

# PLANE OF NUTRITION IN STUD RAM PRODUCTION

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## *Summary*

Ram lambs, born in a medium Peppin Merino Stud, were grown to maturity on either a high plane of nutrition (Stud Plane), or on natural pasture (Trangie Plane). Averaged over their first two production records, the Stud Plane rams produced 31% more clean wool. At 34 months of age, they were 66% heavier in body weight. Their skeletal measurements were also greater than the Trangie Plane rams.

The two groups of rams were progeny tested by joining them as three year olds with Merino ewes. There were no important differences between the two groups of 15 months old ewe progeny in wool production.

## I. INTRODUCTION

In commercial Merino breeding, the generally accepted practice is to grow ram weaners under favourable environmental conditions. Reserve rams, intended for exhibition at shows and special sales, are further prepared during a second year. Their appearance and productivity is greatly improved by techniques such as an initial blade shearing, a high plane of nutrition obtained through use of irrigated pastures supplemented with concentrates, and shedding to protect the fleece from penetration by dust, water and vegetable matter. Merino breeders often fail to differentiate between environment and breeding when comparing "prepared" rams of this type with rams grown under paddock conditions.

This experiment was designed to measure the extent to which the appearance and productivity of Trangie Merino rams can be improved by a high standard of nutrition and management during growth. The relative values of these rams as sires of wool producing sheep was determined by progeny test.

## II. MATERIALS AND METHODS

Prior to lambing in September, 1961, 50 ewes from the Trangie Merino Stud (Reg. Flock No. 78) were divided at random into two groups. The ram lambs from one group (Trangie Plane) were raised under normal paddock conditions at the Research Station. Ram lambs from the other group (Stud Plane) were raised using the management regime described below.

From birth to 21 months, the Stud Plane rams were fed on natural pasture and lucerne supplemented with oats and barley grain. Six rams were then housed in single pens for 12 months and offered *ad libitum* lucerne nuts, oats and cereal chaff. Two percent salt was incorporated with the lucerne nuts and with the grain ration to stimulate water intake. This treatment differed slightly from normal stud preparation where irrigated pasture is used as the basic feed source and rams are housed at night and in bad weather.

The rams were shorn at 4 months of age and again at 16 months when production measurements were taken. At 21 months of age, the six best rams from

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each group were selected by visual appraisal for conformation and fleece characters. The Stud Plane rams were blade shorn to Sydney Sheep Show specifications. The Trangie Plane rams were machine shorn at this time, and again after 12 months in June 1964, at the same time as the Stud Plane group. Following the final shearing, the Stud Plane rams were run with the Trangie Plane rams on natural pasture for four months prior to joining. A final visual selection was made of the best four fertile rams from each group for progeny testing. There were no appreciable differences in selection differentials between the two groups of rams for any of the measured traits.

In October 1964, the rams were joined individually with groups of approximately 67 ewes from a neighbouring property. These groups were balanced for age and were assigned to the rams at random. After removal of the rams, the ewes were run together at all times, except during lambing when ram-groups were separated to allow identification of their lambs. Ewe weaners were raised together under normal flock management, and fleece data were obtained at their first mature shearing.

For the period from spring 1961 to spring 1964, pasture conditions were generally good to excellent. Abundant green feed was available during the winter and spring but feed tended to become rank and dry during the summer and autumn. Pasture availability was considerably reduced in the winter of 1962. Annual rainfall was consistently above the district average of 46 mm (18 in.).

A split-plot 'type analysis of variance, and independence tests were used to examine the body and fleece' data- of the four rams selected as sires in each treatment. Data from the rejected rams have not been included as they were not progeny tested and their relative production performance agreed closely with the comparative data derived from the groups of four. Measures of reproductive performance were examined using independence tests. Data from the rams' progeny were examined using analysis of variance for subsamples within samples, and independence tests.

### III. RESULTS

Averaged over the two series of productivity measurements, Stud Plane rams produced 31% more clean wool than Trangie Plane rams. The advantage for the Stud Plane was significantly greater at the first shearing (52% and was reduced to 16% in the following year. The superior fleece weight of Stud Plane rams resulted from advantages in greasy fleece weight, yield and staple length. There was little difference between the groups in crimps per cm. Prior to joining, Stud Plane rams weighed 66% more than Trangie Plane rams and had larger body measurements with a significant difference of 23 % in width at ribs (Table 1, Figure 1).

There were no significant differences between progeny groups in any of the fleece measurements (Table 2).

### IV. DISCUSSION

The growth and production of the rams illustrated the effectiveness of the two treatments. The Stud Plan rams produced more wool at their first mature shearing showing that the nutrition at pasture was superior to that received by the Trangie Plane rams. The wool production of Stud Plane rams was maintained at this level

TABLE 1  
*Wool production on a two year average, and body measurements at  
 June 1964 of Stud Plane and Trangie Plane rams—four rams per group*

Attribute	Stud Plane		Trangie Plane	
	Mean	S.E.	Mean	S.E.
Greasy fleece weight (kg)	11.6	0.8	9.8	2.4
Yield (%)	65.6	2.6	59.0	1.2
Clean fleece weight (kg)	7.6	0.4	5.8	0.7
Staple length (cm)	13.0	0.9	11.1	0.7
Crimps per cm	4.0	0.6	3.7	0.5
Body weight (kg)	89.4	3.2	53.8	2.6
Length of body (cm)	75.3	1.3	72.0	1.7
Depth of body (cm)	37.9	1.9	33.9	2.3
Width at ribs (cm)	22.6	1.0	18.4	0.5
Leg length (cm)	42.0	0.7	40.5	0.8

the following year, but the Trangie Plane rams improved considerably. Housing and concentrate feeding caused overfatness and reduced feed intakes among the Stud Plane rams. Their average feed intake during the summer of 1963-64 was approximately 0.7 kg dry matter per day — an extraordinarily low level considering their average body weight of 89 kg. The low wool growth rates are undoubtedly associated with these low intakes.

It is obvious that the period of housing was not successful in its aim of lifting production relative to grazing sheep. In fact, the treatment depressed wool production, despite the initial advantage conferred on this group by blade shearing. Although overfatness is avoided in show preparation, the Stud Plane treatment remained successful, in greatly improving the appearance of the rams (Figure 1). Many experienced stud breeders, after inspecting the groups, stated that the difference between them could be expressed as value per head of \$800 to nil.



Fig. 1.—Stud Plane ram (foreground) and Trangie Plane ram (background) after show preparation.

TABLE 2  
**Wool production of ewe progeny over 1.5 months**

Attribute	Stud Plane		Trangie Plane	
	Mean (86)	S.E.	Mean (75)	S.E.
Greasy fleece weight (kg)	4.1	0.4	4.1	0.4
Yield (%)	57.5	0.5	58.0	0.5
Clean fleece weight (kg)	2.4	0.0	2.4	0.0
Staple length (cm)	7.8	0.1	7.7	0.1
Crimps per cm	3.7	0.1	3.6	0.1
Fibre diameter ( $\mu$ )	19.8	0.1	19.6	0.1

Costs during the 12 months' housing were \$32 per ram for feed, plus an equal amount more for labour and management. The industry would be more efficient if breeders combined to educate buyers and eliminate current methods of show preparation. The practice is costly and artificial, and only leads to confusion of breeding merit with acquired characteristics that are not inherited.

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