

Better Returns from pure dairy-bred male calves



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Contents



2 Sourcing male dairy calves



4 Veal production

6 Beef production

7 13 to 15 month bulls

8 14 to 16 month bulls

10 18 month steers

11 24 month steers



12 Feeding

14 Animal health



16 Selecting animals to market

Surplus pure dairy-bred male calves can prove to be a useful option for beef farmers looking to source additional animals to rear and finish.

However, producing good quality beef from pure dairy male cattle needs careful management, but is possible for those with the resources and skills to do so.

There is a fine line between profit and loss when finishing black and white bulls and steers. Success depends on running a system that suits the animals, the farm and the customer's requirements.

As with any livestock farming enterprise, it is wise to secure a market and carry out budgets to check financial feasibility before starting – then monitoring performance and paying great attention to detail as the animals grow.

The way pure dairy-bred beef cattle can be managed is wide and varied. This manual sets out to clarify the main systems with their advantages and disadvantages, along with helpful hints on potential health issues and guidance on preparing and selecting animals for slaughter.

The continued development of technology that allows the sex of dairy offspring to be manipulated may reduce the volume of pure-bred dairy males in future. In the meantime, our aim is to help more beef producers capitalise on the earning potential of surplus male dairy calves. This will increase financial returns for them, as well as for the dairy industry from which they came.



Dr Mary Vickers

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Sourcing male dairy calves

The line between profit and loss when finishing pure dairy-bred male calves is very fine. Success depends on sourcing the right type of calves for the right price.

Well grown, healthy animals have the greatest earning potential, as they are likely to respond well to feeding and grow quickly.

Buy calves that are:

- ✓ Known to have received adequate colostrum as a newborn
- ✓ Seven days old or more
- ✓ Well grown for their age (at least 50kg at two weeks old)
- ✓ Healthy with a dry navel
- ✓ Alert
- ✓ Bright-eyed
- ✓ Showing reasonable conformation

Avoid calves that have:

- ✗ A dull coat
- ✗ Diarrhoea
- ✗ Discharge from their mouth, nose or eyes
- ✗ A wet or thickened navel
- ✗ Trouble breathing
- ✗ A listless look

Colostrum intake

There is a clear relationship between immune status when very young and subsequent performance. It is essential that calves consume a minimum of three litres or 10% of body weight within the first six hours of life. This should be followed up by another similar size feed within 12 hours of birth. This is thought to be sufficient to pass on adequate natural disease protection.

A blood test which measures immunoglobulin levels carried out in the first week of life, can confirm whether this has been achieved.

Transport legislation for calves

A calf is defined as an animal six months of age or less.

- A calf less than seven days old or with a navel which is not completely healed is considered unfit for transport
- Calves of less than ten days of age may only travel for a maximum of 100km (approx 62 miles)
- Calves aged 10-14 days can not travel on journeys over eight hours

Liveweight

Liveweight alone is not a reliable indicator of future performance, but 'weight-for-age' is. The heavier the calf at purchase relative to its age, the healthier it is likely to be and the better it will perform.

Trials have shown that calves with poor conformation at ten days old tend to be lighter, in terms of weight-for-age, compared to better conformed calves. The poorer conformed calves had higher calf mortality during the rearing phase and generally more variable performance during their life.

At such a young age, conformation is likely to reflect colostrum intake and management to date, as much as genetic differences.

Moving cattle off TB restricted premises

When a herd is under a movement restriction due to bovine TB, cattle can only be moved under a licence issued by the Animal and Plant Health Agency (APHA).

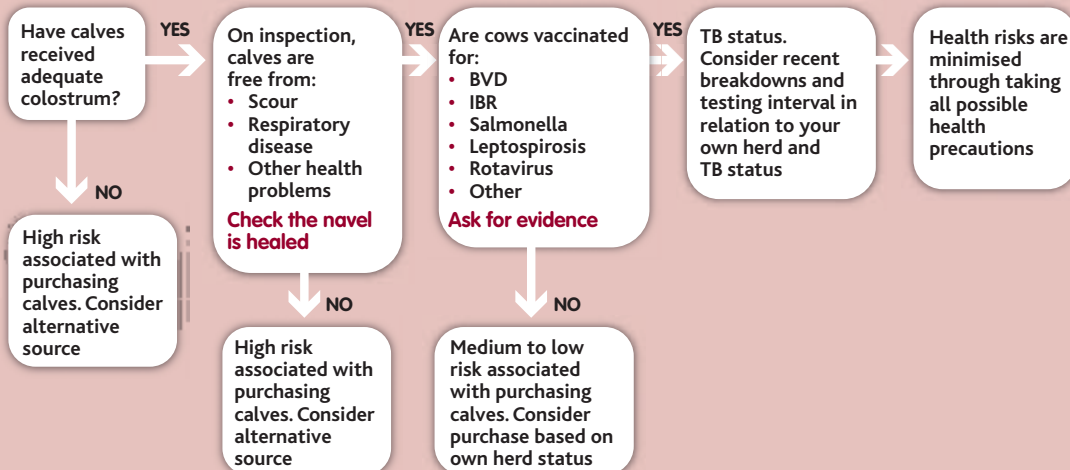
It may be possible to move cattle off the premises direct to slaughter, from one TB-restricted premises to another, to an Approved Finishing Unit (AFU), a TB isolation unit or approved dedicated markets and calf collection centres (orange markets).

