Bull Selection Made Simple
- A Guide For The Commercial Buyer

Prepared by Ian Pritchard
Beef Specialist

High quality genetics are one of the basic building blocks for any suckler herd. But just what exactly are high quality genetics? While the stockman's eye can inspect for traits such as structural soundness, this does not inform fully of the potential that lies within a bull. This is where Estimate Breeding Values (EBVs) can help buyers to select bulls that will help them to fully exploit the potential within their herd. Quality Meat Scotland (QMS) has commissioned SAC Consulting, a division of SRUC, Scotlands Rural College, to prepare this guide to provide suckler farmers with an easy-to-access reference on selecting a bull using EBVs.

Depending on breed chosen, commercial bull purchasers are presented with one of two recording systems - either Breedplan or Signet. Both systems are similar in terms of the information displayed; however, they differ in the terminology used. This guide will take you through what to look for when selecting your bull, depending on whether he is being bought to produce store cattle, finished cattle or to breed heifer replacements.

It is worth doing your homework at least a week before the sale and most auction companies make catalogues available online. If you are unable to get online, you can ask for a copy to be posted to you. Breed society websites also have excellent trait selection systems that can be used to help find bulls that have the traits you require. Breeders will also display the EBV data as bar charts; located above their bulls (at sale events). If you don't understand something ask the seller, it is in their interest to ensure that they have as many potential purchasers for their bulls as possible.

Knowing the health status of your bull and transitioning him from show condition to working clothes are also key to success with your purchase and these aspects are also covered in this guide.

We hope you find this booklet useful and wish you well with your new purchase.

Robert Gilchrist
QMS Knowledge Transfer Specialist

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Version 2

Foreword

This booklet has been prepared by SAC on behalf of QMS. The idea behind the booklet was to provide commercial breeders with a handy sized ready reckoner that would enable them to be quickly brought up to speed with new developments that may have occurred since they were last standing at the ring side to purchase the herd bull. Selecting on the basis of eye for soundness and structure and on Estimated Breeding Values (EBVs) for the potential genetic performance that the bull will transfer, is the best way for producers to identify the economic impact of their purchase. Good genetics are the basic building blocks for any herd but unless you can understand what the economic impact of the various figures on offer mean, you are relying on luck of the draw.

In the UK, commercial bull purchasers are faced with having to understand two different types of recording system, the Australian Breedplan system and the UK based Signet system depending on which breed of bull is of interest. There are similarities between the information display however, there are some differences in the terminology. This booklet aims to take breeders through what you should be looking for depending on whether the bull is being bought to produce store cattle, finished cattle or for breeding heifer replacements. Do your homework at least a week before the sale. The main auction companies are very good at enabling those with computers to access the sale catalogue on-line or alternatively ask for a copy to be posted. Breed society websites are also an excellent way of being able to select through their checker systems for bulls that have the traits in which you are interested. At the sale most pedigree sellers will have the performance figures (Estimated Breeding Values) displayed as easy to read bar charts, located above the bull pen.

Knowing the health declaration status of your bull and how best to look after an animal that finds itself no longer in it's pampered situation are all ways of getting the maximum from your purchase and this booklet covers these aspects as well. Finally, if you don't understand something ask the seller, it is in their interest to ensure that they have as many potential purchasers for their bulls as possible.

We hope you find this booklet a useful guide and wish you well with your new purchase.

Kathy Peebles
QMS Livestock Development Manager

Introduction

Prize winners all – but you need to know more

Many producers buy a bull on looks alone. And yes it does give you some information – scale, length, correctness, soundness, condition etc. But those characteristics as seen by the eye can not give you other critical information on how his calves will perform. They tell you nothing about:

- how easily will his calves be born?
- how fast will they grow?
- will his progeny be lean or fat?
- how milky will his daughters be?
- how fertile his daughters will be?

These characteristics are determined by his GENETICS and the tools to measure GENETICS have been around for some time in the form of Estimated Breeding Values (EBVs).

The visual appraisal of the bull is important but must be used together with data provided.

