

Beef production from pasture

Chapter 4

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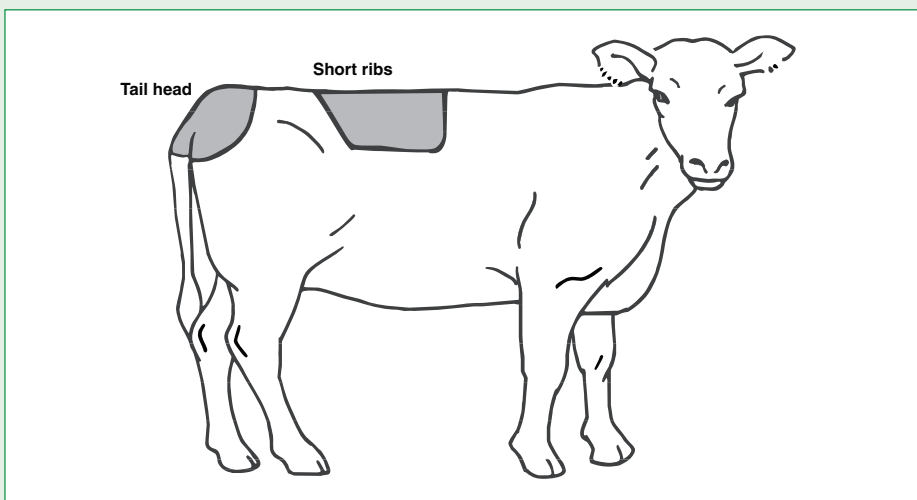
The key aim in the management of the beef herd is to give the best match between seasonal pasture feed supply, beef herd feed requirements and the feed requirements of other enterprises on the farm (eg sheep). Management should also ensure efficient utilisation of the animal's own body reserves.

Factors to be considered

For beef cattle, management involves consideration of:

- fat scoring techniques
- herd reproductive targets
- feed requirements to meet reproductive targets
- time of calving
- length of joining period
- age to join heifers and heifer management
- management of cows to achieve target fat scores
- matching animal requirements and feed supplies to meet production and marketing targets

Figure 4.1 – The two areas palpated to assess fat score



Assessing the fat score of cattle

Cows

The body fat reserves of breeding stock are important sources of stored energy at calving (lactation demands) and at joining.

Manual assessment

Two areas of the animal's body can be palpated to assess fat score, they are:

- the spinous process or short ribs
- around the tail head

The short ribs

The degree of prominence of the short ribs of the individual spinous processes is found by placing the fingers flat over the short ribs and pressing the thumb into the end of the short ribs (see Figure 4.2). A score is given according to the ease with which the individual short ribs can be felt with the thumb.

The tail head

The degree of fat cover around the tail head is assessed by using the fingers and thumb and should be done at the same time as assessing the short ribs. The appropriate score is given depending upon the degree to which palpable fat can be felt.

The description of the scores is given in Table 4.1.

Table 4.1 – Description of fat scores

Description	Equivalent fat scores and approximate P8 rump fat (mm)			
	Cows		Steers/heifers (20 months old)	
Emaciated				
The individual short ribs (site A)* are sharp to the touch, no tail head fat. The hip bones and ribs are prominent.	1	0–2mm	1	0–2mm
The individual short ribs can easily be felt, but feel rounded rather than sharp. There is some tissue cover around the tail head. Individual ribs (site B)* are no longer visually obvious, at the higher end of this score (2H).	2	3–6mm	2	3–6mm
The individual short ribs feel increasingly rounded. Ribs (B)* easily felt with firm pressure.	3	7–12mm	3L	7–9mm
The short ribs can only be felt with firm thumb pressure. Areas either side of tail head have fat cover which can be easily felt.	4L	13–17mm	3H	10–12mm
The short ribs cannot be felt and fat cover around the tail head is easily seen as slight mounds, soft to touch. Folds of fat are beginning to develop over ribs and thighs. Ribs (B)* are hard to feel.	4H	18–22mm	4L	13–17mm
The bone structure of the animal is no longer noticeable and the tail head is almost completely buried in fatty tissue.	5	23mm+	5	18mm+

Figure 4.2 – The degree of fat cover around the tail head and short ribs is assessed using the fingers and thumb

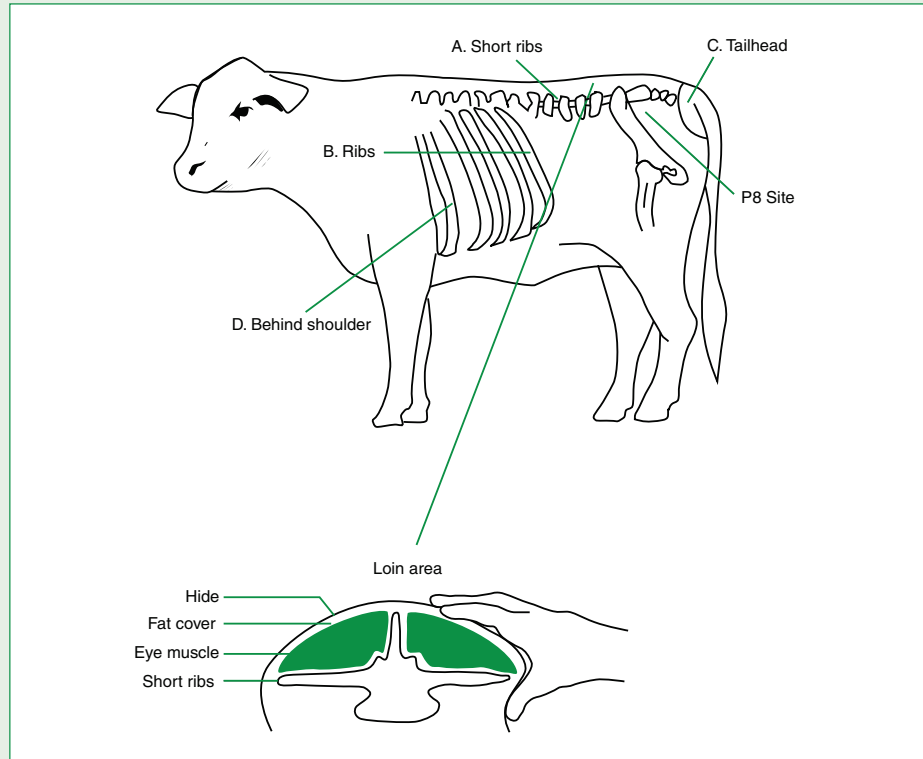
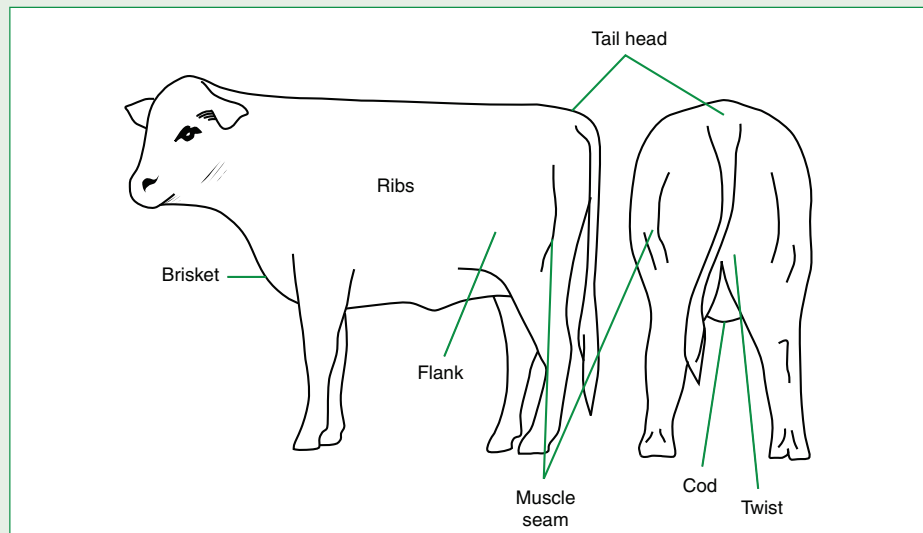


