

# Confinement feeding of cattle in drought: protecting the environment

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## Introduction

Soil degradation and low pasture productivity after drought are a common cost resulting from periods of drought for cattle producers. One of the major consequences of drought is the degradation of pastures as a result of overgrazing and management practices which involve leaving stock on pasture where they are supplementary fed. This practice often results in a loss of productive pasture species, particularly the perennial component, and a reduction in soil fertility due to erosion.

During drought it is vital to:

- ensure that groundcover does not decline below desirable levels – a minimum target of 70% is recommended for gently sloping grazing land gradually decreasing to 40% on flatter land;
- promote pasture production by using rainfall efficiently;
- protect perennial pastures.

Strategies that can be considered include destocking through selling or agisting stock or concentrating stock into a small portion of the property ('sacrifice' areas) to be managed under more intensive conditions. The aim is to reduce grazing pressure and environmental damage to the majority of the property.

The practice of using 'sacrifice' paddocks at high stocking rates has long been regarded as an

appropriate strategy, not only to facilitate the management of stock, but also to minimise the degradation of soil and pasture resources.

The term used for feeding stock under such conditions is sometimes referred to as 'confinement' or 'containment' feeding. 'Confinement' feeding refers to the maintenance feeding of your own stock in a confined area, primarily in order to minimise pasture and related environmental degradation. It is also sometimes called 'droughtlot' feeding. It differs from feedlotting in that the cattle are generally fed for maintenance rather than for production.

This publication provides details on how to set up and manage confinement feeding for cattle. A comprehensive guide to sheep droughtlots is provided in *Managing sheep in droughtlots – a best practice guide* available from Australian Wool Innovation Ltd ([www.wool.com.au](http://www.wool.com.au))

## Why feed in confinement?

Following drought it is vitally important to be able to return to normal productivity and cash flow as quickly as possible. Ideally producers should have a plan, preferably before the drought sets in, to enable this to happen. This plan should take into account the need to minimise damage to perennial pastures by preserving preferred pasture density or composition and minimising soil and nutrient loss from bare ground. More detail on planning can be obtained from [publications](#) on the NSW Department of Primary Industries website.

By locking stock up in a small area there is a subsequent faster recovery of the unstocked areas once the drought breaks as pastures return to productivity more quickly. There is also considerably less expense involved as you minimise costs such as re-establishment (often around \$150/hectare), lost grazing from paddocks while pastures are re-established and the reduced



productivity of pastures until the more productive pastures are re-established. It may take 10–20 years to re-establish pastures on the whole farm following drought.

Whilst sheep may gain some benefit from the pasture in what appears to be bare paddocks, cattle obtain little benefit, if any, due to their different grazing habits. What little energy may be gained from remaining pasture is more than utilised in the animal's search for that feed.

Facilities provided for confinement feeding may also be suitable for future opportunity production feeding of your own or bought-in cattle. However, if you want to continue feeding after the drought, you will need local council approval.

Whilst no specific approval is necessary for confinement feeding of cattle for drought purposes it would be wise to check with your local NSW Department of Primary Industries (DPI) Beef Cattle Officer and the Department of Natural Resources (DNR) about the sensitivity of the proposed site. If your operation is polluting the environment in some way, you can be prosecuted under the *Protection of the Environment Operations Act*. Sometimes pollution can happen in ways that many would not realise.

### Evaluating what stock to feed

Prior to establishing a confinement feeding facility it is important that a full evaluation be undertaken of the drought strategies available. The overriding objective of drought strategies, while always taking into account the welfare of stock, should be to ensure that the farm business survives and that the productive resources of the farm – the soil, the capital, and the genetic merit of the livestock – are managed in such a manner as to allow production to recommence as soon as possible after the drought.

Objectives should be clearly defined both for the drought period and for the post-drought (recovery) period. Recovery from a significant drought may take several years or more, particularly if debt levels rise substantially or if pastures are depleted and require re-sowing.