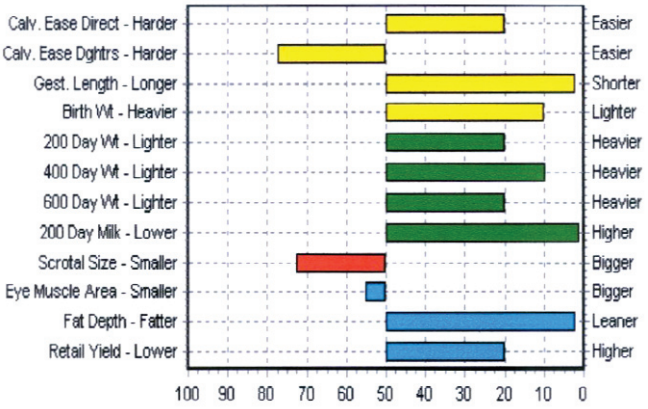
Using a combination of EBVs and THE EYE will give the best chance of success.

There are two providers of EBVs in the UK – Beefbreeder & Breedplan, and the data for a particular breed will be provided by one of the two providers. The principle of EBVs is the same irrespective of the provider.

Breeds and providers have strived to produce EBVs in a straightforward, simple to understand format which is adequate for most purchasers (Figure 1).

It must be remembered that EBVs cannot be compared across breeds.

Figure 1 Typical EBV Display Card



50th Percentile is the Breed Avg.

It is often said that the bull is half the herd. This is correct. With a calf half the genetics come from the sire and half from the dam. Take this example:

Q. A bull has a 400 Day Weight EBV of +60kg.
What is the expected advantage of his calves (Bull A) at 400 days compared with calves sired by a bull (Bull B) with a 400 Day Weight EBV of +20 kg?

A. Take half of 400 day wt EBV of Bull A (30kg) minus half of 400 Day Wt. EBV of Bull B (10kg)

Convert this into an actual situation

	Bull A	Bull B
400 Day EBV	+60kg	+20kg

Advantage to calf	+20kg
Say 38 calves/yr	760kg
5 year life	3800kg
Financial Value	£6650

(Twice this amount if calving in 2 seasons)

A POTENTIAL FINANCIAL BENEFIT TO THE BUSINESS THAT CANNOT BE IGNORED

EBVs Indicate

Calving

It is recognised that some breeds calve more easily than others but within breeds there are considerable variations so attention should be paid to the EBV for calving ease.

Large calves and long gestation periods lead to increasing difficulty in calving and often result in dead or injured calves/cows. Calves slower to their feet from protracted calving will have decreased vital colostrum intake and are more likely to have a disease challenge. Furthermore, difficult calvings affect the re-breeding ability of the cows i.e. they take longer to start to cycle after calving. If they have calved in the second half of the calving period, it is likely that they will not

have cycled before the bull is withdrawn so you end up with an unexpected barren cow. This is unacceptable, especially with young cows and these are the ones that are already more likely to be challenged.

Selecting solely for calving ease in easy calving breeds could result in smaller, slower growing calves. However this can be counteracted by considering all EBVs, not just those for calving.

A LIVE CALF IS ESSENTIAL

A DEAD CALF IS A HUGE LOSS IN VALUE

However, it should be remembered that cow condition and nutrition in late pregnancy can lead to difficult calvings and oversized calves. Quite often a sire used on spring calvers creates no calving problems but when used on autumn calvers there can be difficult calvings and even caesareans. Herd management pre-calving is critical.

Do not always blame the BULL, BUT, make sure his EBVs for calving traits are better than breed average

Maternal CE

Recently another calving ease EBV has been introduced – Maternal Calving Ease/Calving Ease Daughters. This indicates how easily a bull's daughters will calve if they are kept as replacements. One of the main factors influencing Maternal Calving Ease is the size of the cow's pelvis, the bigger the pelvis the more easily the calf will be born.

When selecting a bull to produce heifer replacements it is critical to take both calving ease EBVs into account, the target being positive values for both.

BREEDING REPLACEMENTS USE SIRE & DAM CALVING EBVs

Growth

Once the live calf is on the ground growth trait EBVs are probably the most important financial driver of the enterprise. For most suckled calf producers selection should be based on the 400 Day Weight EBV. If a 600 Day Weight EBV is available this can be used if keeping heifers for breeding. Cows that are too big can be less efficient (as measured as weight of calf produced per 100 kg cow weight). If cows in the herd are considered too big, ensure that sires used to breed replacements don't have too high EBVs for growth. Caution should be taken to avoid extremes.

