Buying a recorded ram to generate Better Returns
The information in this booklet was compiled by Samuel Boon, Signet Manager and AHDB Beef & Lamb Breeding Specialist.

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Since the publication of the first Sheep BRP manual on ram selection seven years ago, many more producers – pedigree and commercial, have been taking a more informed approach to breeding.

Tools like Estimated Breeding Values (EBVs) have become more widely understood, and important economic traits such as growth rate, carcase quality and maternal efficiency have improved. Indeed the annual return due to genetic improvement within the British sheep and beef sectors exceeded £20m in 2010.

Commercial application

EBVs are no longer thought of as the preserve of pedigree breeders. Commercial producers are now seeing the benefits of delving a little deeper into an animal’s background before purchase, rather than buying on looks alone.

Each year AHDB Beef & Lamb runs the Improved Flock Awards, showcasing breeders who have made the most genetic progress with their flocks. At the same time we interview their clients – commercial customers seeking rams to suit their particular farms. The feedback is always positive – the recorded ram they bought has done a good job – reducing days to slaughter and increasing the value of the lambs sold. Their investment in high performance genetics has been rewarded through an increase in flock productivity.

Tools like EBVs and indexes are now freely available and could be used to good effect by many more producers in England. Hopefully this updated manual will encourage many more to give them a try, and in so doing generate better returns from their sheep enterprise.

Samuel Boon
Signet Manager
AHDB Beef & Lamb
Lifting flock performance

A flock's physical performance directly affects its profitability. Efficient, modern animals require less inputs (mainly feed) yet have an increased output (e.g., produce more kg of meat), and thereby boost the financial returns to the business.

The only way to lift flock productivity permanently, and with some certainty, is through selective breeding. In other words, the careful choice of rams known to have the right genetics to produce the type of lambs you and your customers are looking for.

Earn an extra £3 per lamb

Using rams with superior breeding can increase flock profitability. Financial benefits vary from farm to farm – but a £3/lamb increase is often reported in trials.

This can be achieved in many different ways:

- Sell lambs a fortnight earlier to avoid falling prices
- Finish 20% more lambs off grass, rather than selling them as stores
- Reduce the number of lambs sold at fat class 4 to fat class 3L or better
- Increase liveweight sales
- Reduce feed, housing and labour costs by lambing three weeks later
- Increase deadweight sales

Rams with superior EBVs for growth rate and carcase conformation
The use of high performance recorded rams is a proven way to:
- Increase lamb liveweight and deadweights
- Reduce the number of days to slaughter
- Improve carcase conformation

And, in self-replacing flocks, can:
- Improve the milking ability of ewes
- Enhance the number of lambs successfully reared per ewe

A difference of £3/lamb is worth over £800 over the working lifetime of a ram. So while recorded rams may cost more to buy, they will more than repay the initial investment.

Unrecorded rams may be cheaper to buy than recorded rams – but breeding from them is a plunge into the dark.

They could take flock performance forwards or backwards, but there is no way of knowing until their lambs are sent for slaughter.

All of the key aspects of sheep performance can be influenced through the informed selection of rams and ewes with superior genetics.
When establishing breeding objectives for a flock focus on traits that influence profitability.

**Start by:**
- Comparing flock performance against other costed enterprises to identify strengths and weaknesses
- Working out how profitability would improve by selling lambs a week earlier, half a kg heavier or a fat class leaner

**Husbandry, nutrition and management all affect physical performance. However, the maximum potential of the lamb crop is limited by the genetic potential of the ewes and, crucially, the ram.**

**Progress**

Major gains have been made in improving growth and carcase traits in lambs over the past 25 years by farmers carrying out selective breeding.

The breeding potential of rams alive today that have been performance recorded, is very different to that of rams used in the past. In the Charollais breed the top 10% in 1990 would now find themselves in the bottom 5% of the breed today (see graph below).
**Recorded flocks have progressed most**

There is no doubt that the recorded sheep population is progressing much faster than sheep in unrecorded flocks.

