

Section 7

Tagging, Castrating and Disbudding Calves



Introduction

Tagging calves is carried out as part of the Bovine Animal Identification System. The aim is to guarantee the safety of beef and beef products by the operation of an effective animal identification and tracing system. Cattle are castrated in order to prevent sexual behaviour, reduce aggression, and increase handling safety. Disbudding of young calves is performed to prevent bullying and injury to other animals (with implications for productivity and carcass damage respectively) and to promote human safety during handling.

- ① At what age must calves be ear tagged?
- ② What are the rules surrounding BVD sampling when tagging calves?
- ③ How do you order tags?
- ④ What is the best age to castrate calves?
- ⑤ What are the main methods of castration?
- ⑥ When is the best time to disbud calves?
- ⑦ What method is used to disbud calves?

Tagging, Castrating and Disbudding Calves

Tagging Calves

Tagging of young calves is an essential part of the Bovine Animal Identification system and the National BVD Eradication scheme. The Bovine Animal Identification system has four elements: tagging, bovine passport, on-farm bovine herd registers and a computerised database (www.agriculture.gov.ie).

① At what age must calves be ear tagged?

The tagging system requires the application of two identically numbered yellow plastic ear tags to calves born on a holding within 20 days of birth. Correct application of cattle tags is fundamental to any operation. Properly placed tags will minimise discomfort for the animal, decrease risk of injury to personnel and last longer in the ear.



This newborn calf must be tagged within 20 days of birth. To avoid confusion, calves should be tagged as soon as they are dry.

② What are the rules surrounding BVD sampling when tagging calves?

According to the Bovine Viral Diarrhoea Order, 2012, a tissue tag sample must be taken from all calves born after 1st January 2013. Samples must be submitted to a designated testing laboratory as soon as possible, but not later than seven days, after collection.

While calves may be tagged up to 20 days after birth, it is preferable that samples are taken as soon as possible after birth, although not until the calf is dry. Early sampling of calves reduces the possibility of a non-PI calf being infected with BVD virus after birth and becoming transiently infected, leading to a positive virus result.



All calves must be correctly tagged before they are removed from the farm of origin.

③ How do you order tags?

You must order your annual requirement of ear tags directly from the DAFM approved tag supplier. This is done by completing the tag order card sent to you by the tag supplier and returning it with the appropriate fee. On application of a pair of tags to a calf, you must complete a corresponding and identically numbered registration application form, which is supplied with each pair of tags.



All national ID tags ordered for use now have one set of the paired tags designed to take a tissue sample.

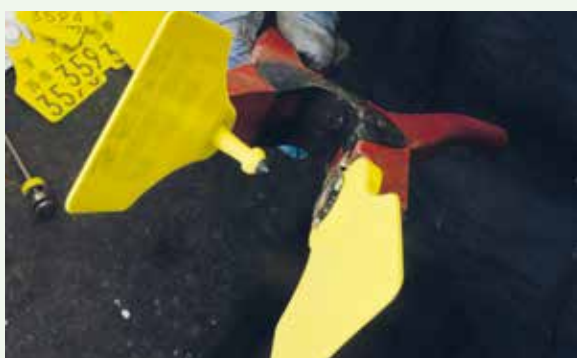
HOW TO:

Tag a calf and collect a BVD tissue sample

1. Calves should be securely restrained. Before beginning, squeeze the handles of the tagger to check that the pin slides easily into the hole on the opposite end of the tagger.
2. Place the male component of the tag on the



tagger pin, and the female component of the tag on the opposite side. Push the alloy pedal down to enable the placement of the female part beneath the metal plate, which holds it in place.



Before tagging, the taggers should be checked to make sure that the female part of the tag is correctly aligned with its male counterpart.

KEY POINT:

The ideal location for a tag is in the middle one-third of the ear, between the rises in auricular cartilage. Tags placed too close to the head will fit too tightly due to the thicker cartilage, and may cause tissue necrosis. Tags placed too far towards the top or bottom of the ear are easily torn out.



The farmer's thumb highlights the ideal location for the ear tag.

3. Clean the site by removing debris and wiping the site with alcohol or another disinfectant. Align the tagger. The male component (with the pin) goes on the outside of the ear, with the female half of the tag going on the inside of the ear.
4. Squeeze the tagger quickly but firmly, you should feel a strong click.

