2
CS	2.9	3.0	2.5	2.3	**	NS	0.03	**	0.05
Mid- pregnancy									
LW	41	46	46	50	**	**	0.3	NS	0.4
CS	2.2	2.2	2.9	2.8	**	NS	0.04	NS	0.05
Pre-lamb									
LW	45	51	48	53	**	**	0.4	NS	0.5
CS	2.3	2.2	3.0	2.0	**	*	0.03	NS	0.04
Marking									
LW	43	47	49	52	**	**	0.2	**	0.3
CS	2.0	2.0	2.7	2.4	**	**	0.03	**	0.04
Weaning									
LW	4	49	51	53	**	**	0.5	NS	0.7
CS	2.3	2.3	2.8	2.4	**	**	0.04	NS	0.0

July-August. Seasonal pasture mass was similar for all treatment groups except that August lambing groups had lower pasture masses by 350-450 kg DM/ha than May lambing groups in August-September. At the same date the lambing time treatments differed in physiological state because of the three and half months differences in mating date. Pastures for the May lambing groups were of higher mass at mating (4700 *v* 1800, sed 260 kg DM/ha) and lower mass in lactation (1500 *v* 3100, sed 150 kg DM/ha) than those for August lambing groups. May lambing groups required, on average, supplementary feed equivalent to 240 kg/ha of oats, in contrast to 140 kg/ha for the August lambing groups.

The average annual liveweight pattern (Table 1) shows that although Comeback ewes were heaver than Merino ewes at the same physiological state, the breeds differed in their liveweight pattern with lambing date. May lambing groups were heavier pre- and mid-mating, particularly as a result of the high live weight of Comeback ewes. August lambing groups were heavier than May lambing groups from mid pregnancy and in lactation the Merino, August lambing groups in particular had relatively high liveweight gains.

There were no significant differences between treatments in ewes not lambing, and the overall mean was 5%. Table 2 presents productivity data. Comeback ewes had a higher lambing rate than Merino ewes, particularly with August lambing. The lambing rate of Merino ewes was not affected by lambing time. Lamb mortality was higher at August than May lambing and among twin-born lambs. Consequently there was little difference between treatments in the weaning rate (lambs weaned/ewe joined) apart from a breed difference where the rate for Comeback ewes was higher than for Merino ewes (0.93 *v* 0.77 sed 0.055). Chill factors calculated from the climate data of 1982 to 1985 were 996, 1012, 992 and 986 for May lambing and 978, 1056, 1071 and 1039 for August lambing. In 1985 severe internal parasite problems affected the May lambing groups and lamb growth before weaning was depressed. This lead to considerably lower weaning weights in comparison with August born lambs (14.2 *v* 19.7 kg sed 0.46). In other years, lambing season had no significant effect on weaning weight nor were there significant effects on lamb output (kg/ha).

DISCUSSION

Lamb output per ha is primarily determined by the number of lambs weaned per ha and the weight of these lambs. The similarity between treatments in lamb output is largely due to environmental effects on production, such as those on lamb survival, and to the management policies of supplementary feeding to prevent excessive body loss and stocking the genotypes at rates to give similar levels of live weight per ha.

The extra supplement fed to May compared with August lambing groups was required in late pregnancy and early lactation (April-June). This prevented a major decline in body condition and meant that adequate lamb nutrition was maintained and lamb weaning weights were not penalised by the low pasture masses during lactation. The effects of internal parasitism on

TABLE 2 Reproductive performance, lamb mortality and lamb growth for May and August lambing with Comeback or Merino ewes.

	May lambing		August lambing		
	Comeback	Merino	Comeback	Merino	SED
Lambs born/ewes joined	1.19	1.07	1.28	1.03	0.052
Lamb mortality (%)					
singles	13	16	17	20	3.1
twins	25	25	39	33	6.6
Lambs weaned/ewes joined	0.93	0.82	0.93	0.71	0.055
Lamb weaning weight (kg)	18.3	17.9	20.4	19.9	0.40
Weight lamb weaned/ha(kg)	189	180	199	192	12.9

lamb growth in 1985 highlight the need to be aware of such problems with autumn lambing and to develop appropriate preventative treatments. With effective parasite control and winter feeding satisfactory lamb growth rates were achieved with May lambing.

Lambing rate and lamb survival determine number of lambs weaned. Comeback ewes had a higher lambing rate at August compared with May lambing. This is consistent with the seasonal effect on fecundity predicted for various genotypes at these latitudes (White *et al*., 1983). The Merinos had similar lambing rates at May and August lambing. This is interpreted to indicate a lack of a change in fecundity as the breeding season advanced.

May lambing groups had abundant pasture feed from weaning to mating (September to December) and these ewes were of higher live weight at mating than August lambing groups which were on dry summer pastures of lower mass in the weaning to mating period. The higher live weight and associated higher fecundity of the ewes mated earlier in the breeding season is likely to have reduced the seasonal fecundity advantage of the August lambing groups (White *et al*., 1983).

The higher lamb mortality at August compared with May lambing was associated with colder, wetter weather as indicated by the higher chill factors. The lamb losses were sufficient to negate the advantage to Comeback ewes of their higher lambing rate at August to the extent that the weaning rates for Comeback ewes were similar at August and May lambing. For Merinos, the higher August lamb mortality lead to a lower weaning rate for August compared with May lambing.

This experiment has shown that at latitudes similar to New Zealand, Australian Merino and Comeback ewes have satisfactory fertility and fecundity for December mating with May lambing and satisfactory lamb weaning output. These results have application to New Zealand situations where a shift from spring to autumn lambing is contemplated. It is possible that given time and selection, early seasonal fertility can be developed in some New Zealand flocks. The shift in mating dates observed by Andrewes (1983) and McQueen and Reid (1988) in Dorset cross ewes in Northland indicates the potential for development of flocks with breeding activity in December.

The productive advantage of lower lamb mortality with autumn lambing is likely to be experienced where climatic differences exist between lambing seasons. Andrewes (1983) reported lower mortality in autumn compared with spring born lambs. With further experience in New Zealand of autumn lambing, seasonal climatic effects are likely to be more widely recognised.

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