Pedigree breeders, who have invested time and effort in measuring and keeping detailed information on individual animals, have taken their breeds forward much more quickly than those who rely on an experienced eye and a good memory.

Commercial sheep producers will always benefit from buying a recorded ram.

The lambs he sires will perform better, e.g. grow faster, have greater muscle depth and improved carcase conformation, than lambs sired by a non-recorded ram of the same breed.

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**Genetic gain from selective breeding**

- On average Texel and Suffolk lambs are 6kg heavier at scanning weight now than in 1990.
- Genetic gain for growth rate in the Meatlinc breed has increased at nearly 0.75kg per annum over the past five years – more than double the rate previously achieved.
- Less than 600 Hampshire Down lambs were weight recorded in 2002. By 2012 this figure had exceed 1300 lambs/annum.

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**Genetic merit of Suffolk lambs (2006 - 2012)**

All lambs had an Index Accuracy Value >40.

The genetic gain achieved by recorded sheep is twice as fast for growth rate and nearly four times as fast for muscling.

![Genetic merit of Suffolk lambs graph](image)
Looks can be deceptive

Despite the importance often placed on the look of a ram, the only influence he can possibly have upon the performance of his progeny is through his genes.

These days it is vitally important commercial buyers assess the genetic merit of the sires they intend to buy. Thankfully selecting a ram no longer needs to be a lottery. Expertise exists to measure a number of economically important traits, and present these in a commercially useful and understandable way.

Estimated Breeding Values (EBVs)

The best guide to a ram’s genetic merit is provided through Estimated Breeding Values (EBVs). Performance data collected by pedigree producers is analysed by the Signet Sheepbreeder Service. This independent organisation calculates how much of each animal’s performance is due to its breeding merit, and how much is due to the environment in which it has been raised.

EBVs have been used in the UK sheep industry for over 25 years, and offer a practical and unbiased guide to whether a ram will do the job expected. In essence, EBVs predict the superiority, or inferiority of breeding stock for specific traits including:

- **Eight week weight**
- **Weight at ultrasound scanning (for muscle and fat depth) at 21 weeks**
- **Muscle depth (mm)** – good prediction of lean meat yield
- **Fat depth (mm)** – indicates potential to produce a lean carcase or heavier carcases without being over-fat
- **Maternal ability (kg)** – the genetic potential to produce daughters with superior milking ability
- **Litter size (lambs)** – highlighting genetic potential for prolificacy
- **Mature size (kg)** – an indicator of ewe efficiency
Research trials have proven that using rams with known genetic potential have both performance and financial benefits.

<table>
<thead>
<tr>
<th>Rams with high EBVs for Scan Weight and Muscle Depth</th>
<th>Animal impact</th>
<th>Business impact</th>
<th>Business benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lambs grow faster</td>
<td>Saves feed costs</td>
<td>Saves money</td>
<td></td>
</tr>
<tr>
<td>• Lambs grow heavier</td>
<td>Carcases worth more</td>
<td>Generates more money</td>
<td></td>
</tr>
<tr>
<td>• Lambs finish sooner</td>
<td>Lambs hit period with higher prices</td>
<td>Generates more money</td>
<td></td>
</tr>
<tr>
<td>• Lambs hit carcase specifications</td>
<td>Carcases worth more</td>
<td>Generates more money</td>
<td></td>
</tr>
<tr>
<td>• Lambs easier to batch</td>
<td>Less time spent sorting lambs</td>
<td>Saves time and makes life easier</td>
<td></td>
</tr>
<tr>
<td>• Lambs top the market</td>
<td>Customer gets name in the market report</td>
<td>Generates more money and provides kudos</td>
<td></td>
</tr>
</tbody>
</table>

In the past ten years various trials completed by SAC, AHDB Beef & Lamb, QMS and Signet have demonstrated these benefits.