Figure 4.3 – Reference points for visual assessment



Steers

It is important that steers and other fat stock meet the fat specifications for their target market. This specification may require certain amounts (mm) of fat covering either the P8 rump fat site, or over the ribs.

Manual assessment can be used to estimate the fat depth at the P8 (rump) site, but to be accurate, more sites need to be felt (hip, backbone, P8 site) and other sites examined visually (see later). For the same 'feel', young stock, for example, 20 month steers or heifers will tend to have less fat compared to cows.

The approximate P8 fat depths for British breeds is shown in Table 4.1 However, to become accurate at manually assessing P8 fat it is essential to compare your estimates with actual results using either an ultrasound or AUSMEAT or Meat Standards Australia (MSA) feedback sheets, through carcass competitions and following your stock through the abattoirs.

Visual assessment

Visual assessment is less accurate but will give a good idea with paddock inspections of cattle.

The two main factors associated with cattle condition and finish are muscle and fat. These are assessed visually at three main sites – the rear, brisket and flank.

What to look for

As cattle get fatter:

- ribs become less visible
- tailhead softens with mounds of fat increasing behind the tail
- muscle seams or hindquarters become less evident
- brisket, flank, cod and twist all fill out giving a squarer appearance

From the rear, the topline gets rounder as fat score increases and the underline cuts up into the twist with some cod development. As cattle get fatter, knobs appear on both sides of the tailhead and there is greater development of the cod and twist. Leaner animals have a more prominent tailhead, the twist is cut up and more wrinkled with little

cod development. Individual muscle groups can be more readily seen in lean animals.

From the front at the brisket, fat is most obvious as little muscle is laid over this area. Deep full briskets are indicative of excess fat.

From the flank, the area contains relatively no muscle and so deep underlines that do not cut up indicate the presence of fat.

Herd reproductive targets

The aim of a beef enterprise must be to get each cow to produce one calf per year at the optimum or most desired time (not one calf every 15 to 18 months).

Given a gestation period of 280 days and a return to first oestrus (on heat) of 55 days, this leaves a period of 30 days for the cow to rejoin and so produce the required calf each year.

280 days	55 days	30 days
Pregnancy to oestrus	Time to return to conceive	Average time

First calf heifers can take longer to return to oestrus, hence the need for compact calving and preferential feeding.

What is reproductive efficiency

Reproductive efficiency is made up of three components:

- calving percentage
- calving pattern
- calving spread (refer to MLA calving histogram)

These three components of reproductive efficiency affect herd profitability and targets can be set for them to improve profits.

Calving percentage

Calving percentage is the number of calves born as a percentage of the number of cows joined. Aim to achieve a calving rate as close to 100% as possible. In southern Australia, a calving percentage of at least 90% is a realistic target.

Calving pattern

Calving pattern refers to the proportion of cows calving in each successive three week period, and the aim should be to have a high proportion (65% or more) calving in the first three week period. The reason for this is that calves born early are older, heavier and therefore more valuable than calves born later.

In most herds in southern Australia, all calves are weaned at the one time and late born calves are at a considerable disadvantage. A calf born on 1st May, for example, would be 60 days younger and about 50kg lighter than a similar calf born on the 1st March.

Target performance can be achieved in well managed Victorian herds as 65% of cows calving in the first three weeks, 25% in the second three weeks and the balance in the third three week period.