If possible buy calves from a single, known source that:

- Practices excellent newborn calf management (including ensuring adequate colostrum intake)
- Can provide calves at the time of year that suits the growing and finishing system
- Can provide calves most of the year to ensure continuous throughput
- Has high herd health status and disease control for key diseases such as calf scour, BVD and IBR
- Can offer information about the dam and the genetics of the sire



Assessing calf health status



On arrival

- Have a strict biosecurity regime in place
- Avoid stressing calves and allow them to rest after delivery
- Quarantine new arrivals for seven days
- Offer a drink of electrolyte in 2 litres of warm water. Start offering milk the next day
- Consider dosing with multi-vitamins
- Work with the vet to develop a suitable vaccination and disease control programme eg for pneumonia, clostridia, ringworm and lice
- Do not disbud or castrate immediately. Allow calves time to settle. Ideal time to disbud is three to five weeks old and before eight weeks of age. Castration can be done using a rubber ring if less than one week of age, bloodless castration (burdizzo) at less than two months of age. Calves older than this can only be castrated using anaesthetic by a vet
- Test for BVD to identify persistently infected animals
- Offer 18% Crude Protein (CP) starter concentrates, water and straw *ad-lib*

Veal production

Modern veal production from young pure dairy-bred male calves that are loose-housed, produces a high welfare, premium food product. The inclusion of iron and roughage in the diet produces delicate pink meat, which is often marketed as rose veal.

Veal is legally defined as the meat from cattle aged less than eight months old at slaughter. The rules on labelling meat products are complex so check carefully before retailing any product.



Market opportunities

The market for high welfare veal in this country is small but growing. Consumers are starting to understand this is not the traditional white veal produced from calves kept in crates – a system that was banned in the UK in 1990.

The food-service sector is a major customer, but veal is also available from supermarkets, specialist online retailers and direct from producers via farm shops or farmers' markets. Some English veal is also exported to Europe.

Before embarking on a veal operation it is important to secure a market outlet and to work out the likely costs of production. When the market price for beef is high, greater financial returns may be generated by keeping animals longer and finishing them heavier.

Producing under contract provides some security, as long as the customer's specifications can be met. Try to find a market for the whole carcass, not just the premium cuts.

Production systems

Holstein and Holstein-Friesian type calves are most commonly used for veal production. Castration is not necessary.

Calves should ideally be reared in fixed groups of no more than 20, in well ventilated buildings that have systems in place for safe and efficient handling. Clean, fresh water must be accessible at all times.

Rigorous disease prevention is essential and regular weighing will highlight any shortfalls in performance as they happen.

Rearing

Initially, all veal calves will derive some nutrition from milk. There are many different milk feeding systems including twice a day or *ad-lib*, teat or bucket feeding or automatic milk feeders. Each has pros and cons in terms of labour and investment requirements.

There is also a choice of milk replacers including skim-based powders and whey-based products.

In veal production, maximising growth rates is key to finishing animals as efficiently as possible, so it usually pays to use the best milk replacer (CP level 24%) to ensure a good start.



Finishing

Current UK practice falls into two main categories.

Age at finish	Liveweight at slaughter	Carcase weight*
6-7 months	Up to 300kg	Up to 150kg
10 month	Up to 420kg	Up to 215kg

* Check minimum carcass weights for the chosen outlet



Six to seven month system (employed on the continent)

Calves are offered high energy milk replacer up to 15 ME (MJ/kg) throughout their life. This is supplemented with concentrates or rolled cereal – up to 2kg/day by the time they reach six to seven months. *Ad-lib* straw is supplied throughout.

Performance targets	
Lifetime growth rate	1.2-1.4kg/day
Liveweight at slaughter	270-300kg
Carcass weight	130-150kg
Carcass classification	-O2
Days to slaughter	210

Ten month system

Calves are initially reared on milk replacer, supplemented with a concentrate blend such as calf starter pellets or coarse mix with *ad-lib* straw. Calves can be weaned at five to six weeks old at around 60kg or at 12 weeks of age at 110-115kg to maintain the high growth rates from the milk replacer.

