

Out of Africa

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Theme "Secrets of Success: Make More Money More Easily: Up Close and Personal With Six Specialists"

The single most important factor that has influenced the evolution of the Merino in South Africa has been the changing wool/meat price ratios. Over the past 40 years we have experienced declining terms of trade so far as wool is concerned and at the same time steadily improving sheep meat prices, to the extent that wool and lamb prices are now almost at parity. The changing wool/meat price ratio has resulted in ever greater emphasis being placed on traits such as conformation and carcass quality, prolificacy and lamb growth rate, all of which contribute to improved meat production. There is no conflict between wool and meat production in the same enterprise. Indeed, the two products are complimentary, each having a stabilising effect on the other. At current price levels in South Africa, in woolled sheep flocks that achieve the highest gross margins, meat can generate as much as 80% of total flock income. The impact of this is that, through the whole spectrum of woolled sheep breeds and strains in South Africa, the emphasis has shifted to characteristics such as body weight, reproduction and growth rate. Even the conventional Merino, previously selected almost exclusively for wool production, has undergone radical evolutionary change in type in order to exploit changing economic circumstances. While the volume and quality of wool production has often been fully maintained, meat income now far exceeds wool income in most woolled sheep enterprises.

If less than 70% of total flock income is from meat, the flock is under-performing and there is a high potential to increase income and profit. We do not see crossbreeding with terminal meat sires to enhance the profitability of Merino flocks as a long term viable option. Cross-breeding for meat production is non-sustainable in the long term and will lead to the demise of the Merino. To achieve maximum profitability the aim must be to increase the meat production to a level where it generates at least 70% of gross flock income in a self-replacing flock where the breeder has full control over the breeding and selection programme. We use simple, logical common sense strategy to achieve this without sacrificing any wool income.

The number of head marketed per hectare per annum (turnoff) is the single most important factor that influences flock profitability and gross margin.

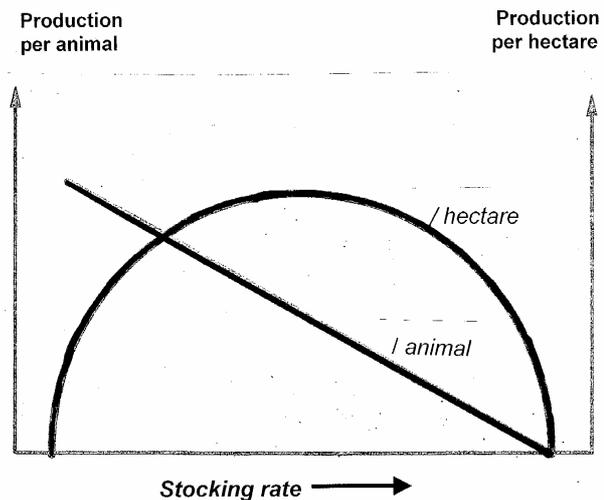
Maximizing the turnoff per hectare involves the following aspects:

1. **Flock Composition** – Maximum number of ewes in relation to total flock – minimum 60%
2. **Lamb Growth Rate** – The faster the lambs grow, the earlier they can be marketed at better prices, freeing production resources for a higher relative number of breeding ewes. The early marketability of lambs is therefore the key to higher ewe numbers, more lambs to market and higher profitability.

3. **Stocking Density** – Maximize turnoff per hectare by carrying the optimum number of ewes for a particular situation. The correct balance needs to be found between ewe productivity and stocking density. Maximizing return per ewe does not equate to maximizing return per hectare. Figure 1. illustrates how stocking density influences productivity per animal. Stocking density must be set a level which will maximize **return per hectare** from ewes capable of efficient production at that level.

Figure 1. Stocking density in relation to Ewe Productivity and Production per hectare (Voermol Feeds, SA)

Production per hectare is maximized by an increased number of ewes at a feed level that optimises production per unit of feed. At this level ewes face competition for feed. To achieve this level of production ewes must be **genetically adapted** to these conditions – which relates to the crucial importance of the next aspect.



4. **Type of Sheep** – Ewes must be hardy, easy-care and efficient converters of even low quality feed. They must be non-selective grazers. They must have high reproduction rates, good maternal ability for high lamb survival and good milking ability for high lamb growth. An optimum relationship between wool production and body size is an essential attribute of the type of sheep capable of this level of production under hard commercial conditions. This relationship is expressed as Wool Production Potential (WPP%) which is clean fleece weight expressed as a percentage of body weight measured at 12 months of age (Herselman *et al*, 1993). Because there is an inverse relationship between WPP% and reproduction and lamb growth rate, striking the right balance in the flock is crucial. Most Merinos in South Africa have a potential for wool production higher than most environments can support. This high fibre production potential impedes reproduction and growth rate (Wentzel, 1991, Adams *et al*, 2006). Experience has shown that Merino types with a WPP% of between 5% and 7% are ideal and have the added advantage of being plain-bodied, hardy, fit and easy care - traits that also help to reduce production costs. Attention to quality traits to achieve maximum value for wool will enhance returns.

While wool may contribute only 30% or less in this equation, its contribution adds long-term stability and higher future cash flow potential if markets improve, especially since selection for finer, high quality wool can increase the value of this component. Experience with this strategy has demonstrated that while meat production increases with more efficient sheep, the wool production of the enterprise can be fully maintained and, because of more lambs/hoggets to shear before marketing, it can often be increased.

Outcomes

Table 1. (Fourie, 2006) summarises the results achieved by participants in a Study Group in the Western Cape, most of whom follow this strategy to varying degrees.