5. Remove the tagger and ensure that the tag halves are interlocked and that the tag is placed securely and comfortably.
6. With modified national tags, the stainless steel tube section of the BVD tissue tag remains inside the applicator after the plastic tag has been applied to the ear of the animal.



The BVD tissue sample remains inside the specialised tagger after the calf has been tagged.

7. To collect the BVD sample, apply the provided plastic tube onto the stainless steel needle. Attach the two parts together by applying sufficient pressure until the plastic tube 'clicks' into place. Make sure both pieces (needle and tube) are firmly fixed to each other. Samples should be placed in a plastic bag and stored in a cool dark place (ideally in a non-domestic fridge) prior to sending them to the lab.

KEY TIPS:

Tissue sample tags should be inserted in the right ear.



A plastic tube is provided to collect the BVD sample. These can be stored for up to seven days in a plastic bag in a refrigerator before they are sent to the laboratory.

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8. Keep an eye on the calf over the next week for signs of infection.

KEY TIPS:

Bacteria and viruses can be spread by shared ear taggers, so care should be taken to clean the tagger with alcohol or other disinfectant.

Castration

④ What is the best age to castrate calves?

In Ireland, cattle can be castrated by persons other than a vet before they attain six months of age using a burdizzo or before they are eight days of age using a rubber ring (S.I. 127 of 2014) without the use of anaesthesia and analgesia (S.I. 107 of 2014).

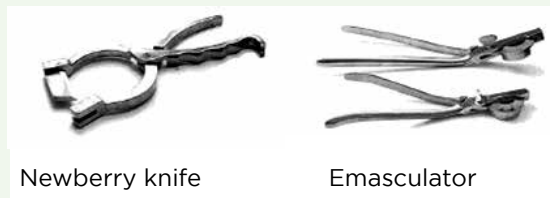
In terms of performance, calves castrated at birth reach weaning at the same live weight as calves castrated at weaning because the productivity differences due to testosterone are not seen until after puberty (three to four months after weaning). Early castration of calves can be beneficial to handlers as young calves are smaller, easier to handle and quicker to recover.

However, as young calves are physiologically immature there is concern that castrating them may compromise their welfare.

⑤ What are the main methods of castration?

Three main methods of castration are available:

- 1) **Rubber ring/banding** - this cuts off the blood supply to the testes and scrotum, which dry up and fall off.
- 2) **Bloodless castration** (using a device such as a Burdizzo) - these are used to crush the spermatic cord (the tube leading from the testes to the penis) and the surrounding vessels which leads to loss of blood supply to the testes.
- 3) **Surgical castration** - the scrotum is cut to reveal the testes which are then removed by twisting, cutting or tearing.



Newberry knife

Emasculator

Rubber ring/banding

Rubber rings are the most frequently used castrating method for very young calves. Rubber ring castration, or the use of other devices for constricting the flow of blood to the scrotum, is only permitted for use on calves less than eight days of age without the use of an anaesthetic.

For success, it is essential to use new rings and clean equipment.

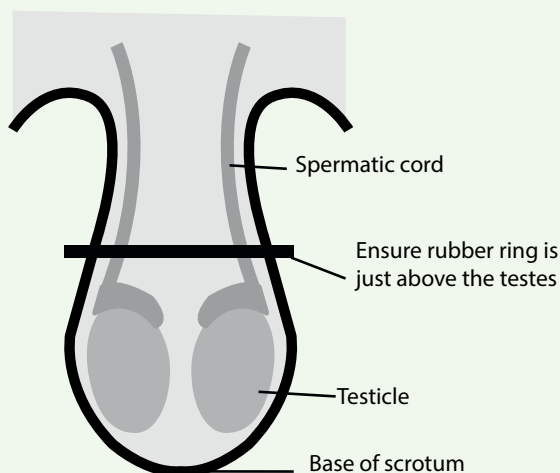
HOW TO:

Castrate a calf with a rubber ring

- Minimal restraint is needed. Make sure that the calf can't kick or turn around easily.
- Check that both testes are present in the scrotum.
- Once the two testes are found, squeeze them down to the base of the scrotum.
- With the prongs of the elastrator facing upwards towards the calf's belly, squeeze the handles and expand the ring so it can be easily placed over the scrotum and placed just above the top of the testes.
- Release the handles, slip the prongs from underneath the ring and check that both of the testes are fully below the ring.
- Small rubber rings are used for calves less than one month of age. For older calves, a heavy wall latex band is used along with a grommet.
- When castrating older calves, they should be vaccinated for Tetanus (using Tetanus toxoid) at least one-month before carrying out the procedure and administered a booster vaccine on the day of banding.