Finishing diets can vary according to availability and cost. They should be high in starch to promote muscle growth rather than frame.

The diet is often a cereal-based mix. Maize silage + 11 ME (MJ/kg DM) can be included, but the overall ration should be formulated to contain 16% CP in the DM. Grass-based feeds should be avoided. Straw must be offered throughout to provide fibre for efficient rumen function and the diet must supply all the necessary vitamins and minerals for health and growth.

Performance targets	
Lifetime growth rate	1.2-1.4kg/day
Liveweight at slaughter	400-420kg
Carcass weight	200-215kg
Carcass classification	-O2
Days to slaughter	300



Beef production

Financial returns from pure dairy-bred male beef systems are highly sensitive to changes in calf price, the market price for beef and most importantly any fluctuations in the cost of the ration. Feed typically constitutes 75-80% of the variable costs of a beef enterprise.

Before buying any animals, calculate an enterprise cost of production, including variable and overhead costs. Consider the potential impact of rising feed prices on the bottom line.

Monitor progress, including daily growth rates throughout and be flexible enough to make changes if margins start to look too tight. It is important to know the average cost/kg of gain across each group of animals.

The type of system also depends on:

- What the customer wants and when the product is required
- Availability and state of housing. Is it strong/secure enough for a group of bulls (maximum of 20 bulls per pen)? Can bulls be bedded up and fed from outside the pen to keep staff safe?
- Availability and cost of straw and/or other materials for bedding
- Can slurry and manure be stored/dealt with appropriately?
- Is there enough room for groups of bulls to grow together without the need for mixing?
- What home-grown feeds and forages are available? What quality are they?
- Availability and cost of bought-in feeds. Compare all possibilities on a cost per unit of energy and protein in the DM basis
- Are 'cheaper' co-products available locally? Can they be stored appropriately on-farm?

Bulls or steers

Entire males can be finished relatively quickly, slaughtered before they are 16 months of age. Or they can be castrated and grown more slowly, finishing at between 18 to 24 months of age.

There are advantages and disadvantages of both options. Bulls tend to have superior feed conversion efficiency compared to castrated animals, due to the testosterone in their bodies. They also produce leaner carcasses with a higher yield of edible meat in a shorter time than steers. However, producing bull beef is a specialist enterprise and requires higher fixed and variable inputs. Steer production can be more flexible, utilise grazing land and be easier to manage.

Benefits

Bulls

- **Faster growth rates**
- **Improved feed conversion efficiency**
- **Better carcass conformation**
- **Quicker turn-over/revenue generation**

Steers

- **Easier to handle and manage**
- **Can be taken to an older age**
- **More suited to extensive/forage systems**
- **Can use lower quality feed/forage**
- **Some buyers prefer steers**

System comparisons

13 to 15 month bulls

Housed and fed a cereal-based ration

Intensive beef systems for dairy-sired male calves are traditionally based on high cereal diets to promote high growth rates. However, when cereal prices are high, margins can be put under pressure and alternative high energy feeds can be substituted for grain.

Performance targets	
Lifetime growth rate	1.2-1.4kg/day
Liveweight at slaughter	540-620kg
Carcase weight*	270-320kg
Carcase classification	-O2/3

* Check minimum carcass weights for the chosen outlet

Professional nutritional advice, tailored specifically to the farm and the system, is recommended. The diet should contain protein supplementation around 16% CP in the DM (14% as fed) for bulls up to six to seven months old. After which a 14% CP in the DM (12% as fed), + 12.5 ME (MJ/kg DM) cereal-based diet is generally required. All cereals must be lightly rolled. Consider including 10% beet pulp as a source of digestible fibre, especially with high starch rations and those containing wheat.

A source of good clean straw must always be accessible in feed racks or chopped in the ration.

Average concentrate consumption with this system would be in the region of 2.4 tonnes per head.

House in well bedded and well ventilated yards, with at least 5.4m² of space allowance for 600kg bulls (2.5m² for slatted yards).

Monitor feed intakes and liveweight gain. Select cattle for slaughter at fat class 3. Sell those animals that fail to thrive (poor 'doers') early.



