A COMPARISON OF AN EARLY AND A MID-AUTUMN JOINING OF PEPPIN MERINOS

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Summary

Data were collected from four joinings (1962-1965) of two genetically similar Peppin Merino flocks to compare the productivity of early and mid-autumn joining at Trangie, -N.S.W. Each year, joinings commenced during the last week of February (March joined) and the first week of April (April joined), and continued for approximately five weeks.

The patterns of oestrus incidence were the same for each flock, but there were 12% more conceptions to first service and 7% more ewes bearing lambs in the April joined flock. A lower average multiple birth rate reduced this advantage to 6% more lambs born, and a higher death rate eliminated the advantage by weaning.

At birth, lambs from the March joined flock were 6% lighter than those from the April joined flock, but by weaning they were 8% heavier. The growth advantage of these lambs was reflected in their 4% higher body weight and 5% greater clean fleece weight at 16 months of age. It is concluded that, for reasons of pasture suitability, the optimum time for commencement of joining at Trangie is probably late February or the first week of March.

I. INTRODUCTION

In the central west of New South Wales, Peppin Merino ewes show higher lambing percentages after they have been joined with rams in the autumn (March-April) than they do after spring joinings. However, little information is available to assist the grazier in choosing the most suitable joining time within the autumn period. Unfortunately, the problem involves more than the identification of a restricted joining time that will result in the maximum number of lambs born. In this area the eventual choice of a joining time must take into account the fact that an infestation of barley grass *(Hordeum leporinum)* seed during October will severely check the growth of young lambs (Morley 1948). This paper presents results of a comparison between early and mid-autumn joinings of Peppin Merinos at Trangie, N.S.W.

II. MATERIALS AND METHODS

The location of the Trangie Agricultural Research Station and the environment during the period covered by this report (1962 to 1965) are described by Robards and Pattie (1968). Briefly, 1962 to 1964 were years of good pasture growth although the autumns were dry in 1962 and 1964. In contrast, 1965 was a year of severe drought and all sheep were hand fed until spring.

The sheep used are descendants of the autumn and spring joined "Random flocks" described by Dun, Ahmed and Morrant (1960). After 1960, spring joinings

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were discontinued at Trangie and since 1962 the spring joined flocks have been joined for five weeks from the beginning of April (April joined). The flocks previously joined in autumn (April-May) are now joined for five weeks commencing in the last week of February (March joined). On three occasions, rams have been exchanged between the March and April joined Random flocks to ensure that they remain genetically similar.

Both flocks are closed and consist of 100 ewes and 25 rams. From the start of each joining period, vasectomised rams fitted with raddle crayons are run with the ewes for three weeks. Each morning, raddled ewes are removed and are mated using artificial insemination. The ewes are then yarded with a vasectomised ram for several hours,- and are returned to the flock after three days. For the remaining two weeks, each flock is joined with five entire rams, one ram to 20 ewes in separate paddocks. Twenty rams are used during the period of artificial insemination, the remaining five being used for the last two weeks of joining. The ewes lamb in a drift lambing system (Giles 1968) where all lambs are identified with their dams, and their birth weights recorded.

Lambs are weaned and weighed at 11 to 12 weeks of age and weaners from both flocks are shorn during the same week in December each year. The flocks are grazed separately on pastures of similar composition — the best available. The sheep are again shorn as hoggets the following November when their fleeces are weighed and sampled. All sheep are weighed after this shearing.

The drought of 1965 caused two major interruptions to this routine: (i) the hoggets born in 1964 were shorn in September 1965 with nine months' wool to allow early culling, but body weights were measured at the usual time; (ii) the lambs born in 1965 in the March joined flock were agisted at Leeton after weaning. Thus the body and fleece weights of all lambs born in 1965 have been omitted from the analysis.

Reproduction data were analysed by chi-square analyses of the actual figures. Body and fleece weights were examined by analyses of variance' of unweighted subclass means, where the effects of joining time, years, sex and type of birth were treated as separate classifications. Weaning weights were corrected for age each year by adjusting the individual weights to the average age of the two flocks combined.

III. RESULTS

Patterns of oestrus incidence, averaged over four years, are shown in Figure 1. There were no significant differences between joining periods in either the total number of ewes in oestrus in the first three weeks, or in the proportions of ewes not mating during the whole joining period.

The average reproductive performance of each flock is given in Table 1. A significantly greater proportion of April than of March joined ewes conceived to first service ($P<0.05$) and this difference was reflected in the significantly greater ($P<0.05$) proportion of April joined ewes lambing.