Figure 4.4 – Target calving pattern for cows

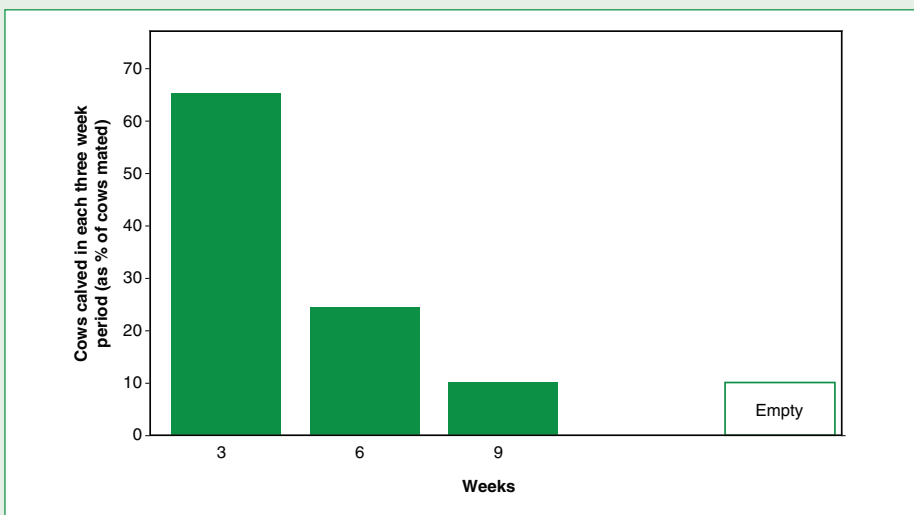
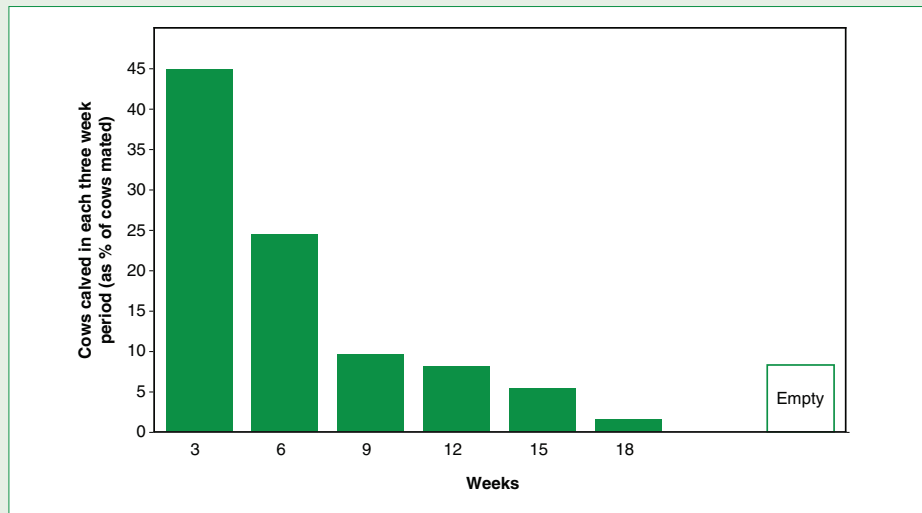


Figure 4.5 – Average calving pattern for cows



Calving spread

Calving spread refers to the total duration of the calving period and this should be as short as possible. Figure 4.4 shows the target calving pattern for a beef herd and Figure 4.5 shows an average calving pattern.

A realistic target is nine weeks or less and the reasons for this are:

- calves will be heavier at weaning
 - Research in north-east Victoria has shown that calves born during summer or early autumn can be up to 35kg heavier at weaning than calves born at other times and weaned at the same age.
- a more even line of calves will be produced, since all calves will be close to the same age
- feed costs can be reduced, as cattle need only be fed when all or most of the herd require supplementary feed, for example immediately after calving
- labour costs will be significantly reduced by a short calving period
- with a nine week mating period, cows in good body condition (fat score three) and cycling will have three chances to conceive – more than enough for high conception rates

In summary the targets include:

- each cow to have a calf each year
- calving rate of 90%

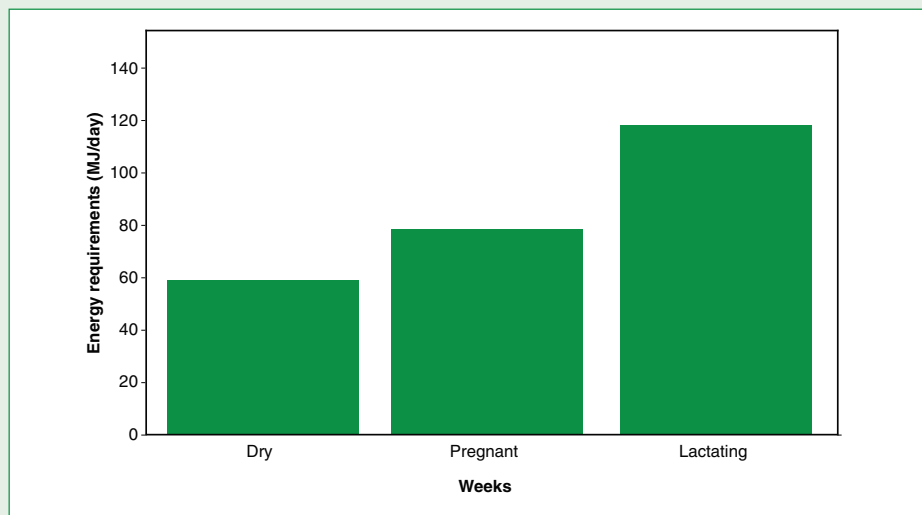
- calving period of nine weeks
- 65% of cows calving in the first three weeks
- achieving minimum heifer joining liveweights of 280kg for British breeds and 320kg for European breeds
- joining heifers at 15 months to calve at 24 months of age
- meeting market specifications
- minimise dystocia
- minimise nutritional diseases

Feed requirements to meet reproductive targets

The seasonal feed requirements of the breeding cow are affected by cow weight, stage of pregnancy, stage of lactation, and age of the calf.

The seasonal requirements for an autumn calving British breed cow are shown in Figure 4.6.

Figure 4.6 – Energy requirements of a breeding cow



To allow for moderate weight loss after calving it is essential that cows calve in target condition so that energy needs after calving are met. Excessive weight loss after calving is detrimental.

Cow condition

As autumn cows are often losing weight during autumn and winter, condition of the cow is vital (as cows will need to utilise body reserves to meet lactation demands).

In the tables and graphs below cow condition is described in terms of AUS-MEAT Fat Scores as used in Livestock Market Reporting and AuctionsPlus.

As fat scores cover a wide range of fatness, fat scores three and four have been divided into 3L (low), 3H (high) and 4L (low), 4H (high).

Department of Primary Industries research in Victoria has clearly demonstrated that both cow body condition at calving and level of

nutrition between calving and the end of joining have a substantial effect on the time taken for cows to return to oestrus after calving.

The higher the fat score at calving, the greater the chance for the cow to be in oestrus within 55 days from calving (see Table 4.2).

Cows in fat score two at calving are slow to return to heat, slow to get in calf and will calve later each year.

Cows receiving a high feed level after calving return to first heat more quickly at any given fat score.

Table 4.2 shows an average situation, but individual cows will tend to vary in how quickly they return to heat.