Advantages	Disadvantages
High throughput of cattle	Rations may be relatively high cost per tonne
Easy to control and monitor	Safety risk – adequate housing, handling and management policies must be in place for handling bulls
Fast growth and early finishing reduces feed cost per kg gain	Little room for slippage in growth targets due to disease challenge, variable feed quality, stress etc. High standard of management required

Success factors

- A least cost ration that delivers target growth rates
- The right type of buildings/handling facilities
- Maximum ration energy density and inclusion of digestible fibre to maintain rumen stability
- Regular recording of bull weights and condition
- Strict veterinary and stockmanship regime

14 to 16 month bulls

Housed and fed silages + cereals/co-products

Home-grown forage can provide an efficient and cost-effective feeding system for finishing beef cattle, but a ration has to be devised that can still deliver target growth rates. A strict veterinary and stockmanship regime is also required.

Performance targets	
Lifetime growth rate	1.1-1.3kg/day
Liveweight at slaughter	540-620kg
Carcase weight*	270-320kg
Carcase classification	-O3

* Check minimum carcase weights for the chosen outlet

Incorporating silage into the diet will lengthen the time it takes bulls to finish to between 14 and 16 months. Older bulls can be more difficult to handle because they become more aggressive as they mature.

Grass, wholecrop, red clover, lucerne and maize silages can all be fed to finishing bulls as a simple mixed forage ration, with other feeds fed separately or as a total mixed ration (TMR). The quality of any home-grown forage offered has to be high to maintain performance.

Silage must be good quality, +11 ME (MJ/kg DM) and the overall diet formulation must contain at least 15-16% CP in the DM. This can be dropped to 14% at six to seven months old.

Feed 2-6kg/head/day of concentrates to achieve a target daily liveweight gain (DLWG) based on the quality of the forage.

Feed should always be available and regularly topped up with fresh material and any rejected feed removed. Straw should also be available to provide the long fibre the animals need to stimulate rumination.



Advantages	Disadvantages
Potential to save feed costs by including home-grown forages	Relies on producing high quality forage
Relatively high cattle throughput	Risks associated with keeping older bulls

Success factors

- Best practice silage making from crop establishment to harvest, storage and feed-out
- Rations based around silage analysis with supplementary feed to make up shortfalls in energy and protein
- Regular recording of bull weights and condition
- Facilities robust enough for older bulls
- Selling before 16 months of age. Some abattoirs penalise bulls older than this



14 to 16 month bulls

With a grazing season

Many of the costs associated with producing bull beef are tied up in housing and the high labour requirement for feeding, bedding and dealing with muck and slurry. Including a period of grazing can reduce these costs.

Work in Northern Ireland has shown that bulls fed the same ration at grass as those reared indoors, ate the same amount of concentrate to maintain similar growth rates. Those bulls fed less supplementation had reduced growth rates. So, if growth rates are not to be compromised, supplementation is required at grass. However, the costs associated with housing cattle indoors can be saved.

Performance targets	
Lifetime growth rate	1.1-1.3kg/day
Liveweight at slaughter	540-620kg
Carcase weight*	270-320kg
Carcase classification	-O3

* Check minimum carcase weights for the chosen outlet

Grazing bulls requires more management than grazing other types of stock. Section 59 of the Wildlife and Countryside Act 1981 states that bulls of a recognised dairy breed over ten months old, should not be grazed in fields crossed by public rights of way. It is also good practice to avoid grazing younger bulls in fields with public access. Field boundaries must be secure to prevent access to neighbouring stock, especially cows and heifers.

Bulls between four and eight months old are most suitable for grazing. Calves born in late autumn through to mid winter can spend the following summer grazing, before being housed in the autumn for intensive finishing. To prevent a growth check it is important to introduce the finishing diet to cattle while they are still outside, so the rumen bugs have chance to adapt to the different diet.

Bulls born in summer will be too old/big to be allowed out to graze the following spring.

Grazing management should be based on a rotational system to maintain high quality swards of 11-12 ME (MJ/kg DM) throughout the grazing period. This will allow cattle growth rates of 0.9 to 1.1kg/day. Supplementation will generally be needed after mid-summer if the nutritional quality of the pasture falls or if faster growth rates are targeted. This also allows for the introduction of the final finishing diet.

Where a grazing period is introduced into a bull system, high levels of management are required and performance should be monitored closely to avoid target weights being missed.

Advantages	Disadvantages
Potential to reduce feed costs and other costs associated with housing	Where pasture quality is low, supplementation will be required at grazing
Cost-effective growth rates can be achieved off well managed, high quality pasture	Fences and field boundaries must be robust. It is best to avoid fields that have public access
Grass growth is weather dependent so flexibility is key to adapt to changing grass availability	Holstein bulls have thin skins and will not perform well if challenged by the climate. Sheltered sites are best

Success factors

- Careful field choice
- Bulls of the right age to graze
- Good grassland management
- Supplementation at grass if necessary
- Fast finishing once indoors
- Selling before 16 months of age. Some abattoirs penalise bulls older than this



18 month steers

The production system for 18 month dairy steers differs depending on when the animals are born.