USE GROWTH EBVs - A BIG DRIVER OF PERFORMANCE

Carcase Traits

The aim is the production of cattle with a high percentage of saleable meat. Selecting cattle on Muscle Depth, Eye Muscle Area EBV and Retail Beef Yield EBV will help to achieve this. These traits can be used together with the EBVs indicating carcase fat levels.

In many situations a reduction in fat is necessary. If outwintering or if the cow breeds are very lean, it may be prudent to use a bull with slightly higher than average fat levels. Also, if cow breed is lean the sire may need to have an EBV that is deemed fatter so that the finishing cattle can reach slaughter at acceptable weights.

AIM FOR THE CORRECT BALANCE OF EBVs

Maternal Traits

Although fairly new these traits merit use when selecting bulls to breed heifer replacements. With increasing numbers of herds breeding their own replacements these traits are good indicators of animals with genetic potential to improve herds.

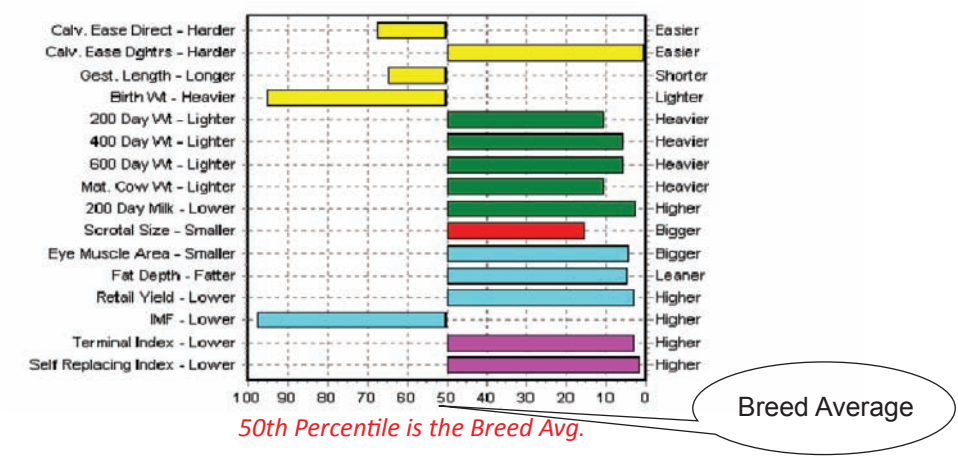
A bull used to breed replacements will have an effect that lasts for many years through the genetics inherited from him by his daughters and also his granddaughters. Therefore it is critical that bulls selected have the correct balance of EBVs to allow the herd to show ongoing improvement over the years. Just selecting a bull with a high EBV for one trait and moderate/low EBVs for other traits is unlikely to give benefit.

A closed herd with correct genetic selection will exhibit superior performance especially when linked with membership of a CHeCS approved Health Scheme testing for production diseases such as BVD and Johne's.

Interpretation of EBVs

Figure 2 indicates a bull showing high genetic merit for various traits

Figure 2 ***EBV Display Board Used At Sales***



The 50% line is the current breed average. Anything to the right is above average – the further to the right the higher the EBV. Anything to the left is below breed average. Ideally most of the traits should be to the right of the mid-line. But it should be remembered that being to the left of the line is not necessarily bad e.g. in some situations cattle could be too lean and some extra fat will be beneficial. In this situation the bull selected should have the fat EBV to the left.

For those of you who want more detailed information this is also shown and the individual traits can be compared with the breed percentiles.

For example, in the above chart the bull is in the top 5% of the breed for Ease of Calving Daughters but nearly in the bottom 5% of the breed for Intramuscular Fat (marbling). Sale catalogues show the accuracy figures and the breed averages. For example in Figure 3 the 400 Day Weight of +56 kg has an accuracy of 92% and the breed average is +38 kg. The individual EBVs are often combined into an overall index or value (Figure 4) – in this example the bull has a terminal index of +£36.

