module seven
husbandry, health and welfare

MANAGING INDIGENOUS PASTORAL LANDS
MODULE 7  husbandry, health and welfare

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Introduction

Husbandry, health and welfare are the three key sections covered in Module 7. These are critical components of successful management of a profitable beef enterprise. There are also legal requirements and obligations in respect to certain aspects of husbandry, health and welfare. Property managers need to be aware of these requirements and modify their management accordingly.

Husbandry

This section summarises best practice husbandry for common procedures such as branding, dehorning and castration. Best practice husbandry procedures are essential in meeting animal welfare responsibilities and a ‘duty of care’ in the prevention of infection, disease or unnecessary injury that could lead to animal stress, reduced production and reduced income.

While the husbandry descriptions in this section are quite detailed, it is suggested that beginners and learners be trained first in a practical ‘hands on’ manner by experienced operators and trainers. An example of such training is that provided by Roy Wilson at Burks Park training facility, Halls Creek, WA.

Health

Health and disease problems can significantly affect a beef business and its annual profit, particularly in the event of mortalities, reproductive loss, poor growth and poor fertility. Healthy cattle produce more calves and more beef, plus there are fewer losses due to health and disease problems.

Disease control and disease prevention are important aspects of herd management. Preventative health management is relatively cheap compared with other costs, and prevention is a sound investment for some key diseases described in this manual.

Welfare

Animal welfare is essential for sustainable and profitable cattle production. It is also a legal responsibility. People responsible for cattle welfare are all those who handle or are in charge of cattle throughout the supply chain, and include:

- owners
- representatives of owners
- property staff
- contractors
- transport workers
- saleyard and abattoir staff
- spelling establishment operators
- livestock exporters
- abattoir workers.
Husbandry

This section of Module 7 summarises best practice husbandry for common procedures such as branding, dehorning and castration.

It is strongly recommended that owners, managers and head stockmen also read: ‘A guide to best practice husbandry in beef cattle – branding, castrating and dehorning’, a free MLA publication available at Publications | Meat & Livestock Australia or from your local beef extension officer.

The information in this section has been adapted from this publication and state departmental sources.

Castration, dehorning, spaying, and to a lesser extent branding, are surgical procedures and produce wounds. Animals heal faster from surgery if they are well hydrated, not hot and not subject to stress prior to these procedures. It is important to be very hygienic and follow these recommendations, which are based on the principles of veterinary surgery:

- Muster cattle calmly using low stress stock handling methods.
- Allow cattle to rest in the yards or in ‘cooler paddocks’, and provide clean fresh water after mustering and before handling and husbandry procedures.
- Brand, castrate and dehorn during the coolest part of the day if possible. Hot animals bleed more.
- The most invasive procedures should be done last. Vaccinate first, then earmark, then brand, then castrate, then dehorn.
- Minimise the time that unweaned calves are separated from their mothers.
- Minimise the time that cattle are off feed and water during handling.
- Keep the dust to a minimum by dampening down the working area.
- Do NOT dehorn, castrate, spay or brand if it is raining, even if it is just drizzling rain.
- Treat cattle with an insect control agent before surgery, and ensure the animal is dry when surgery is performed.
- If not previously vaccinated with 5-in-1*, provide the first injection during the procedure to prevent deaths due to tetanus.
- Use well trained staff to perform procedures in a correct and timely manner.
- Stress with procedures increases with age — the younger the animal the better.
- Wash hands in one bucket and disinfect hands in another bucket.
- After each animal, clean and place instruments in an antiseptic solution such as Hibitane*.
- Ensure the surgical site is free of contamination, especially faeces. Swab with antiseptic, if necessary.
- After procedures, reunite cows and calves, and release cattle into a holding paddock with feed and water.
- Handle cattle quietly and calmly and avoid walking or trucking cattle large distances following surgical procedures.
- Inspect cattle daily and treat any that may be unwell or have complications (which should be avoided in the first place by following these recommendations).
Branding

Branding and earmarking are permanent animal identification practices, and are a legal requirement in accordance with the respective State and Territory Livestock Acts. In northern Australia, branding and earmarking are usually the only practical means of identifying ownership of livestock. However, from an animal welfare perspective, these are not the preferred methods of identification (as stated in the MLA Husbandry best practice booklet).

Each state stipulates requirements for size and positioning of brands, ages of animals which can be branded, and lodgement of annual brands returns (for more information see Module 4, Property Management).

When to brand

Branding calves as young as possible is recommended - two to six months old is best. Very young calves (one month or less) are often too small for the relative size of the branding iron. Most properties have two sizes of brands — a smaller branding iron for young calves and a larger branding iron for older cattle.

Adequate restraint is necessary for both older and younger cattle. Suitable restraints are a calf cradle for calves and a squeeze crush and head bail for older cattle.

Hot iron branding

Hot iron branding is the most common type of branding used on cattle in northern Australia. Freeze branding is usually only used for horses.

To reduce the pain to the animal, the branding iron must be held firmly to the hide for the shortest amount of time, ideally two to three seconds. To produce a desirable hide brand, the branding iron must be at the right temperature when applied:

- ‘Blue hot’ irons are at the ideal temperature.
- ‘Black hot’ irons are not hot enough.
- ‘Red hot’ irons are too hot and will result in hide damage.
Photo 7.2  Red Hot Brand – Too Hot!

Source:  MLA and Beef CRC

The brand should appear as a light tan colour on the hide.

Do NOT brand wet animals. When the brand is applied to wet hair the water on the animal will boil. This results in a ‘smudged brand’ and a large painful burnt area.

Management Checklist for Branding Cattle

- Ensure conditions are suitable for surgery by following the suggested recommendations.
- Branding calves as young as possible is recommended - two to six months old is best.
- Good restraint is essential – use a cradle for calves and a squeeze crush for older cattle.
- Ensure branding irons are well maintained and the heating equipment is adequate to reach and hold the required temperature.
- Hot branding irons must be at the correct temperature, that is ‘blue hot’, when applied.
- Never brand wet cattle, or very weak and poor cattle.
Dehorning

Dehorning is a labour-intensive, skilled operation with important animal welfare implications. For those properties that are not yet breeding poll cattle, dehorning is a necessary animal husbandry procedure. In contrast to hornless cattle, horned or tipped cattle have the following disadvantages:

- can cause injury to other cattle especially in yards and when in transport
- can cause significant damage to hides and carcase quality
- cause more damage to infrastructure on average
- need more space during transport
- are harder to handle in yards and crushes and can be more aggressive
- are potentially more hazardous to people and other animals.

How does a horn grow and how does this affect dehorning?

The horn bud starts to form during the first two months of the calf’s life. During this time the horn bud is free floating in the skin layer above the skull. After about two months, the horn bud attaches to the skull, and the horn starts to grow from the horn forming tissue in the horn bud. Where possible, calves should be dehorned before attachment of the horn bud to the skull occurs. This significantly reduces trauma associated with the dehorning operation, and also dehorning at this time is easier.

The horn grows on a bony extension of the skull. The horn grows from the skin around its base, just as the wall of the hoof grows down from the skin of the coronet. Therefore to ensure no horn regrowth, it is essential to cut away 1 cm of skin around the base of the horn.

As shown in Figure 7.1, the hollow centre of the horn core leads directly to the sinuses of the skull. This shows how easily infection can get inside the skull and be detrimental to the animal. When cutting off larger horns on older animals, an open hole is exposed. This substantially increases the risk of infection inside the skull.

Figure 7.1 Anatomy of a Horn and Sinuses

Source: Dehorning, under Husbandry in the Topics section of the Futurebeef website
When to dehorn

The younger the animal at the time of dehorning, the less pain and stress for the animal, and the less risk of infection or fly strike. Smaller animals are also much easier to handle and restrain, and this makes the task easier for handlers.

Removing horns from older cattle, yearlings and adults is time consuming, painful for the animal and increases the chances of a setback. Dehorning animals over 12 months of age is not recommended, unless it is undertaken by a veterinarian. Also it is illegal in some states and territories to dehorn animals over twelve months old.

Which method of dehorning to use?

The method of dehorning should be matched to the size of the horn and the age of the animal. The level of skill of the operator may also be a consideration.

