PRODUCER'S PERSPECTIVE "A SHARP KNIFE WITH A CLEAR CONSCIENCE"

D. Rossiter

Galmpton, Kingsbridge South Devon TQ7 3EY UK

INTRODUCTION

Before looking at some of my breeding objectives I would like to give you a brief outline of Burton Farm. Some 750 acres in size, extending from rough cliff grazing through South facing early country to North facing colder heavy soil. (two valleys that run to the coast)

Stock includes:
120 Dairy cows plus 150 young stock
150 Registered Suffolk ewes
400 Registered Roll Dorset ewes
100 Registered Poll Dorset ewe lambs
(650 ewe lambed Sept-Feb in 3 lambing periods)
400 Poll Dorset X Mule ewe lambs grazing the cliffs, sold as shearlings
100 Rams produced off both flocks
Cropping associated or integrated with livestock units include:
Maize 55 acres
Barley 100 acres
Linseed 50 acres

As an extra I feed 25 Limousin suckler cows for a retired farmer wishing to retain a farming interest.

During my talk I would like to comment on how each livestock unit has changed and in particular, how the use of modern technology has elevated the Poll Dorset and Suffolk flocks to some of the best recorded stock in the UK.

Points for consideration unit by unit.

Dairy. Developments in selection criteria in the early days of my career were based on type producing Royal Show winners resulting in the decline of performance. Following Foot & Mouth in the 60's re-stocking brought in the performance animals of Canada, "The Holstein". The pendulum swung to extreme production animals irrespective of type.

Recent years have seen recognition that to be profitable, milk production is not the only selection point.

Quality (Effective use of quota)
Lifetime (Number of replacements – depreciation)
Legs and feet (Being able to travel and forage)
Udders (Wearability and susceptibility to stress and disease)

Beef. It continues to struggle post BSE. The development techniques demonstrated in the sheep sector have been transferred to give better live weight gain, muscling, reduced fat and improved conversion gains.

As more of an observer, the lessons learnt in the past within the pig sector haven't been repeated where breeders going for extreme conversion created problems through other traits.

Sheep. With both flocks the objectives are to produce superior performance breeding stock for the commercial customer.

Through the use of AI (Laproscopic), genes have been selected to further this aim from far and wide. All stock are back fat scanned and recorded for liveweight gain but, throughout, the principles of a shepherd's eye have been retained.

Developments of the future will include:

The use of total body scans.
AI (Cervical, its reliability?).
Record keeping – farmer friendly.
Identification – micro chips?
Geno typing – monitoring Scrapie resistance.

To conclude, breeding policies for the future will have to look further than an article leaving the farm gate but to a greater consumer generated confidence.

A food loving UK customer wanting:

A traceable raw material
Appealing presentation.
Recipes simple to prepare and enjoy.

Therefore as Agriculturists we must not be afraid to use "a sharp knife" with a clear conscience" to satisfy the customer's desires in a profitable way.

generate 'adult' (a) ewe parameters, whereas female (f) and male (m) 16 month old parameters were called 'hogget' (h) parameters (Table 1). The WAp&g were taken from Greeff (1997) and Greeff (pers. comm.). The 'permissibility' of the resulting phenotypic and genetic variance-covariance matrices was tested (Hill and Thompson 1978; Foulley and Olivier 1986) and the necessary conditions were satisfied for both SAp&g and WAp&g.

Table 1. SA (bold) and WA parameters : phenotypic standard deviations (σ_P), heritabilities (along diagonal) and phenotypic (above) and genetic (below) correlations

	hCFWm	hCFWf	aCFWf	hFDm	hFDf	aFDf	hCVm	hCVf	aCVf	hSSm	hSSf	aSSf
σ_P	**15.00**	**15.00**	**16.00**	**1.50**	**1.50**	**1.76**	**2.40**	**2.40**	**2.40**	**11.5**	**9.10**	**10.5**
	15.53			1.75			2.57			8.91		
hCFWm	**0.57**			**0.35**			**-0.01**			**0.24**		
	0.40[A]			0.20			0.00			0.06		
hCFWf	**0.75**	**0.42**	**0.59**		**0.27**	**0.24**		**-0.01**	**-0.06**		**0.10**	**0.07**
aCFWf	**0.73**	**0.80**	**0.45**		**0.10**	**0.23**		**-0.03**	**0.03**		**0.11**	**0.15**
hFDm	**0.38**	**0.07**	**0.13**	**0.62**			**-0.16**			**0.33**		
	0.25			0.50			-0.09			0.16		
hFDf	**0.21**	**0.30**	**0.10**	**0.96**	**0.72**	**0.75**		**-0.17**	**-0.11**		**0.27**	**0.20**
aFDf	**0.21**	**0.37**	**0.26**	**0.93**	**0.92**	**0.70**		**-0.01**	**-0.21**		**0.23**	**0.20**
hCVm	**-0.08**	**-0.03**	**0.15**	**-0.24**	**-0.15**	**-0.04**	**0.60**			**-0.35**		
	0.16			-0.04			0.51			-0.49		
hCVf	**0.00**	**-0.08**	**0.10**	**-0.16**	**-0.20**	**-0.08**	**0.97**	**0.71**	**0.65**		**-0.31**	**-0.24**
aCVf	**-0.05**	**-0.17**	**0.04**	**-0.24**	**-0.19**	**-0.03**	**0.83**	**0.84**	**0.66**		**-0.33**	**-0.49**
hSSm	**0.44**	**0.10**	**0.10**	**0.50**	**0.27**	**0.30**	**-0.42**	**-0.48**	**-0.45**	**0.45**		
	0.21			0.24			-0.72			0.41		
hSSf	**0.13**	**0.09**	**0.05**	**0.50**	**0.43**	**0.33**	**-0.40**	**-0.56**	**-0.50**	**0.59**	**0.42**	**0.45**
aSSf	**0.14**	**0.16**	**0.16**	**0.43**	**0.53**	**0.45**	**-0.55**	**-0.52**	**-0.52**	**0.65**	**0.40**	**0.35**

