



FACT SHEET

BULL SELECTION

This factsheet is a summary of the Beef + Lamb New Zealand Bull Selection Book and can be used as a guide during the bull selection process.

The selection process should begin with the establishment of breeding objectives which have a high relative economic value. Appropriate bulls should be selected to meet these objectives.

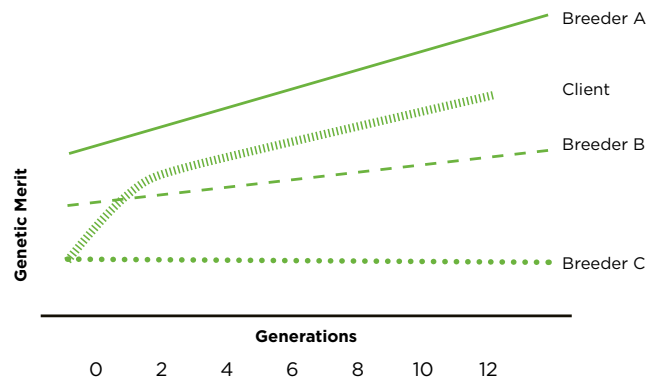
IMPORTANT QUESTIONS TO ASK YOUR BULL BREEDER PRIOR TO BUYING A BULL:

1. What are the breeding objectives for the herd?
2. Is the breeder recording with a recognised performance recording service provider (e.g. Breedplan, CSU)?
3. Can the breeder provide evidence that the genetic progress is being made in the traits in which you are interested i.e. by showing you a favourable genetic trends table?
4. What is the average genetic merit of the breeders herd in relation to the breed average?
5. Can the breeder supply you with percentile band information, enabling you to rank his bulls?
6. Can the breeder supply you with \$ indexes (EBV's for Profit), which rank bulls according to their profitability in different production systems?
7. From where does the breeder source the herd sires and what are their EBV's/ Indexes?

8. What are the breeders' main criteria for sire selection?
9. Does the breeder mate yearlings- heifers and/or bulls?
10. What proportion of bulls are sold in relation to the number born?

CHOOSING A BULL BREEDER

Once your breeding objectives have been set and your ideal type of bull established, the next step is to choose the right breeder. The most important single factor in making that choice is that the breeder's herd must have higher genetic merit and rate of improvement than your herd, so that your herd can improve.



As shown in this diagram, you will progress at a similar rate to bull breeder A, but will remain two generations behind. If bull breeders B or C were chosen, little or no genetic progress would be made.

However, the two generation lag can be reduced by purchasing year after year at a level about the average of the breeder's bulls.

SELECTING A BULL WITH DESIRED MATERNAL TRAITS

ESTIMATED BREEDING VALUES

The maternal attributes which a bull will pass to his daughters, cannot be detected by even the most experienced stockman. For these reasons Estimated Breeding Values (EBVs) should be an important consideration in the selection of an individual bull.

An EBV or Breeding Value (BV) is a genetic prediction of the average performance of an animal's progeny or a prediction of how an animal is going to perform as a parent. EBVs are expressed in the units of the particular trait. For example, 600-Day Weight is expressed in kg, Scrotal Size is expressed in cm and Calving Ease is expressed as a percentage figure.

An EBV can be generated for any trait as long as there is variation within the trait and the trait is of known heritability. Development of an EBV starts with collecting raw data (basic information) on a group of animals, which have been treated the same. The raw data is then adjusted to ensure that all animals within the group are compared on a 'level playing field'. For instance, weaning weights have to be adjusted for the date of birth of the calves and the age of the cows. Once the adjustments are made, the computer then:

- Calculates an average performance figure for the group for each trait
- Compares each individual animal within the group with this average, so that each animal has a performance figure, which is above or below the average
- Multiplies this difference from the average, for each animal, by the known heritability of the trait

The resulting calculation for each animal represents the animals within group EBV for the particular trait being considered.

HOW DOES AN EBV RELATE TO PROFITABILITY?