All equipment should be cleaned between each animal’s procedures and kept in a clean antiseptic solution during procedures. The head of the animal should be well restrained.

- **Dehorning knife**

  The dehorning knife has a curved blade which must be kept sharp and clean. The procedure should be very quick, and (with practice) produce good results with no regrowth. The knife is used to cut through the skin around the horn bud in one decisive action. The key to successful dehorning is the removal of a complete ring of hair (~1 cm wide) around the horn base.

Photo 7.3  Dehorning Knife

The dehorning knife can be used on calves where the horn bud is still mobile and not attached to the skull. This usually applies to calves up to two to three months of age. Once the bud has attached to the skull, a small scoop dehorner may be a better choice.
- Scoop dehorners

Scoop dehorners are used by placing them vertically down over the horn bud, and while maintaining firm downward pressure on the skin, the handles are opened quickly outwards thereby scooping out the horn.

Scoop dehorners are suitable for calves two to six months old. It is preferable to use scoop dehorners before the horn bud attaches; however, they can also be used after the horn bud attaches, provided the horn tissue is not too hard. Scoop dehorners come in a number of sizes and it is important that the right size instrument is used on the right size animal. The larger scoop dehorners can leave a deep hole if used on too small an animal, but are useful for larger weaners and older cattle.

- Cup dehorners

Cup dehorners are designed to be used on calves that are too big to dehorn with a knife, hot iron or scoops. Again it is necessary to take a complete ring of skin around the horn base. Downward pressure on the cup may need to be applied by a second person to prevent the cup ‘riding up’ the horn. However, too much downward pressure can produce an unnecessarily large wound, so care must be taken.

Photo 7.4 Cup Dehorners

Cup dehorners will handle cattle up to 12 months of age; however, they are best used on calves up to six months of age where the horn bud is already firmly attached.
Tipping cattle

Tipping is the removal of the insensitive sharp end of the horn, and is not proper dehorning. If cattle are dehorned at an early age, or are polled, tipping would not be necessary. Tipped cattle still have the disadvantages of horned cattle; for example they can still cause bruising. Also, tipped cattle can still be a danger to other cattle as well as handlers.

Horn tipping however is sometimes necessary for welfare reasons such as when a horn is growing towards an animal’s head. While tipped cattle can still hurt other cattle and handlers, it is likely an injury from a tipped horn may not be as detrimental as an injury from a sharp ‘speary’ horn.

Horn saws, parrot teeth tippers and surgical wire should only be used to tip the horns of adult cattle; that is to remove only the insensitive part of the horn. If these instruments are used to dehorn cattle, or remove more horn than tipping, then they should only be used by veterinarians (or under their direction). Local anaesthetic should be used.

Management Checklist for Dehorning Cattle

- The younger the animal – the less trauma and the less chance of infection or setback.
- Prepare animals for surgery and ensure conditions are suitable for surgery.
- Use the correct instrument for the size of the horn or calf.
- Good restraint of the head is essential – use a cradle for calves and a squeeze crush for older cattle.
- Ensure dehorning instruments are kept clean and sharp.
- Place instruments in a bucket of disinfectant between each animal’s treatment, and use a separate bucket of disinfectant for hands.

Further Information on Dehorning and Branding

See A guide to best practice husbandry in beef cattle – branding, castrating and dehorning, a free MLA publication is available at: Publications | Meat & Livestock Australia

See Dehorning on the FutureBeef Website.
Castration

Castration is a key animal management procedure which has important animal and human welfare implications. Castration is carried out for the following reasons:

- Genetic management: Castration prevents undesirable bull calves and mickey bulls from breeding. This enables mating of bulls only with desirable genetic traits.
- Behavioural control: Castrated male cattle (steers) are generally less aggressive, easier to handle, less likely to fight causing injury to other animals, and less likely to damage fences.
- Meat quality: Unless slaughtered at a young age, the secondary sex characteristics of bulls tend to make bull meat tougher and less attractive to consumers, especially for the higher priced cuts.

When to castrate

Castration should be carried out on bull calves when they are very young, and certainly before six months of age. If bull calves are castrated early in life there is less pain and discomfort to the animal, less risk of bleeding and infection, and less risk of weight loss. Younger animals recover quicker if castrated early. On larger properties, where mustering can't be started until the wet season has finished, this may be difficult to achieve, particularly if calves are born at the start of the wet season (as recommended) or just after the last muster of the previous year. Some states have specific legislation regarding age of castration – check with your local stock inspector.

Methods of castration

There are two generally-acceptable methods of castration:

- Surgical castration using a scalpel blade is the most practical and common method used in northern Australia. (See description that follows).
- The Burdizzo® should only be used by a skilled experienced operator. Due to risk of failure, it is not recommended for use by inexperienced cattle producers. In addition, the Australian Code of Practice for the Welfare of Animals states that this method should only be used on calves under six months of age if done without anaesthetic.

Emasculation using latex rings can cause extreme pain, if not designed for the task, and not applied correctly. They are only suitable if the technique employed is PERFECT. Apart from the pain, a common complication of imperfect technique is tetanus, unless the animals have full vaccine protection. The Australian Code of Practice for the Welfare of Animals states that elastration rings must only be used on calves less than two weeks of age. This option is not legal in most circumstances, on most extensive properties.

With all methods of castration, effective restraint such as a calf cradle is essential for the welfare of the calf and the operator. When performing castration it is important to disinfect equipment in an antiseptic solution between each animal’s procedures, and have a separate bucket of antiseptic for washing hands.
Surgical castration

The following photos show the procedure of surgical castration using a scalpel blade.

Photo 7.5 Castration Photos

After checking that two testicles are present, the testicle is squeezed against the bottom of the scrotum to stretch the skin.

A scalpel blade is used to make an incision at the very bottom of the scrotum, long enough to expose the testicle when squeezed out.

In some cases the testicles proper may still be hidden behind a thick whitish membrane - the tunica vaginalis. If this is the case it will be necessary to make an incision in the tunica to completely expose the testicle. A deep initial incision ensures the testicle is exposed immediately.
The testicle proper can be pulled from the incision hole by wrapping the fingers around the testicle and the spermatic cord. The attached ligaments and vas deferens (sperm cord) can be separated from the testicle and blood vessels with the fingers.

Cut through the separated white fibrous tissue, freeing this from the end of the testicle. Then cut through the white fibrous tissue again, as close to the neck of the scrotum as possible.

The testicle can be separated by firmly pulling on the exposed testicle and removing it in one quick continuous tearing action. Do not cut through the cord as this may lead to excessive bleeding. The most desirable method is to remove the exposed testicle using a triple crush emasculator, which crushes and cuts the blood vessels and hence minimises bleeding. Emasculators are the preferred option for older calves and for castrations done in hotter weather.

Source: MLA
Good hygiene is essential when castrating. It is recommended that scalpels and emasculator are soaked in disinfectant between operations. Poor hygiene may lead to infection, which delays healing and may set back growth. Fly control should be considered at certain times of the year. Calves should be vaccinated against tetanus.

**Further Information on Castration**

See - A guide to best practice husbandry in beef cattle – branding, castrating and dehorning, a free MLA publication is available at

Publications | Meat & Livestock Australia

Also see Dehorning and Castration of calves under 6 months of age - NT Agnote

**Spaying**

Cattle spaying is a strategy to prevent breeding in females targeted for slaughter. There is no known growth advantage from spaying, other than that gained by preventing pregnancy and lactation. If not done well, it can cause death. Effective segregation is a better option than spaying, if it can be done. Spaying is a somewhat costly surgical procedure. It is recommended that it be performed by a trained professional, such as a cattle veterinarian.

**Further Information on Spaying**

Spaying beef cattle


Speying cows - Willis dropped ovary technique

Why are cattle spayed? - RSPCA Australia knowledgebase
Health

Healthy Cattle, More Income

Health and disease problems can impact significantly on a beef business and its annual profit, particularly in the event of mortalities, reproductive loss, poor growth and poor fertility. Healthy cattle produce more calves and more beef, plus there are fewer losses due to health and disease problems.

Disease control and disease prevention are important aspects of herd management. Preventative health management is relatively cheap compared with other costs and is a sound investment for some key diseases mentioned in this manual. However, in any case where preventative health care is being considered, a cost-benefit analysis should be undertaken. This analysis may be partially subjective if a major benefit is the welfare of the animal.

