

Selecting and Breeding Rams in the past, now and for the future

Hans Pörksen, who farms in the uplands of Northumberland, describes in this article the consequences of breeding stock selection

We produce Suffolk, Texel, Blue-faced Leicester, Scottish Blackface and some cross-bred rams at Gallowshill farm. Suffolk rams have been produced by me for well over 25 years and as a founder member of the Suffolk Sire Reference Scheme (SSRS) and a member of it's management committee from the start in 1988, a lot of experience has been gained.

Performance and Progeny recording has been more valuable since the introduction of ultra sound muscle and fat scanning, the Best Linear Unbiased Prediction (BLUP) analysis which presents the most important genetic traits in the form of Estimated Breeding Values (EBV's) and across flock analyses enabling comparisons between flocks.

CT scanning has meant that a carcass of a live animal can be assessed with great accuracy.

Items I consider when purchasing sheep with EBV's:

- The breeders reputation. Do the sheep for sale generally live up to expectations? Or in other words can the breeder be trusted to produce accurate records.
- How high are the Accuracy figures? Many sale catalogues have EBV's with accuracies as low as 30%. In my experience accuracies below 60% are meaningless and the EBV's should be totally ignored. Between 60 and 70 % Accuracies become interesting but can not be relied upon as the EBV's can still change dramatically when more information becomes available. 80 to 90% really start to mean something to me and EBV's over 95% can be trusted completely as by this stage a large number of progeny have been included in the BLUP analysis.
- The Senior stock rams with accuracies over 95% are the once to use if one wants to play safe when purchasing semen for AI.
- I never purchase a stock ram for pure breeding without records. It would be like buying a pig in a poke. Purchasing ram lambs or shearlings who have no recorded progeny is always a risk as EBV's can go down as well as up once the progeny's information is included in the analysis, which is carried out several times a year for most breeds.
- When purchasing rams I select from the top 3% of the breed and when purchasing females I select from the top 5% .My Blackface flock is not recorded but I have selected stock rams in the top 5% for quite a number of years .All my Blackies should by now be very highly indexed as after 5 generations they should all be in the top few % automatically without having to go to the trouble and expense of recording . This is a very sound system for breeders with low ewe numbers to produce stock of very high genetic merit.

How the choice of stock sires can influence the breed for generations can be seen from the following example:

Ram A was chosen in the mid 1990's as a Reference Sire and widely used by breeders within the scheme.

Ram B was a typical breeders sheep and Edinburgh Champion in the early 1990's whose progeny dominated the show circuit for a decade.

	Number of Animals	8 Week Weight EBV	Scan Weight EBV (kg)	Muscle Depth EBV	Fat Depth EBV	Gigot Muscularity EBV	Suffolk Index
Ram A (own figures)	1	4.75	8.34	4.21	0.11	6.4	£3.57
Accuracy %		99	99	99	99	99	99
Ram B (own figures)	1	0.93	-0.15	0.69	0.12	-3.36	- £0.30
Accuracy %		99	99	99	99	96	99
Ram A Progeny	4097		6.04	2.53	0.09		£2.13
Ram B Progeny	1112		1.22	0.48	-0.03		- £ 0.13
Ram A Paternal Grand Progeny	5642		5.83	1.99	0.16		£ 1.89

Ram A Maternal Grand Progeny	4036		6.6	2.35	0.1		£ 2.12
Ram B Paternal Grand Progeny	11557		2.3	0.61	-0.04		£ 0.22
Ram B Maternal Grand Progeny	1936		2.69	0.65	-0.05		£ 0.26
April 2009 Suffolk Breed Average		3.24	5.81	1.15	0.08	0.33	£ 1.43
Data Source: Signet Breeding Services Nov 2008							

Ram A was a popular choice on the SSRS selection day. He was an excellent example of the breed, with very correct, clean black head and legs and exceptional conformation. Some breeders suggested he should have had a bigger head and more bone but most wanted to focus on weight gain and muscle. His actual performance figures at the time (mid 1990's) did put him in the top 1% of the breed. His 20 week scan weight was very good and he had an exceptional gigot. Today, his gigot muscularity score is still fantastic and his index (see Table 1) is very close to the current top 5% of the breed which is £3.61.