[A] The WAp&g do not distinguish between the sheep classes, however for convenience the parameters are placed in the hogget sections of this Table.

A base breeding objective (BASE) was defined which included CFW and FD. The breeding objective was then expanded to include CV and SS. The SAp&g distinguish between the hogget male, the hogget female and the adult female expressions of these traits. The expanded genetic model was used because the genetic correlation between trait expressions in the two sexes or at different ages was not equal to one (Table 1). By contrast, the WAp&g (and reports on genetic change based on these parameters) treat the expression of these traits in the different sexes and ages as if they were the same trait. The economic values were calculated (Ponzoni 1988) for two different micron premiums (3 and 12 %), and for three different price differentials of staple strength ($0.03, 0.06 and 0.12 per Newton per kilotex per kg of clean wool), assuming the price of 1 kg of clean wool was $4.50. Genetic change was calculated for a standard selection index which included hCFWm and hFDm, and then for indices which included hCVm and hSSm. The genetic change was calculated for a period of 10 years, assuming the ratio of average selection intensity to generation intervals (in males and females) was 0.4.

Overall the results show a striking contrast between the predicted genetic changes in SS using the SAp&g and the WAp&g. This may be attributed to the differences in the genetic models assumed, as well as to the actual phenotypic and genetic parameter values used. Both differences (i.e. the genetic model and the parameter values) contribute towards reduced expectations about the prospects of improving SS by genetic means using the South Australian approach.

Note that using the SAp&g approach genetic gains were greater (or losses smaller) for aSSf than for hSSf. This was due to a combination of factors, namely, greater economic value for aSSf than for hSSf, and stronger correlations of hFDCVm and hSSm with aSSf than with hSSf. When these values were 'smoothed' (i.e. hFDCVm with hSSf and aSSf set equal to –0.45, and hSSm with hSSf and aSSf set equal to 0.6) the differences in genetic change between hSSf and aSSf were smaller, but still in favour of the latter trait. However, the overall conclusions drawn from the study remained unchanged.

The results based on the SAp&g suggest that although there is scope for genetic improvement of SS in Australian Merino sheep, gains are likely to be smaller and harder to achieve than earlier suggested by Western Australian studies based on WAp&g and on an over-simplified breeding objective. We conclude that the elucidation of an appropriate genetic model and the choice of the most appropriate phenotypic and genetic parameters are critical if realistic predictions of genetic change in SS are to be made.

ACKNOWLEDGMENTS

Financial assistance for the work was provided by Australian woolgrowers through the Woolmark Company, and J.A. Hill is the holder of a scholarship funded by SARDI. We thank Mr R.J. Grimson, Mrs K.S. Jaensch and Mr D.H. Smith for their assistance.

REFERENCES

Foulley, J.L. and Olivier, L. (1986) *J. Anim. Breed. Genet.* **103:** 81

Gilmour, A.R., Cullis, B.R., Welham, S., and Thompson, R. (1998) *Ag. Biom. Bull.* No. 3. (Orange, NSW, Australia)

Greeff, J.C., Lewer, R.P., Ponzoni, R.W. and Purvis, I.W. (1995) *Proc Aust. Assoc. Anim. Breed. Genet.* **11:** 595

Greeff, J.C., Ritchie, A.J.M. and Lewis, R.M. (1997) *Proc. Aust. Assoc. Anim. Breed. Genet.* **12:** 714

Greeff, J.C. (1997) In "Access to the Experts, Module 1". (CRC for Premium Quality Wool)

Hill, W.G. and Thompson, R. (1978) *Biometrics* **34:** 42

Lewer, R. and Li, Y. (1994) *Wool Tech. Sheep Breed.* **42:** 103

Ponzoni, R.W. (1988) *Wool. Tech. Sheep Breed.* **36:** 70

Ponzoni, R.W., Grimson, R.J., Jaensch, K.S., Smith, D.H., Gifford, D.R., Ancell, P.M.C., Walkley, J.R.W. and Hynd, P.I. (1995) *Proc. Aust. Assoc. Anim. Breed. Genet.,* **11:** 303