The offspring of a bull with an EBV for 600-day weight of 130kg will be 65kg heavier and return in the region of 15% more profit than the progeny of a bull with an EBV of zero. This takes into account the additional feed eaten by the higher performing animals, and assumes the two bulls are mated to cows of similar genetic merit. It does not allow for the higher-growth-rate animals attracting early season premiums, which can further improve profitability.

There are currently 19 different EBVs being generated. Therefore it is vitally important, when considering what EBVs to pursue, to only target those traits that the processor currently pays for. The farmer should also consider any other traits that they think may receive some sort of monetary recognition in the near future. Each individual beef farmer may have different genetic requirements for stock; therefore it is unwise to promote 'genetic recipes' without pointing out their shortcomings.

For example in a simple finishing operation, the most important trait to consider is growth rate, as the sooner the cattle meet target liveweights:

- The more efficient the animals are, in terms of conversion of grass to beef
- The sooner monetary returns are received
- The more likely the animals are to attract early-season premiums
- The more likely the producer is to avoid that period of the year when there is a dramatic decline in pasture quality, with a corresponding decline in animal growth rates.

PHYSICAL EXAMINATION OF THE BULL

The bull's fertility is the most important of his traits. You want him to be able to sire many calves, and sire them early each joining season. To do this, a bull must be sound in his structure so that he lasts many years, serving many cows in a short period of time, without suffering injury.

THE HEAD

The head should show reasonable length and width yet not be too large in proportion to the body. A head that is too big could potentially increase calving problems.

(i) The Jaw

The jaw should be wide, enabling the animal to harvest its daily food requirements in as short a time as possible. The teeth on the lower jaw should meet squarely with the upper pad.

(ii) The Eyes

Eye cancer is a serious condition leading to wastage in cattle and possible condemnation of the carcass. It can be minimised by ensuring that animals are well pigmented around the eyes, have eyes which are well set into the head, and have a well "hooded" forehead. Susceptibility to eye cancer is a heritable trait.

THE NECK

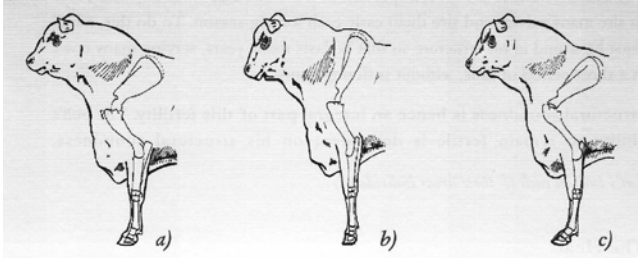
The neck should appear to be of a reasonable length and held high. Often the neck appears to be short because there is too much angle to the shoulder. If the head and neck are held low, this can indicate the shoulder is too straight.

THE SHOULDERS

The shoulders are naturally sloping. A slope of 45-60 degrees is considered acceptable. A beast whose shoulder blade is tipped forward (straight shouldered) has less angle at the shoulder joint and elbow joint and this reduces the shock absorbing ability of these front joints.

Front leg and shoulder structure of the bull

The shoulder should lie smoothly against the rib cage. Bulls whose shoulders are wide at the point of the shoulder (the base of the neck) or wide between the shoulder blades (when observed from above), may throw heavily shouldered calves increasing the chance of calving problems.