Objectives should be clear and, wherever possible, be stated in terms of numbers, dates or dollars. Once the objectives have been clarified, you can then select various strategies and determine how each would contribute to meeting these objectives. To do this properly, you need to cost these strategies for droughts of various lengths; that is, you need to develop a 'model' of the drought so that you can estimate the effectiveness of various strategies. You will find that as the assumed period of drought varies, so does the likely cost of the

different strategies. Similarly, varying the assumptions about the cost of restocking, or the current sale value of stock dramatically affects the cost of various strategies.

NSW DPI Stockplan<sup>®</sup> workshops are designed to guide you through this process and it is strongly recommended that you attend a course in your area. Details are available from your local DPI office, [www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au) or by calling 1800 628 422.

The five most common options are shown below. Each producer must choose which options to employ, to what degree, to which stock and under what circumstances:

- selling stock;
- production feeding;
- maintenance feeding;
- agistment;
- trading in livestock.

Maintenance feeding is generally a low cost strategy in a short drought but as the drought lengthens it can become very expensive, particularly if continued to the point where resources are exhausted. It is hence considered best to only feed those stock that are necessary to meet your planned objectives.

The question of which stock to sell and which to feed revolves around which types are easier to handle during drought, and which are going to be most productive or give the best returns after the drought.

With a longer drought and a higher percentage of stock sold, the critical factor becomes the ability to purchase replacement stock at reasonable prices when conditions improve. Livestock prices in the post-drought phase do not always rise dramatically, because the financial reserves of graziers are depleted.

Generally, the wider the expected gap between drought sale revenues and repurchase costs, the greater the incentive to feed.

As the drought progresses, stock should be sold class by class, starting with finished young stock, then castrate stock, replacement stock, aged stock and older breeders, until you are left with a nucleus of young, sound, breeding females, which represent the class of stock likely to be most valuable when the drought breaks, and most capable of the best production at that stage.

To decide which stock to keep and feed the following must be considered:

- the current value of the livestock;

- the probable cost of feeding;
- the value of any production that would be gained should the cattle be kept;
- the future replacement value of the stock.

The use of confinement feeding in small pens is not recommended for joining, cows in late pregnancy, during calving or for cows with calves up to 3 months of age. These cattle should be confined to a small paddock which allows room for exercise and for cows to move away from the mob when calving. After three months of age calves can be weaned and fed separately and the cows treated as dry cows

## Establishing the confinement area

### Site selection

Establishment of an area for confinement feeding need not be an expensive exercise. If possible, aim to use existing facilities or if additional facilities need to be constructed try to ensure that they can be useful in non-drought years. On most farms the feeding area should be incorporated into existing infrastructure to reduce the cost and increase the return. If it is proposed that the area to be used will become a permanent fixture to be used in future droughts then the quality of troughing, fencing etc may need to be of a higher standard than that required for a temporary short term structure.

Generally the area to be used will be a 'sacrifice' paddock, that is:

- a degraded pasture paddock that is not very productive and due to be renovated;
- a paddock with a predominance of annual species and good soil seed reserves; or
- a stubble paddock which has the advantage of a cover of roughage and straw which is useful in preventing soil loss from either wind or water.

Avoid using paddocks that have a significant cover of perennial pasture plants, and especially if the cover consists of native perennial grass species. Also avoid areas of excessive slope where run-off after rain could result in erosion.

The proposed area must also be free of potential residues. High risk areas include old sheep yards and dips where arsenic or organochlorines may have been used in the past.

In order to minimise damage to pasture paddocks, small confinement paddocks capable of holding just the number of stock to be fed are preferable to large paddocks, as the whole paddock will ultimately become bare and subject to damage.

A number of small paddocks may need to be sacrificed to enable management and feeding of different classes of stock, which again increases the area of potential damage but this can be minimised by restricting paddock size or through subdivision of paddocks.

Several sites across the property may be utilised for confinement feeding but this needs to be balanced against ease of access and location of other facilities.