If approached by a rep to purchase a health product, take care to ASK THE RIGHT QUESTIONS. A simple example of the wrong question is, ‘Will this drench improve the growth of my cattle?’ The answer will always be yes, and a very poor decision could be made to purchase and treat cattle unnecessarily. A better question would be, ‘Will the drench improve my business profitability, affect the development of immunity in the cattle, or cause unnecessary stress due to administration?’ If the advisor can provide satisfactory logical answers with EVIDENCE, only then is their advice valuable.

Effective herd health outcomes from appropriate management include:

- no disease contracted by handlers or consumers, that is sourced from cattle
- no depression of growth or fertility due to ill-health
- minimal pregnancy failure and calf loss
- low cow mortality rates
- low mortalities in calves and weaners
- low bull injury and mortality rates
- achieving market access and premiums
- cattle are able to behave normally and experience minimal stress
- compliance with market specifications, regulations, and codes of practice
- justifiable herd health management costs
- no animal welfare issues.

Diagnosing Disease and Deficiencies

In the event of disease there are four key steps:

- diagnosis
- treatment of the cause
- treatment of the symptoms
- prevention of spread including the use of vaccines.
Incorrect diagnosis of a disease can cause substantial unnecessary costs. A vet is the best person to diagnose diseases or deficiencies on extensive properties. In situations where it is too costly or not practical for a vet to visit, the property manager can make very observant and careful notes and take photos to describe what they see. This evidence can then be assessed by a vet or stock inspector.

If more than one animal has died of an unknown cause, it is worthwhile to get a vet out to diagnose the cause, even if costly, so action can be taken to prevent further deaths and financial loss. If this is not possible then a bush post-mortem by the manager/owner may be necessary. A post-mortem, even if extremely basic, can be of great value in understanding why an animal died. If a totally untrained person does a simple post-mortem and observation, they may work out the problem, or alternatively they may see critical indications that, when described to a trained professional, identify the cause of the problem. Access to a digital camera to record what was seen can vastly improve the quality of information.

Cattle owners and managers should always notify their local state department stock inspector or biosecurity officer of disease events. Where possible, officers will follow up with a disease investigation.

### Recommendations for Diagnosing Disease and Deficiencies (in the absence of a vet)

**Level 1**
- Carefully observe sick animals, make notes and take photos, which can then be passed onto a vet or stock inspector.

**Level 2**
- Undertake a bush post-mortem (remember to wear plastic gloves and be very hygienic). Seek directions from your local stock inspector.
- Make notes and take photos and pass these on to your vet or stock inspector for assessment.

### Further Information on Health

- [Diagnosing disease and deficiencies website](#)
- Animal Health and Disease Investigation (2nd edition) - buy from Queensland Government (you can also download a ‘Disease and welfare investigation form’ and ‘Condition score tables’ here).
Prevention - Vaccines and Vaccination Programs

Vaccines are a preventative measure to reduce:

- disease incidence
- loss of production
- animal losses
- economic losses

For diseases such as Botulism, Vibriosis, Clostridial diseases, and Pestivirus (in certain circumstances), vaccines are quite cost effective. It only takes the prevention of a few animal losses to pay for the cost of the vaccine. If a disease is prevalent in the herd, and causing losses, extra prevention above normal management may be required.

To reduce mustering costs and time, the annual vaccination program should be tied in with the normal planned mustering and cattle handling program. However, timing of vaccination should be prior to the time of year when disease outbreaks are most likely.

Handling and using vaccines

Incorrect handling of vaccines can result in the vaccine being ineffective, and therefore a waste of money spent and no protection against the disease. Correct handling of vaccines is quite easy, provided a few simple rules are followed.

- Remember most ‘killed’ vaccines require two initial injections (priming and booster) at least four weeks apart to have a real effect. If only one shot is given, the vaccine may provide only low protection (but may be better than no vaccine). Once the animal has protection, most of these vaccines require annual ‘boosters’ to sustain protective immunity.
- It is difficult to vaccinate calves against some diseases; however, they do get some protection from antibodies in colostrum milk at birth. The best way to maximise these antibodies is to give annual vaccinations to cows at the last muster each year, prior to calving.
- Some vaccines can interfere with development of immunity from other vaccines given at the same time. Avoid using tick fever vaccine with priming injections (it is OK with boosters). Also avoid using more than two bacterial vaccines at once.
- Vaccines are sterile, and must be kept refrigerated (including in an esky at crush side!). If they are exposed to heat or light or freezing cold, they can break down and will not work. Once a pack is open, usually it must be used within a week, as long as it can be kept chilled and clean. Some vaccines must be used within one day; others within 30 days. Check the labels for specific advice.
- Don’t miss the animal and inject yourself. If you inject yourself with vaccine it can cause nasty prolonged reactions. It is VERY important to ensure you do not accidentally vaccinate yourself or others with an oil-based vaccine such as SingVac®. It can cause very serious reactions that may require surgical excision. Seek medical attention immediately.
- The needle should be sharp and clean and be inserted in the correct manner.
• Most cattle vaccines should be given under the skin to allow proper absorption and minimal tissue damage. This is particularly important for oil-based vaccines. If the vaccine is given into muscle, severe reactions can occur. The preferred site is the neck, forward of the hump. Injections in the hindquarter can result in damage to the choice meat cuts, and injections into the rumen fossa (flank spay site) can penetrate directly into the rumen and be wasted.

• Two common problems are persistent post-vaccination lumps (especially after using oil-based vaccines), and a high resistance to injection on the first attempt. The latter is often incorrectly rectified by deeper insertion of the needle at a more perpendicular angle. Both of these problems are often caused by incorrect orientation of the needle on the syringe. See the diagram in Figure 7.2 for correct orientation/insertion of a needle, including the needle tip also.

**Figure 7.2 Correct and Incorrect Orientation of a Vaccination Needle**

The objective when vaccinating is to get the opening of the needle resting between the skin and underlying tissues. This is achieved by orientating the needle so that, at entry, at about 45° to the skin, THE BEVEL IS PARALLEL WITH THE SKIN (see correct example).

Record details of all vaccines used and vaccinations including:

• vaccine details
• date of vaccination
• animals vaccinated
• batch number and expiry date.
Case Study Examples for Vaccines

Warrigundu Station, Northern Territory

Vaccinations for cattle include:

- Singvac as a vaccination for Botulism in all cattle is normally carried out in the first round for those cattle that require it in that particular year.
- Ultravac 7 in 1 to prevent Leptospirosis and the major clostridial diseases for calves at branding.
- Vibriosis vaccine for bulls in the first round and heifers prior to joining.

Other health treatments include:

- Pour-on to treat ticks.
- Buffalo fly tags for all weaners destined for Gunbalanya Station floodplain.

Delta Downs, Queensland

During the first round the vaccination program includes:

- Cows returned to the paddock are vaccinated for Botulism with Singvac.
- Bulls returned to the paddock are vaccinated for both Botulism with Singvac and Vibriosis with Vibrovax.
- All weaners receive a vaccination for Botulism with Singvac.
- During the second round, weaners taken off their mothers at this time receive a Botulism vaccination.

Management Checklist for Handling and Using Vaccines

- Vaccinate animals before likely exposure to the disease.
- Keep the vaccine refrigerated, even at crush side by using an esky.
- Use clean and sterile equipment, including sharp needles.
- Ensure the needle is orientated the correct way as shown in Figure 7.2.
Further Information on Vaccines (FutureBeef website see Husbandry)

Principles of using vaccines
Vaccinations for beef cattle

Reproductive Diseases

Vibriosis, Trichomoniasis, Leptospirosis and Pestivirus are prevalent in large beef herds under extensive conditions in northern Australia. Vibriosis and Pestivirus in particular can cause significant reproduction losses, leading to loss of income. Strategic management and control of these diseases is critical to herd performance.

Vibriosis

Vibriosis is a sexually transmitted disease of cattle, caused by a bacterial infection in the female reproductive tract. Vibriosis is transmitted by bulls that pass the disease on to uninfected heifers and cows. Bulls act as carriers for years if they are not vaccinated. Infected cows pass the disease to uninfected bulls which have not been vaccinated. The biggest problems occur under the best controlled management systems, especially where naïve heifers are exposed to infected bulls during their maiden mating.

