



## Case Study

## Suffolk Flock at Myerscough College

### Estimating breeding values - the key to improve breeding and quality

The key to the livestock breeder making informed selection decisions is the ability to accurately assess the genetic merit or rather the 'breeding value' of their stock.

Historically this has largely been achieved by visually assessing animals; some information may have been gathered about the animal regarding its performance or perhaps the performance of one of its close family.

It is now widely known that the performance of all animals is influenced by both their genetic potential and environmental factors such as feeding, climate and management. Therefore, selection by visual assessment alone can be enormously misleading. In the past the genetic potential of animals could only be objectively compared if they were living in the same environment and being managed under the same regime.

Relatively recently the development of sophisticated computer software in the form of BLUP (Best Linear Unbiased Predictor) has resulted in it being possible to separate the genetic from the environmental factors which influence the performance of pure bred animals. This allows animals within flock and animals in an across flock breeding group to be directly compared.

It is common knowledge that the majority of lambs which are slaughtered in the UK are crossbreds. The purebred flock have an essential role to play in the production of high genetic merit breeding stock for use in the commercial flock.

Myerscough College have a small pedigree Suffolk sheep flock consisting of twenty sheep, based at Lee Farm. This flock's main role is to produce quality tups for sale and replacement within the commercial mule ewe flock.

The flock is monitored under the Signet Sheepbreeder recording scheme, which is used in Great Britain and Northern Ireland. This system uses weight and ultrasonic scanning information measuring backfat and eye muscle depth to provide an Estimated Breeding Value (EBV) for individual sheep. The scheme helps to identify genetic traits within animals; for example, those which are growing quickly, are well muscled and have low levels of fat. Prime lambs readily inherit these traits and thus the aim is to produce quality lean carcasses.

Sheepbreeder uses performance recording and statistical analysis to calculate Estimated Breeding Values (EBVs) and Indexes that provide the farmer with an objective method of comparing the genetic potential of different animals. Indexes are tailored to suit the breed of sheep, breeder objectives and industry requirements.

The aim of Sheepbreeder is to work out for the breeder how much

of each animal's performance is due to its genes and how much is because of the environment so animals that are truly genetically superior for traits such as growth and muscle can be identified and selected for breeding. Mating and lambing records are kept on each animal born in Sheepbreeder flocks and performance data such as lamb weights, muscle and fat depths are collected on farm. Aspects such as month of birth and rearing group are also recorded.

Seven Estimated Breeding Values (EBVs) are calculated for each animal, as shown in Table 1.

Growth and Carcase traits	Female traits
8-week weight	Mature size
Scan weight (20/21 weeks)	Litter size
Muscle depth	Maternal ability
Fat depth	

Table 1 Source: Signet Sheepbreeder

EBVs are measures of the genetic worth of an animal, half of which will be passed onto its lambs. An EBV is calculated from all available performance records on the animal itself as well as its relatives. Information on how performance traits are related to each other (correlations) and how they are inherited by the next generation (heritabilities) is also used.

EBVs are a common language in breed improvement programmes around the world and are available for all animals recorded through Sheepbreeder. The EBVs are:

EBV	Unit of Measurement
<b>Growth and Carcase Traits</b>	
8-week weight	kg
Scan weight (20/21 weeks)	measured in kg at the time of ultrasonic scanning
Muscle depth	measured in mm by ultrasonic scanning at 20/21 weeks
Fat depth	measured in mm by ultrasonic scanning at 20/21 weeks
<b>Female traits</b>	
Mature size	pre-tupping gimmer weight (kg)
Litter size	Number of lambs born
Maternal ability	Kg of lambs reared

Table 2 Source: Signet Sheepbreeder

### Connecting Farming and Food in England's Northwest



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### Estimating breeding values - the key to improve breeding and quality (continued)

The Myerscough Flock is also a member of the EBLEX Better Returns Programme. This programme aims to highlight the financial impact that improved breeding and improved lamb selection strategies can have on commercial flock profitability.

In 2005 the Myerscough College Suffolk Flock became a winner of the coveted EBLEX Better Returns Programme (BRP) Progressive Flock Award. EBLEX BRP presents the awards to English breeders in eight terminal sire breeds who have recorded the largest increase in their overall flock rating.

Estimated Breeding Values					
2003	8wk EBV	Scan Wgt EBV (Kg)	Muscle Dpt (Kg)	Fat Depth (mm)	Index (mm)
Ram Lambs - 14	1.48	2.93	0.75	0.30	0.74
Ewe Lambs - 9	1.80	3.61	0.87	0.35	0.94
2005					
Ram Lambs - 10	3.18	5.44	2.73	0.25	2.26
Ewe Lambs - 9	3.24	5.64	2.51	0.25	2.31

Table 3 Source: Myerscough College

The Myerscough College flock's index increase was mainly down to its average breeding potential growth rate rising by nearly 2kg during 2005. This combined with an improvement in its muscle depth Estimate Breeding Value (EBV) of 1.5 mm means each commercial lamb sired by rams in this breeding flock could be worth an extra £1.40 as a result of extra meat yield from the carcase.

The success of the enterprise was showcased at the first Forward Farming on-farm event of the 2005-6 season, where producers were able to see for themselves the improvements the flock has made and consider the merits of EBVs when it comes to lamb selection. Tremendous improvements in genetic traits had been recorded after a programme of artificial insemination using semen from the Suffolk Sire Reference Scheme, and by culling ewes showing negative traits. The 20 ewe flock is retained by the College to demonstrate to students the potential of flock recording and selective breeding. The majority of the tups reared are used as replacement sires in the College's 700 mule ewe flock, which had resulted in a greater number of recorded lambs being sold off grass during the three year period end 31 July 2003 to 2005.

### Main Lambing Flock Performance Target Weight 40kg - Off grass

	2003	2004	2005
Number of ewes tupped	546	525	628
Number of lambs born	1180	1085	1297
Number of lambs survived	1015	1003	1070
Lambing Percentage (Reared)	186%	191%	170%
Lambs on Hand 31st July	750	694	550
% Lamb Crop Sales	26%	31%	49%

Table 4 Source: Myerscough College

Andrea Gardner who is responsible for recording all data for the Myerscough College Suffolk Flock is delighted with the progress the flock is making in terms of breeding quality animals for the improvement of commercial flock profitability. She explained 'the flock is recognised in playing an important role to ensure the viability of the College's commercial mule flock. Modern farming methods, pricing policies and the demands of the consumer means that breeders are under further pressures to produce quality animals which give the type of meat which the modern consumer demands.'

For further information on particular areas of interest in this case study please contact Andrea Gardner at The Rural Business Centre at Myerscough College T: 01995 642255 E: [andrea@myerscough.ac.uk](mailto:andrea@myerscough.ac.uk)



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