**EBVs provide a useful guide to:**
- How a ram's lambs will perform
- Whether a ram is suited to a particular production system
- How a ram compares to the rest of the breed

**Breeding rams must be structurally sound**

**Teeth and mouth** – check incisor and molar teeth

**Neck/head/shoulders** – check for any wounds from fighting or signs of Caseous Lymphadenitis (CLA)

**Brisket** – pay attention to sores from raddles

**Penis/Sheath** – check that the sheath is clear of infection with no sign of shearing damage and that the penis can be extracted

**Testes** – should be firm but springy and a good size. Check for lumps, adhesions and eveness in size

**Legs and feet** – rams need sound feet to work well. Footrot and other infections reduce fertility due to raised body temperature

**NB:** It is important to take all factors into account when buying a ram – not just his EBVs. It is a good idea to view all potential rams to check there are no physical defects and they are in a fit condition to work.
**EBVs that influence growth**

**Why growth matters**

High growth rates can enhance the:

- Weight of lambs sold
- Proportion of lambs finished off grass
- Timing of sales to hit periods with better market returns
- Size of store lambs and lower the costs of production by reducing the number of days to slaughter

**Which EBVs are important?**

<table>
<thead>
<tr>
<th>Eight Week Weight EBV (kg)</th>
<th>Scan Weight EBV (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>An indication of breeding potential for growth to eight weeks of age</td>
<td>An indication of breeding potential for growth to 21 weeks of age</td>
</tr>
</tbody>
</table>

**Example**

A ram with an EBV of +4kg is estimated to produce lambs which are 2kg heavier at eight weeks of age than a ram with an EBV of 0.

<table>
<thead>
<tr>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>A ram with an EBV of +6kg is estimated to produce lambs which are 3kg heavier at 21 weeks of age than a ram with an EBV of 0.</td>
</tr>
</tbody>
</table>

**Remember**

Growth rates are important in all production systems.

The breeding potential for high growth rates is only realised under good management, including appropriate feeding and maintaining high flock health status.

NB: Selecting rams with EBVs for high growth rate alone can increase ewe mature size, which on some systems may reduce flock efficiency.

It is important to note that a ram’s EBVs must be halved to estimate how much of his genetic superiority will be passed on to his progeny – the other half comes from the ewe to which it is mated. See examples above and on pages 9-12.
EBVs that influence carcase quality

Why quality matters

Carcase quality is a key determinant of consumer acceptability – and therefore price.

- Muscle depth EBVs influence carcase conformation
- Fat depth EBVs influence levels of fat cover at slaughter, and how quickly lambs can be finished

Financial returns can be improved significantly by increasing the number of carcases meeting market specifications.

Which EBVs are important?

<table>
<thead>
<tr>
<th>Muscle Depth EBV (mm)</th>
<th>Fat Depth EBV (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>An indication of breeding potential for muscling across the loin</td>
<td>An indication of breeding potential for fatness across the loin</td>
</tr>
<tr>
<td>Example</td>
<td>Example</td>
</tr>
<tr>
<td>A ram with an EBV of +4mm is estimated to produce lambs with loin depths 2mm deeper at 21 weeks of age than a ram with an EBV of 0.</td>
<td>A ram with an EBV of –1mm is estimated to produce lambs with 0.5mm less fat across the loin at 21 weeks of age than a ram with an EBV of 0.</td>
</tr>
</tbody>
</table>

Remember

Select rams with the optimum Fat Depth EBV for the flock.

- Flocks producing too many over-fat lambs should select sires with lower Fat Depth EBVs
- Extensive grass-based finishing systems may want to consider selecting rams with more positive Fat Depth EBVs

Always ask the vendor about the traits of particular interest for your flock so they can select the best ram for your needs.
# EBVs that influence maternal performance

## Why maternal traits matter
One key economic driver influencing flock profitability is the number of lambs reared per ewe. This is a function of both ewe fertility and her ability to successfully bring up her lambs. Rams pass maternal traits to their female offspring. These traits are important in closed flocks or where females are sold for breeding.