Table 4.2 – The effects of fat score at calving and low feed level after calving on cow fertility

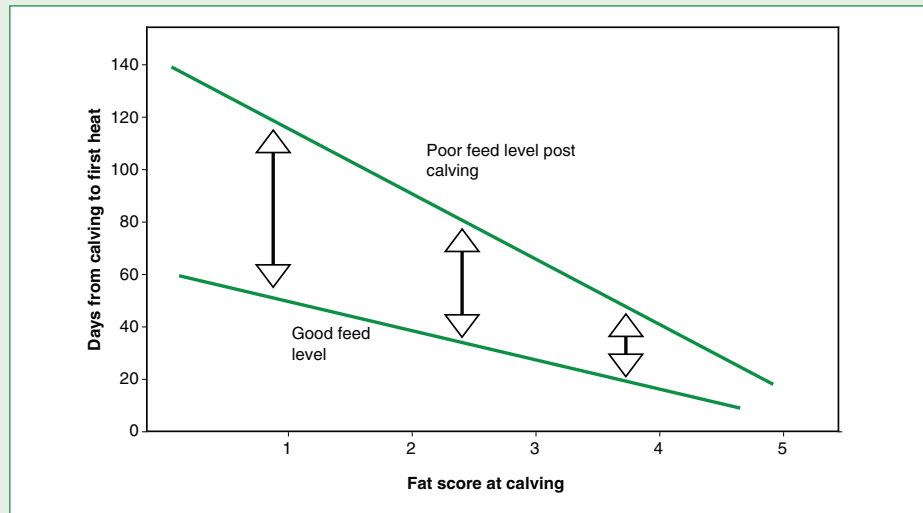
Fat score	Days calving to first heat	Cow cycling three weeks of joining period %	Pregnancy rate %
2	65	58	70
3-4L	45	91	87
4	38	90	86

Based on four-years data, from 120 autumn calving Hereford cows, Hamilton, Victoria.

Source: Beef Manager Manual.

The range of response that can occur at any given fat score is shown in Figure 4.7. It reveals that cows in fat score 4L are less variable in response and are less sensitive to level of nutrition after calving than cows in fat score two or lower.

Figure 4.7 – The relationship between fat score at calving and days to first heat (autumn calving)



Time of calving

Ideally, calving and joining should coincide with a seasonal feed flush. In doing so they provide for the nutritional demands on the cow during the last month of pregnancy and during the calving and joining period.

However, time of calving is a compromise between nutritional requirements of the cow, pasture requirements of the calf from five months onwards, seasonal health problems and marketing considerations.

Cows calving in autumn will often require some supplementary feeding to control the decline in cow condition. Spring pasture growth will coincide with increasing calf demands for high quality pasture. Alternatively, spring calving cows are likely to require supplements for calf growth in summer.

The decision around whether an enterprise should be autumn or spring calving depends on the particular features of each individual property and the target being produced for. These property features include the annual rainfall and variability of rainfall, the pattern of pasture growth during the year, the other enterprises on the property, the labour availability during the year, the grazing management, the suitability of the cattle to grow to 300kg or 400kg for slaughter or for further fattening and the aspirations of the business.

Heifer management

The way heifers are managed at their first mating largely determines the subsequent reproductive performance during their lifetime in the herd. In other words, heifers that are poorly managed and calve late first time will tend to be late calvers for the rest of their lives.

Achieving an 85% pregnancy rate in a six week joining is assisted if a target mating weight is known for the herd and the animals are managed to be at or greater than this weight no later than 2–3 weeks prior to joining. Traditionally this has been around 280kg for British breed animals. However we have seen this creep up to around 300kg in some herds with selection for higher growth, hence larger cows. For cattle with European content, heifer critical mating weight has been around 320kg. Similarly to British breeds, recent selection for higher growth has seen this figure creep up to 340kg. Target weights are approximately 60–65% of mature cow weight and estimates need to be confirmed on individual properties.

Join heifers to fit, young, active bulls for 6 weeks. To ensure successful calving of heifers at two years of age they should:

- reach minimum joining weights at 12–14 months of age
- gain 100kg liveweight between the start of joining and calving
- be supervised at calving
- be given the best feed available after calving to make sure they rejoin

Calving heifers at two years of age has economic benefits.

Some producers aim to have their heifers reach critical joining weights by 13 months. This allows them to join their heifers at 14 months so they begin calving at 23 months, one month earlier than the cow herd. This gives heifers an additional 30 days to return to oestrus before they are rejoined with rest of the cow herd.

Heifers calving at 30 months is an alternative to two-year old calving. This practice allows heifers to calve down out of season; that is, spring for autumn calving herd, and vice versa. Heifers are then rejoined to calve early in the cow calving group. However, this results in less calves/ha/year.

Spring calving heifers which calve at 30 months of age need very careful grazing management and monitoring of liveweights to minimise the incidence of dystocia.

Heifer nutrition

Heifers should be well fed before and during joining to increase conception rates. Between joining and calving the minimum liveweight gain should be 100kg. Growth rate should be as steady as possible to ensure heifers keep growing and obtain maximum pelvic size for the calving process.

Over-feeding of heifers in late pregnancy will create calving difficulties. Nutrition must allow steady growth but not allow them to become over-fat. Heifers should be in fat score three at calving (or about 380–420kg in two-year old calving heifers).

Avoid letting heifers get too fat early in their pregnancy and then attempt to make them lose condition immediately prior to calving.

Heifer condition can be controlled by stocking rate or use of poorer paddocks.

Feeding may be restricted over the last six weeks of pregnancy to maintain fat score, but heifers should not starve.

Anecdotal evidence suggests that 'fit' heifers have fewer problems with dystocia than other heifers. Farmers in north east Victoria report running heifers on hill country prior to calving to ensure they are 'fit' and this results in a lower incidence of dystocia.

Heifer retention

Heifers intended as replacement breeders in the herd need to be selected for their ability to:

- become pregnant
- deliver a live calf unassisted
- rear their calf to a satisfactory weaning weight
- conceive within 45 days of start of mating after calving for the first time

When determining the number of heifers to join, it is important to allow for culling of heifers that fail this screening test. However, if too few heifers are retained, the balance of the breeding herd (target size and desirable age structure) cannot be maintained from year to year. Another option may be to purchase pregnancy-tested-in-calf cows, but the impact on the herd age structure and breeding objective would need to be carefully assessed.

Retaining a higher proportion (>60%) of your heifers for joining has a number of benefits. These include:

- increased rate of genetic gain
- increased ability to cull poor performing cows
- decreased risk of age related diseases such as grass tetany, cancer eye and degenerating structural problems

Bull management

Bulls should be in fat score 3 at joining.