Performance targets	
Lifetime growth rate	1.0-1.2kg/day
Liveweight at slaughter	600-680kg
Carcase weight*	300-350kg
Carcase classification	-O3

* Check minimum carcase weights for the chosen outlet

Autumn-born calves are usually reared indoors over winter to reach approximately 200-230kg at turnout in April. They graze high quality pasture throughout the summer, ideally on a rotational system which maintains daily liveweight gains of 1kg/day. They are generally housed in the autumn and finished indoors on high quality silages, along with a good energy source such as rolled cereals and appropriate protein supplementation and minerals if required.

Late spring-born and summer-born calves are unlikely to be old enough to make good use of grass in their first summer, but may benefit from access to a paddock for loafing. The animals are usually housed over the winter with free access to high quality grass silage – supplemented to enable them to meet target growth rates.

Depending on pasture quality and steer condition, they may be able to finish whilst at grass, but may need supplementary feed to ensure adequate fat cover.

Alternatively they can be managed to grow frame during the grazing period and housed in the autumn to finish inside, three months later, at ages nearer 21-24 months old.

Advantages	Disadvantages
Steers are easier to manage than bulls	Slower growth, so slower throughput than bulls
High degree of flexibility in terms of feeds that can be used	Poorer carcase grading due to poorer conformation scores than bulls
Opportunity to maximise low cost growth from pasture	

Success factors

- Maximising the use of home-grown feeds and forage
- Flexibility to take advantage of grass growth/conditions
- Regular monitoring of weight and condition, particularly in the last few weeks so they are marketed at the correct level of fatness



24 month steers

Spring-born dairy steers will usually have a second grazing season before slaughter at around two years of age.

Performance targets	
Lifetime growth rate	0.75-0.9kg/day
Liveweight at slaughter	600-700kg
Carcase weight*	300-370kg
Carcase classification	-O3

* Check minimum carcase weights for the chosen outlet

In their first year at grass some supplementation is normally required. After which, housed rations are generally based around grass silage or other forages and a small amount of concentrates. During this time the animals develop frame with only a moderate growth rate of around 0.7kg/day. Generally there is no supplementation during the second summer at grass, depending on grass availability and the cattle are finished during their second winter inside. The level of concentrate required will depend on forage quality. Seventy-five per cent of the total concentrates fed will be consumed during the finishing period. Fast growth rates during the finishing period will help optimise conformation classification.

Advantages	Disadvantages
Good way to utilise poorer quality land/and or home-grown forages	Slow throughput of cattle – ties up working capital for a long time
Can work well with environmental schemes	Two winters needed – increasing feed and production costs
	Feed cost per kg gain can be high even though daily feed costs look cheap

Success factors

- Maximising growth from home-grown forage and grazed grass
- Minimising concentrate feeding until finishing period
- Regular monitoring of weight and condition, particularly in the last few weeks to avoid steers finishing over-fat



Feeding

Intensive systems for bull finishing tend to involve the bulls going straight from a rearing to a finishing ration, finishing under 16 months old.

Semi-intensive and extensive systems include an additional phase of growth where cattle grow frame at moderate growth rates, usually whilst fed primarily either grazed or conserved forages. This is followed by a more intensive finishing period where the energy density of the ration is increased.

Growing phase

The growing phase is a period of continuous growth when the aim is to grow the animals' frame.

Growing animals have a large appetite compared to their body weight and thrive on high levels of good quality forage.

Rations should be high in both structural fibre and digestible fibre as found in good quality forages and grazed pastures. They should also be high in protein and have moderate energy density with adequate minerals and vitamins. High levels of starch are not recommended as it can lead to unwanted fat deposition.

Grazing young Holstein animals is a viable, cost-effective option to promote weight gain during the growing phase from 130kg to 320kg. Average weight gains of 0.9kg/day are achievable but require good grazing and animal management.

Faster weight gains generally would require supplementation with high energy feeds.

Alternatively, it is possible to feed a balanced TMR at grazing, providing adequate feeding facilities are available.

Finishing phase

The key to profitable finishing is maximising feed conversion efficiency (FCE). This is achieved by maintaining optimum dry matter intakes and high liveweight gains. Bear in mind that Holstein cattle tend to eat 10% more dry matter per day than traditional beef breeds, which together with a lower potential for growth, reduces their FCE.

Improving FCE reduces the amount of feed required for each unit of weight gain so it cuts production costs.