What will you see?

- (usually) no abortions or discharges
- a lot of cows having late calves or not having a calf
- if pregnancy testing, you will see:
  - late calving peaks or prolonged calving patterns
  - a lot of empty cows
- abortions, if cows have been infected in the latter stages of pregnancy.

Disease confirmation involves professional examination, usually of vaginal mucous samples of cows and heifers.
Management Checklist for Vibriosis Control

Level 1:

- Castrate all mickey bulls, plus maintain paddock fencing.
- Vaccinate herd bulls with an annual booster.
- Vaccinate all young bulls introduced to the herd. Two doses are required, one month apart, for bulls which haven’t been vaccinated previously.
- Reduce the age of herd bulls being used, to six years of age or less.

Level 2: (In addition to the above)

- Cull all empty breeders at a pregnancy test to reduce prevalence of the disease (note pregnant animals may still be carriers of the disease).
- Mate new young bulls which have been vaccinated with maiden heifers in a separate heifer paddock.

There may be some specific situations where a vet will recommend vaccination of females as well. Generally bull vaccination is sufficient.

The stress of vaccination against Vibriosis may cause temporary sub-fertility in bulls. Bull vaccination should be completed as early as two months prior to mating.
Trichonomiasis

Trichonomiasis is a sexually transmitted disease of cattle that causes infertility in cows in much the same way as Vibriosis. It is caused by a protozoan instead of a bacterium. An infected bull may pass on the disease to any female it serves. Similarly an infected female may infect any bull that serves it. Any animal of breeding age is susceptible to infection. Often the incidence for this is higher amongst heifers than mature cows.

The organism lives in the uterus where it produces an inflammation which either prevents conception or causes an early abortion. Such abortions are common at approximately two to four months. Short seasonal mating greatly assists in control as the organism does not persist as well as Vibriosis.

Note that Trichonomiasis (or ‘trich’, pronounced ‘trike’, as it is commonly called) is a notifiable disease in some states.

What will you see?

- The best indication of the presence of Trichonomiasis is when cows keep returning to the bull for four to five months after they have been initially served.
- Aborted foetuses, of two to four months of age, may be found in the paddock and a persistent vaginal discharge occurs in affected cows.

However, under the extensive management conditions of northern Australia, these symptoms are usually not observed.

Management Checklist for Trichonomiasis

No commercial vaccine is available.

Level 1 – Standard prevention
- Castrate all mickey bulls and mend fences.
- Reduce the age of herd bulls used to six years or less.

Level 2 (in addition to the above) - if trich is suspected
- Cull infected herd bulls if diagnosed by a vet.
- Segregate heifers and mate only with young clean tested bulls.

Level 3 (in addition to the above) - if trich is diagnosed
- Segregate heifers and seasonally mate with young clean tested bulls.
- Use whole-herd, short-seasonal mating.
Bovine Pestivirus or BVDV

Bovine pestivirus is also known as bovine viral diarrhoea virus (BVDV). Bovine pestivirus causes reproductive losses and young cattle deaths across Australia. Infected cattle can appear normal or show with a range of symptoms. A surviving foetus infected at between one and three months of pregnancy has no immune system when infected. If this happens, its immune system thinks the virus is normal and allows it to persist for life. These are called persistently-infected animals, or PIs.

Most commonly, BVDV is spread by PI animals. Many of these cattle appear normal until they develop BVDV, but some are born frail or have ‘ill thrift’. Half die each 12 months. PI animals infect other animals by shedding the virus through contaminated secretions and discharges to unaffected animals. Therefore cross infection often happens at mustering and yard handling.

Where the virus persists in a herd, the damage can be either low-level and persistent, or more sporadic and noticeable. Properties with better infrastructure and cattle control and management are usually worst affected. This is simply because naïve heifer groups are created which then become exposed, most often during a mating period. The main problem occurs with infection of cycling or early-pregnant females.

What will you see?

- reduced calving levels, plus delayed time of calving (late calves)
- late abortions, calf still births and birth defects (can die soon after birth)
- ill thrift and death in calves and weaners.

Bovine viral diarrhoea or Muscosal disease (diarrhoea, fever, ulcers on the gums) develops in PIs. This disease cannot be treated and animals invariably die.

Disease investigation involves testing for antibody levels in blood from a group of up to 30 older cows born on the property.

Photo 7.6  A ‘Normal’ PI Yearling

Source: Geoffrey Fordyce, QAFFI
Recommendations for Bovine Pestivirus Control

What is the BVDV status of your herd?
Work with your vet to screen your herd for BVDV status, to see if the herd is naïve to the virus, or if the virus is active.

Recommendations will depend on the BVDV status of the herd. Your vet will determine a control or prevention program for your herd based on whether it is naïve or infected/ endemic.

Infected Herds – Steps to Minimise Losses

Level 1
- Do nothing until overall management improves.

Level 2
- Before selection and maiden mating, test antibody in blood from up to 30 head or more maiden heifers to see if one or more PIs is ‘vaccinating’ the group or not.
- If PIs are not present in a heifer group within an endemic herd, then vaccination is needed. Vaccinate heifers twice prior to mating with two vaccines, six weeks apart, as well as vaccinating new bulls (expected to be profitable when only 1% chronic loss is incurred).

Naïve herds – Necessary Steps Required
- Undertake biosecurity measures to minimise the risk of infection, such as checking the status of all cattle trucked to the property.
- Have all new bulls tested to ensure they are not PIs. In naïve herds, the level of vigilance needs to be high to prevent financial loss. Neighbours cattle can be a source of infection.
- If recommended after consultation with your cattle vet, vaccinate against pestivirus infection for naïve heifer groups prior to first mating. Remember that two injections of Pestigard® are required (one injection offers NO protection).
**Leptospirosis**

Leptospirosis is a contagious cattle disease, caused by bacteria that require moist conditions to survive. Cattle which recover may become carriers and shed the organism in their urine, for up to 12 months. Survival of the organism in the environment can be extended if picked up by carrier animals such as rats, pigs and bandicoots, which can then re-infect the herd with their urine.

Leptospirosis can be transferred from cattle to humans, and can make humans very sick. When handling cattle or around cattle faeces or urine, wash your hands before eating, before touching your face, and before picking up small children.

**What will you see?**

- Leptospirosis rarely causes significant reproductive loss in cattle, but if it does, it is usually by late abortion and young calf deaths
- Cows may develop an unusual mastitis.

Disease investigation involves taking blood samples from cows, usually in the wet season, which are then examined in a laboratory. The primary issue is human health.

### Management Checklist for Leptospirosis

**Level 1**

- If a cattle vet indicates vaccination for herd or human health is advisable, a broad herd vaccination program is required.
- Vaccination must start in young females before the bacterium establishes in the kidneys.
- Vaccinate annually. In young cattle, this may be with ‘7 in 1’vaccine that includes Leptospira hardjo and Leptospira pomona (as well as the five clostridial diseases).

### Further Information on Reproductive Diseases

**Vibriosis in the Northern Territory**

**Vibriosis (or Campylobacteriosis), Biosecurity Queensland**

**BVDV Australia website** Bovine viral diarrhoea virus (BVDV) or Pestivirus.

Biosecurity Queensland - **Leptospirosis**

**Trichomoniasis** - Agnote, Northern Territory Department of Primary Industry and Fisheries (DPIF)
Botulism

Botulism is a serious disease, causing an estimated 10% of all cattle deaths in northern Australia. The disease is caused by the toxin produced by the bacterium *Clostridium botulinum* (closely related to the organisms causing tetanus and other clostridial diseases). The organism forms highly resistant spores which can survive in the environment for many years.

Botulism occurs when cattle ingest the toxin. In northern Australia, this is mostly associated with depraved appetites brought on by nutritional deficiencies. The common deficiencies associated with this are protein and/or phosphorous. Sometimes in these situations, cattle eat carcases and chew bones; that is, they have depraved appetites. Cattle with depraved appetites will also chew sticks, bark, or other unusual objects, and will be more likely to ingest the botulism toxin if present.