Common sources of low bull fertility and low conception are:

- bulls in poor condition two months prior to joining when the semen is produced
 - the condition of yearling bulls (12–18 months) is critical
- over fat bulls
 - this can interfere with the heat exchange function of the testicles resulting in infertility

According to the Australian Association of Cattle Veterinarians, a fertile bull should be able to get 90% of 50 cycling disease free cows in calf by natural service within a nine week joining period.

A more conservative approach is needed if it is the first year for yearling bulls. This is the case until you have a track record for the performance of yearling bulls on the farm. In these situations, mating loads of only 25–30 females are recommended.

Have bulls in reserve (at least 20%) to replace injured bulls as soon as they are identified.

Herd bulls should be examined by a vet or trained professional at least two months before mating. During joining bulls should be closely monitored to identify any potential problems.

Weaning management

Weaning methods have changed greatly over time as production systems and markets have evolved. Where cattle were traditionally weaned around 8–10 months of age, in some cases cattle are being weaned as young as three months old as a different management system. Changes in weaning

methods have also occurred where once paddock weaning was the norm, today the method most widely accepted as being 'best practice' is the yard weaning method.

Yard weaning has been shown to have a number of benefits, especially in relation to the feedlot industry. Essentially yard weaning achieves the following:

- it encourages social interaction in a confined environment
- exposes the animals to a variety of external stressors
- enables animals to better deal with stressors throughout their life, resulting in increased weight gain and decreased animal sicknesses
- improves temperament

Yard weaning cattle is not a complex process and the following guidelines can be used.

- use well built, weaner-proof yards with good quality water
- use a pen stocking density of 4m²/head for 180–260kg calves and 2.5m²/head for 100–180kg calves
- provide access to high quality hay or silage (>9–10ME, 15% protein) (troughs and rations not necessary)
- keep weaners in the yards for five to ten days
- apply routine human contact each day (ie walking through pens twice a day)
- ensure a reasonably sloped, non-bog surface
- as an option, rubber belting may be added to pen sides to create a solid wall although this is not necessary

At the time of weaning it is also important that health concerns of the calves are addressed. As calves are susceptible to worms it may be an option to undertake a worm egg count (WEC). If the WEC is high enough to require drenching, drench early-weaned calves 1–2 weeks prior or after moving. This is to mitigate drench resistance. To maximize the ability of weaners to develop immunity to worms, it is important they are moved onto paddocks with good quality pasture. The lower to the ground the cattle are forced to eat and the closer to dung pats they are forced to eat, the higher the risk of exposure to worm larvae.

In addition to worm control, it is also advisable that a clostridial vaccination program is undertaken. This program involves administering a vaccination shot to each calf during the weaning process and then administering a second shot 4–8 weeks later. Without the second shot, the first shot is effectively useless.

During the weaning process you should also look out for other diseases such as pink eye and in early weaned calves, scours.

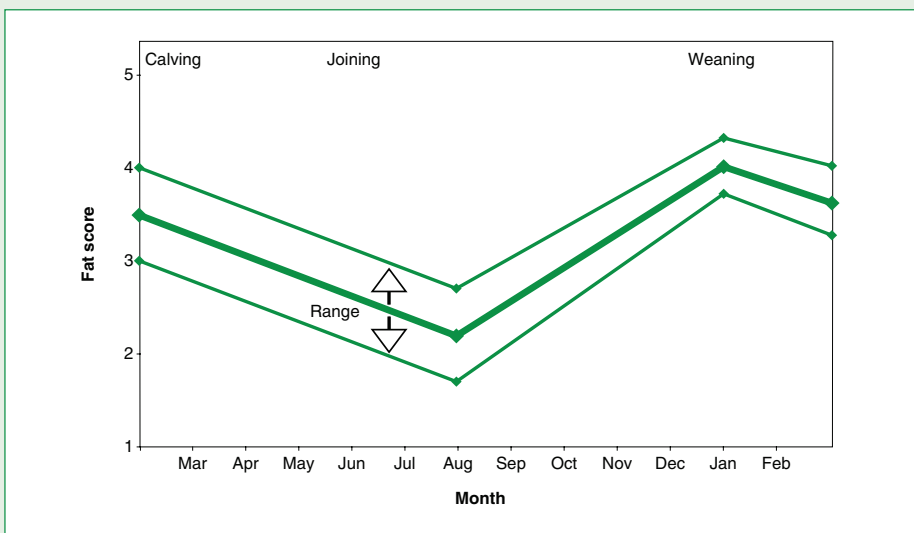
Management of cows to achieve target fat scores

Fat score targets

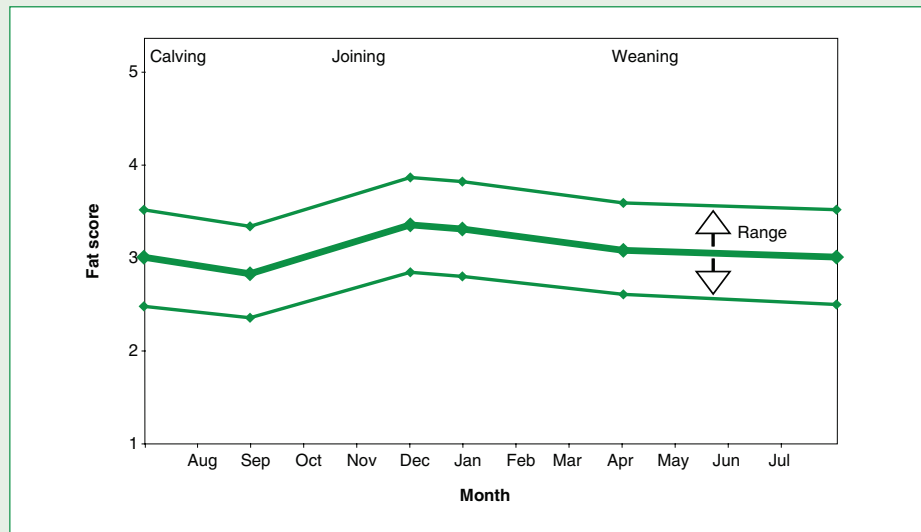
In early lactation, unless the cow is on very good feed, the total energy requirement of the cow will be greater than its ability to consume feed energy. At this time it is normal for lactating animals to lose weight; the energy released from this weight loss contributes to milk production. However, if the cow is in poor condition at calving, she will be slow to return to heat and get in calf (see Table 4.2).