The index can be Terminal (Beef Value) or Self Replacing (Maternal Value). Various EBVs are used to construct the index and these may differ from breed to breed.

If breeding replacements, use the self replacing indices (Maternal Values), however, ensure that you are happy with the individual EBVs – **do not select on the index alone.**

For buyers who receive the sale catalogue to read through before the sale, recorded bulls will have their EBVs shown in a table, an example of which is shown in Figure 3.

Figure 3 Display of Individual EBVs

Individual EBVs														
	Calving Ease Direct (%)	Calving Ease Daughters (%)	Gestation Length (days)	Birth Wt. (kg)	200 Day Wt. (kg)	400 Day Wt. (kg)	600 Day Wt. (kg)	Mat. Cow Wt. (kg)	200 Day Milk (kg)	Scrotal Size (cm)	Eye Muscle Area (sq cm)	Fat Depth (mm)	Retail Beef Yield (%)	IMF (%)
EBV	-3.8	**+16.8**	+1.6	+4.3	+31	**+56**	**+64**	+55	**+10**	+0.3	+4.9	-1.0	+2.1	-0.3
Acc	89%	87%	93%	92%	93%	92%	90%	78%	88%	65%	62%	71%	67%	52%
Breed Average EBV's														
EBV	-0.6	-0.3	+1.3	+2.5	+23	+38	+43	+42	+4	-0.2	+2.9	-0.3	+0.8	+0.1

Figure 4 Overall Index Values

SELECTION INDEX VALUES		
Market Target	**Index Value**	**Breed Average**
Terminal Index	+36	+22
Self Replacing Index	+45	+26

Accuracy

Accuracy is determined by the amount of records available on the animal and its close relatives in any herd. The more information known about the animal the higher the accuracy.

For example, if only the animal was weighed and had a 400 Day Wt EBV he would have a relatively low accuracy. However, if his sire, dam, grandparents and all his other relatives had been weighed the accuracy would be much higher.

Some characteristics are passed from generation to generation more strongly than others i.e. have higher heritability. Generally growth EBVs have higher heritability and maternal EBVs have lower heritability and accuracy.

If you buy a bull with low accuracies there is more chance that his EBVs will change over the next few years than a bull with high accuracies. These changes could be upwards or downwards. You may ask why these changes occur? Even though there is no added information from the bull itself there could be considerable additional information from relatives of the bull.

- <30% Accuracy Buyer Beware
- >60% Accuracy Acceptable

Which EBVs Are Most Important?

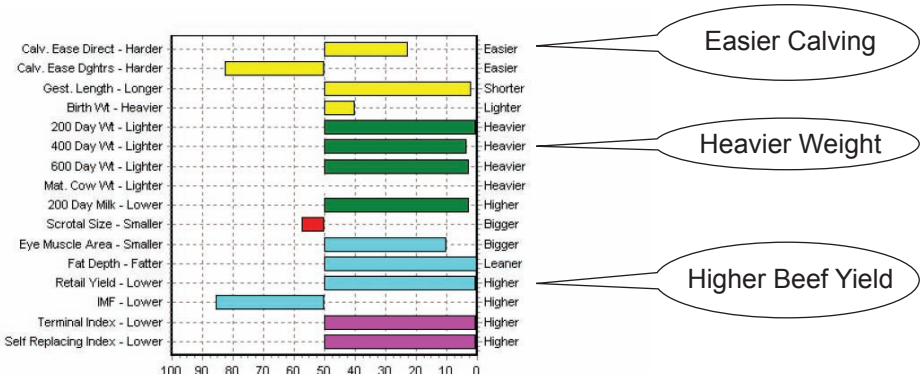
The most important EBVs will depend on whether the bull is being selected as a terminal sire, a dual purpose/maternal bull where some of his heifers will be kept for breeding, or a bull bought to use on heifers. The priority in all cases is a live calf.

Suitable bulls for each category are shown in Figures 5, 6 and 7.

Terminal Sire

- Ease of Calving Direct
- 400 Day Weight
- Beef Value/Retail Meat Yield

Figure 5



Other EBVs such as Muscle Depth/Ribeye Area are important but having first drawn up a short list using the above criteria any major differences between individual bulls in these other EBVs can then be taken into account.