When performed properly, complications should be rare. The two most common problems are:

- Not capturing both testes - animals may still be fertile.
- Infection - if not done cleanly, then abscesses can occur which will cause chronic pain.



Bloodless/Burdizzo castration

This castration method employs the use of the Burdizzo. It is based on the principle that crushing destroys the spermatic cord carrying blood to the testicles but that the skin of the scrotum remains intact. The testicle is left to atrophy in the scrotum.

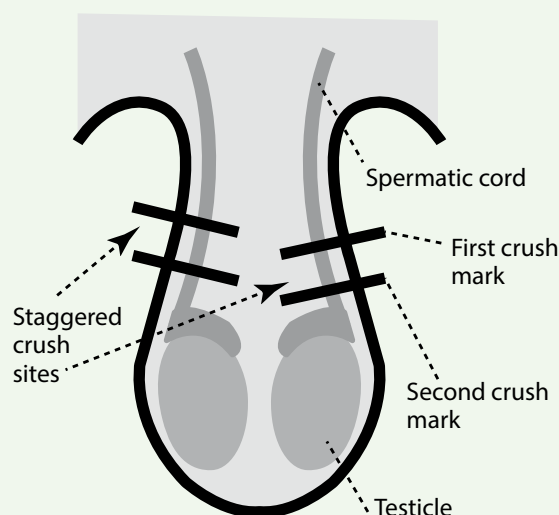
Each spermatic cord is crushed twice (second crush below the first) for 10 seconds each along the neck of the scrotum to ensure complete castration.

This method of castration is the most likely to fail in untrained hands because you cannot tell whether you have successfully castrated the calf. However, with training and experience it is a relatively quick and simple method.

Key factors for successful use of the Burdizzo:

- Use clean equipment.
- The Burdizzo must be in good condition. The jaws must be parallel and close uniformly.
- Proper calf restraint - use a crush if one is available.
- Clamp one side then the other - do not clamp across the whole scrotum.

Emasculated calves should be checked four weeks later to ensure that the testes are not growing. When done properly, the Burdizzo results in the fewest complications. In particular, the risk of infection or haemorrhage is very low because of the lack of open wounds.



KEY POINT:

When using a Burdizzo it is important that the crush marks across the scrotum do not join.

Surgical Castration

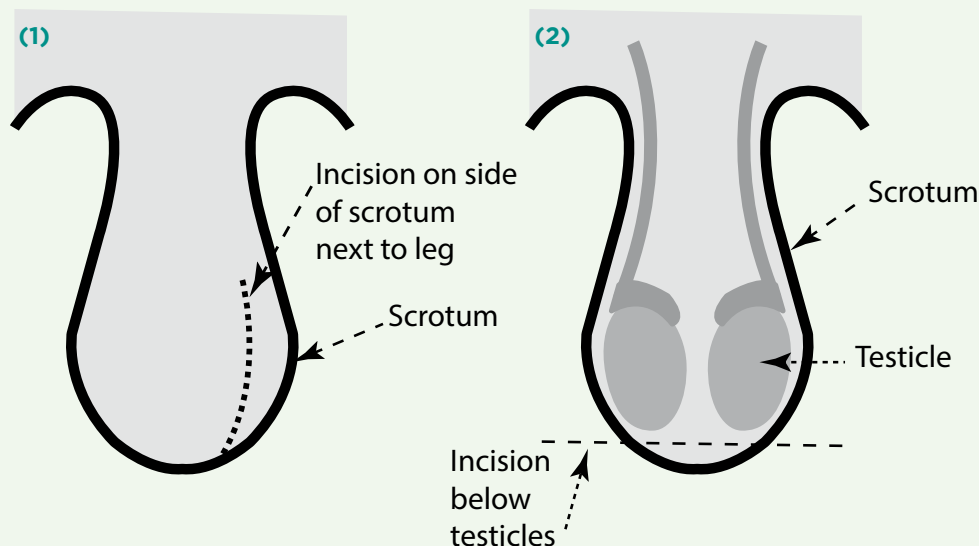
There are two principal surgical techniques for castrating male cattle that are performed by a veterinary practitioner:

1. Excision of the distal one-third of the scrotum with a scalpel or sharp castration knife to expose the testicles by descent through the scrotal incision.
2. Incision of the lateral scrotal walls with a scalpel or a Newberry knife to expose the testicles in a vertical fashion.