The botulism organism can also produce toxin in other low-oxygen situations, such as in dead animals accidentally trapped in hay bales and cattle can become affected by ingesting the affected fodder. Stock can also be affected by drinking water, which has been contaminated by dead animals. Carcases of birds, rodents or frogs can all harbour the organism. Open water tanks or turkey nests also can be especially hazardous in harbouring the botulism organism.

Botulism has an incubation period of three to seven days between ingestion and the onset of symptoms.

**What will you see?**

- The main symptom is progressive paralysis, usually starting in the hindquarters (causing animals to stagger) and gradually extending to chest, neck and throat. Death usually occurs due to paralysis of the respiratory muscles. A classical sign of botulism is deaths with no evidence of leg paddling, a consequence of the paralysis.

- Affected animals found alive may drool saliva and have half chewed food material in their mouth and throat and may have little or no control of their tongue, due to paralysis of the muscles. Often the tongue is hanging out between the teeth. If the tongue is pulled out, the animal cannot pull it back in.

- Affected animals have difficulty eating and become ‘hollowed out’ and thin quite quickly.

- Animals with botulism do not lose their mental capacity until they become weakened by lack of food, water and oxygen. Till then, they may be ‘spooky’ which is caused by them being unable to respond to normal situations such as being handled.

- Often, in extensive areas, symptoms are not seen and the animals are found dead within close proximity to water. Cattle usually die within 24 hours of the onset of symptoms. A small percentage of animals affected with botulism will recover after three to four weeks, especially if given intensive nursing.

- Cattle of any age can be affected, including suckling calves, if their dams have not been vaccinated during pregnancy.

- A positive diagnosis is extremely difficult to make. Very rarely, a vet can isolate the toxin from the bowel contents of the dead animal. Diagnosis is usually by the history, and that deaths stop after vaccination starts.
Management Checklist for Botulism

- Botulism vaccination is recommended for all herds in northern Australia.
- There are three types of *Clostridium botulinum* (types B (rare), C, & D) that can cause botulism in cattle. Vaccination against types C and D botulism has been widely adopted and is now standard industry practice.
- Seek advice from your vet or stock inspector. SingVac gives three years of protection from one injection. Longrange needs to be given once as an initial injection to get one year of coverage, then annually.

Level 1

- Vaccinate all susceptible animals with one injection OR two injections four to six weeks apart – depending on the vaccine used.

Level 2 (in addition to above)

- Ensure cattle have access to adequate pasture and supplementation to rectify the main deficiencies, which are usually of protein and/or phosphorus.
- Carcasses should be disposed of by deep burying, or by burning where ever possible to reduce possible sites of infection.

Deaths from botulism are often associated with deficiencies. So if cattle are seen chewing bones it could mean you need to feed supplements. However, just because you supplement doesn’t mean cattle are safe from botulism. The best prevention is vaccination. As botulism spores can survive for many years, outbreaks of botulism may occur if the vaccination program is stopped.

Further Information

*Botulism, Biosecurity Queensland*

*Botulism poisoning in cattle in the Northern Territory, DPIF*
Three Day Sickness (Bovine Ephemeral Fever)

Bovine ephemeral fever (BEF) is caused by a Lyssavirus, which is carried by a number of biting insects, including mosquitoes and midges. These insects transfer the virus by biting successive animals. The incubation period is two to four days and animals are normally infectious for up to four days after the fever subsides. It is more prevalent during the wet season. ‘Ephemeral’ means ‘comes and goes’. The animal has regular bouts of a very high fever with other clinical signs.

Although mortalities are usually low, the economic loss due to three day sickness is important. This occurs in the form of:

- death of valuable animals such as bulls or sale bullocks and steers - the heavier and fatter animals are, the more severe the disease, and the more likely it will kill
- reduced milk yields and depressed calf growth
- weight loss of up to 20%
- temporary sterility in bulls due to fever
- occasional abortion losses and calf mortality.

Fever itself can cause early-pregnancy losses which are seen as simply low pregnancy rates. This is more likely to occur in heifers after a run of dry years.

What will you see?

- Severe fever, stiffness, lameness from inflamed joints and the animal goes down for a period of two to seven days (usually three to five), after which, animals usually recover.
- A secondary bacterial infection and prolonged lameness can also occur and occasionally death occurs due to these complications.

All previously unexposed cattle are susceptible, but mainly cattle up to two years old are affected. Bulls and cattle in good condition are more severely affected due to the effects of fever combined with a period of being ‘down’ (prostration). Calves under six months are rarely infected due to maternal immunity. In previously infected animals, natural immunity lasts for up to two years. Treatment of affected animals is generally expensive and largely only symptomatic in nature. Consult your vet or local stock inspector for details.
**Management checklist for Three Day Sickness**

A freeze dried live vaccine is available for use on valuable, susceptible animals from your vet. Two injections are required two to four weeks apart, best administered at the 2nd round muster.

**Level 1**
- Do nothing, which is common across northern Australia.

**Level 2**
- Vaccinate only valuable animals such as bulls; especially those being brought in from areas where BEF does not occur.

**Level 3**
- Vaccinate all bulls and the current year’s sale steers or bullocks.
Clostridial Diseases such as Tetanus

Clostridial diseases are caused by a group of bacteria that survive by forming spores that live for decades in the ground. The spores can arrive in dust storms and in rain wash. In addition to botulism, five diseases that are usually fatal to cattle are included in this group of diseases — tetanus, malignant oedema, blackleg, enterotoxaemia and black disease.

Tetanus

Tetanus is caused by a bacteria *Clostridium tetani*, which produces a powerful toxin which attacks the nervous system. Tetanus organisms enter the animal through wounds, nail pricks, stake wounds, burns or surgical incisions that have been contaminated with soil or manure containing tetanus spores.

Horses are most commonly affected as they are extremely susceptible to the disease. Spores are found in the lower intestinal tracts of most animals where they appear to cause no harm. These spores pass out in the manure resulting in contamination of soil especially around yards and stables.

In recent years, there have been widespread reports of this disease caused by castration with latex rings. Wounds caused by castration and dehorning can also lead to tetanus if calves are not vaccinated.

What will you see?

- Signs develop seven days to three weeks after infection and include stiff muscles, spasms, tremors, lockjaw, unsteady gait and a stiffly held neck and tail. The third eyelid will become visible.
- Animals become dehydrated and commonly bloat. As the disease progresses, muscular spasms develop. In the terminal stages the animal falls with neck and back arched and the legs fully stretched out. Death is due to severe spasm.

Malignant Oedema

Malignant oedema is an infection in soft tissue which follows wounding or castration.

What will you see?

- Swelling at the site of infection, plus fever and muscle tremors. The animal becomes weak and death usually occurs within 48 hours.

Blackleg

Blackleg is a gas gangrene of muscle tissue. It usually affects young, fast-growing cattle and can affect cattle as young as one month old. Bacteria may enter muscle through small wounds or after bruising.

What will you see?

- fever with a gassy swelling at the site of infection or
- sudden death.
Enterotoxaemia

Enterotoxaemia is associated with a change in feed flow through the intestine. It usually affects calves when conditions in the gut favour rapid growth of the bacteria. These conditions can be brought on by a high protein diet, a flush of green feed or change in feed ration.

What will you see?

- bellowing and mania
- diarrhoea
- convulsions
- paralysis
- blindness
- sudden death

It is often associated with bloat.

Black disease

Black disease is a clostridial infection of liver tissue, usually associated with migrating liver fluke.

What will you see?

- severe liver disease
- death within one to two days

Management Checklist for Clostridial Diseases

A ‘5 in 1’ or ‘7 in 1’ vaccination protects against all five clostridial diseases (tetanus, malignant oedema, blackleg, enterotoxaemia and black disease).

Level 1

- Vaccinate calves the first time they are yarded, even if this is during branding. A booster vaccine provided six weeks later or when next yarded will improve effectiveness of the vaccine.

Level 2

- Where some of these diseases cause regular mortality, give an annual booster.

Prevention is the best strategy particularly when the vaccines developed are highly efficient, readily available and inexpensive to use.

Humans should also be vaccinated against tetanus and receive boosters every ten years.

