



**Beef Sires for
the Dairy Herd**

Introduction

Hybu Cig Cymru/Meat Promotion Wales (HCC) was established in April 2003 and is the strategic body for the promotion and development of the Welsh red meat industry. Its mission is to develop profitable and sustainable markets for the benefit of all stakeholders in the supply chain.

It brought together the red meat activities of three organisations, namely the Meat and Livestock Commission in Wales (MLC Cymru), Welsh Development Agency and Welsh Lamb and Beef Promotions Ltd. Each organisation was responsible for different aspects of red meat activity, which have now been integrated into HCC's work.

HCC is now the sole body for the promotion and development of red meat in Wales.

This booklet forms part of a series of publications produced by HCC's Industry Development Team.

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Beef Sires for the Dairy Herd

Increasing productivity and efficiency within the beef industry is a key objective of Hybu Cig Cymru/Meat Promotion Wales. This booklet provides information to help guide a dairy farmer through the decisions involved in choosing a beef bull.

Invited Author: Mr Nigel Young, Technical Director, Kingshay Farming Trust, Henley Manor, Crewkerne

Nigel Young has a long and wide experience of the dairy industry, starting as Manager of the North Wyke Research farm for the Institute of Grassland and Environmental Research, continuing as Technical Director for the Kingshay Farming Trust and now as an independent consultant. He is well placed to understand the needs of dairy producers and how they contribute to the beef production in the UK.

Co Author: Dr Duncan Pullar, Beef & Sheep Technical Manager, MLC

Making the most of beef calves

Returns for milk producers are under pressure. Every opportunity for increasing returns should be explored. One opportunity is to increase the value of beef calves produced. This booklet shows how improved beef calf prices can be achieved, and how they can make a valuable contribution to bottom line profitability.



Each year over 400,000 beef cross calves are produced by the UK dairy herd. Some of these will become suckler cows, but many are slaughtered as bull, steer and heifer beef. By using better beef sires the price of each calf could be increased by £10, bringing an extra £4 million per year into the dairy industry. Beef producers would benefit by having better quality calves to finish.

Benefits

Calves sired by a bull with high Estimated Breeding Values (EBV's) for beef traits grow faster, have better muscling and lower fat than their low EBV counterparts. Calves sired by a bull with good EBV's for calving traits are likely to be easily born. The beneficiary of this improved performance should be the owner of the dairy enterprise from which the calf originated, as well as others involved in the beef production chain, (calf rearer, store cattle vendor or beef finisher). The beef value should be recognised in the purchase price of the animal, at whatever stage.

The effects of using high EBV beef sires on dairy cow are shown in Appendix 1. EBV's are tools, which allow a professional approach to sire selection. EBV's are available for artificial insemination (AI) and natural service bulls. Approximately 40% of pedigree beef cattle are recorded in the leading terminal sire breeds.



Estimated Breeding Values (EBV's) describe the genetic potential of a beef animal. EBV's are calculated for several aspects of animal growth or meat production by Signet Farm Business (Box 1 for traits).

Box 1: EBV's are currently produced for nine recorded traits

EBV	Unit of Measurement
Gestation length	Days
Calving ease	Expected change in percentage of unassisted calving
Birthweight	Kg
200-day growth	Kg
400-day growth	Kg
Muscling score	Recorded at 400 days on a 1-15 point scale
Muscle depth	Measured in mm by ultrasonic scanning at 400 days
Backfat depth	Measured in mm by ultrasonic scanning at 400 days
200-day milk (indirect)	kg

How should the Dairy Producer use EBV's?

For mature cows look for bulls with a high overall "Beef Value" with good growth and muscling, be aware of "Calving Value" and try to keep this above average for the breed. Calving surveys conducted by companies supplying semen also provide a useful guide to the ease of calving associated with progeny of a given bull.

For heifers and difficult calvers look for a high "Calving Ease" low "Birthweight" set of EBV's - "Calving Value" should be top 25% or better, especially in the more developed terminal sire breeds. Then look to maximise the Beef Value. There are sires available through AI with top 10% Calving and Beef Value. Again calving surveys conducted by companies supplying semen can provide additional information about AI sires.