FCE can be improved by:

- Maximising growth in younger animals
- Keeping animals fit and healthy. Even sub-clinical disorders can reduce performance, eg acidosis, fluke or worm burdens or viral infections
- Minimising the stress on animals by ensuring clean, dry bedding and space to lie down. Feed and bed bulls in the morning and avoid disturbing them for most of the day to minimise aggressive behaviour. Avoid mixed liveweight groups to minimise bullying
- Providing an appropriate and balanced ration that will achieve target daily liveweight gains and minimise digestive problems

Present fresh palatable feed and dispose of feed that is mouldy, heating or decaying, to optimise daily intake. A continuous, clean and adequate water supply should be available at all times.

	Growing stage	Finishing stage
Daily liveweight gain	0.7-1.3kg/day	>1.3 kg/day
Ration specification		
Dry Matter %	30-60	30-85
Crude protein % DM	15-16	12-15
Energy MJ/kg DM	10.5-11.4	>12.2
Starch and sugar % DM	<20	>33

Finishing rations

Holsteins have a large mature size and a propensity to lay down lean tissue rather than a lot of fat.

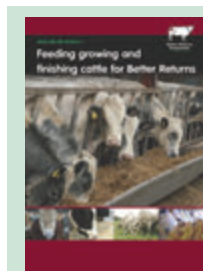
This means they can perform well on good quality forages early on. However, as they grow older they can continue to grow frame without enough fat to finish. To prevent this, the finishing ration must be high in metabolisable energy.

Traditionally this has been provided in the form of dry rolled cereals for starch, but other options are now available in the form of crimped or 'treated' cereals or cereal-based co-products. Crimped grain maize is becoming increasingly popular and provides a high energy and palatable feed. Trial results have shown that it increases growth rates and FCE compared to rolled barley.

Cereals can also be replaced with locally available co-products from human food and biofuel processing. However, consider storage to minimise losses and check there is a constant supply available.

When considering different co-products compare their cost on at least a dry matter basis and ideally in terms of cost per unit of energy and protein provided. Seek professional advice on appropriate inclusion rates as these feeds vary in their palatability and nutritional characteristics.

High quality forages can also be used in finishing rations eg quality maize silage or wholecrop wheat. Mixed forage rations have been shown to increase intake compared to a single forage, as long as both are of high nutritional quality.



Beef BRP Manual 7 – Feeding growing and finishing cattle for Better Returns looks at nutrition in more detail. Email brp@ahdb.org.uk or call **024 7647 8834** for a free copy.

Acidosis

Beware that as the energy density of the ration rises, so too does the risk of acidosis – where conditions in the rumen become too acidic, causing digestive upset and damage to the rumen wall. The condition is also associated with liver abscesses and laminitis.

Examining the dung can give clues as to whether the diet is right or not. Feed particles passing through the digestive system undigested are clearly a waste of feed and suggest rumen instability, indicating that the ration needs adjusting.

Tips to avoid acidosis:

- Do not grind cereals into fine particles – crack the grain
- Offer moist cereals like crimped or treated grains
- Always have a source of long fibre eg straw available in racks to provide structural fibre. Intakes likely to be 0.5-1.5kg/day
- Never let *ad-lib* feed hoppers run out
- If not feeding cereals *ad-lib*, feed in small meals throughout the day. Avoid individual meal sizes greater than 2.5kg/head/feed for dry cereals

Protein

Trials looking at the performance of cereal-fed pure Holstein bulls from 280kg to slaughter, showed that increasing protein content of the ration above 12% in the fresh weight or 14% in the DM does not improve physical or financial performance.

However weaned pure dairy bull calves from three to seven months old growing frame generally require a ration with 15-16% CP in the DM.

It is important to remember that the protein requirements (quality and quantity) of an animal depend not only on the animal itself and its target performance, but also the energy sources in the ration. It is always advisable to seek professional nutritional advice when formulating rations.

Animal health

A discussion with the vet about the plans for rearing cattle will help prevent disease problems developing. This should form the basis of a written health plan with an agreed protocol of routine procedures and treatments.

Veal systems

Try to source calves from as few farms as possible and develop a relationship with suppliers so that everyone knows the type of animal that is favoured.

Colostrum provision is critical for a healthy start and the rearer is reliant on the farm of origin to ensure good colostrum intake (see page 2).

Pneumonia

This is the most significant disease risk in housed cattle and may also be a greater problem in herds where there are other underlying issues such as BVD. Attention to detail in housing design and correct ventilation is essential for reducing potential problems.