Further Information on Clostridial Diseases

Black disease, blackleg, enterotoxaemia, malignant oedema and tetanus, Biosecurity Queensland
Coccidiosis

Coccidiosis or Post-weaning diarrhoea (PWD) is a very common condition in recently weaned calves that are under stress. It is caused by two coccidia that are normal intestinal inhabitants, \textit{Eimeria bovis} and \textit{Eimeria zeurnii}. Under normal circumstances these cause no significant problems. However, weaning is very stressful for the weaner and its immune system can be compromised, particularly if it is not getting fed well enough. The parasite then can rapidly multiply and cause substantial damage to the lining of the intestines. This is seen as bloody diarrhoea.

Usually it takes about four weeks from the time of immune suppression to clinical disease. Interruption to feed supply for as little as one day can compromise the gut’s immune system and cause coccidiosis in weaned calves. If not given drugs to control the parasite, the weaner may continue to suffer chronic intestinal damage from coccidia. If left untreated, scarring of the intestine can occur, which may affect long-term growth.

What will you see?

- foul smelling diarrhoea which may be blood tinged; that is black or red in colour
- decreased appetite
- depression
- death in the worst cases.

Management Checklist for Coccidiosis

- Prevent the onset of coccidiosis by feeding weaners a nutritious supplement and good quality hay from day 1 of weaning. Voluntary intake must be satisfied.
- Make sure Rumensin® is included in the ration — calves need 25mg per head per day. It is toxic if the dose rate is too high so make sure it is included in the ration at the right rate. Note: small amounts are lethal to horses.
- Also provide clean water, dry yards, shade and adequate space. Wind breaks in winter in colder locations will be needed.
- Do not confine weaners to yards for long periods.

Treatment

- For the weaner group - remove stress and treat with Rumensin®.
- Separate severely infected animals.
- Treat severely infected animals with a prescribed product recommended by a vet.
- Electrolytes can be added to the water.
- Feed with a high quality feed suitable for the size of the animal.
Tick Fever

Tick fever is caused by three different protozoa (parasites) which invade and destroy red blood cells and cause a severe, and sometimes fatal, disease. They are transmitted to cattle by ticks. The resulting diseases are known as Bovine babesiosis (tick fever or red water) and Anaplasmosis. Tick fever often has a high mortality rate of 20% or more in susceptible cattle.

Cattle on properties in marginal tick areas are most at risk, particularly in good seasons when there can be an increase in tick numbers. Cattle that are more susceptible include British and European cattle, cattle from clean country, older cattle with no previous exposure, bulls and stressed cattle (pregnant or in poor condition).

What will you see?

- fever (for one week)
- white of eyes turn yellow
- reduced appetite
- stands with head down
- rapid breathing and heart rate
- red urine (Babesia).

Diagnosis is confirmed by a blood test as well as clinical signs.

Management Checklist for Tick Fever

- Tick fever vaccine (blooding) is recommended for cattle moving from tick-free areas into tick-infected areas. Cattle should be vaccinated two months before they leave the property.
- If cattle can’t be vaccinated until they arrive on the property, they can be vaccinated after they have recovered from the trip. However, they must be immediately treated with long acting ‘pour-on’ to kill any ticks.
- Export cattle from tick-free areas can be ‘blooded’ prior to shipping. Different export destinations will have different requirements. Check with your agent or local vet. Export cattle must be free of ticks prior to shipping.

Treatment

- Infected animals can be treated with veterinary prescribed drugs. Ensure the recommended dose is adhered to.
- Tick fever vaccine can be ordered from your local agent or feed merchant or direct from the Tick Fever Centre.
- It is a live vaccine with a limited shelf life and can only be dispatched at the beginning of the week - so make sure freight arrangements are suitable.

Further Information on Tick Fever

Tick fever

Cattle ticks, DAFF Queensland
Worms

Most cattle carry worms inside their gut. Worms of various stages of their life cycle are a problem if they cause tissue damage, loss of blood, or can be transmitted to humans. On most extensive pastoral properties in the dry tropics, cattle disease from worms is uncommon because of dry season pastures and extensive grazing patterns. However, worms can be a problem on smaller, intensely-grazed properties or in smaller paddocks which are not spelled, such as weaner paddocks. On swampy floodplains and some wetter coastal areas, worm numbers can often be high enough to cause deaths in cattle up to two years old.

Young cattle with low worm populations develop immunity, and can be quite resistant to worms by two years of age. In drier areas, control of intestinal parasites may achieve small temporary growth advantages in weaners during the dry season. However, this advantage is most probably lost by 18 months of age. The situation is very different under wet conditions where growth rates are affected and treatment is often required.

What will you see?

- weight loss and anaemia (small intestinal worm – *Cooperia* spp.)
- foul smelling diarrhoea may occur after weaning (nodule worm)
- weakness, weight loss and anaemia (barber’s pole – *Haemonchus*).

**Management Checklist for Worms**

- Spell weaner paddocks.
- Provide weaners with good nutrition, clean water and shade.
- Determine if worms are present before treating. Faecal egg counts from dung samples are a useful indicator of adult worm burdens in young susceptible cattle. This will identify which worms are present and require treatment.
- If infestations are high enough to indicate treatment is either necessary for welfare of the animals or a return on investment will occur, treat with anthelmintics.
- In intensive systems, particularly those in wetter locations, regular drenching programs and pasture spelling may be needed.
- The financial viability of routine drenching on extensive properties is not proven.

**Further Information on Worms**

*Worm infestations – don’t guess*

*Know your worms*
Other Diseases of Cattle

- Akabane, Biosecurity Queensland
- Bluetongue
  - Bluetongue, Biosecurity Queensland
  - Bluetongue in cattle, DPIF
- Calf scours – post weaning diarrhoea
- Enzootic bovine leucosis (EBL)
  - EBL, Biosecurity Queensland
  - EBL, DAFWA
- Johne’s disease
  - Johne’s disease, Biosecurity Queensland
  - Johne’s disease, DAFWA
- Lumpy jaw, Biosecurity Queensland
- Neospora, Biosecurity Queensland
- Stringhalt in cattle
- Tail rot
- Three day sickness (bovine ephemeral fever)
  - Three day sickness, Biosecurity Queensland
  - Three day sickness, DPIF
- Warts, Biosecurity Queensland

Zoonoses (diseases transmissible to humans)

- Leptospirosis, Biosecurity Queensland
- Q-fever, Biosecurity Queensland
Other Parasites

- Buffalo fly control in cattle, DAFF Queensland
- Lice treatments, DAFF Queensland

Exotic diseases and parasites

- Bovine Spongiform Encephalopathy (BSE), Food Standards Australia New Zealand (FSANZ)
- What is TSE?
- Foot and mouth disease (FMD), Biosecurity Queensland
- Rinderpest, DAFF Queensland
- Screw worm fly, DAFF Queensland

Feed-related poisoning

- Acidosis – clinical signs, treatment and prevention, DAFF Queensland
- Urea poisoning in cattle, DPIF
- Pimelea poisoning (St George disease) (PDF 1.96 MB)
- Cyanide (prussic acid) and nitrate in sorghum crops - managing the risks, DAFF
- Swainsona poisoning in cattle and horses, DPIF

More information

- Animal Health Australia website

Further Information on Diseases

Health and disease | FutureBeef
Animal Health and Disease-Department of Primary Industry and Fisheries-Primary Industry
Department of Agriculture and Food - Animal Health
Animal health and diseases | Agriculture, Fisheries & Forestry | Queensland Government
Animal Health Australia
Welfare

Animal welfare is essential for sustainable and profitable cattle production. It is also a legal responsibility. Each state and territory has its own animal welfare Act and accompanying regulations that affect people who own or work with animals. People responsible for cattle welfare are those handling and in charge of cattle throughout the supply chain and include owners, representatives of owners, property staff, contractors, transport workers, livestock exporters, saleyard and abattoir staff, spelling establishment operators and meatworks workers.

Owners, managers and handlers have a duty of care to ensure that the animal’s basic needs are met. They are responsible for providing:

- sufficient food and water to maintain full health
- appropriate living conditions if housed
- opportunity for cattle to display normal behavioural patterns
- protection from injury or disease through prevention, and treatment if required
- appropriate handling and transport
- skilled, knowledgeable and conscientious animal management
- humane killing if the animal is suffering, or is slaughtered for meat.