Factors to consider in choosing the site are:

- soil type;
- drainage, potential run-off risks and erosion;
- shelter;
- convenience to facilities;
- access to water;
- proximity of water courses, dams, neighbours, etc.;
- access for feed out vehicles;
- potential cost of site rehabilitation after drought.

### Soil type

The first step is to determine if there is any groundwater resource underlying or close to the site which may become contaminated from effluent draining from the site. It is possible that there may be an impermeable clay layer which may protect any underlying groundwater. Your local DNR office will be able to advise you. If contamination is not likely to be a problem choose a site with a stable soil type but not containing stones which could cause feet problems. Sandy and gravelly soils are unsuitable as they have high infiltration rates.

### Drainage

Some slope is desirable to assist runoff, avoid ponding and to prevent the possible development of boggy conditions and to ensure vehicle access after periods of rain. However, erosion is not wanted either, so avoid steep slopes. Optimum slope is approximately 3–4%. Avoid boggy hollows and drainage lines, and keep well away from creeks and waterways. If possible also avoid areas where runoff from above the site naturally flows through the proposed area.

### Shelter

Stock in a confinement area should be sheltered from wind, especially from strong, cold winds in colder parts of the state. Shade should be available for stock in the summer but any trees in the area will need to be protected from damage such as

ring barking due to stock rubbing and chewing the trees.

#### *Convenience to facilities*

The site should be close to existing yards, feed storages and machinery sheds to reduce the time spent in feeding and monitoring stock, to make it easier to use existing facilities and to minimise capital expenditure. However, avoid sites close to residences, etc. where dust, odour and noise pollution may be a problem. Visibility is also a very important consideration, particularly from an aesthetic viewpoint. If the site is shielded from view, perhaps by topography or by windbreaks of trees, the impact should be reduced.

#### *Access to water*

A guaranteed supply of good quality water to the site is essential. It should preferably be made available through troughs as dams will rapidly become contaminated and may become boggy as water levels fall. Access to creeks or waterways should not be permitted.

#### *Proximity to water courses, etc.*

Care needs to be taken to ensure that any run-off from the site does not cause contamination of any natural water courses, water storages or a neighbour's property. Impinging on neighbouring properties can easily lead to problems, especially if complaints are made to your local council. Also be aware of any possible impact on the community amenity, especially in relation to odour, dust, noise and insects.

Choose a site at least 500 m from any potential area of contamination. Contour banks may be used to divert run-off away from sensitive areas but are an expensive solution. Another consideration may be the use of a settling and holding pond to capture excessive run-off if this is likely to be a problem.

Fines for polluting the environment can be severe

#### *Access for feed out vehicles*

Vehicle access to the yards is necessary under all weather conditions. Use of existing compacted roadways is one option, otherwise the use of gravel on areas traversed by vehicles may be necessary to prevent excessive dust or bogging.

#### *Potential cost of site rehabilitation after drought*

After drought the sacrifice sites may need to be re-established with crop or pasture. Ease of access and costs for cultivation and sowing needs to be considered along with necessary weed

control measures, particularly for weeds that may be introduced through fodder and grain.

#### **Site construction**

Any additional construction needs to be kept to a minimum by utilising existing facilities where possible. However some form of feed troughing will need to be provided along with water troughs and a reliable reticulation system. If paddocks are too large some subdivision fencing may also be necessary.

Quality of construction will be dependent on whether the facility is to be a temporary or permanent fixture.

There is no standard design for confinement feeding but the following design features should be kept in mind.

#### *Area and stocking density*

Stocking density, generally described in terms of the area of yard space per animal, depends on the size of cattle on feed, on the topography and on the climate. A major consideration with stocking density is the balance between dust and mud. Too much space can lead to dust problems, while too many cattle can lead to boggy conditions developing. Both dust and mud can affect animal welfare and performance.

Suggested *minimum* stocking densities when feeding in pens are as follows:

- weaners – 9 to 10 m<sup>2</sup> per head
- yearlings – 12 – 14 m<sup>2</sup> per head
- dry cows – 15 – 25 m<sup>2</sup> per head
- late pregnancy/lactating cows – pen feeding not suitable.