The advantage of the Newberry knife is that both the lateral walls and the median septum are simultaneously incised, thereby enhancing wound drainage.

Proper surgical hygiene must be observed to avoid any unnecessary cross-contamination, infections or sepsis. A concurrent clostridial immunisation is recommended.

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Disbudding

⑥ When is the best time to disbud calves?

Calves should be disbudded while horn development is still at the horn bud stage as the horn buds are not yet attached to the skull. Consequently, the procedure involves less tissue trauma and is less stressful than dehorning older animals. Small calves are also easier and safer to handle than larger animals.

⑦ What method is used to disbud calves?

Cautery is recommended by the European Food Safety Authority (EFSA) and other authority organisations, and is the only method of disbudding allowed in Ireland under S.I. 127 of 2014. This permits disbudding of calves up to 28 days old by thermal cauterisation. Either local anaesthetic (LA) or analgesia is required for disbudding on calves that have reached the age of 15 days.

For success, ensure that:

- A cauterisation method (i.e. using a heated disbudding iron) is used at one to two weeks to remove the horn buds. A chemical paste to cauterise the horn buds is not recommended.



The standard iron is attached to an LPG canister. Cordless irons are now available and are useful for disbudding younger calves.

- A custom-built calf dehorning crate is used to minimise stress to the calf and for optimum safety to the operator.
- Operators performing either disbudding of calves or dehorning of older cattle must be trained and competent in the procedures used, and must be able to recognise the signs of complications.

Once horn development has commenced, horn cutting or sawing at the base of the horn close to the skull is required.

HOW TO:

Disbud a calf



Calves must be restrained in a dehorning crate for disbudding.

1. Restrain the calf, preferably using a custom built calf dehorning crate.
2. If the calf is more than 15 days of age, an aesthetic or analgesia must be used. Consult your vet regarding their procurement and application/administration.
3. Prior to disbudding it may be useful to clip the hair around the horn bud so that it can be seen easily and a clean burn can be achieved.
4. Place the hot disbudding iron on the bud and rotate in a half circle 10 or 12 times while applying pressure. Angle the instrument so that the edge burns the skin around the rim of the bud.
5. Dig out the horn by pressing and moving the head of the iron laterally, leaving a crater in the skin. There may be a small protrusion in the centre of the hollow but this may be left as it is not horn-forming tissue.
6. Remove the other horn bud in the same manner.

KEY TIPS:

When the skin around the horn bud is properly cauterised you should see a clear copper ring. If there are still pale areas heat these again.



An antibiotic spray can be applied to the disbudded sites to prevent infection.



Section 7

Successful Weaning of Calves



Introduction

Weaning can be a stressful time for calves as they change from a liquid diet from predominantly animal protein sources to a solid diet from vegetable protein sources. To reduce potential stress, concentrates should be introduced early, from a few days of age, to encourage intake. Concentrates should be highly palatable and of a high nutritional quality. Forage should also be offered, usually straw or hay. Fresh water must be available throughout.

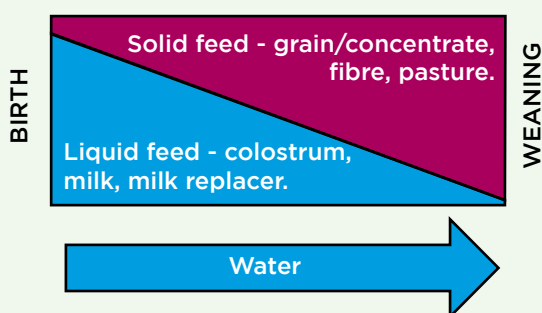
- ① When can I wean calves?
- ② What criteria must be met to successfully wean calves?
- ③ What factors can lead to a post weaning growth check?
- ④ What is the difference between abrupt and step weaning?
- ⑤ How is step weaning performed?
- ⑥ How do you wean calves off an *ad lib* system?

Successful Weaning of Calves

① When can I wean calves?