Table 1.

Overberg Sheep Enterprises, 2003 and 2004 (Anker Agric Consultants)

Stocking rates, Production and Gross Margins

Year	Average		Top Third		Lowest Third		Top Individual	
	2003	2004	2003	2004	2003	2004	2003	2004
Stocking rate per Ha, (SSU)	4.53	4.60	6.06	6.00	3.95	4.10	8.71	9.33
<u>Wool Production</u>								
KG per SSU	4.4	3.9	4.1	3.6	4.5	3.7	3.1	2.9
KG per Hectare	19.9	18.0	24.8	20.8	17.8	15.3	27.0	27.0
Wool income per Ewe	232	148	227	137	214	157	148	125
<u>Meat Production</u>								
Weaning % / Ewes mated	1.15	1.06	1.16	1.14	1.14	1.02	1.36	1.19
Income per Head	376	388	489	584	324	282	509	525
Income ratio - Wool : Meat	38:62	28:72	32:68	19:81	40:60	36:64	22:78	19:81
Gross Margin per Ewe ZAR	527	453	560	541	478	363	472	410
Gross Margin per Ha. ZAR	1203	1089	1641	1556	988	792	1998	1869

It is important to note the features of those flocks achieving the highest gross margins:

1. They have the highest ratio of meat to wool income
2. They have the highest stocking rates and weaning percentages
3. They have the lowest wool production per head but the highest wool production per hectare

These results confirm that wool production is no longer the most important component of flock income and a new philosophy in terms of breeding goals and selection strategy for Merino Sheep is necessary to maximise profitability in the current and future market environments.

Selection strategy to accelerate progress

While it would be nice to say that performance and pedigree recording and the use of EBVs have been the means by which the successful evolution of the South African Merino has been achieved, the change began some decades before these were in general use. Much of the change was the result of rational thinking and common sense.

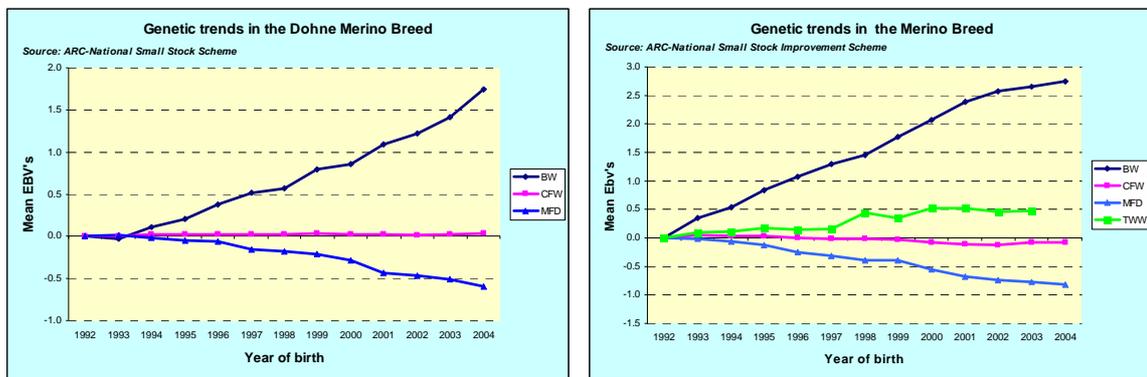
However a significant number of progressive sheep breeders have used measurement since fleece testing facilities became available in 1970. Initially performance was expressed as within flock deviations for the parameters measured and rams were

ranked on various indices which were modified from time to time to adapt to changing price trends. Currently most ram breeders participate in Performance Testing schemes operated by Breed Societies in collaboration with the Agricultural Research Council. National across-flock EBVs are available for Body Weight, Clean Fleece Weight, Fibre Diameter and Total Weight of Lambs Weaned per ewe (TWW) and rams are ranked on their Relative Economic Value (REV) according to specific Selection Indices. Because of the importance of the meat component, the Selection Indices are generally designed to increase Body Weight and TWW, maintain Fleece Weight and reduce Fibre Diameter. This is in contrast to most Australian Selection Indices which still aim to increase Fleece Weight (Merino Superior Sires Central Test Sire Evaluation Results No. 11 – 2006 published by the Australian Merino Sire Evaluation Association). Annual summaries of test results reflect the average productivity of each stud in terms of EBVs relative to the national average for that breed and are valuable as an indication of where future selection pressure should be placed. Positive results are being achieved. Figures 2 and 3 illustrate the trends for the Dohne and Merino Breeds.

Figures 2 and 3.

Genetic Trends in the Dohne and Merino Breeds

(Source: ARC National Small Stock Scheme (Olivier, 2006))



Many breeders also select directly for reproduction rate and lamb survival by, amongst other strategies, selecting sires on the basis of their dam's reproductive performance. In many cases a summary of the reproductive performance of the dam of each ram offered for sale is published in ram sale catalogues.

Our next challenge is to incorporate EBVs for reproduction and fitness traits into a routine evaluation scheme. This can be done by recording data at weaning. A facility for this already exists in our National Performance Testing Scheme and EBVs for TWW are already available to some breeders. This will also enable us to get EBVs for direct weaning weight (growth) and maternal weaning weight (mothering ability).

Acknowledgements:

The assistance of André Fourie of Anker Agric Consultants, Bredasdorp and Dr, Buks Olivier fo the Agricultural Research Council, Stellenbosch, who provided both data and advice, is gratefully acknowledged.

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