Small paddocks can be used rather than pens.



Figure 1. Steel cable makes an excellent fence for confinement yards



*Figure 2. A low cost feed trough constructed along a fence line.*

There is no evidence to suggest that the number of stock in each paddock influences their performance provided adequate feed and water troughing is available. A maximum of 250 cattle per mob is suggested but small paddocks holding up to 150 head allow for easier handling. Identification of sick and non-performing animals and shy feeders is also easier in smaller mobs.

A separate yard should be set aside as a 'hospital' yard to allow isolation and treatment of any sick animals and to allow removal of shy feeders. This could be part of the existing cattle yards or an additional pen may need to be constructed.

#### *Fencing*

Generally any well constructed cattle fence with at least 5 wires and 1650 mm high will be adequate to contain stock. This can be reinforced with an electric outrigger wire on the inside of the fence if required. While more permanent cattleproof subdivisional fencing is preferred, a 3-line electrified fence should be adequate in most situations. However if a more permanent structure is required which can be similarly utilised in future droughts a more substantial structure will be required.

#### *Feed troughs*

Some form of troughing is considered an essential part of feeding out as feeding out on the ground in confinement yards will result in excessive amounts of wastage, spoilage and soil intake. Minimum

requirements for trough space are 25–30 cm/head for weaners, 30–40 cm/head for yearlings and 40–60 cm/head for adult stock.

Troughing should be located on the high side of the pens with good slope away from troughs (inside the pen) to help reduce the amount of manure accumulated around it. Avoid running troughs east to west, because the southern side will not dry out in winter and could cause bogging behind the trough.

The feed trough is usually constructed along a fence line, which should be strengthened with timber, cable or pipe placed 45–50 cm above the trough to prevent stock pushing through. Access for filling the trough should be available from the outside of the yard so that it is not necessary to drive into the pen and through stock when filling.

Troughs should be 45–60 cm wide and deep enough to hold sufficient of the drought ration with the top of the trough 60 cm from the ground. It is an advantage to have the trough 8–15 cm higher at the back (outside) to minimise feed wastage.

Troughs can be made from 200 L drums cut in halves lengthways and fastened end-to-end to sawn or bush timber. Alternatively conveyor belting, flat-iron and even roofing iron can be used. Concrete feed troughs are excellent, but more expensive.

Self-feeders can be used but are less suitable for feeding maintenance rations. They need to be closely supervised as blocking of the feeders can be a problem, particularly when starting on high-roughage diets or can result in over and under feeding of some animals. It is suggested that stock to be fed in confinement yards be introduced to the ration before using self feeders.

An advantage of self feeders is that they can be moved around the feeding yard to avoid any bogging around the feeder in wet weather. However, a major disadvantage is that of access to the feeder for filling.



*Figure 3. Round trough in fence line*

A mixture of hay feeders, troughing and self feeders may need to be used to ensure that an adequate amount of trough space is provided within the yards.

#### *Water troughs*

Water should be separate and at least 10 m away from the feeding troughs to help ensure that stock have clean mouths before drinking. The further away from feed troughs, the less feed falls from the animals' mouths while drinking and the less rotting grain in the water. They should preferably be situated in the centre of a fence line, on the lowest side of the pen, so that they can be used by stock on either side of the fence. Allowing the trough to drain outside the yard can help to avoid boggy conditions developing when troughs are emptied for cleaning.

Troughs should be long enough to allow at least 10% of the cattle to drink at any one time. Allow at least 300 mm space for every 10 head. That means that one 3 m trough section will water 100 head. There also needs to be enough volume and pressure of water to keep the trough filled (around 10 L/head/hour). In hot weather, more trough space may help.

Continuous-flow troughs ensure that fresh clean water is available and encourage new animals to accept trough water readily. Ballcocks and floats should be shielded to protect them from breakage by cattle and causing leaks. High flow rates are important to ensure rapid refilling.