- Selecting rams with high Litter Size EBVs will increase lamb numbers produced by their female offspring.
- Selecting for improved Maternal Ability EBVs will ensure ewes have sufficient milk to rear their lambs.

## Which EBVs are important?

<table>
<thead>
<tr>
<th>Litter Size EBV (kg)</th>
<th>Maternal Ability EBV (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>An indication of breeding potential for female prolificacy</td>
<td>An indication of breeding potential for maternal care, particularly milkiness</td>
</tr>
</tbody>
</table>

### Example
- A ram with an EBV of +0.20 is estimated to produce ewes which produce 10% more lambs than a ram with an EBV of 0.
- A ram with an EBV of +1 is estimated to produce ewes whose lambs are 0.5kg heavier at eight weeks than a ram with an EBV of 0.

## Remember
- The benefits of superior maternal genetics will be expressed for several seasons.
- Using EBVs to enhance prolificacy is more reliable than simply selecting rams reared as twins or triplets.
- Lamb survival is influenced by many factors – genetic and non-genetic. Flock management should be reviewed if large increases in prolificacy are planned.
EBVs that influence ewe mature size

Why ewe size matters

There is a relationship between lamb growth rate and ewe mature size – larger ewes tend to produce faster growing progeny.

There is usually a benefit from increasing growth rates as lambs will be ready to market earlier. However, breeders must consider how this may affect the mature size of their dams.

Which EBVs are important?

<table>
<thead>
<tr>
<th>Mature Size EBV (kg)</th>
<th>Scan Weight EBV (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>An indication of breeding potential for size at maturity</td>
<td>An indication of breeding potential for growth to 21 weeks of age</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>Where flocks are not recording mature size and the Mature Size EBV is of limited benefit, the Scan Weight EBV can be used to identify breeding lines that will be heavier at maturity.</td>
</tr>
</tbody>
</table>

A ram with an EBV of +8kg is estimated to produce ewes which are 4kg heavier at maturity than a ram with an EBV of 0.

Effects of increased ewe mature size

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lambs with superior growth rate</td>
<td>Increased feed requirements</td>
</tr>
<tr>
<td>Increased milking ability and prolificacy in some breeds, subject to adequate nutrition</td>
<td>Poorer performance in a harsh environment</td>
</tr>
<tr>
<td>Increased cull ewe value</td>
<td>Increased capacity required for housing</td>
</tr>
<tr>
<td>Potential to increase breeding stock value, where larger ewes are in demand</td>
<td>Heavier, stronger sheep to catch and handle regularly</td>
</tr>
<tr>
<td>Lower stocking density required</td>
<td></td>
</tr>
</tbody>
</table>

Remember

- Optimum mature size for ewes in a flock depends on the target lamb market and available farm resources, particularly feed and housing
- The close relationship between lamb growth rate and ewe mature size makes it difficult to select for faster lamb growth rate and smaller mature size at the same time. However certain bloodlines are available that can do both
Newer EBVs

Carcase characteristics

A number of Terminal Sire breeders now make use of Computed Tomography (CT). This allows them to assess carcase characteristics to a much finer degree than by ultrasound scanning.

Live animals are put into a CT scanner which measures the total amount of muscle and fat in the body to a very high level of accuracy.

Three EBVs are predicted using CT measurements.

<table>
<thead>
<tr>
<th>CT Lean Weight EBV (kg)</th>
<th>CT Fat Weight EBV (kg)</th>
<th>CT Gigot Muscularity EBV (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>An indication of breeding potential for weight of muscle in the carcase</td>
<td>An indication of breeding potential for weight of fat in the carcase</td>
<td>An indication of breeding potential for width of gigot</td>
</tr>
<tr>
<td>Example: A ram with an EBV of +2kg is estimated to produce lambs with 1kg more muscle in their carcase than a ram with an EBV of 0.</td>
<td>Example: A ram with an EBV of -1kg is estimated to produce lambs with 0.5kg less fat in their carcase than a ram with an EBV of 0.</td>
<td>Example: A ram with an EBV of +4mm is estimated to produce lambs with 2mm wider gigots than a ram with an EBV of 0.</td>
</tr>
</tbody>
</table>

Health and welfare

Three EBVs for traits that influence health and welfare are currently available, but not yet for every breed.