Figure 4.8 – Target and range of fat scores for cattle reproduction

Autumn calving



Spring calving



The appropriate fat score targets for autumn calving and spring calving are shown in Figure 4.8.

First calvers and high producing cows should be at the top of the range. Also bear in mind that cows at the bottom of the range at calving will be more sensitive to the feed supply after calving (see Figure 4.8).

Autumn calving cows in Victoria should not be allowed to fall below fat score three at calving. As well as affecting fertility, autumn cows calving below score three will have reduced calf weaning weights of 10–15kg.

Because spring calvers should have good feed conditions at joining, their reproductive performance tends to be less sensitive to fat score at calving. The calving target fat score for spring calvers is 3L.

The target fat score for mating is around three for both autumn and spring calvers.

Experience at Primary Industries Research Victoria at Hamilton with autumn cows suggests that although very high stocking rates or extreme conditions can cause poor pregnancy rates, satisfactory pregnancy rates are achieved when cows are fat score 3L and above 400kg liveweight at joining.

After joining, cows are less sensitive to low nutrition and fat score can drop further.

Fat score targets are summarised in Table 4.3.

Matching feed requirements and feed supply

The energy requirement of the cow calf unit more than doubles from two months before calving to six months after. The best fit between feed requirements and pasture feed supply usually occurs when cows calve in autumn.

The autumn growth of pasture can meet the increasing feed requirements after calving and during mating. The flush of pasture in spring coincides with the increasing feed requirement of the rapidly growing calf (Figure 4.9). The calf at five months receives over half its feed requirement from pasture.

Any small energy deficit during late summer can be met by cows utilising body reserves of fat built up in spring, provided that cows have already reached or exceeded target fat scores.

Cows need to be at target fat scores by calving, particularly autumn calving cows, as it is difficult to improve fat score after calving.

Techniques to manipulate cow fat score before calving include time of weaning and preferential feeding of low fat score cows. Also, pregnancy testing cows 6–8 weeks after bulls are taken out can identify future early and late calvers.

Table 4.3 – Fat score targets

	Autum calving	Spring calving
Point of calving	3H	3L
Joining	3–3L	3
Mid lactation	3	3
Weaning	3H	3

Figure 4.9 – Pasture growth and feed requirements

Annual pasture growth in west and south Gippsland, and feed requirements for beef cows stocked at 1.5 cows/ha for autumn calving

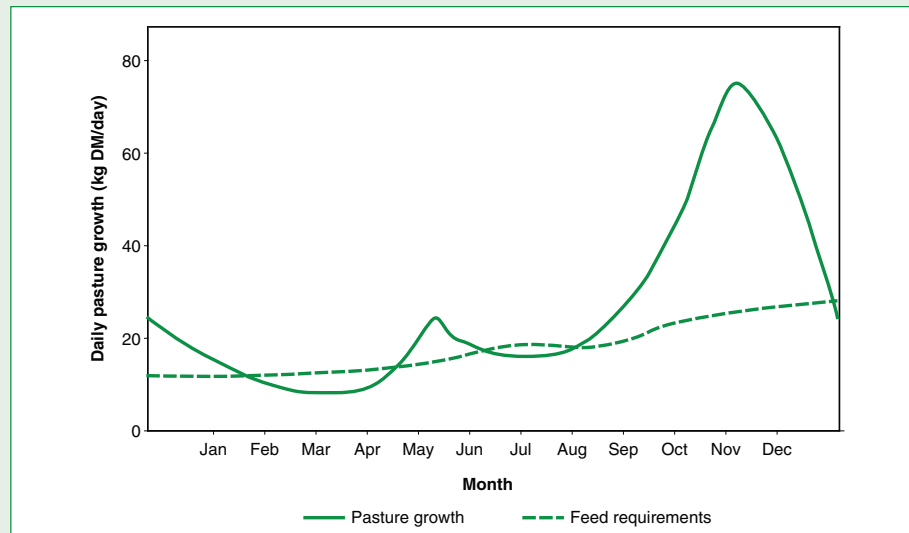


Figure 4.9 shows how effectively stock requirements are met by autumn (March) calving. In this example from Gippsland, stock requirements have been calculated at a stocking rate of 1.5 cows per hectare, assuming the digestibility of pasture to be between 70–75%.

Spring calving may result in a better fit between feed requirement and pasture supply where winter conditions are very harsh, and where there is abundant summer feed and/or when calves are sold at 6–8 months as weaners. Alternatively, weaners can be carried through and sold at 14–16 months after growing through their second spring.

The optimum stocking rate will vary markedly from district to district and farm to farm depending on pasture growth and how well pasture is utilised. The best guide to the appropriate stocking rate is animal performance – how well cows meet target fat scores.

Feed management

During late autumn and winter, pasture quantity is often insufficient to meet the needs of autumn calving cows for lactation and cows lose weight. To manage the rate of weight loss, hay or grain is often fed. For pasture management purposes, hay may be fed in early to mid-autumn to ‘transfer’ pasture from autumn to winter.

During mid-late summer and autumn the feed value of dry standing feed is low in both protein and digestibility. Depending on the stage of the breeding cycle spring cows with unweaned calves calving in autumn may need to be fed with a higher quality supplement.

Cattle performance at pasture

The performance of cattle at pasture is affected by their weight, pregnancy, and lactation status and age. It is also affected by quantity and quality of pasture.

A computer program developed by CSIRO called GrazFeed takes all these factors (and others) into account to predict animal performance. The program can also be used to work out the minimum paddock feed needed to give a required animal performance. These guidelines are called pasture benchmarks.

At pasture levels below these benchmarks, stock performance will drop unless feed supplements are fed or cattle are moved to another paddock.

The program requires input on the quantity (kg dry matter) and quality (digestibility) of both green and dead pasture material, and the percentage of legume.

Three example pasture qualities, which have been used to construct some pasture benchmarks, are shown in Table 4.4.

Pasture varies greatly in quality from district to district and farm to farm. Each farmer needs to determine what constitutes high, moderate and poor quality pasture for their own situation.