There will be wide variations in consumption, depending on climate, size of cattle, season and the water content of the feed. See section on water under 'Feeding' for more details on water requirements.

#### *Aprons*

A concrete, gravel or timber apron 2–3 m wide on the stock side of the feed and water troughs is a useful adjunct to prevent bogging around the troughs and to facilitate cleaning.

### **Feeding**

The following information will provide a guide as to what and how much to feed. However, more information can be obtained from a number of detailed publications available from NSW DPI.

#### **What to feed**

Prior to feeding any feedstuff, producers should satisfy themselves that the feedstuff is suitable for its purpose. A feed analysis should be carried out and this can be used to determine the best value



Figure 4. Conventional trough

feed. Feeds should be bought on a weight basis (kg dry matter) and costed on the basis of the landed price per unit of metabolisable energy (ME) or crude protein as appropriate because feed that has the lowest price per tonne may not be the cheapest source of energy or protein. Use a [feed cost calculator](#) to help you do this.

NSW DPI offers a feed quality testing service at Wagga Wagga. Test kits are available at NSW DPI offices or phone (02) 6938 1957. You should contact your local NSW DPI advisory officer for assistance in interpreting the test results.

Producers should also ensure that any feedstuff used is free of unacceptable chemical residues. Before purchasing any feed ask for a Commodity Vendor Declaration (CVD) for conventional feeds or a By-product Vendor Declaration (BVD) for unconventional feeds.

#### **Warning**

Drought increases the risk of unacceptable residues in stock. Risks include contaminated feed, increased intake of contaminated soil, concentration of existing residues as animals lose condition, and many other causes. Refer to Primefact 312 [Drought increases residue risks](#) for details before purchasing stockfeed or making feeding decisions.

#### *Grain*

Grain is usually the most economical type of feed to use when confinement feeding. Wheat, barley, triticale, oats, maize and sorghum are energy-rich feeds of similar nutritive value. They contain sufficient protein to meet the requirements of adult stock, and all are suitable for drought feeding.

Most classes of cattle can be maintenance fed on grain alone.

Most grains give satisfactory results if fed whole. Grains are more digestible if coarsely crushed, but the benefits of crushing the grain are questionable when drought feeding for maintenance

Some whole grain will pass through in the dung, but the proportion lost will decrease the longer cattle are being fed whole grain. Grain that is processed too finely may cause digestive upsets and surges in intake.

Digestive losses will vary depending on a number of factors including the amount and type of grain fed and the length of time animals have been on that feed. The amount passing through cattle eating whole grain compared with crushed grain varies from about 5% in oats up to about 25% in sorghum.

Grains consumed to excess or introduced too rapidly can cause sickness or even death. Cattle should be introduced to grain gradually, either by feeding small amounts in the paddock or by feeding in conjunction with hay or roughage. For more information on grain introduction and the use of feed additives to reduce the risk of grain poisoning, see Primefact 330 [Grain poisoning of cattle and sheep](#).

Changing from one type of grain to another (e.g. from oats to wheat) increases the risk of grain poisoning and deaths. The approach here is to introduce the new grain slowly by mixing it with the original grain and, over 7-10 days, gradually increasing the proportion until the substitution is complete.

Grains are low in calcium, so 1.5% limestone (superfine grade) by weight must be fed with all-grain diets.

### *Hay*

Hay is only necessary in confinement feeding when:

- introducing stock to grain
- feeding during periods of cold stress
- production feeding.

Lucerne hay and good pasture and cereal hays are more than adequate for maintaining stock. The energy value of 3 kg of these hays is equivalent to the energy value of 2 kg of grain. Lucerne and clover hays are high in protein, calcium and vitamin A, and are particularly suited to young and lactating stock.

Poorer quality hay and straw barely meet stock maintenance requirements, 2 kg being equivalent to 1 kg grain. The fibrous nature of these feeds

will limit the amount a beast can eat. They are usually low in protein and are not suitable for young or lactating stock without the addition of either grain or a mixture of molasses and a high-protein feed.