Calves should only be weaned after they have been eating at least 1kg of starter concentrates per day for three consecutive days. This will avoid a growth check after weaning. This level of intake is usually achieved by eight weeks of age. The amount of concentrates a calf eats depends on the availability of concentrates and the volume of milk being fed.

If calves are fed milk *ad lib* or close to the level of milk they would normally drink (for example to make use of transition, non-saleable milk or to achieve higher weight gains in an automated feeding system), gradual weaning should not be initiated before the 12th week of life.



② What criteria must be met to successfully wean calves?

- Calves should have been consuming at least 1kg calf starter/day for three consecutive days.
- Calves should be healthy.
- Calves must not be stressed (avoid disbudding, castration etc. at the same time).

Table 1. Target starter intakes of calves from 0-8 weeks of age.

Age	Starter Intakes
0-2 weeks	Minimal
2-3 weeks	Start to increase
5 weeks	0.5 kg/day
6-8 weeks	0.7-1 kg/day
8 weeks	At least 1 kg/day

KEY POINT:

Calves can be weaned once they are consistently consuming 1kg of concentrates per day. This level of intake can potentially be reached at an age of six weeks if access to palatable starter and water is available *ad lib*.



*These calves have been successfully weaned and are now on a concentrate and hay diet with water *ad lib*.*

③ What factors can lead to a post weaning growth check?

The post-weaning growth check found in many calves is due to three factors:

- Low intake of dry feed up until weaning, resulting in limited rumen development. This results in a growth check for about two weeks while the rumen becomes accustomed to digesting significant quantities of dry feeds.
- High intake of bulky roughage such as grass and hay. Calves are physically unable to eat enough roughage to sustain rapid growth weights with their small, developing rumen.
- Calf stress when feeds are changed.

Feeding concentrates before, during, and after weaning should limit the level of growth check. If a growth check does occur, the lost growing time will never be made up and it will take longer to attain target weights.

④ What is the difference between 'abrupt' and 'step' weaning?

Calves can be either abruptly or step weaned. Stepped weaning is when the amount of milk being fed and the number of feeds/day are gradually reduced over time. This is also referred to as gradual weaning.

Both step weaning and abrupt weaning can be performed successfully provided the calf's rumen is adequately developed and that they are eating at least 1kg of calf ration per day. However, stepped weaning does reduce the stress at weaning and can avoid temporary setbacks in growth rate.

⑤ How is step weaning performed?

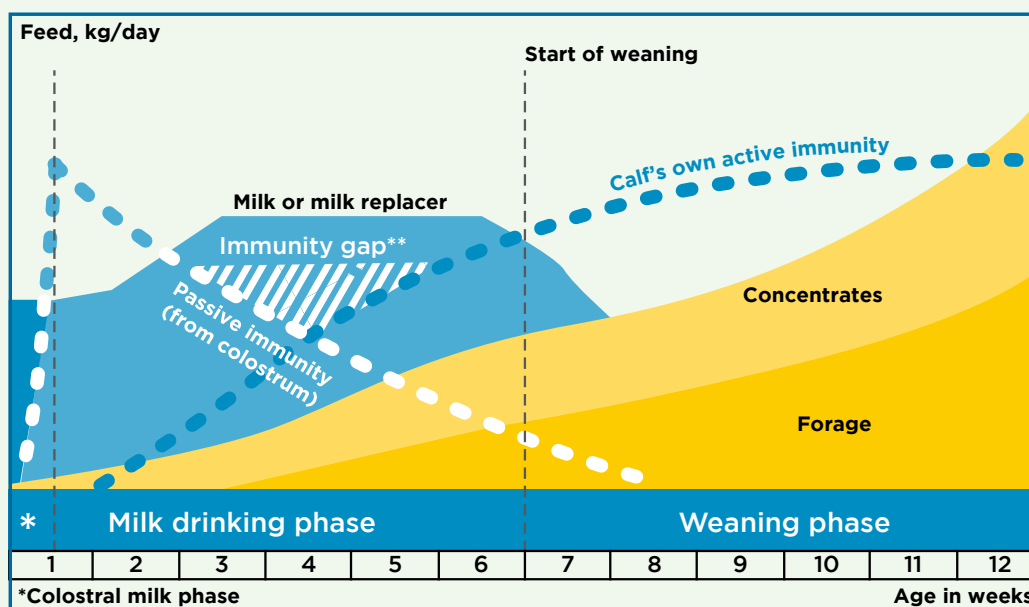
Generally, stepped or gradual weaning is achieved by reducing the volume of milk fed over a period of seven to 10 days. If calves are being fed milk twice a day, weaning can be achieved by cutting down to once a day feeding.