- The youngest calves should have access to the freshest air in the rearing shed
- There must be no draughts at calf height. Stoop down to their level to assess this
- The bed must be dry. Pneumonia viruses live longer in warm moist air. Check that water from troughs and down pipes is not getting onto beds
- Vaccines to prevent and reduce the severity of pneumonia are available. Discuss their use with the vet



- Affected calves are slow feeders, have a raised temperature and breathe quickly. They usually have discharges from their nose and eyes and may cough when moved around the pen
- Treat pneumonia cases promptly with antibiotics and anti-inflammatory drugs. Consider the other calves in the pen. Early treatment is the most effective
- Badly affected individuals will need a heat lamp and isolation in a sick pen

Coccidiosis

Calves will be exposed to coccidiosis in the rearing process. Disease is seen when exposure overwhelms their immune response.



- Clean out bedding and disinfect pens between batches
- Keep feed troughs as clean as possible, contamination with faeces quickly multiplies coccidia
- Affected calves are hunched up, with starey coat and strain to pass loose, frequently blood-stained faeces. Dung samples can confirm diagnosis
- Treat all in the pen with an anticoccidial drug and oral fluids, following advice from the vet
- Anticoccidials can be used, on prescription, in feed to reduce the exposure in calves

If losses occur or growth rates are poor, always investigate. Disease may be present that needs a more effective treatment and control strategy.

Intensive beef systems

Pneumonia

- Always a risk in housed cattle. Shave the backs of larger animals to reduce humidity in the shed from their sweating
- Try to allow cattle the option to run into outdoor yards. Especially useful when using a straw blower
- Consider IBR vaccination if mixing and housing store cattle

Lameness

- Digital dermatitis is common in dairy herds. Scrape feed areas, yards and passages to prevent slurry build up
- Examine lameness cases promptly. Seek advice if unsure of the diagnosis and treatment options. If treating, avoid deep intramuscular injections that damage valuable meat cuts
- Laminitis from ruminal acidosis in beef bulls can be avoided by making feed changes gradually, avoiding finely ground concentrates and excessive starch levels in the ration, allowing access to palatable straw and introducing rumen buffers/yeasts into the diet

Beef systems with grazing

Parasite control

Work out a parasite control plan with advice from the vet or animal health advisor. Grazing cattle will be exposed to gut worms, lungworm and liver fluke. Faecal samples can be used to assess the worm egg and larva burden in groups of stock. Control is aimed at limiting production loss from parasite burdens and not over-using anthelmintics. Resistance to wormers develops the more they are used. So make sure cattle are not under-dosed and apply pour-on products carefully.

Gut worms

Warm wet summers are ideal conditions for gut worms to survive on pasture. In such years consider a mid-season wormer dose. All stock finishing their first grazing season should be wormed at housing. By their second grazing season most cattle will have developed a protective immunity to gut worms, so it should only be necessary to worm animals showing poor growth rates.

Clostridial disease

Blackleg, tetanus and other clostridial diseases are a significant cause of loss in cattle. Vaccination

is effective and grazed stock are at risk. Discuss vaccination protocols with the vet.

Liver fluke

Warm wet summers are ideal for the snail that is the intermediate host for liver fluke. Typically infection on pasture peaks in late autumn. Treatment after housing can be timed to catch all ingested larva. On high risk farms that practice early turnout, a treatment for liver fluke mid-season will reduce pasture contamination.

Lungworm

Exposure to lungworm is variable. Coughing at pasture is a typical sign.

Untreated lungworm will predispose to other forms of pneumonia. In wet years the mid-season wormer can be timed to protect stock from the late summer peak in lungworm. Consider preventative measures with the vet.

Tick-borne diseases

In areas where tick disease is encountered, care must be taken when introducing naive stock on to the pasture. Discuss these specialised problems with the vet.

Selecting animals to market

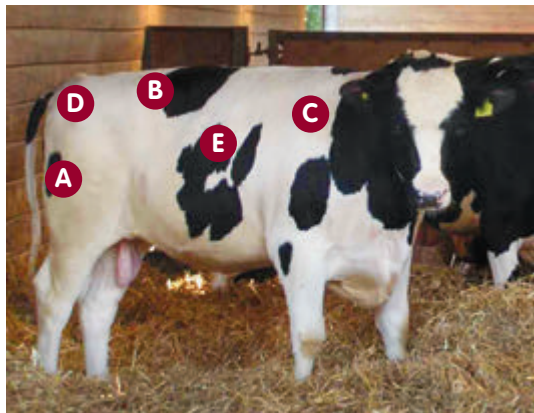
Beef carcass classification

The current grading system for carcasses in the UK and Europe uses the EUROP classification for conformation and a numeric assessment for fatness (classes 1-5).