### *Cattle and sheep nuts*

Cattle and sheep nuts vary in quality between manufacturers and even between batches. Their energy value is slightly lower than that of grain. Whilst they are a convenient form of energy, they can be expensive and may cause digestive upsets similar to those caused by grain. When introducing and using prepared feeds, adopt the same precautions as for grain.

### *Protein meals*

Protein rich feedstuffs such as cottonseed, linseed and sunflower meals can be used as special-purpose supplements for young stock to increase the protein levels of energy feeds but they are too expensive to be fed in large quantities.

### *By-products and other unusual feeds*

By-products and other unusual feeds are sometimes available which are suitable for maintenance feeding in confinement yards. Some of these products are bulky and will require additional trough capacity and may be difficult to feed out on a regular basis. It is essential that these products be tested for their feed value and residue status before use.

### *Additives*

Other additives may be useful to either improve the quality of the feed or to reduce animal health problems. They include:

- **Urea** – can be used to increase protein content of poor quality feeds. It must be introduced gradually and must not be fed at rates greater than 60 g per head per day. Urea is toxic in excess amounts. Seek advice before using.
- **Vitamins** – vitamin A and E supplementation will be necessary for animals on feed for greater than 60 days or sooner if animals have not had access to green feed prior to being confinement fed.
- **Minerals** – Limestone at the rate of 1.5% and salt at the rate of 1% by weight should be added to all grain diets as sources of calcium and sodium.
- **Sodium bentonite** – can be useful when introducing cattle to grain, in cold weather or

when changing grain rations but should not be a permanent part of the ration. Use at 1.5 – 2% of the ration.

- **Antibiotics** such as virginiamycin can be used to reduce the risk of grain poisoning but there are restrictions on the length of time that they may be used and they are only available on veterinary prescription.

### Amount to feed

Details on calculating feed requirements for various classes of cattle are available in the NSW DPI publication *Managing Drought* and at [www.dpi.nsw.gov.au/drought](http://www.dpi.nsw.gov.au/drought).

Table 1, below, can be used as a guide.

### Water requirements

It is most important that cattle have an adequate supply of good quality water at all times. Amount and quality of water required vary between classes of stock and in response to the environment in which the stock are running.

The suitability of water for stock use is determined by the following factors.

- **Water quality**, which includes:
  - salinity – desirable maximum total dissolved salts (salinity) for cattle is 4,000 mg/L;
  - acidity – pH should be between 6.5 and 8.5;
  - toxic elements and compounds – a detailed water analysis can reveal if toxic levels of these are present;
  - algal growth – water sources that support heavy algal growth must be avoided. The effects of algal blooms may be toxic.
- **Environmental factors** such as air temperature and feed quality influence how much cattle will drink. In general, water consumption will be around 40% higher in summer than in winter and up to 80% higher in extreme conditions.

Higher water temperature will also increase intake. Generally animals prefer water at or below body temperature with a preference for cool water in hot conditions.

- **Animal factors**, which include breed differences and age and condition of stock.

As a guide provide at least 70 L/day in hot weather and about 35 L/day in cold weather per 450 kg animal. An allowance of 6.5 L/day/50 kg live weight can be used for planning on an annual basis. Full details on water requirements are available in Primefact 326 [Water requirements for sheep and cattle](#) and Primefact 269 [Stock water – a limited resource](#).

### Management

#### Stock management

Before feeding, cattle should be drafted into management groups based on age and type. Remove cattle that have bad temperament and do not settle down.

It is usually easier to manage adult stock rather than weaners. More attention must be paid to weaners to ensure that they keep growing. Weaners need more protein than adult stock, thus adding to feeding costs.

If heifers are to be fed they will need to be fed sufficient to allow them to continue growing without compromising calf development.