⑥ How do you wean calves off an *ad lib* system?

Weaning a calf off an *ad lib* system is more difficult than bucket feeding systems. This is because calves that have *ad lib* access to warm milk replacer from an automatic feeder have little interest in consuming solid feed.

Concentrate consumption in the period immediately before weaning can be increased by restricting milk replacer availability for seven to 14 days pre-weaning. This can be done by:

- Limiting the total quantity of milk replacer offered by restricting the daily allowance per calf in the period prior to weaning.
 - Two weeks before weaning allow 0.75kg milk powder and one week before weaning reduce to 0.50kg powder per calf per day.
- Limiting daily access to the nipples in the period before weaning.
 - Two weeks before weaning allow 12 hours access and one week before weaning allow six hours access per day.
- Reducing the bore of the pipeline by restricting the flow of the milk for seven to 14 days before weaning.
 - This makes it difficult for the calf to satisfy its appetite with milk alone and encourages it to consume solid food.
- Abruptly turning off the water heating system and reducing the concentration from 10 to 5% is also effective in reducing milk intake and thereby increasing concentrate intake.



**The immunity gap is the period in a calf's life where it is most susceptible to infection. During this period, the calf's acquired (passive) immunity from colostrum is reducing while its own active immunity is still growing, leaving the calf vulnerable.



Section 7

Monitoring the Performance of Calves



Introduction

Margins are tight in calf rearing. Therefore it is important to set objectives for the enterprise, making sure that rearing protocols are designed to ensure the achievement of the objectives that you set.

- ① What are the important targets for rearing dairy beef calves?
- ② When should calves be weighed?
- ③ How should weight measurements be made?
- ④ Records and costs.

Monitoring the Performance of Calves

① What are the important targets for rearing dairy beef calves?

The critical targets up to 15 weeks of age are:

- Minimal mortality, maximum of 5%.
 - Pre-weaning (less than 28 days of age) mortality rate of less than 3%, regardless of the cause of death.
 - From 28-120 days, target less than 2% mortality.
- Minimal morbidity: If the calf suffers setbacks from poor health, feed intake and average daily gain will be affected.
 - Fewer than 10% of calves should be treated with antibiotics and/or electrolytes prior to weaning.
- Optimal daily liveweight gain: average 0.7-0.8kg/day up to 15 weeks.



Figure 1. Target liveweight of calves from 1-15 weeks of age. Source: Agriland, M. Gould & J. Cooke, 2013.

② When should calves be weighed?

Producers should weigh calves at birth, or at the time of arrival onto the farm, and again at six to 10 weeks. Alternatively, calves could be weighed at times that coincide with existing management practices (such as dehorning) to minimise additional labour requirements.

③ How should weight measurements be made?

Weighing scales offer the most accurate measure of calf weight and, if set up correctly in a race or crush, will be the easiest method to use. If weighing scales are not available, use a weighing band (girth tape) or height stick or height marks on the crush wall.

KEY TIPS:

Using the same measure and being consistent are important to accurately monitor animal performance.

④ Records and costs.

Good record keeping goes hand in hand with good management. It is vital when managing an efficient calf rearing enterprise.

The following details should be recorded and will enable you to complete an analysis of the calf rearing enterprise:

- Costs of all inputs – milk, milk replacer, meal, straw, hay etc.
- All stock purchases and sources.
- Cases of illness, treatments and cost.
- Performance of calves at various stages.

Analysis of the records kept (Table 2) will enable you to compare achievements with the physical and financial targets set. They will also help you to identify deficiencies in performance and in the use of inputs.

Table 2. Sample chart of performance data to record to analysis the physical performance of calves

Analysis of physical performance	Actual performance	Target performance
Mortality %	<5%
Weight at birth (kg)	40kg
Weight at 12 weeks	100-102 kg
Average daily gain (ADG) (kg/day)	700-800g/day
Feed cost per kg liveweight gain	

KEY POINT:

Studies both at Teagasc Grange and on co-operating farms have shown that, in young bull rearing systems, up to 40% of the variation in carcass weight can be explained by the weight of the calf at 12 weeks of age,