<table>
<thead>
<tr>
<th>Lambing Ease EBV (%)</th>
<th>Birth Weight EBV (kg)</th>
<th>Worm Resistance EBV</th>
</tr>
</thead>
<tbody>
<tr>
<td>An indication of breeding potential for ease of lambing</td>
<td>An indication of breeding potential for birth weight</td>
<td>An indication of breeding potential for resistance for worms</td>
</tr>
<tr>
<td>Example: A ram with an EBV of +6.0 would be expected to produce 3% more unassisted lambing events compared to a ram with an EBV of 0.</td>
<td>Example : A ram with an EBV of -1 would be expected to produce lambs 0.5kg lighter at birth than a ram with an EBV of 0.</td>
<td>Example: Negative values are superior. A ram with an EBV of -2 will produce progeny that shed less worm eggs onto the pasture than one with an EBV of 0.</td>
</tr>
</tbody>
</table>

Bear in mind:

- The Lambing Ease EBV is a direct assessment of the ease with which a ram or ewe’s lambs will be born. It is not a measure of the ewe’s ability to give birth easily.
- Optimum birth weights vary from flock to flock. The Birth Weight EBV is intended to help breeders avoid sires known to throw very large lambs, particularly where they are being mated to ewe lambs.
- The number of breeders recording Faecal Egg Count (FEC) is very low. Always ask the breeder whether this trait is being measured in their flock or whether the EBV is simply a prediction based on known ancestors and other recorded traits.
**Breeding Indexes**

EBVs identify animals that excel for individual traits – but they can also be combined to create a Breeding Index.

Within an index each EBV is weighted according to its importance to meet a specific breeding objective. Some of the most routinely used indexes are:

- **Terminal Sire Index** – designed to increase lean meat yield in the carcase, whilst limiting any associated rise in fatness

- **Maternal Index** – enhances pre-weaning growth rates and lamb survival, by improving maternal ability. Some Maternal Indexes include a positive weighting to enhance prolificacy

- **Welsh Index/Carcase+ Index** – identifies sheep with superior breeding potential for maternal ability, lamb growth and carcase quality

- **Hill-2 Index** – enhances the ewe’s overall productivity. The index will increase lamb growth rates, maternal ability and number of lambs reared to weaning in hill farming situations

Rams with indexes in the top 50% of the breed will pass on better characteristics to their lambs than those in the bottom 50%.

**Optimising Fat Depth**

One of the most widespread modifications applied to Signet’s breeding indexes is the inclusion of the ATAN function. This reduces the indexes of sheep with very low Fat Depth EBVs, which are more likely to produce overly lean progeny. Most terminal sire breeds have adopted this function in their index calculation to optimise selection for fat.
**Accuracy Values**

Accuracy Values indicate how much information has been used to calculate an animal’s EBVs. They indicate the likelihood of a ram’s EBVs changing over time and hence the risk associated with making a particular breeding decision. Accuracy values allow breeders to assess how close an animal’s EBVs are to its true breeding potential.

Accuracy values are presented on a range 0-99 – the higher the value the more that is known. Low heritability maternal traits will tend to have the lowest accuracy values.

Widely used stock rams that have sired many lambs will have higher accuracy values than young, unproven rams. This is demonstrated in the example below for a Champion Poll Dorset ram lamb – whose figures are shown alongside those of his sire. Notice the higher accuracy values achieved by the sire for growth and carcase traits.

