Beef production from the dairy herd
The information in this booklet was compiled by:
Mary Vickers, MLC; Clive Brown and Liz Ford, EBLEX.

EBLEX Beef Better Returns Programme is grateful to all those who have commented and contributed to this production.

Illustrations: Tebbit Design
Photography: Farmers Weekly, Milk Development Council and Genus Breeding
With thanks to M & R Kirkham and Sons

Edited: Geoff Dodgson, Chamberlain

EBLEX Beef Better Returns Programme has funded the writing and publication of this booklet. While the authors have worked on the best information available to them, neither the EBLEX Beef Better Returns Programme, nor the authors shall in any event be liable for any loss, damage or injury howsoever suffered directly or indirectly in relation to the booklet or the information on which it is based.

Reference herein to trade names and proprietary products and services without stating that they are protected does not imply that they may be regarded as unprotected and thus free for general use. No endorsement of named products or services is intended nor any criticism implied of other alternative but unnamed products.

For more information contact:

Beef Better Returns Programme
EBLEX
Graphic House, Ferrars Road
Huntingdon PE29 3EE
Tel: 0870 241 8829
Fax: 0871 433 6205
Email: brp@eblex.org.uk
www.eblex.org.uk
Opportunities to beef up returns

Delivering genetics through a stock bull or AI?

Benefits of Estimated Breeding Values (EBVs)

Breeding for beef – meeting market needs

Calving traits

Growth and carcase traits

From calf to market

Meeting market requirements

Selection for slaughter

Carcass classification for prime cattle

Grading cull cows

John Cross
Chairman
EBLEX
Opportunities to beef up returns

Beef calves and cull cows from the dairy herd can make important contributions to dairy producers’ profitability.

**Calves for beef production**

A beef cross calf is worth over £100 more than a dairy bull calf from the same cow.  
Equivalent to 1.4p/litre*

Better breeding can add an average £30 more to the value of a beef calf  
Equivalent to 0.4p/litre*

Sexed semen could boost calf returns even further. If fewer cows need to be served to a dairy bull, more beef calves can be produced.

As well as higher returns, choosing a calf that is born easily will minimise the costs of difficult calving and subsequent poor fertility. Ensuring a calf is born on time will see the mother returned to the milking herd without the delays of an extended gestation period.

**Cull cows**

Marketing your cull cows at the correct level of fatness into the most appropriate market can increase returns by £30/head (0.4p/litre)

Always aim for the human consumption market. The fallen stock scheme should be avoided if at all possible. Higher returns from the market will most often outweigh veterinary and medicine costs.

Cull cows deliver better returns when sold at the right level of fatness. This requires careful management as culls can quickly get over fat. So prepare culls for sale and deliver the weight and fat class your market requires.

* Improved return for an individual cow with average dairy lactation of 6,850 litres. Improvement on a herd basis will be dependent on system.
Delivering genetics through a stock bull or AI?

Whether using AI or buying a beef stock bull, investing in better quality genetics will pay dividends in terms of producing calves that are born on time, without calving difficulties, and have a higher market value.

The cost of each calf born, from different insemination methods, varies according to the cost of the bull or semen, the number of services for each conception (AI) and the number of calves sired (stock bull).

Stock bull or artificial insemination – weighing up the options

For each calf, typical artificial insemination costs range from around £15 for DIY to £25 using a technician; while a stock bull can cost from £20-40/calving. However, there is a range of other issues to consider.

Artificial Insemination

- Offers producers access to top quality semen from a range of breeds and sires – but always know what quality genetics you are buying
- Avoids maintenance costs of keeping a bull and has different cash flow implications
- Bulls and semen regularly screened for infectious diseases
- semen fully checked for fertility
- Known insemination dates help accurately predict calving dates
- Requires good handling and drafting facilities
- Requires high levels of stockman’s time and skill to detect heats accurately and maximise conception rates
- Relies on good AI technician or trained stock person

Stock bull

- A bull’s presence can stimulate cows and heifers to come on heat
- Bull does all the heat detection
- Low labour requirement because the bull carries out the insemination
- Invaluable as a ‘sweeper’ following AI
- Access to high quality genetics can be expensive depending on the number of cows to be served
- High initial capital cost with consequent cash flow implications and ongoing cost of keep
- Can introduce and spread disease within the herd
- Fertility can change and is often unknown, number of services each day is limited
- Dangerous to have on farm. Can also escape and carry out unplanned inseminations

Remember that buying a stock bull is not always the cheap option
Benefits of Estimated Breeding Values (EBVs)

Estimated Breeding Values (EBVs) provide information about the potential performance and ease of calving of a bull’s calves. Using EBVs will help produce the type of cattle the market requires cost-effectively—whether selling calves, stores or finished cattle. Calves sired by a bull with high EBVs for carcase traits grow faster, with better muscling and less fat than their lower EBV counterparts. In addition, a bull with superior EBVs for calving traits is likely to reduce calving difficulties delivering huge benefits for both cow and calf.