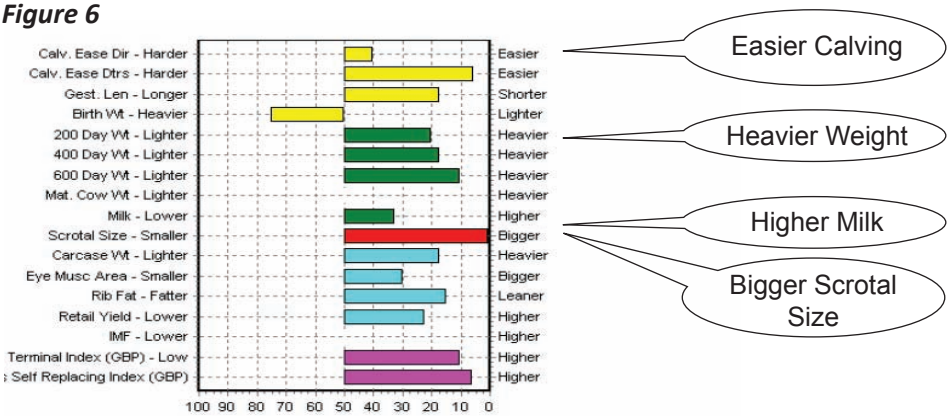
If breeding heifer replacements the critical EBVs are:

Important EBVs

- Ease of Calving Direct
- Ease of Calving Daughters
- 200 Day Milk
- 400 Day Weight

Because of the link between fertility and testicle size the recently introduced scrotal size EBV should be considered.

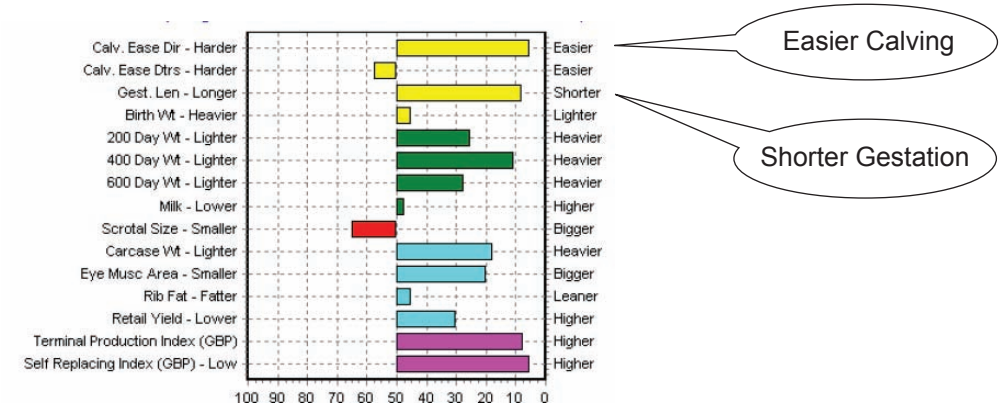
Figure 6



For use on Heifers

Important EBV's
• Ease of Calving Direct • Gestation length

Figure 7



Other traits may be important but priority should be given to the above.