<table>
<thead>
<tr>
<th>Breeding Values for a Champion Poll Dorset ram lamb</th>
<th>Breeding Values for his sire</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EBV</strong></td>
<td><strong>Accuracy Value</strong></td>
</tr>
<tr>
<td>Eight Week Weight</td>
<td>5.48</td>
</tr>
<tr>
<td>Mature Size</td>
<td>3.79</td>
</tr>
<tr>
<td>Litter Size</td>
<td>0.05</td>
</tr>
<tr>
<td>Maternal Ability</td>
<td>2.34</td>
</tr>
<tr>
<td>Scan Weight</td>
<td>11.65</td>
</tr>
<tr>
<td>Muscle Depth</td>
<td>2.17</td>
</tr>
<tr>
<td>Fat Depth</td>
<td>0.70</td>
</tr>
<tr>
<td>Terminal Sire Index</td>
<td>341</td>
</tr>
<tr>
<td>Maternal Index</td>
<td>320</td>
</tr>
</tbody>
</table>
The best way to put a set of EBVs into context is to compare them to the Breed Benchmark. This identifies the range of values that exist for a given trait and ranks them from best to worst.

Signet publishes breed benchmarks for 30 sheep breeds. These are updated each year and available to view on the website [www.signetfbc.co.uk](http://www.signetfbc.co.uk).

NB The top 10% for Fat Depth (ie the leanest animals) are not necessarily the best – it simply indicates that these are the 10% leanest animals.

<table>
<thead>
<tr>
<th>Breed Benchmark</th>
<th>Average</th>
<th>Top 25%</th>
<th>Top 10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eight Week Weight</td>
<td>2.96</td>
<td>3.67</td>
<td>4.25</td>
</tr>
<tr>
<td>Litter Size</td>
<td>0.08</td>
<td>0.14</td>
<td>0.19</td>
</tr>
<tr>
<td>Maternal Ability</td>
<td>0.11</td>
<td>0.32</td>
<td>0.50</td>
</tr>
<tr>
<td>Scan Weight</td>
<td>6.51</td>
<td>7.95</td>
<td>9.28</td>
</tr>
<tr>
<td>Muscle Depth</td>
<td>2.28</td>
<td>3.05</td>
<td>3.95</td>
</tr>
<tr>
<td>Fat Depth</td>
<td>-0.03</td>
<td>-0.28</td>
<td>Leaner</td>
</tr>
<tr>
<td>Terminal Sire Index</td>
<td>262</td>
<td>309</td>
<td>352</td>
</tr>
</tbody>
</table>

Breed Benchmarks can only be used for comparing within a breed not for selecting across breeds.
How to interpret EBVs when buying a ram

Sheep farmers selling breeding stock present key information about their animals in several ways, including on their websites, in sale catalogues and on sale cards.

These EBVs are expressed in real units of measurement, so this ram has the breeding potential to be 8.85kg heavier at scanning time, with over 2mm more muscling across the loin compared to a ram with EBVs of 0. This information might be shown in a sale catalogue as follows:

<table>
<thead>
<tr>
<th>Litter Size</th>
<th>Maternal</th>
<th>8 Wk Wgt</th>
<th>Scan Wgt</th>
<th>Musc Dpth</th>
<th>Fat Dpth</th>
<th>CT Gigot Musc</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.15</td>
<td>0.14kgs</td>
<td>4.82kgs</td>
<td>8.85kgs</td>
<td>2.18mm</td>
<td>0.21mm</td>
<td>2.93mm</td>
<td>282</td>
</tr>
<tr>
<td>28%</td>
<td>25%</td>
<td>88%</td>
<td>90%</td>
<td>86%</td>
<td>88%</td>
<td>78%</td>
<td>89%</td>
</tr>
</tbody>
</table>

STONELIEGH PERFECTION

Sire: COVENTRY OXYGEN XYZ08019(E) by FRANKTON FRED (1)
Dam: DEC070001(2) by WARWICK MAGNET (2)

EBVs: 0.15 0.14kgs 8.85kgs 2.18mm 0.21mm 2.93mm 282

Accuracy 28% 25% 88% 90% 86% 88% 78% 89%

High Scan Weight EBV = high growth rates

High Muscle Depth EBV = better conformation

Negative Fat Depth EBV = leaner lambs

Index = overall ranking
Breeding information can also be presented as a bar chart. Bars to the right of the centre line indicate above average levels of performance. Note the difference in performance of the two rams shown in the charts below.