Fat score and pasture benchmarks

The benchmarks below have been calculated using the following assumptions:

- autumn calving British breed cows of 500kg and fat score 4L immediately after calving
- cows lose 60kg and one fat score from calving to the end of joining
- calves gain 0.8kg/day in winter and 1–1.2kg/day in spring/summer and weaned at approximately 280kg, nine months after calving

Table 4.4 – Pasture benchmarks

Livestock class	Pasture digestibility		
	75%	68%	60%
Dry cow	700	1,100	2,600
Pregnant cow, 7–8 mths not lactating	900	1,700	ns
Lactating cow (calf two months)	1,100	2,200	ns
Growing cattle % of potential growth			
– 30 (0.39kg/day)	600	1,100	2,900
– 50 (0.61 kg/day)	800	1,600	ns
– 70 (0.85kg/day)	1,200	2,600	ns
– 90 (1.12kg/day)	2,200	ns	ns

*The pasture contained 500kg of dead DM of 47% DDM and 15% legumes.
The predicted growth rates were for a 13 month old steer of 320kg.*

Steer production

Factors to be considered:

- market to be supplied
- target steer growth rates
- pasture quality
- age of steers
- pasture benchmarks

Markets

Specific requirements for your area need to be checked. The general requirements for some domestic and export markets are shown in Table 4.5.

Table 4.5 – Specifications for common prime beef markets

Characteristic	Market		
	Japan	EU	Supermarket
HSCW (kg)	300–400	260–338	220–300
Dentition (adult teeth)	0–6	0–4	0
P8 fat depth (mm)	10–40	6–22	3–10
Butt/muscle shape score	A–C	A–C	A–C
Bruising	nil	nil	nil
Sex	Steer	Steer and heifer	Steer and heifer
Ossification score	–	–	<300
Marbling score	2+	–	–
Fat colour score	0–2	0–3	0–2
Meat colour grade	–	1b–3	1b–3
Ultimate muscle pH	–	–	5.3–5.7
Loin temperature (°C)	–	–	<12
Retail meat yield (%)	–	–	68–73
HGP status	–	Free	Free
Required accreditation		EU	MSA

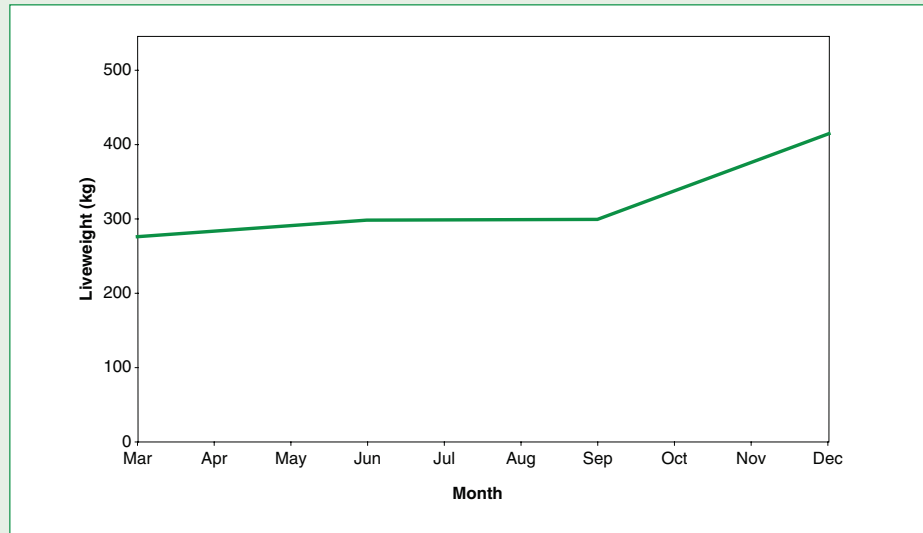
Source: More Beef from Pastures Manual, MLA

Target steer growth rates

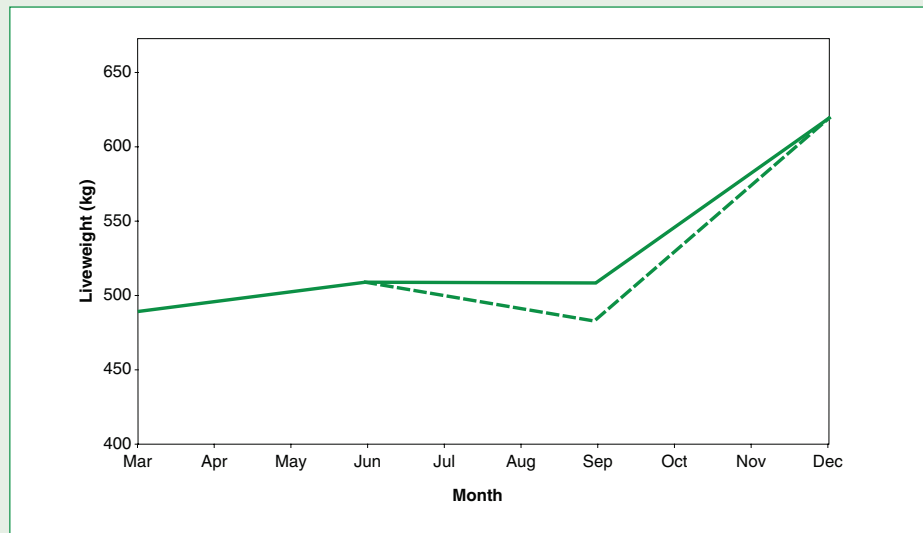
Actual targets will depend on local feed conditions, target market and planned sale time. Two examples of liveweight targets are shown in Figure 4.10.

Figure 4.10 – Target weight gain (yearling) domestic trade and (2–3 year old) Japanese trade

Domestic trade



Japanese trade



Yearling steers can be expected to gain between 100 and 150kg from September to January. Winter performance therefore largely determines whether targets are reached. The most economically efficient winter stocking rate is usually that which ensures that steers do not lose weight in winter, without the need for supplementary feeding in a normal year.

For autumn born weaner steers to be grass fattened for the domestic market a gain of 150–190kg is likely to be needed for both optimum returns and to ensure that steers are marketable.

The weight gain pattern for heavy steers will also depend on the market aimed for. The top draft may be suitable for autumn finishing on crop or saved pasture. For remaining steers, some weight loss through winter can be tolerated as weight gain in spring will be rapid due to compensatory gain.