Both dairy and beef industries have similar systems to evaluate the breeding potential of sires. This helps select the right sire for a particular herd, rather than simply relying on visual assessment.

Both dairy and beef sires can be ranked within breed for the genetic merit of a specific trait.

Dairy

Predicted Transmitting Ability (PTA)
Ranks animals within breed for genetic merit of a specific trait.

Selection Indexes eg
Production Profit Index (£PIN)
Profitable Life Index (£PLI)

Help producers progress towards a breeding objective by selecting for a balance of different traits.

Beef

Estimated Breeding Values (EBVs)

Selection Indexes eg
Beef Value
Calving Value
Carcase Yield Index

Reliability
The degree of confidence that can be placed on genetic values.

Accuracy

Genetic information is available for both recorded stock bulls and beef semen. Ask to see the figures before you buy.

Note: EBVs cannot be compared between breeds
Breeding for beef – meeting market needs

The most important calving, growth and carcase EBVs to look for depend on the farm’s beef system.

Negative Birth Weight and Gestation Length EBVs indicate lower birth weight (easier calving) and shorter gestation lengths.

Positive Calving Ease EBVs are desirable to reduce the risk of difficult calvings.

<table>
<thead>
<tr>
<th>Calves</th>
<th>Stores</th>
<th>Finished beef</th>
<th>Suckler replacements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef X calves</td>
<td>Beef X calves</td>
<td>Beef X calves</td>
<td>Female beef X calves</td>
</tr>
<tr>
<td>sold for rearing and</td>
<td>reared and sold as stores</td>
<td>reared and sold as finished</td>
<td>for suckler herd</td>
</tr>
<tr>
<td>finishing</td>
<td></td>
<td></td>
<td>replacements</td>
</tr>
</tbody>
</table>

Calving traits

| Calving Ease – Direct  | +    | +    | +    | +    |
| Birth Weight          | – or average                  | –                              | –                    |
| Gestation Length      | –    | –    | –    | –    |
| Calving Ease –        |      |      | +    |      |
| Maternal/Daughters    |      |      |      |      |

Growth & carcase traits

| 200 Day Growth        | +    |      | +    |      |
| 400 Day Growth        |      | +    | +    |      |
| Muscle Depth          | +    | +    | +    | +    |

The breeding aims

- Well-conformed calves
- Born easily without extended gestation periods
- Grow well and have good muscle development as calves
- Calves born easily without extended gestation periods
- Grow well, particularly at young age, with good conformation
- Calves born easily without extended gestation periods
- Grow well with good conformation
- Well-conformed calves
- Born easily without extended gestation periods
- Subsequently:
  - Able to calve easily
  - Get back in calf quickly
  - Have a long breeding life

Prioritise desired EBVs to suit market needs. Look for positive (+) or negative (–) according to your system.
Calving traits

Calving difficulty is associated with considerable extra cost and reduced production.

Choosing a bull with easy calving EBVs can significantly reduce losses from calving difficulties (including veterinary treatment), poor fertility, and lost beef and milk output.

Calving difficulty is scored on a rising 1–5 scale, associated with increased costs. At 3 (severe assistance) costs will be around £200/calving, rising to over £500 at score 5 (caesarean).

Which EBVs are important?

Ease of calving is influenced by Birth Weight, Calving Ease – Direct, Calving Ease – Maternal/Daughters, and Gestation Length.

<table>
<thead>
<tr>
<th>Birth Weight EBV (kg)</th>
<th>Calving Ease – Direct EBV</th>
<th>Gestation Length EBV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enables sires to be selected for smaller calves at birth.</td>
<td>Identifies bulls whose progeny will be born without assistance.</td>
<td>Identifies bulls whose calves are born without extended gestation length.</td>
</tr>
<tr>
<td>Example</td>
<td>Example</td>
<td>Example</td>
</tr>
<tr>
<td>A bull with an EBV of -4kg is estimated to produce calves with birth weights 2kg lighter than a bull with an EBV of 0.</td>
<td>A bull with an EBV of 6 is estimated to produce 3% more unassisted calvings compared to a bull with an EBV of 0.</td>
<td>A bull with an EBV of -6 will produce calves with gestation lengths 3 days shorter than a bull with an EBV of 0.</td>
</tr>
</tbody>
</table>
Growth and carcase traits

Good breeding decisions in the dairy herd are based on balancing the need for calving ease with good beefing qualities.

Look for bulls whose calves will be born easily AND produce well-conformed calves that grow well.

Which EBVs are important?