Indexes

Two economic indexes are calculated using the EBV's, namely the Beef Value (BV) and the Calving Value (CV) (See Box 2). They show the animals' overall ability to efficiently produce high yields of saleable meat. EBV's, Beef Value and Calving Value are produced using the same methods as PIN values for dairy cows. They are all very good predictors of animal performance.

Box 2 Genetic Evaluation, BLUP and EBV's

An animal in a field, finishing yard, sale ring or show ring shows the combination of two effects, the way it has been reared and the genes it's parents gave it. As a dairy producer looking for a sire to breed high quality beef progeny, the genes are key to profit. So how can these genes be measured? By using the Signet Beefbreeder records, which are analysed by a Best Linear Unbiased Prediction (commonly called BLUP).

Many producers, including dairy farmers, are using BLUP methods to improve the breeding value of the animals. This method uses the pedigree information between an animals' relatives and the records, (weight and measurements) which have been recorded. The method uses all the available information on all recorded relatives from an animal's parents and progeny to cousins, aunts, brothers and sisters. The analysis calculates Estimated Breeding Values, which are the assessment of the genes or genetic merit of the animal.

Beef Value

The Beef Value is the overall balanced assessment of the economic value of an animal for meat production, including growth. The Beef Value uses the information from the individual EBV's to show the animals' ability to produce high yields of saleable meat. High positive values indicate the animals, which are more commercially valuable.

Calving Value

The Calving Value is the overall balanced assessment of the likely economic and welfare benefits associated with calving. High positive values indicate animals with low calving difficulties and short gestation lengths, which will lead to fewer assisted calvings and easier re-breeding.

SUPERBOY

Born: 16/08/1999

Sire SUPER BULL	Dam SUPER COW
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BLUP Analysis Date: 01/09/1997	Calving Value	200 Growth (kg)	400 Growth (kg)	Muscling Score (points)	Muscle Depth (mm)	Fat Depth (mm)	Beef Value
EBV	XX20	+13	+21	+0.4	+0.2	-0.0	XX18
Accuracy %	43	64	58	54	53	29	52

WEIGHTS (kg)	100 days	200 days	300 days	400 days	500 days
	152	307	534	745	

Calving Value

The overall assessment of the economic value of an animals' effect on calving. It rates bulls in terms of their effect on the calving of their progeny. The two EBV's that contribute to Calving Value are Gestation Length and Calving Ease. A higher positive Calving Value is associated with a shorter gestation length and an easier calving.

200 Day Growth

(kg/liveweight). Higher positive values indicate faster growth to 200 days.

Muscling Score

(Points of muscling score). Animal's muscling measured at 400 days. Higher positive values indicate greater muscling. Approximately two points are equal to one EU carcass conformation class,

Muscle Depth

(mm muscle depth). This is an objective measure of an animal's muscling and is measured ultrasonically. Higher positive values indicate more muscling

Beef Value

(XX denotes breed prefix). This is the assessment of economic genetic merit of an animal to produce a carcass demanded by the market in terms of weight, conformation and fat composition. The more positive the Beef Value the better the carcass meets the current demands. Beef Value and Calving Value; together allow trade-offs to be made between growth, carcass traits and calving traits.

EBV's, Beef and Calving Value are not comparable between breeds

Each beef breed has its own average for EBV's and the top 10 and 1% bands will be different figures for each breed. For the leading beef breeds the EBV's, BV and CV are re-calculated three times a year. The breed average will change and so will the EBV's, BV and CV for individual animals (See Appendix 2).

All EBV's are expressed as the difference from a reference value, which is the average of the breed, in 1980, for the trait in question. In Box 3 the average 400 day growth for the breed is +21kg and the average BV is 14. To buy an above average BV bull, the BV must be greater than 14.