Health Declaration

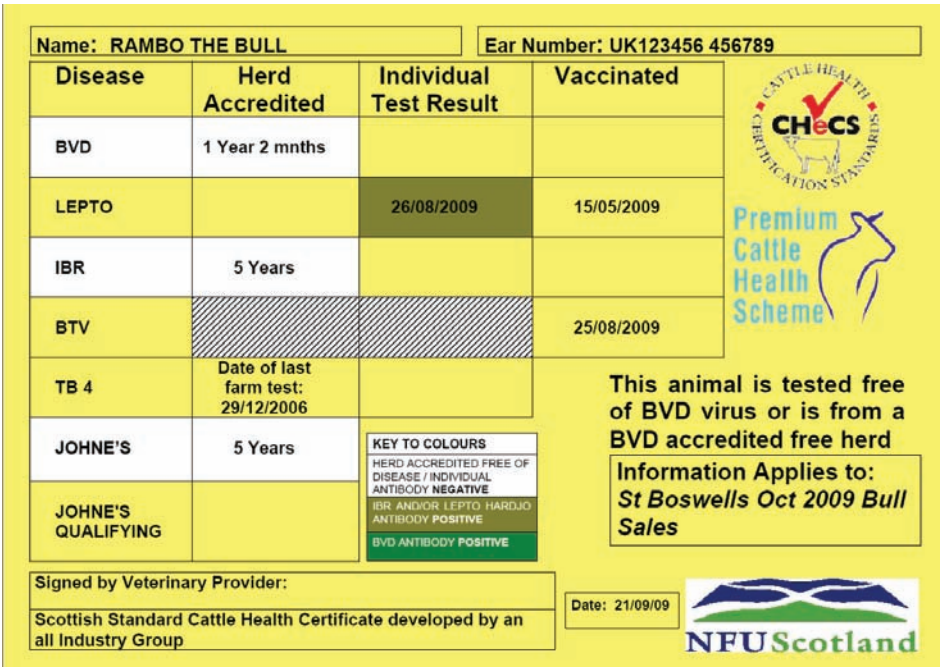
Many breeds are insisting on a declared health status at breed sales and from 2011 most of the major breeds will have a status for one or more diseases. Scottish Government has shown a commitment to eradicate BVD in Scotland.

The risk of buying a BVD virus carrier or a bull naïve to BVD will be greatly reduced as a result of rules imposed by breed societies for sales. If buying privately ensure the herd is in a CHeCS health scheme and preferably accredited free of a disease.

Nobody can afford to lose a young animal from Johne's disease so the status of the herd, not the individual animal, should be explored before purchase.

At sales, health declarations should be displayed by vendors. These will tell you the disease status of the individual animals and herds. Figure 8 shows an example.

Figure 8 Example of Health Declaration Card



Name: RAMBO THE BULL

Ear Number: UK123456 456789

Disease	Herd Accredited	Individual Test Result	Vaccinated
BVD	1 Year 2 mnths		
LEPTO		26/08/2009	15/05/2009
IBR	5 Years		
BTV			25/08/2009
TB 4	Date of last farm test: 29/12/2006		
JOHNE'S	5 Years		
JOHNE'S QUALIFYING			

KEY TO COLOURS

HERD ACCREDITED FREE OF DISEASE / INDIVIDUAL ANTIBODY **NEGATIVE**

IBR AND/OR LEPTO HARDJO ANTIBODY **POSITIVE**

BVD ANTIBODY **POSITIVE**

CHeCS

CATTLE HEALTH CERTIFICATION STANDARDS

Premium Cattle Health Scheme

This animal is tested free of BVD virus or is from a BVD accredited free herd

Information Applies to: *St Boswells Oct 2009 Bull Sales*

Signed by Veterinary Provider:

Scottish Standard Cattle Health Certificate developed by an all Industry Group

Date: 21/09/09

NFU Scotland

What does the above declaration tell me that is of benefit to my herd?

1. He comes from a herd that is BVD accredited. However, he needs to be vaccinated.

2. He has been vaccinated for leptospirosis and has been blood tested antibody positive. He may not be suitable for a herd that is accredited for leptospirosis.

3. He comes from an IBR accredited herd and has not been vaccinated. As he could be naive it would be prudent to vaccinate him.

4. He comes from a herd that has been monitored Johne's free for 5 years.

Check List for the Buyer

- Buy a bull well in advance of requirement ☐
- Get catalogue in advance ☐
- Determine your priority EBVs ☐
- Produce a short list of criteria to meet ☐
- Set a price limit ☐
- At sales, select from short list by eye ☐
- Study the health declaration ☐
- Ensure BVD accredited or BVD virus free ☐
- Ensure BVD vaccinated ☐
- Buy from Johne's accredited herd ☐
- On purchase, get him insured ☐
- Quarantine ☐

BUY A PERFORMER - USE THE CHECK LIST

Post Purchase Management of Young Bull

Purchase

1. Buy well in advance to allow time to settle – make it a planned rather than a last minute decision. Recommendation is to buy at autumn sale for early spring use, February sale for later spring use or May sales for autumn use.

2. On getting the bull home isolate for a month, check his working capability and health and vaccinate/treat as necessary. A semen test should also be carried out. Try to minimise stress.