<table>
<thead>
<tr>
<th>400 Day Growth EBV (kg)</th>
<th>Muscle Depth/Area EBV (mm/cm²)</th>
<th>Fat Depth EBV (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicates breeding potential to 400 days of age</td>
<td>Assesses muscle depth/area across the loin</td>
<td>Assesses fat depth across the loin</td>
</tr>
</tbody>
</table>

**Example**

A bull with an EBV of +48kg is estimated to produce calves 24kg heavier at 400 days than a bull with an EBV of 0.

A bull with an EBV of +6mm is estimated to produce calves with 3mm more muscle across the loin than those of a bull with an EBV of 0.

A bull with an EBV of -2mm is estimated to produce calves with 1mm less fat across the loin, than those of a bull with a 0 EBV.

**Investing in superior genetics will pay dividends.**

On farm trials have shown that progeny from sires in the top 25% of their breed can potentially return £20-40 a head more than below average sires. These returns come from improved carcase value, better feed conversion and fewer days to slaughter.

**Bull A:**

- higher rate growth
- 450kg
- 400 days

**Bull B:**

- slower rate growth
- 350kg
- 400 days

**200 days**

**Remember:**

The potential for high growth rates is only realised under good management, good nutrition and high herd health status.
From calf to market

There are three growth phases in producing beef animals:

1. **Rearing**

   Good management pays off for both beef and dairy calves.

   - Management early in a calf’s life significantly affects subsequent health and performance.
   - Leave calves on the cow for at least 24 hours and provide their dam’s milk for four more days.
   - Ensure calf receives 2 litres of colostrum in the first 6 hours. Then 2 litres in the next 6 hours and a further 2 litres in the following 12 hours. If the calf has not sucked use a stomach tube – colostrum is vital.
   - Calves must have their navels treated with veterinary iodine immediately after birth
   - Calves must be at least 7 days old when marketed. Do not present unfit calves for sale.
   - Aim for healthy calves with a shiny coat, supple skin, clean damp nose and bright eyes.
   - Selling healthy vigorous calves will enhance your reputation as a quality cattle supplier.

2. **Growing** – use low-cost good forage, ideally from grazing, for economic growth.

3. **Finishing** – a short sharp phase where energy intake rises through enhanced rations. The aim is to increase growth rates to reach the desired weight and fatness level to meet market requirements efficiently.

   **Note:** Bull beef production moves direct from rearing to finishing.

   Breed type will affect growth rates during the various phases.

   Weigh cattle regularly to make sure they are on course to achieve target specification slaughter weights and slaughter dates.
**Meeting market requirements**

<table>
<thead>
<tr>
<th>Calves</th>
<th>Stores</th>
<th>Finished</th>
<th>Cull cows (i)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Must be at least 7 days old</td>
<td>Present healthy, clean cattle, well grown for age</td>
<td>Aim to finish steers &amp; heifers less than 24 months old, bulls less than 16 months old</td>
<td>Sell cows as soon as they reach target fat class, as they tend to kill out fatter than they handle</td>
</tr>
<tr>
<td>Present vigorous healthy calves with a ‘bloom’</td>
<td>Provide veterinary history to buyer</td>
<td>Try to avoid penalties by ideally presenting animals with conformation of R, U or E at fat class 3 or 4L</td>
<td>A range of conformation are acceptable (R, -O+, P+), but fat levels should be 3 or 4L</td>
</tr>
<tr>
<td>Provide veterinary history to buyer</td>
<td>All cattle should be dehorned or polled</td>
<td>Check with your auctioneer or buyer for carcase weight range</td>
<td>Cows sold for human consumption must be born after 1 August 1996 and killed at a licensed OTM plant</td>
</tr>
<tr>
<td>Coat colour can be important for calf buyers</td>
<td>Sell in even batches in market</td>
<td>Compare prices from different buyers taking dressing specification into account when deadweight selling</td>
<td>Compare prices from different buyers taking dressing specification into account when deadweight selling</td>
</tr>
<tr>
<td></td>
<td>Seek the advice of your auctioneer or selling agent</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Remember:**

- Consider all marketing options
- Ensure your farm assurance is up to date and covers beef production
- Non-farm assured stock generally sells at a discount
- Understand market requirements and match your cattle to them to produce better returns
- Avoid penalties which stock outside specifications will incur

See Better Returns from Cull Cows
Selection for slaughter

Key handling points for beef cattle and cull cows

Cattle should always be handled from the left side as seen from behind as kidney fat that deposits around the loin area on the right side can be misleading when assessing loin depth.

Fatness assessment

Use just the tips of fingers to feel fat depth over the underlying muscle and bone at each of the handling points.

As animals get fatter, the ends of the transverse processes over the loin and the pin bones, as well as shoulder blade ridge, become more rounded. The hollows between ribs and shoulders fill up completely at the highest fat levels.

Hide thickness varies; native breeds and bulls tend to have thicker hides. Consider this when assessing fatness, particularly over the tail head, loin and ribs.