The current breed averages for EBV's, BV and CV are available from MLC's Signet Breeding Services on 01908 844271 or www.signetfbc.co.uk.

Box 3: Example data describing a breed. Use this data to check the merit of an individual bull. "Superboy" is above average but not top 10%.

	Average	Top 10%	Top 1%
Gestation length (days)	1.0	-0.7	-2.4
Calving Ease (%)	-3.7	1.8	5.4
Birthweight (kg)	1.6	-0.1	-1.5
CALVING VALUE	0	3	5
200d Growth (kg)	13	26	39
400d Growth (kg)	21	41	64
Muscle Score (kg)	0.2	0.5	1.0
Muscle Depth (kg)	0.1	0.3	0.4
Fat Depth (kg)	0.0	-0.1	-0.3
BEEF VALUE	14	21	30

Table 2: Percentage increase on bottom line profitability

Herd yield and current profit margin		£10 premium per beef calf £480 per 100 cows	£20 premium per beef calf £960 per 100 cows
5000 litre herd	0.5 ppl	16%	35%
	1.5 ppl	5%	12%
	3.0 ppl	3%	6%
6500 litre herd	0.5 ppl	12%	27%
	1.5 ppl	4%	9%
	3.0 ppl	2%	5%
8000 litre herd	0.5 ppl	10%	22%
	1.5 ppl	3%	7%
	3.0 ppl	2%	4%

Assumptions:

- 100 cow herd
- 96% calf survival rate
- 50% of herd put to beef
- Extra £1 per straw of high EBV @ 1.5 straws per calf
- Average price of bulls and heifers

Summary

- **By selecting sires with high EBV's dairy farmers can make worthwhile additions to their profitability.**
- **Choose beef sires using EBV's, BV and CV to suit the individual cow or heifer.**
- **Dairy farmers can improve the recognition of the high value of their beef stock by using integrated schemes, and promoting EBV's at every other marketing opportunity.**

Appendix 1

How well do EBV's work on farm?

The results from using bulls with different EBV's clearly show up in the calves and their later performance. Below are some examples of field results.

The birthweight EBV predicts calf birthweight with good accuracy

Bulls	Birth weight EBV	Av birthweight of progeny (kg)	
		Bulls	Heifers
A	+5.8kg	52.6	49.2
B	+4.6kg	51.6	48.9
C	+1.1kg	41.6	44.6

(more than 30 recorded progeny per bull)

The 200 day weight for EBV predicts differences in weaning weight with good accuracy

Bulls	200-day Growth BV	Progeny adjusted 200 day weight
D	+32.7kg	221kg
E	+16.5kg	195kg

Advantage to Sire E

At a standard slaughter weight bulls with the higher 400 day weight EBV are slaughtered 3 weeks earlier

Bull	Bulls EBV's		Calf Performance	
	Birth wt	400-day Growth	Carcase Weight	Age at Slaughter
F	+1.76	+57.7kg	335kg	374 days
G	+1.83	+36.1kg	332kg	395 days
Advantage to Bull F			3kg	21 days

At a daily feed cost of £1.50, the financial advantage for Bull F equals £31.50 per animal

Muscle scores effect conformation grades

Bull	Muscle Depth (mm)	Muscle Score (pts)	% Progeny with U Grades
H	+0.2	+0.6	45
I	+0.4	+1.2	75

Appendix 2

Beef Breeds using Signet Beefbreeder

Aberdeen Angus	Galloway	Salers
Beef Shorthorn	Hereford	Simmental
Belgian Blue	Limousin	South Devon
Blonde d'Aquitaine	Lincoln Red	Stabiliser
British White	Murray Grey	Sussex
Charolais	Piemontese	Welsh Black
Devon	Red Poll	

MLC's Signet Breeding Services – Beefbreeder contact 01908 844210

Typical example of breed improvement using BLUP

Further information

Please contact HCC's Industry Development Team

Tel: 01970 625050 or email: enquiries@hccmpw.org.uk

For further information on this brochure or the work of HCC please visit

www.hccmpw.org.uk