3. Try to buy a young bull that has been semen tested and shown to produce fertile semen. If not available have him tested at home.

4. Remember a short working life increases cost.

Feeding

1. Young bulls are in forward condition at sale and should be allowed to lose condition gradually as they are still maturing. Dietary changes should not be sudden. Try to find out the diet prior to purchase so that a stable rumen environment can be maintained. Forage alone will not be sufficient to maintain the young bulls which will be anything up to 1000 kg in weight. They should be fed to gain at 0.8 kg/day.

2. Feed concentrates in at least 2 feeds for one month after purchase. Prior to purchase a bull will have been on a high level of concentrate feed, fed frequently throughout the day.

3. A bull will have seen little grass since the suckling period. Ideally do not turn to grass without supplementary feed for at least 4 – 6 weeks after purchase.

Housing

1. Bulls will have been in individual pens with a lot of human contact (walking/ grooming) plus several feeds per day.

2. Do not ignore him post purchase by keeping him in a confined space or tied in a dark shed. Provide human contact and allow him to see his surroundings even though he is in isolation.

3. Do not keep on a slippery floor surface and certainly do not allow him to serve cows on this surface. Look after his feet by trying to keep him on a partial hard dry surface.

4. Make sure pen divisions are high and strong (Figure 9) – many accidents happen with bulls trying to jump out of pens shortly after arrival.

Figure 9 Example of Bull Pen

Training

1. Young bulls are sexually inexperienced.
2. Using prior to sale is resisted as they become harder to handle.
3. Try to pen bulls where they can see cows/other bulls working.
4. Take a mature cow to him and allow him to serve her several times.

Working

1. Avoid overwork – young bulls are enthusiastic but have low semen reserves.
2. Target 20 cows in the first season.
3. Try to get him to take a bit of supplementary feed to maintain a body condition score around 3.
4. Remove from cows if it is apparent condition is being lost – it will only lead to barren cows.
5. Check he is serving correctly, (20–40% of bulls could be infertile or sub-fertile), keep a watchful eye and check herd 3 weeks later. If in doubt pull him out. It is essential to PD after the bull is removed from the herd.

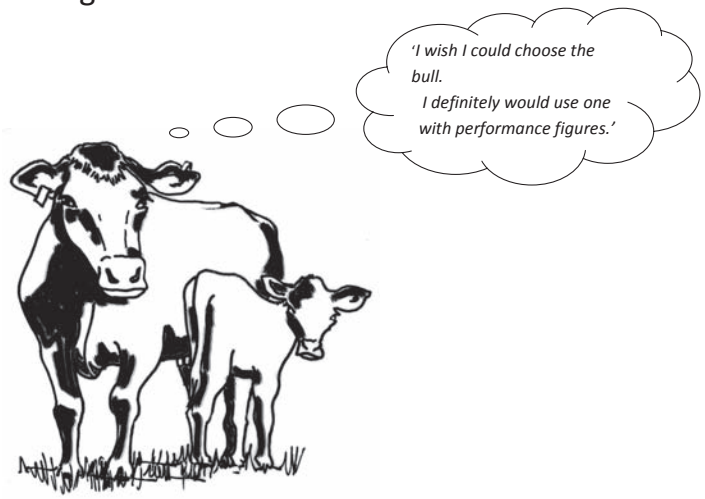
Annually (for all bulls)

1. Being fertile one season is no guarantee. Prior to the next season do bull 'MOT' and fertility check in conjunction with your vet.
2. Do not trim feet just before use - plan for 6-8 weeks before. Feet and legs do a lot of work in the mating season.
3. Feed 2-3 kg concentrates prior to the mating season to build condition ready for an active season.

A short working life results in higher replacement costs and reduced enterprise profitability

REMEMBER

- The eye alone cannot assess breed potential
- Examine the individual EBVs
- Select on EBVs rather than on indexes (overall values)
- Bulls with top EBVs for all traits are a rarity
- Buy the bull which best meets your needs
- Ensure your purchase has a good health status
- Careful post-purchase management will ensure a longer working life



EBVs are the drivers of economic performance.
You cannot afford not to use them.

QMS QUALITY MEAT SCOTLAND

SAC