Skeletal structure of loin

Transverse process       Spinous process

See DVD Cull cow selection and handling for Better Returns
Carcase classification for prime cattle

Conformation is determined by a visual appraisal of shape, taking into account top, loin and shoulder. No adjustment is made for influence of fat on overall shape.

Fat is determined by visual assessment of external fat cover. There are five main classes. Class 4 and 5 are subdivided into L (leaner) and H (fatter).

<table>
<thead>
<tr>
<th>Fat class</th>
<th>increasing fatness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>E</td>
<td></td>
</tr>
<tr>
<td>U+</td>
<td></td>
</tr>
<tr>
<td>-U</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td></td>
</tr>
<tr>
<td>O+</td>
<td></td>
</tr>
<tr>
<td>-O</td>
<td></td>
</tr>
<tr>
<td>P+</td>
<td></td>
</tr>
<tr>
<td>-P</td>
<td></td>
</tr>
</tbody>
</table>

Fat class

- Little or no demand
- Discount prices
- Poorest returns
- Medium demand
- Average prices
- Moderate returns
- High UK demand
- Premium prices
- Best returns
- High demand for specific export markets
- Premium prices

Carcase assessment addresses conformation and fat. Fat cover is scored on a 1–5 scale. Conformation is assessed from E to P. Combining scores for conformation and fat determines carcase classification score and indicates the most suitable market.
Grading cull cows

Grade 1
Produces a very good commercial carcase. Well fleshed throughout; fat cover even, not patchy or excessive.

E • U • R • 2 • 3 • 4L

Markets
Domestic: Catering butchers • retail and some food service outlets • fat class 3-4L

Grade 2
Average to good quality carcase, not as good as grade 1. May benefit from further finishing.

R • -0+ • 3 • 4L • 4H

Markets
Domestic: Catering butchers • retail foodservice outlets
Export: (predominantly pistola hindquarters and boneless cuts). France: Fat class 2-4L • beef or good quality dairy bred cows. Netherlands: Fat class 2-3 • beef or dairy bred. Italy: Fat class 2-4L

Grade 3
Poor carcase, plainer type. Lacking flesh. Manufacturing grade / Steaker. May benefit from further finishing.

-0 • P+ • 2 • 3 • 4L

Markets
Domestic: Manufacturing processes – mince • diced • ready meals • burgers
Export: (predominantly boneless cuts and manufacturing beef). Spain: Fat class 3-4L • dairy bred
Germany: Fat class 3-4L • some better end grade 3 animals. Netherlands: Fat class 2-3 • beef and dairy bred. Belgium: Fat class 2 • lean • dairy bred
**Grade 4**
Extremely poor carcase, lacking flesh, notably under-finished or over-fat, out of weight specification, or having abnormalities. (rejects)

All (predom. -P) • 1 • 5 • 5H

**Markets**
**Domestic:** limited demand • possibly some manufacturing processes but limited value due to low lean meat yields.
**Export:** (Predominantly manufacturing beef) Potentially some leaner meat to Central European countries, but low value.

Export market specifications are intended as a guide. Contact your market outlet for more information.

### Carcase classification for cull cows

<table>
<thead>
<tr>
<th>Fat class</th>
<th>increasing fatness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4L</td>
</tr>
<tr>
<td>4H</td>
<td></td>
</tr>
<tr>
<td>5L</td>
<td></td>
</tr>
<tr>
<td>5H</td>
<td></td>
</tr>
</tbody>
</table>

Fat is determined by visual assessment of external fat cover. There are five main classes. Class 4 and 5 are subdivided into L (leaner) and H (fatter).

**Conformation Class**
Conformation is determined by a visual appraisal of shape, taking into account top, loin and shoulder. No adjustment is made for influence of fat on overall shape.

- **E**
- **U+**
- **-U**
- **R**
- **O+**
- **-O**
- **P+**
- **-P**
This is one of a number of booklets produced under the Better Returns Programme. Other titles in the series include:

1. Choosing bulls to breed for Better Returns
2. Beef selection and handling for Better Returns
3. Improving cattle handling for Better Returns

Also available is a Better Returns from Cull Cows leaflet, and a Cull cow selection and handling for Better Returns DVD.

All contain useful pointers to where you can achieve savings in time and money as well as increase the value achieved from your beef or dairy enterprise.

Copies are available FREE from EBLEX, call 0870 241 8829 or email brp@eblex.org.uk

For more information contact: Beef Better Returns Programme EBLEX Graphic House Ferrars Road Huntingdon PE29 3EE

Tel: 0870 241 8829
Fax: 0871 433 6205
Email: brp@eblex.org.uk
www.eblex.org.uk
© EBLEX 2007

The tables and contents of this publication may not be reproduced without the express permission of EBLEX.