# AN INTERACTION BETWEEN STRAIN OF MERINO EWE AND SEASON OF JOINING

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#### Summary

Young Peppin and South Australian Merino ewes were joined with Border Leicester rams in either autumn (March-April) or spring (October-November) in 1963 and 1964. The ewes were bred at Trangie and transferred to Condobolin where the experiment was carried out.

With autumn joining the Peppin ewes had 5% more lambing ewes and 9% more twin births than the South Australians. This ranking was reversed with the spring joining where the South Australians had 12% more lambing ewes and 14% more twin births.

# I. INTRODUCTION

The long history of spring joining in many Merino studs located in southern Australia contrasts with the autumn joining commonly used in New South Wales studs. Thus genetic differences are possible in the pattern of the breeding season between Merino strains of southern and northern origin. Reviews by Watson (1952, 1956, 1962) show that to date there has not been a conclusive demonstration of any such differences.

One aim in a Trangie project evaluating the South Australian Merino is to compare the reproductive performance of this strain with the local Peppin Merino in joinings with the Border Leicester ram. This breeding combination forms the basis of the important "first cross" industry, an enterprise which depends on successful spring joining. Joinings in both spring and autumn, however, were compared for the two strains.

# **II. MATERIALS AND METHODS**

The origins of the South Australian and Peppin Merino flocks bred at the Trangie station and transferred to Condobolin have been described by Dun, Alexander and Smith (1964). The first transfer, in January 1963, consisted of 90 South Australian ewes (36 born in June 1960 and 54 in August 1961) and 100 Peppin ewes (born in August 1961), and the second, in January 1964, of 90 South Australian and 97 Peppin ewes, all born in August 1962.

Half the ewes of each strain, chosen at random within age-groups, were joined as one flock in spring 1963, the same three fertile Border Leicester rams being used for each joining. The two groups of ewes were joined again to the same rams in autumn or spring 1964, a random half of each strain from the second transfer being added to each flock. Each autumn joining lasted for five weeks commencing March 7 and each spring joining for six weeks commencing

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October 18. The ewes were run as one flock with vasectomised crossbred teaser rams for two weeks immediately prior to each spring joining. Rams and teasers were equipped with mating harnesses so that services could be recorded.

Abundant green feed from annual pastures was available during the spring joinings, whereas the ewes grazed dry pasture residues in February-March. The average body weights of the ewes at the commencement of joining in the spring were 53 kg (117 lb) for Peppins and 56 kg (124 lb) for South Australians compared with 47 kg (103 lb) and 5 1 kg (112 lb) in the autumn. Irrespective of strain and season, the average body weight increased by approximately 6% during the period commencing a month before to the end of joining.

# **III. RESULTS AND DISCUSSION**

The two years' data on reproductive performance (Table 1) were pooled for chi-square analysis as described by Snedecor (1956). The South Australian strain was significantly superior at spring joining with all characters except percentage twin births. The strain by season interaction was significant for lambing ewes and twin births. This interaction is summarised in terms of lambs born; with

	Peppin	South Australian	Chi- square	Interaction Chi-square (strain x season)
Number of ewes joined				
Autumn	145	134		
Spring	146	134		
Raddled prior				
to joining (%) <sup>†</sup>				
Spring	20	33	5.50*	
First services (%)†				
Autumn	95	95	0.00	
Spring	67	86	12.49***	3.73
Lambing ewes (%)†				
Autumn	86	81	0.89	
Spring	61	73	4.14*	4.18*
Twin births (%)‡				
Autumn	33	24	1.86	
Spring	29	43	3.23	5.03*
Lambs born (%)†				
Autumn	115	101		
Spring	79	105		
	* P<0.05	*** P<(	*** P<0.001	

#### TABLE 1

The reproductive performance of Merino ewes of the Peppin and South Australian strains joined in either spring or autumn, 1963 and 1964

†Expressed as a percentage of ewes joined.

First Service

= the first oestrus during the joining period. = a ewe which carries a lamb to full term i.e. either a lactating ewe Lambing Ewe or a ewe lambed and lost (Dun 1963). **Expressed** as a percentage of lambing ewes.

autumn joining there was an advantage of 14% for **Peppins** over South Australians while with spring joinings, a marked advantage of 26% for South Australians over **Peppins** occurred. It is unlikely that this result could have been influenced by preferential mating by rams. The crossbred teasers also mated a greater percentage of South Australian ewes in the spring and Border Leicester rams showed no evidence of preference for either strain at the autumn joining.

A genetically determined strain difference in seasonal reproductive performance has therefore been demonstrated. This could have been produced by natural selection over the 120 years of spring joining used in the foundation of the particular South Australian stud sampled. The Trangie Peppin has been developed within a management system including autumn joining.

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