Combining scores for conformation and fat determines the market most suited for each type of carcass.

Key handling points

Weight and visual appraisal are general guides to an animal's readiness for market, but to ensure accurate selection, handling the live animal is essential.



Aim for most pure dairy-bred males to fall into the O area of the grid for conformation and fat class 3, for best returns.

Holsteins tend to have smaller muscles and deposit more marbling and less external fat than most beef breeds. They also have a lower killing out percentage due to a lower muscle to bone ratio and higher kidney and pelvic fat content.

These five key handling points give the best indication of level of finish and fat class. They combine reliability with ease of access.

To assess conformation feel the animal at:

- A** The round or hindquarter
- B** The loin
- C** The shoulder

To assess fat level feel the animal at:

- D** The pin bones and either side of the tailhead
- B** The loin (transverse processes)
- E** The ribs

Assessing conformation

To gauge an animal's conformation take into account the depth and thickness of the round, fullness of the loin and thickness of the flesh over the shoulder.

Carcass classification is an assessment of three areas: round, loin and shoulder. When the three parts differ, the classification for two of the three is applied.

Assessing fatness

Handle animals over the loin on the left side as seen from behind. Large amounts of kidney fat on the right hand side can be misleading in assessing fat cover. 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 (bones) over the loin and pin bones, as well as the shoulder blade ridge, become more rounded. The hollows between the ribs and shoulders fill up completely at the highest fat levels.

Hide thickness varies with breed. Consider this when assessing fatness, particularly over the tailhead, loin and ribs.

Handle with care

Sensitive handling is vital for animal welfare and avoids damage that shows up after slaughter.

Bruising and abscesses lead to wasteful trimming and even partial condemnation of the carcass, which in turn reduces carcass saleability and returns to the producer.

Avoid potential losses by:

- Handling cattle in races with smooth walls, non-slip floors and gradual ramps

- Not using sticks or goads
- Not overcrowding animals in vehicles and by using internal partitions to restrict movement while travelling
- Using clean injection needles to avoid infection
- Choosing injection site with care
- Separating horned and non-horned cattle

Fat colour

Some markets require carcasses with white fat, such as bulls for export.

Fat colour comes from pigments in plants including grass. Cereal-fed cattle will tend to have whiter fat than those fed on grass or silage.



For more detailed information on how to finish cattle, see **Beef BRP Manual 7 – Feeding growing and finishing cattle for Better Returns**.

Dark cutting meat

Dark cutting beef – where the meat looks an unattractive deep red colour, can occur in all types of cattle, with the incidence highest in young bulls. Shelf-life is also reduced and the carcass devalued. This is usually caused by stress in the 24-48 hours before slaughter.

To avoid stress pre-slaughter:

- Always handle animals quietly
- Avoid mixing cattle from different groups
- Provide clean, dry bedding and plentiful water in any holding pens or lairage

Severely dark cutting sirloin



Slightly dark cutting sirloin



Normal sirloin



Beef BRP Manual 2 - Marketing prime beef cattle for Better Returns has more details on carcass classification. Download at beefandlamb.ahdb.org.uk or email brp@ahdb.org.uk for a free copy.

Other BRP publications available

Beef BRP

- Manual 1 – Choosing bulls to breed for Better Returns
- Manual 2 – Marketing prime beef cattle for Better Returns
- Manual 3 – Improving cattle handling for Better Returns
- Manual 4 – Beef production from the dairy herd
- Manual 5 – Feeding suckler cows and calves for Better Returns
- Manual 6 – Improve beef housing for Better Returns
- Manual 7 – Feeding growing and finishing cattle for Better Returns
- Manual 8 – Optimising suckler herd fertility for Better Returns
- Manual 9 – Controlling worms and liver fluke in cattle for Better Returns
- Manual 10 – Better Returns from pure dairy-bred male calves
- Manual 11 – Managing replacement heifers for Better Returns

Joint Beef and Sheep BRP

- Manual 1 – Improving pasture for Better Returns
- Manual 2 – Improved costings for Better Returns
- Manual 3 – Improving soils for Better Returns
- Manual 4 – Managing clover for Better Returns
- Manual 5 – Making grass silage for Better Returns
- Manual 6 – Using brassicas for Better Returns
- Manual 7 – Managing nutrients for Better Returns
- Manual 8 – Planning grazing strategies for Better Returns
- Manual 9 – Minimising carcase losses for Better Returns
- Manual 10 – Growing and feeding maize silage for Better Returns

See the AHDB Beef & Lamb website beefandlamb.ahdb.org.uk for the full list of Better Returns Programme publications for beef and sheep producers.

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