Ram B Was a popular “ breeders” sheep at Edinburgh. At the time he was sold for 22000gns. Figures did not play any major role at the sale and animals were commonly judged by their appearance alone. Even if his figures had been available it is doubtful if it had made any difference, as most breeders selected their stock rams on perceived rather than actual values. He was used widely and produced 1112 progeny who produced 11557 paternal grand progeny.

He was Suffolk Sire of the year in 1994-1995-1996.

Today we now know with 99% accuracy that Ram B was in the bottom 1% of the Suffolk breed genetically when he was sold. What is remarkable is that 97.7 % of his grandsons are still below breed average.(See Table 2)

	Ram A Maternal Grand Progeny	Ram A Paternal Grand Progeny	Ram B Parental Grand Progeny	Ram B Maternal Grand Progeny
Top 10%	312	659	1	1
Top 25%	2129	1605	38	14
Top 50%	1906	876	227	84
Below Average	1295	896	11291	1837
Sum	5642	4036	11557	1936
Top 10%	5.53%	16.33%	0.01%	0.05%
Top 25%	37.73%	39.77%	0.33%	0.72%
Top 50%	33.78%	21.70%	1.96%	4.34%
Below Average				
on Index	22.95%	22.20%	97.70%	94.89%
Sum	100%	100%	100%	100%
Data source: Signet Breeding Services, Nov 2008 Suffolk evaluation				

Financial benefit to the commercial producer:

Ram A sired just over 2000 sons and just over 5600 paternal grand progeny. If used commercially those 7600 rams would average 300 lambs each at a financial benefit of £1 . Benefit = 7600 X 300 X 1 = £ 2.28 Million

The financial benefit of using Ram B was Zero, in fact his sons progeny had a negative value if they were used commercially.

One can juggle these figures around but most trials confirm an advantage of £2 to £ 5 per lamb for the commercial progeny of a high index ram.

The Future:

As our knowledge and investment increases more genetic traits will have EBV's in future. Quite a number of breeders are now recording lambing ease and lamb vigour. At Gallowshill for example we have recorded this for a long time and rams used for pure breeding have to be born naturally, unassisted and have been no problem at all in the first few days of life. This has already had a major impact on lamb survival and labour input at lambing.

CT scanning is required to get a high accuracy for the muscularity EBV. We have found CT scanning really valuable and find that this has great potential in future to identify superior breeding stock. When the CT unit was started at SAC Bush Estate we had large numbers of lambs scanned. Interestingly one year 8 out of 50 lambs had an extra rib, therefore producing an extra two chops per carcass.

Unfortunately these traits are not examined in the current analysis.

Conclusions:

Breeding sheep is a very interesting challenge. Using all the tools available it has become more straight forward and more reliable.

Unlike the nutritional effect on ram production, which is very temporary, genetic improvement is permanent, cumulative and extremely cost effective, as can be seen from the example of Ram A. Hopefully selecting stock rams on perceived values and buying a pig in a poke will become a thing of the past.

Our aim at Gallowshill is to produce rams and females in the top 5% of their breed in order for the purchaser to farm their flocks more profitably.

To achieve this aim we will continue to work with actual rather than perceived values.

Ram B is a classic example of what can go wrong and all breed societies must ask the question of how they can avoid this problem and keep improving their breed.

The showing of rams without taking EBV's into account is a totally meaningless exercise.

Relying on methods of showing and presenting rams for sale, which lead to selection of the Ram B's of this world, can have a catastrophic impact on performance (see table 2)

In future, breeders must know their breed standards and the implications of their selection decisions.

Concentrating on irrelevant traits, like the number of black spots on a white ear or white wool spots on coloured wool, may keep a breed society busy but does nothing to improve the breeds actual value.

If however the input is into genetic improvement and the production of profitable sheep; a future for your chosen breed will be certain.

The good news is, there is a wide variation within all breeds and we now have the tools to identify the superior animals accurately.

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