It is important to know how much water that different sized cattle need to drink each day - for more information refer to the Infrastructure (waters section of Property Management Module 4). It is also important to know how much feed that cattle need for maintenance of liveweight — for further information refer to the Supplementation section of Herd Management and Production Module 6.

Photo 7.7 Well fed cattle
Further Information on Animal Welfare

The national animal welfare code of practice:
Model code of practice for the welfare of animals – cattle

See also Australian Animal Welfare Standards and Guidelines

Northern Territory
Animal Welfare-Department of Primary Industry and Fisheries-Primary Industry

Queensland
Animal welfare and ethics | Agriculture, Fisheries & Forestry |
Queensland Government

Western Australia
Department of Agriculture and Food - Animal Welfare

Animal Handling

Animal handling is an important component of animal welfare. Poor and inappropriate handling can cause excessive stress and fear in livestock, which in turn leads to reduced productivity, such as low liveweight gains, low conception rates, low milk yields, high pre-weaning mortalities and high susceptibility to disease.

The usual situation when livestock are handled involves unpleasant experiences for the animals. For example, they may be:

- mustered and walked long distances to yards where they may be:
  - separated from group mates or mothers
  - run through races
  - restrained
  - vaccinated, dehorned or castrated.

However there are a number of things that can be done to reduce an animal’s fear of people and places. These include ensuring the animal’s first experience with humans is a good one, training young cattle, and ensuring yard handling and overall movement is as neutral or positive an experience as possible.
Animal's first experience

An animal’s first experience with humans should be a good one. Why? If the first experience of people is a bad one, then a permanent fear memory can be produced. Animals that have had a bad first experience in a certain place, or with a certain person, will attempt to avoid that place or person in future. With repeated unpleasant experiences, it becomes more likely that animals will generalise that all interactions with all people will be unpleasant. The animals become increasingly fearful of people and increasingly stressed by the presence of, and contact with, people. It is recommended that young animals first experience people moving amongst them quietly, in a way that does not cause fear or pain. Do this before any handling which involves pain such as branding. Weaners should be fed immediately after weaning - a positive experience.

Training of young cattle

Training of young cattle has life-long impacts. The primary objective of weaner training is to train them to not be fearful when being handled. The easiest way to train all animals is by hand feeding and gentle handling during this process. During weaner training, ensure cattle associate the feeding with humans. Provide cattle with good yard handling experiences. Teach them to lead during driving and droving, which are the objectives of ‘tailing.’ Teach them to eat supplements such as weaner pellets or a protein meal.

Yard handling

Make ongoing yard handling as neutral or positive an experience as possible. If each time cattle are brought into the yards they are hit with jiggers and pieces of poly-pipe, then they anticipate that future experiences in the yards will result in pain. They will learn this very quickly and will soon demonstrate their learning by a reluctance to enter the yards. If on the other hand, being in the yards is a good or neutral experience because the animals are handled correctly, these animals will quickly learn this and demonstrate their learning by willingly entering the yards. Yard-work can become a neutral or a positive experience for livestock if they do not experience undue fear or pain, and if they are ‘rewarded’ with water, shade, and hay or other feed. People who yard-train weaners will recognise some of these aspects in that process.

Good movement

Good handling of cattle when moving them involves exploiting their natural tendencies such as their flight zone, herding or bunching instincts and blind spot (cattle can’t see behind). Low stress stock handling aims to achieve what is called ‘good’ movement. Good movement is when animals are moving smoothly and are all heading in the same direction; such as when cattle walk to water and it encourages other animals to follow. ‘Bad’ movement prevents animals from following and is shown when animals are hesitant to move, start to turn away from the desired direction of travel and/or attempt to circle or cut back. The basic principles apply whether moving individual animals or groups. The method works best with animals that have a fairly large flight zone. Apparently, it is also difficult to apply with pure-bred Brahman cattle, as these animals respond much better to following a leader. However, it is reported to work with Brahman cross cattle.

Animals that are handled quietly and calmly on a regular basis learn that the handler(s) will not pressure them so hard as to cause fear and panic. So each time you work your animals in this way, you are training them.
Identifying and culling animals that have very poor temperament will improve herd handling experiences for both humans and other cattle. Ensuring that bulls and breeding females do not have poor temperament is extremely important, as fearfulness is a highly-heritable trait. For further information see Herd Management and Production Module 6.

(This section on handling was adapted from Handling cattle | FutureBeef.)

Cattle handling facilities

Yards and other cattle handling facilities should be well constructed and maintained to minimise injury, stress and even disease. Thought should be given to how these are constructed so cattle flow through naturally and don’t become over crowded.

Make sure there are no protrusions in yards on which cattle can injure themselves. The risk of leg injury to animals can be reduced by ensuring loading ramps have a good foot grip surface. At the top of the ramp, cattle can get their legs caught between the ramp and the road train if the platform doesn’t cover the gap.

Training courses on cattle handling

Low Stress Stock Handling

Individual training providers give practical and valuable courses. Contact your extension officer for details. www.lss.net.au/training.htm

Case Study Examples for Cattle Handling: Lamboo Station, WA

Improved infrastructure development on Lamboo has significantly assisted animal welfare through a quieter system of mustering using traps and lanes and which includes the reduction in helicopter mustering.

The new cattle yards also improve handling of livestock by reducing stress on both animal and man. Dust control using water sprinklers is particularly important.

Staff training in low stress cattle handling has also improved animal welfare.
Loading and Transport (is it fit to load?)

Good preparation of livestock is essential to minimise stress and injury during transport. Good communication and cooperation between the cattle producer (owner/owner’s representative) and the transport driver will maximise animal welfare while the animals are in transit and also improve meat quality.

The truck driver will decide on the loading density, after consultation with the producer or producer’s agent, and using his/her own knowledge and experience. The driver is responsible for the welfare of the animals, from loading to unloading.

Animal selection

Producers should ask these questions before loading any animal for transport:

- Has the animal been prepared according to the relevant husbandry and transport code and/or Export Standards, as applicable?
- Can it walk normally and bear weight on all four legs?
- Is it free from visible disease or injury?
- Can it keep up with the mob at both loading and unloading?
- Can it see out of at least one eye? (Export Standards stipulate that animals must be able to see from both eyes).
- Is it in late pregnancy?
- Is it a newborn or young animal that requires special consideration?

And if in doubt, leave it out. If you have any queries about an animal, please contact either your relevant state or territory department stock inspector.

Feed and water

When cattle are taken off water and feed (fasted), they begin to lose weight. Initially, most of this weight loss is ‘gut fill’ (faeces and urine). The greatest weight loss will occur in the period between yarding and loading.

When cattle are fasted before transport, the floors of trucks are drier and less slippery. The animals travel better; they are cleaner and easier to unload. It is therefore recommended that cattle be kept off water for 6–8 hours and off feed for 6–12 hours, before loading. However, it is against animal welfare regulations to have cattle off feed and water for too long. Therefore the actual time off water will depend on the weather, distance to be travelled, road conditions, and when the cattle last had access to water and feed.

If cattle are off feed and water for too long, some of the rumen microflora necessary for digestion of plant material will start to die. This is referred to as ‘dead bellies’ and can be a problem if cattle are kept off feed and water for more than 24 hours.
Rest before transport

After mustering, cattle should be given time to settle down before handling. After handling in the yard they should also be rested prior to transport. Rushing cattle causes stress, which leads to tough or dark-coloured meat, and more injuries and bruising.

A survey of deaths among railed cattle from western Queensland showed that fewer animals died in transit when they were rested for more than 12 hours between mustering and loading at the property yards. It is recommended that cattle are rested for 6–12 hours before transport.

Handling prior to transport

Correct handling of cattle reduces bruising and stress. Skilled handlers work cattle without noise and bustle to reduce animal stress. Cattle then travel better when they are quiet.

Cattle should be segregated according to horn status, size and sex. Mixing horned and hornless cattle should be avoided as it will increase the risk of injury and losses from bruising.

Loading densities

How many cattle are loaded into a pen on the truck (loading density) will depend mainly on the size, shape and horn status of the cattle. However weather conditions and the distance to be travelled will also be taken into account. Loading densities must be assessed for each pen in the stock crate to ensure the animals give each other mutual support, and are not too jammed up.