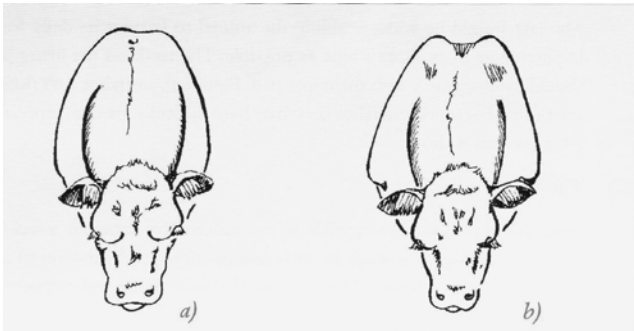


Correct

Too straight

Too much angle

Prominent shoulder blades may increase calving difficulties



Smooth shoulders

Prominent shoulders

Front Legs and Feet

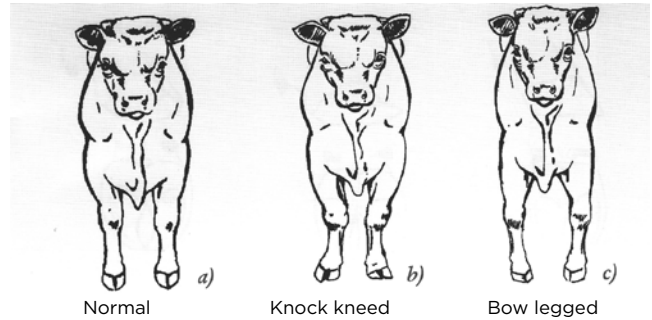
The front legs of the bull should be straight when viewed from in front. On a structurally sound animal, a vertical line may be drawn from the point of the shoulder to the middle of the claw. This line should intersect the knee. As the knee joints carry over half the bull's body weight, deviations from this line will cause excessive wearing of these joints.

A 'knock-kneed' bull may have turned out front feet (up to 10 degrees is considered normal). A bull is considered 'knock kneed' when the knee joints lie inside this line, which may eventually lead to overgrown outside claws.

A bull that is wide at the knees (bow-legged) presents a more serious problem. These animals are often narrow in their stance and may roll their feet as they walk. They can also be wide in their shoulders.

From the side, the foreleg and cannon bones should be in a straight line. The knee joint forward of this line (buck-kneed) can be associated with steep shoulders and pasterns, and may be a serious fault.

Front leg Structure

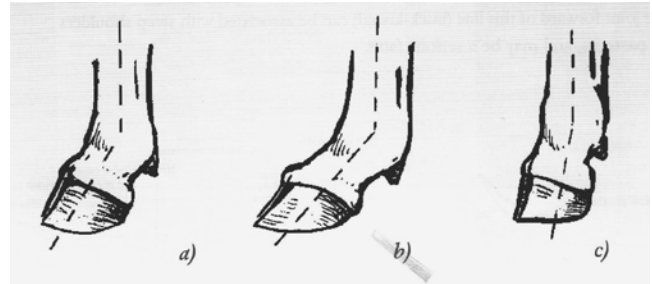


Normal

Knock kneed

Bow legged

Correct angle of the pastern joint



Correct

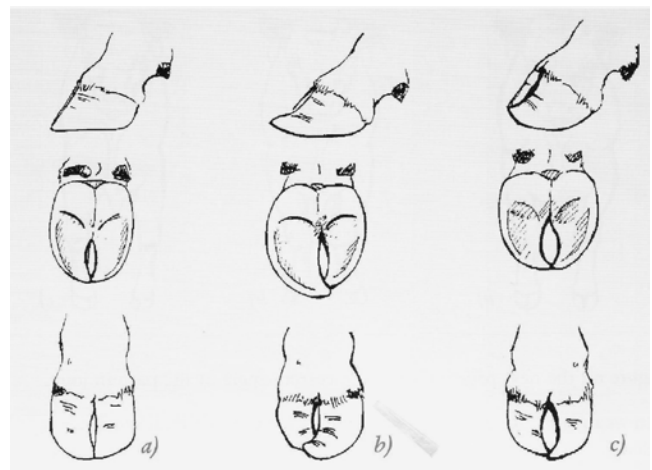
Too much angle

Too straight

FEET

Avoid overgrown, scissor or curved claws. Mild curling is normal. It is exaggerated by heavy feeding and soft soils. Overgrown, uneven claws are usually indications of poor limb structure or early signs of hip arthritis. Avoid extremely short feet, which are often associated with over-straight legs.