Pasture quality

Pasture quality has a large effect on stock performance. The main components of pasture quality are the digestibility of the green herbage, the amount of dead material and the amount of legume. Figure 4.11 shows the effect of high quality (75% DDM) and moderate quality (68% DDM) pasture on the performance of 350kg yearling steers.

High quality pasture tends to contain productive species which are short and leafy. Moderate quality tends to be longer, with more dead material in the base. Poor quality pasture tends to have a higher percentage of non-productive species such as bent grass, fog grass and paspalum. Dead material in a pasture will restrict potential animal performance particularly at levels of 50% or higher.

Age of steers

As steers increase in age, their potential for growth declines as they reach mature weight. Figure 4.12 shows the potential for growth for British breed yearling and two-year old steers on moderate quality pasture.

Figure 4.11 – Quantity and quality of green herbage and performance of 350kg yearling steers

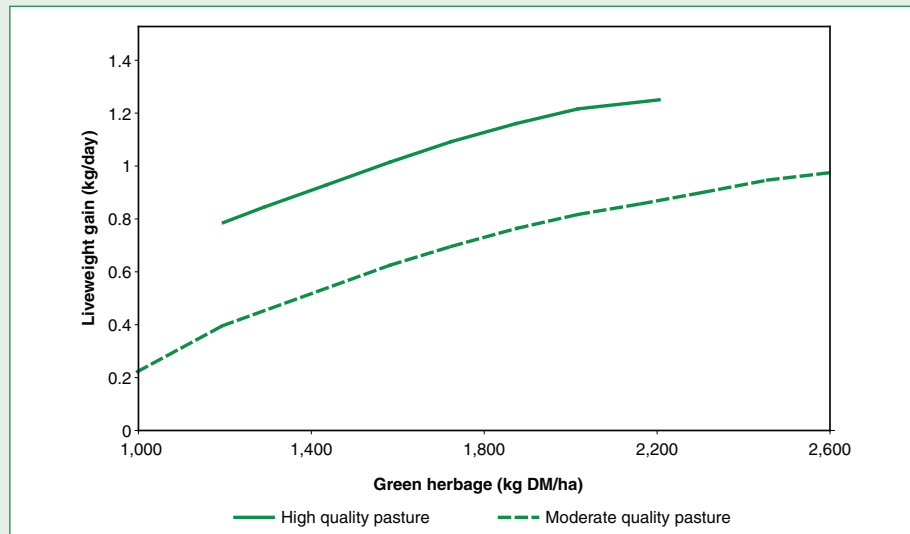
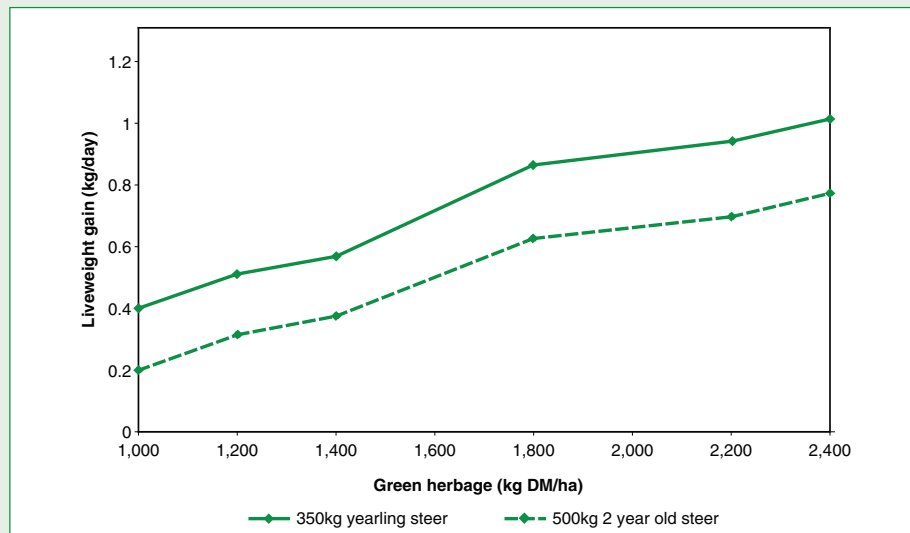


Figure 4.12 – Performance of steers on moderate quality pasture



Summary

Calving

- cow fat score target
 - autumn 3H
 - spring 3L
- first calvers require priority management
- pasture target – aim for a minimum of 1,500kg green DM to minimise weight loss in cows and ensure satisfactory milk production

Joining

- cow fat score target (autum and spring)
- join heifers 6 weeks
- join cows 6-8 weeks
- pasture target – aim for a minimum of 1,500kg green DM for cows and first calvers
- supplement if pasture quantity is inadequate with hay or silage

After joining

- cow fat score target 2.5–3
- wean early if cows fall below fat score 2
- pasture target – aim for a minimum of 1,200kg green DM/ha at end of joining rising to 2,200kg green DM/ha to maximise calf growth
- at weaning, weaner education, health and nutrition are high priorities for targeted growth rates

After weaning

- cow fat score target
 - autumn 3–3H
 - spring 3
- pasture target:
 - aim for a minimum of 1,200kg green DM/ha for cows pre-calving
 - aim for a minimum of 1,200kg green DM/ha for weaners to ensure satisfactory growth
- in tight seasons draft cows and heifers to those above and those below fat score 2.5, to allocate specific pastures and/or supplements

Bulls

- assessed two month prior to joining
- to be in fat score three at joining

Other important issues

- Early weaning, 3–5 months of age, is a practical way to manipulate the fat score of cows. Calves weaned this early need access to a high quality supplement – minimum 11ME and 16% protein.
- Yard weaning is strongly recommended. This will result in quieter, healthier mature animals whether they be breeding females or fattening/feeder cattle.
- Heifers to be joined as yearlings (12–15 months) need to reach critical mating weights. These weights have traditionally been 280kg for British breeds and their crosses and 320kg for European breeds, but may vary depending on the mature cow weight in the herd. They will probably require a minimum of 1,000kg green DM to achieve the target.
- Joined heifers should continue to grow at a steady rate and gain at least 100kg between joining and calving but must not get to fat score 4 or more (over-fat and lazy at calving).
- After weaning cows must be managed to increase their liveweight before calving. The benefits are:
 - improved fertility at the next joining
 - higher milk production for a better calf growth rate in early lactation

Note: All of the above pasture targets are for a moderate quality pasture.