In this example Ram B would produce progeny with superior growth rates and better muscling across the loin. The progeny sired by Ram B would also be leaner than those sired by Ram A.

Ram A has superior genes for prolificacy; his daughters would be expected to produce more lambs than ram B. Ram A also has a superior Maternal Ability EBV; his daughters would be expected to have superior milk production.

In this example there is a difference in the amount that is known about each ram. Ram A is a widely used stock ram with performance recorded daughters – shown by the accuracy values displayed after each EBV.
Locating a recorded ram

Signet Breeding Services performance records over 700 flocks per annum, identifying the leading animals amongst 30 different breeds of sheep.

An online breeders directory, giving details of English Performance Recorded Flocks is available from the Better Returns Programme [beefandlamb.ahdb.org.uk](http://beefandlamb.ahdb.org.uk). Breeders can also be located via the signet website [www.signetfbc.co.uk](http://www.signetfbc.co.uk).

Buying a recorded ram

Rams can be purchased by auction at ram sales or directly from the breeder.

<table>
<thead>
<tr>
<th>On-farm sales</th>
<th>Auctions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advantages</td>
<td></td>
</tr>
<tr>
<td>• Lower bio-security risk</td>
<td>• Greater range of recorded rams available</td>
</tr>
<tr>
<td>• There may be more time to examine records and discuss specific needs</td>
<td>• Competitive bidding</td>
</tr>
<tr>
<td>• The rest of the flock can be inspected</td>
<td>• Sale cards and published information on show</td>
</tr>
<tr>
<td>• Purchases can be made at any time</td>
<td>• Opportunity to compare stock from different flocks</td>
</tr>
</tbody>
</table>

Always:

• Speak to vendors about the performance data on display
• Take a Breed Benchmark to assess how each ram ranks in comparison to the rest of the breed
• Ask for the most recent indexes and EBVs for the rams you plan to buy
• Check if it has been scanned using ultrasound

Be aware of overfed rams

Rams are a significant investment and need to last for at least three to four matings to ensure a financial return.

It is human nature to be impressed by the largest looking animal at a sale. But rams that are over-fed for the show ring may be less able to mate successfully with as many ewes as one reared off forage. They may also suffer from poor joints and kidney problems and are likely to die sooner.

Some breeders now rear rams specifically on forage-based systems. This means they are fit and ready to work as soon as they reach their new home.

Make sure the ram you buy is ‘Fit for Purpose’.

The EBLEX publication, *Fit for Purpose Rams* has been produced as a blueprint for pedigree breeders seeking to increase the longevity of the rams they sell. It is available to download at [beefandlamb.ahdb.org.uk](http://beefandlamb.ahdb.org.uk).
Searching for rams on the internet

Performance records for the majority of Signet recorded flocks can be accessed via the Signet website. These diagrams show how to find EBVs for an individual animal. However, the same website can be used to find a specific breeder or all animals with EBVs above a certain threshold.

**STEP 1** Log onto the Internet and type ‘Signet Breeding Services’ into your search engine.

**STEP 2** Click the blue icon within the Sheepbreeder Section – ‘EBV Search’

**STEP 3** In the In the search box ‘all breeds quick search’, type the ear number or the name of the ram you are interested in.

If you only know part of the name (eg Champion) this can be used. Your ram will be listed with others that share that name.

**STEP 4** Print the record.

**STEP 5** Sale charts can be printed by clicking on the ‘sale chart icon’

Use the Signet website to select rams with the attributes you require in your flock – be it faster lamb growth rates, better muscling or superior maternal attributes such as milking ability and prolificacy.
Other traits influenced through breeding

Many other commercially important traits can be enhanced through selective breeding, capitalising on differences both within and between breeds. There are no EBVs for these traits yet.