Overloading cattle in a truck increases the risk of an animal going down and being unable to get up again, especially horned cattle. Animals that go down significantly increase the risk of bruising, injury and mortality. Appropriate loading densities reduce stress, bruising and deaths during the journey. Table 7.1 details the loading densities of adult cattle for road transport recommended by Biosecurity Queensland.

Table 7.1 Recommended Loading Densities of Adult Cattle for Road Transport

<table>
<thead>
<tr>
<th>Mean live weight of cattle (kg)</th>
<th>Floor area (m²/ head)</th>
<th>No. of head per 12.2 m deck*</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>0.77</td>
<td>38</td>
</tr>
<tr>
<td>300</td>
<td>0.86</td>
<td>34</td>
</tr>
<tr>
<td>350</td>
<td>0.98</td>
<td>30</td>
</tr>
<tr>
<td>400</td>
<td>1.05</td>
<td>28</td>
</tr>
<tr>
<td>450</td>
<td>1.13</td>
<td>26</td>
</tr>
<tr>
<td>500</td>
<td>1.23</td>
<td>24</td>
</tr>
<tr>
<td>550</td>
<td>1.34</td>
<td>22</td>
</tr>
<tr>
<td>600</td>
<td>1.47</td>
<td>20</td>
</tr>
<tr>
<td>650</td>
<td>1.63</td>
<td>18</td>
</tr>
</tbody>
</table>

Source: 'Loading Strategies for Road Transport of Cattle', Biosecurity, DAFF, Qld
New national standards and guidelines are being developed. Work is currently underway to update the existing Model Codes of Practice for animal welfare of cattle and land transport of cattle, as part of the new Australian Animal Welfare Standards and Guidelines. The new documents will incorporate both national welfare standards and industry ‘best practice’ guidelines (see link in information box that follows).

**Workshops**

- Northern livestock transporters course, DPIF  
  (Northern Territory - contact Trisha Cowley and Trudi Oxley)
- Road transport of cattle – loading strategies, Biosecurity Queensland  
  (contact the [DAFF Queensland Customer Service Centre](#))

**Photo 7.8  Weak Animal - Not Fit to Load**
Further Information on Animal Welfare

The Welfare | FutureBeef website contains the following relevant documents under Transport

Is it fit to load? MLA (PDF 461 KB)

Transporting livestock – when are animals fit to load? DAFWA

Loading strategies for road transport of cattle, Biosecurity Queensland (PDF 254 KB)

Guidelines for feeding travelling cattle, Biosecurity Queensland (PDF 271 KB);

This NT Ag article is relevant to live export cattle: Feeding cattle in temporary holding facilities

Model code of practice for the welfare of animals – Land transport of cattle, Primary Industries Steering Committee (PDF 535 KB)

and Animal welfare of cattle are current, until new guidelines are produced for the welfare of cattle and land transport of livestock.

See: new national guidelines for road transport of livestock and welfare of cattle

Live Export (is it fit to export?)

The supply of appropriately prepared livestock that are fit for travel and export is critical for successful health and welfare outcomes that underpin the livestock export trade. Cattle that are suitable for live export include those that are:

- within a 200 kg and 650 kg liveweight range – note special conditions apply to cattle heavier than 650 kg
- weaned for at least 14 days before sourcing
- not emaciated, that is not very thin
- not over-fat or extremely fat
- horns should be 12 cm maximum length and blunt ended - however some markets specify 'no horns'.

Different markets will have varying requirements in relation to the above factors, including in relation to health status and notifiable diseases. It pays to check these with your agent or buyer before sending cattle for live export.

The Australian Standards for the Export of Livestock set the basic standards for the conduct of the livestock export trade, as required by the Australian, state and territory governments. A copy of these standards can be found at:

Australian Standards for the Export of Livestock v2.3 - Department of Agriculture, Fisheries and Forestry
The following photos provide illustrations of cattle which are either too thin or have enough body condition for live export.

**Photo 7.9** Example of Cattle which are Emaciated or Very Thin

![Photo 7.9 Example of Cattle which are Emaciated or Very Thin](image1)

**Photo 7.10** Example of Cattle which are Emaciated or Very Thin

![Photo 7.10 Example of Cattle which are Emaciated or Very Thin](image2)

**Photo 7.11** Example of Cattle with Sufficient Body Condition for Live Export

![Photo 7.11 Example of Cattle with Sufficient Body Condition for Live Export](image3)
Extended Dry Seasons and Drought

Owners, managers and handlers of cattle have animal welfare responsibilities during periods of extended dry season and drought. Under these conditions, the amount and quality of pasture in the paddocks do not supply enough nutrients for the maintenance needs of the livestock. As a result, cattle can lose weight and become weak and in poor condition. These conditions increase the chances of mortalities.

To prevent animal welfare problems during extended dry seasons and drought there are a number of things an owner or manager can do. These actions include:

- early mustering
- segregation of cattle
- selling livestock
- securing agistment
- crisis feeding of weak and poor stock.

Early muster

If the wet season was a poor one and the property received little rain, it may be necessary to muster breeders earlier than normal and wean their calves younger and smaller than normal. While this means the calves will need to be fed well for a period of time with supplements, it may help save the cow’s life. The energy and protein requirements of a wet (lactating) cow are much higher than that of a dry cow. When the calf is removed, the cow’s nutritional needs are immediately reduced.

Segregation

Breeders with calves at foot that are too small to wean should be put in a paddock on their own, if at all possible. This means they can receive special treatment and be fed a supplement. This saves having to feed the whole herd which can be very expensive.

Selling livestock

If there isn’t enough grass in the paddocks to carry the current stock numbers, it will be necessary to sell stock. From an economic point of view, the best stock to sell are those that are not likely to improve in value much over the next 12 months. Predominantly this will be aged cows and dry cows that aren’t in calf and haven’t weaned a calf. Try to avoid selling next years’ steers (to be marketed), as the steer will increase in value more over the next 12 months than a breeder.
Agistment

If pasture conditions are particularly bad, it may be necessary to agist country to ensure survival of your livestock. Make sure you have an agistment agreement drawn up and signed. Transport cattle before their condition becomes too poor. If cattle to be transported are thin and in poor condition, it may be necessary to feed them in the yards on hay and protein plus energy supplements (such as pellets) prior to transport. It is important when transporting stock in poor condition that they are fit to load, for economic and animal welfare reasons. (Animal welfare is a legal responsibility). Depending on the cattle’s condition and the distance to be travelled, feed for at least four days before transporting.

Crisis feeding of weak and poor stock

To meet animal welfare criteria, crisis supplementation of weak and poor stock may be needed in the event of drought where other measures mentioned above have not been undertaken. Crisis supplementation is also recommended during unusual flood situations where cattle get caught on islands and run out of feed.

Crisis supplementation involves supplying energy and protein supplements, as well as roughage. As it is expensive, only the most susceptible cattle should be fed; that is those that are in very poor condition, weak and have run out of roughage. Crisis feeding for several days is also recommended for weak and poor condition stock before transport. Due to the cost of crisis supplementation, it is best to seek advice from a nutritional expert or departmental adviser or stock inspector before deciding what to feed.
Workshops

Nutrition EDGE Workshops cover nutritional requirements for maintenance and production.

Further Information on Extended Dry Seasons and Drought

The following articles on the FutureBeef website are relevant to northern Australia.

Crisis feeding

Managing cattle in dry conditions/drought

‘Dry season management of a beef business: a guide to planning, managing and supplementary feeding’

Northern Territory

The NT Ag article is relevant to live export cattle
Feeding cattle in temporary holding facilities

Drought Assistance-Department of Primary Industry and Fisheries-Primary Industry

Queensland

Animal welfare in natural disasters, Biosecurity Queensland

Welfare of drought-affected livestock, Biosecurity Queensland

Western Australia

Managing cattle in dry conditions - pastoralists options and animal welfare responsibilities
Photo 7.12  Moving drought affected cattle

Sources of Information Used in this Module


NWQ Beef Extension Notes. Felicity Hill, and other then NWQ staff. Department of Primary Industries. 2000.


Health and disease | FutureBeef

Animal Health and Disease-Department of Primary Industry and Fisheries-Primary Industry

Department of Agriculture and Food - Animal Health

Husbandry | FutureBeef