Uneven wearing of the two claws, where one grows longer than the other, is often due to a problem in the leg structure. It is caused by an uneven distribution of weight through the foot.



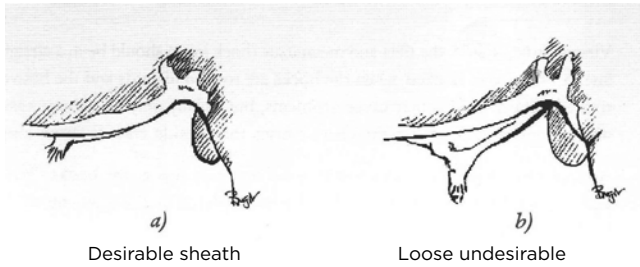
Normal

Large outside claw and long curled toe

Scissor claw

THE SHEATH

The sheath should be trim and close to the body. A long sheath or an excessively angled sheath is more prone to injury or infection (from grass seeds, and other foreign objects) and should be avoided. The sheath should be close up against the body to prevent injury.

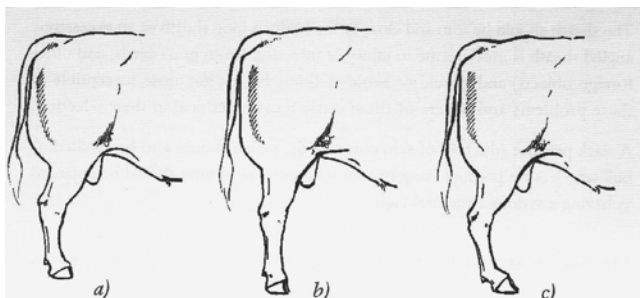


HIND LEGS AND FEET

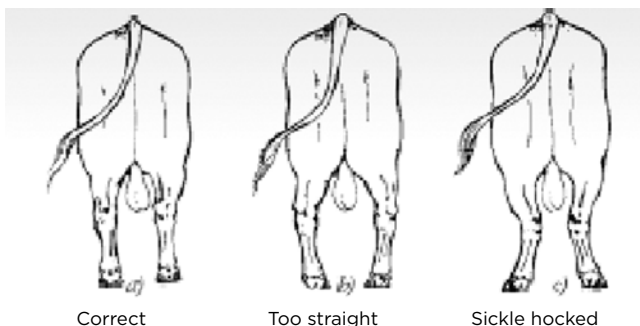
When a bull mounts a cow, he straightens up the joints in his hind legs. When he thrusts, he further straightens the legs, placing enormous stress on all joints, but particularly the hock. If these joints don't have enough angulation, they become swollen and painful, leading eventually to their breakdown.

Straightness in the hind leg can be seen in the hock and pastern joints, and this indicates straightness in the stifle and hip.

Hind leg structure (from the side)



Hind leg structure (from the back)



Viewed from behind, the hock joint should be in a straight line. A bull is 'cow hocked' when the hocks are rotated inwards and the hooves rotated outwards.

A more serious problem occurs where the legs are wide at the hocks ('bowlegged'), but the feet are turned in. Extra strain is placed on the ligaments of the hock joints causing lameness and even permanent damage.

Where an animal places its feet when walking naturally, tells you a lot about its structure.

BULL BUYER'S FINAL CHECKLIST

- Clear objectives have been set for your herd
- A bull breeder with similar objectives has been identified
- The breeder has a similar management system and is located in a similar environment
- Can the breeder demonstrate he has a genetically progressive selection programme underway
- Make sure the breeder will follow up to see how you and the bulls are progressing

MORE INFORMATION

For more information on bull selection please request:

- Bull Selection Book
- R&D Brief 142 Bull Soundness and Effect on Fertility
- Profitable Farming of Beef Cows

For a free copy of these publications phone Beef + Lamb New Zealand on 0800 BEEFLAMB (0800 233 352), email enquiries@beeflambnz.com or visit www.beeflambnz.com

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