- **Early puberty** – important for breeders wanting to breed from ewe lambs at an early age

- **Ability to breed out of season** – lowland breeds have a longer breeding season than hill breeds. Poll Dorset and Dorset Horn sheep readily breed out of season

- **Temperament** – differences exist between breeds which have an impact on shepherding and other production traits, e.g. lamb survival

- **Fleece characteristics** – fleece weight and structure tend to be highly heritable, i.e. they are readily passed on to the animal’s offspring. Rapid change can be made by selecting specific fleece characteristics

- **Wool shedding** – the Wiltshire Horn breed and its crosses can shed all or part of the fleece. This has been exploited in the “Easycare” strains of sheep

- **Health traits** – many health traits have a low heritability and are not widely reported. Opportunities to enhance them through within-breed selection are more limited

- **Ewe survival and longevity** – within-breed differences tend to have a low heritability. However major improvements can be made through crossbreeding
Capitalising on crossbreeding

Many traits that are difficult to enhance through within breed selection, can be improved greatly by crossbreeding. This allows farmers to exploit what is known as hybrid vigour.

This is where the performance of a crossbred is over and above the average performance of its two parents.

Most traits are influenced by hybrid vigour, but those most significantly improved include:

- Ewe fertility
- Lamb survival
- Disease resistance
- Longevity

These traits have a major impact on flock productivity.

When following a cross-breeding strategy, producers need to consider whether they are seeking to optimise hybrid vigour in the breeding ewe, its offspring or both.

Breeding females

Producers considering breeding their own female replacements need to consider whether these are to be purebred or crossbred.

<table>
<thead>
<tr>
<th>Advantages of purebred flock</th>
<th>Advantages of crossbred females</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Simple system, where only one breed is required</td>
<td></td>
</tr>
<tr>
<td>• Potential marketing advantages from purebred sales</td>
<td></td>
</tr>
<tr>
<td>• Greater uniformity amongst breeding stock</td>
<td>• Exploitation of hybrid vigour to gain better performance</td>
</tr>
<tr>
<td></td>
<td>• Wide access to different genetics</td>
</tr>
<tr>
<td></td>
<td>• Faster rates of genetic change</td>
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</tbody>
</table>

In most production systems breeders can enhance the number of lambs reared per ewe by capitalising on maternal hybrid vigour.
Other BRP publications available

Sheep BRP
Manual 1 – Marketing prime lamb for Better Returns
Manual 2 – Buying a recorded ram to generate Better Returns
Manual 3 – Target lamb management for Better Returns
Manual 4 – Managing ewes for Better Returns
Manual 5 – Growing and finishing lambs for Better Returns
Manual 6 – Target easier management for Better Returns
Manual 7 – Reducing lameness for Better Returns
Manual 8 – Worm control in sheep for Better Returns
Manual 9 – Improving ewe breeding for Better Returns
Manual 10 – Controlling external parasites for Better Returns
Manual 11 – Target ewe fertility for Better Returns
Manual 12 – Improving ewe nutrition for Better Returns
Manual 13 – Improving sheep handling for Better Returns
Manual 14 – Reducing lamb losses for Better Returns

Joint Beef and Sheep BRP
Manual 1 – Improving pasture for Better Returns
Manual 2 – Improved costings for Better Returns
Manual 3 – Improving soils for Better Returns
Manual 4 – Managing clover for Better Returns
Manual 5 – Making grass silage for Better Returns
Manual 6 – Using brassicas for Better Returns
Manual 7 – Managing nutrients for Better Returns
Manual 8 – Planning grazing strategies for Better Returns
Manual 9 – Minimising carcase losses for Better Returns
Manual 10 – Growing and feeding maize silage for Better Returns

See the AHDB Beef & Lamb website beefandlamb.ahdb.org.uk for the full list of Better Returns Programme publications for beef and sheep producers.

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