There was a significant interaction between years and joining time in the proportion of multiple births. In 1962 and 1965, there were 16 and 13 % more multiple births in the March than in the April joined flock, whilst there were 11 and 4% more multiple births in the April joined flock in 1963 and 1964. The

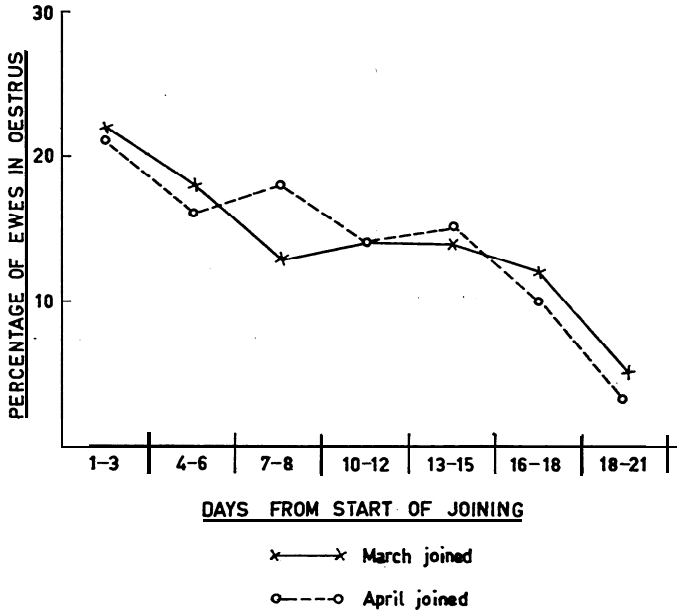

Fig. 1.—Patterns of oestrus incidence, averaged over four years in the March and April joined flocks. Each point represents the percentage of ewes in oestrus in each three day period.

In both flocks, 1% of ewes mated with entire rams after day 21; 2% of the March and 5% of the April flock did not mate during the whole joining period.

April joined flock averaged 6% more lambs born over the four years but, as more of these lambs died, the same percentage of lambs were weaned per ewe joined in each flock.

Body weights and clean fleece weights for lambs born from 1962 to 1964 are given in Table 2. Lambs from the March joined flock were significantly lighter at birth but were heavier at weaning. For this character, there was a significant year x joining time interaction: the lambs born in 1962 and 1963 in the March

TABLE 1

Reproductive performances, averaged over the four years 1962 to 1965, for March and April joined flocks

	March (%)	April (%)	Difference
Conceptions to first service‡	58	70	*
Ewes lambing§	75	82	*
Multiple births||	35	31	(*1962)†
Lambs born§	103	109	no analysis
Lambs lost¶	13	18	not significant
Lambs weaned§	89	89	no analysis

*$P<0.05$.
†Flock x years interaction significant.
‡As percentage of ewes inseminated.
§As percentage of ewes joined.
||As percentage of ewes lambing.
¶As percentage of lambs born.

TABLE 2

Means and standard errors of body weights and clean fleece weights for sheep born in the March and April joined flocks from 1962 to 1964

	Flock		
	March joined (kg)	April joined (kg)	Difference
Birth weight	3.89 ± 0.04	4.14 ± 0.03	*
Weaning weight (age corrected)	21.11 ± 0.16	19.36 ± 0.18	(*1962, 63)†
16 Month weight	43.06 ± 0.35	41.56 ± 0.25	*
Clean fleece weight	3.05 ± 0.04	2.91 ± 0.03	*

*$P < 0.05$ †Years x flocks interaction significant.

joined flock were 3.6 and 2.3 kg heavier, while the 1964 drop lambs were 0.9 kg lighter than lambs from the April joined flock. At 16 months of age, hoggets from the March joined flock were significantly heavier and cut significantly more wool than those from the April joined flock.

IV. DISCUSSION

The patterns of oestrus incidence and the erratic variations in multiple births indicate that there was no systematic difference in lambing potential between ewes joined in either March or April. This would not have been expected from the earlier observations of Dun, Ahmed and Morrant (1960), which showed a peak in multiple ovulations in early April. However, in the present experiment the variations in multiple births may have been associated with variation in feed supply in early autumn, a variation to be expected because of the extreme unreliability of rainfall at Trangie.

The smaller proportion of conceptions to first service in the March joined flocks is probably a result of the high temperatures experienced in this environment in January and February (average daily maximum greater than 32°C). Temperatures of this magnitude have been shown to cause infertility among rams (Fowler 1967) and to reduce fertilization and embryo survival among ewes (Dutt 1964). It is likely that the sheep affected in these ways recover but there is insufficient time in a five weeks' joining for all the ewes to return to service. In this study the disadvantage was carried through to a lower percentage of ewes actually lambing. A longer joining time would reduce this disadvantage but nevertheless the high summer temperatures do limit the early commencement of joining.

Despite their lower birthweights, lambs from the March joined flock grew faster to weaning and at 16 months had the higher body and fleece weights. This growth advantage would have been associated with the longer growing period experienced by the lambs before pastures dried off and barley grass seed became a problem. Thus, an early joining would ensure maximum lamb growth. A compromise must be made between the high temperature losses and better growth rate, so it would appear best to commence joining in late February or the first week of March.

V. ACKNOWLEDGMENTS

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