SRS genetics

FACT SHEET

The Effect of Selecting for Fat and Muscle on Reproductive Performance

Introduction

During the last decade there has been a significant shift in many Merino flocks to selection for meat production to increase profitability. This has resulted in a much greater emphasis on reproduction, carcass and growth traits in selection programmes. However, the focus of the meat industry on meeting the wants of the consumer for lean cuts by selecting against 'fatness' has come at a cost of Merino reproductive performance.

The Research

A collaborative research study involving CSIRO Livestock Industries, Murdoch University and the Sheep CRC was established to determine the impact of selecting for carcass traits on other productive qualities. The study demonstrated that selecting for a combination of higher carcass muscling and higher growth, while not selecting against fat, produces better all-round results than breeding for either higher muscling or higher growth alone.

Lead researcher in the project, Dr Mark Ferguson of Murdoch University & Department of Agriculture and Food, Western Australia, assessed the 'whole of farm value' of fat and concluded that fatness should be maintained, or increased in the Merino. A Merino flock with 10 years of reproduction data was used to analyse the correlation between breeding values for fatness at yearling age (YFAT) and the number of lambs born per ewe mated. Modelling was used to assess the impact in different sheep production systems and for year-to-year production responses. The study found that the whole of farm benefit of a genetic increase in fat was a direct function of its effects on reproduction. In addition there was a positive YFAT effect on lamb birth weight when ewes were on restricted nutrition during pregnancy.

The positive link between genetic fatness values and the number of lambs born has major implications for breeding decisions on-farm. In the Merino, fatness should be maintained or increased to enhance reproductive potential. The changes in whole-of-farm profitability for a 1mm increase in YFAT varied from $1000 for a wool enterprise with a low response up to $44,000 for a lamb enterprise where the number of lambs born was sensitive to YFAT. (These calculations were made using a lamb price of $3.50 per kg).

Results from the Field

Recent field observations made by SRS® Merino breeders, Mark and Vicki Murphy, of Karbullah Poll Merino Stud, Goondiwindi, Queensland, suggest that most lambs survived when sired by rams with high Australian Sheep Breeding Values (ASBV) for Eye Muscle Depth and Fat Cover. By contrast, lamb survival was about 20% lower when sired by rams with low breeding values for muscle and fat (see Table 1 below).

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Table 1: Field Observations – Karbullah Poll Merino Stud

Sire	Number of Lambs Born	% Lambs Weaned	Yearling Breeding Values	
			Eye Muscle Depth (mm)	Fat Cover (mm)
High muscle and fat sires:				
A	41	100	1.6	0.9
B	41	97	1.6	0.7
C	40	97	1.6	0.9
D	72	96	2.0	1.0
E	64	95	0.8	1.2
F	54	85	0.7	0.9
Low muscle and fat sires:				
G	35	88	- 0.8	0.1
H	73	79	- 1.0	- 0.8
I	46	79	0.0	0.4
J	57	77	- 1.9	- 0.9

As outlined above, there is an economic imperative to increase sheep fertility whilst maximising lamb survival. Lamb marking percentages across Australian Merino flocks are low, averaging about 85 lambs to every 100 ewes joined (85%). Lambs losses from birth to weaning are estimated at 20% to 30%.

Like the Karbullah flock above, most SRS® Merino flocks see lamb marking outcomes of 120 to 130%. This high fertility is associated with the SRS® sheep type being plain bodied with a calm temperament, high milk production and instinctive maternal bonding – All of which enhance lamb survival. Commercial producers using the SRS® Breeding System have seen major improvements in survivability and reproductive fitness across a wide range of Australian environments, from the Snowy Mountains of New South Wales to the hot and vast pastoral country of Longreach, Queensland.

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Figure 1: SRS® Merino ewe rearing three lambs under drought conditions

Conclusion

By using ASBVs in tandem with the SRS® Breeding System, breeders across Australia have observed that sheep with the genetic capacity to lay down muscle mass with high fat cover early in life are able to maintain good body condition during drought, pregnancy and lactation, and rear more lambs with many fewer lamb losses.

Contact Us

For more information on the SRS® Breeding System or sourcing SRS® genetics please contact:

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