Dry cows and cows in early/mid pregnancy are readily managed but they should be pregnancy tested and identified so that late pregnant cows can be removed. Confinement feeding in pens is not recommended for cows in late pregnancy because of the increased risk of dystocia and metabolic disorders and risk of infection if allowed to calve in the pen. There is also a greater risk of mismothering.

Table 1. Feed options: minimum weight (kg) per day 'as fed'

Class of stock (bodyweight)	Grain (12 ME)	Hav (8.5 ME)	50:50 grain: hay mix	80:20 grain: hay mix or	Silage (30% dry matter and 9 ME)	Expected weight gain/day
Weaners (200 kg)	2.5	3.5	3.0	2.5	12.0	0.2 kg
Yearlings (250 kg)	3.0	4.0	3.5	3.0	15.0	0.1kg
Adult dry stock (400 kg)	4.0	6.0	5.0	4.5	20.0	nil

During periods of cold weather, these levels should be increased by 20% using hay if possible (3 kg hay is equivalent to 2 kg grain). For young stock, protein levels should be at least 9% for them to continue growing. It would be better to feed these cattle for production.



Calves can be weaned at 3–5 months of age as long as they are fed a balanced diet. See Primefact 322 Feeding calves in drought for further information. Calves over 5 months should be weaned and can be fed separately in confinement yards but will need a higher protein ration to ensure growth. Cattle with horns should not be dehorned immediately prior to confinement feeding but if possible should be tipped. Dehorning of drought affected cattle is considered too stressful to do at this time. By law anaesthetics must be used for animals over 12 months of age.

### Feeding management

When stock are fed grain or any feed that has a high carbohydrate content, the feed must be introduced gradually so that the animal's rumen has time to adapt to the increasing levels. When changing between different types or even batches of grains, and especially when changing between batches of pellets, the new feed should be introduced by 'shandying' it with the old and gradually increasing the proportion of the new feed over about 7–10 days.

During cold, bleak weather it is important to increase the rations for all classes of stock by 20% using hay.

Feeds should always be weighed and measured – do not guess quantities as overfeeding can be expensive and underfeeding can lead to stock deaths.

When cattle are on full grain drought rations, it is safest to feed daily. Apart from minimising digestive upsets daily feeding allows closer supervision of the stock and identification of shy feeders, bullies and any sick individuals. Such stock should be removed on a daily basis. If you can feed only two or three times a week because labour is scarce or needed elsewhere, be alert to the increased risk of grain poisoning but feed daily in cold and wet weather if possible.

Develop and adhere to a regular routine of feeding and inspection.

Water troughs should be checked daily, perhaps more often in very hot weather, to ensure there are no problems with supply. Clean troughs as required, but at least once a week to avoid a build-up of contamination with dung and grain. Apart from the hazard of manure, grain washed from cattle's mouths into the trough will ferment rapidly and cause a variety of problems, including digestive upsets, or souring of the water, which can affect the water's palatability.

Feed troughs should be cleaned out as required, but preferably weekly. Feed additives such as urea can settle to the bottom of the trough, resulting in the accumulation of toxic amounts which may be eaten.

Bark chewing, hair licking and dung eating can occur when cattle are on grain survival rations. These habits are no real problem. However, bone chewing is more serious, and calcium-based supplements should be given to reduce this behaviour and avoid deaths from botulism.

### Yard management

Yards may need cleaning on a regular basis to minimise sediment run-off. Generally after a period of time within the yard an impermeable 'pad' will develop which will aid when cleaning. Be careful not to break this layer once it develops as it will aid run-off in the event of rain and help minimise mud and bogging problems.

### Animal health

Stock management and stock health are closely linked. Although it may go against the grain to call a veterinarian before you have a problem, it will save you money in the long run if you involve your local veterinarian.

Your veterinarian can help you assess the risks of your particular situation, and plan to reduce those risks.

Close observation of cattle each day is essential. Learn to recognise what is abnormal - look at the physical state of the animals, respiration rate, their behaviour and the consistency and odour of the dung. If abnormalities are seen act early before the problem has a chance to spread or become untreatable. Producers should have an understanding of the symptoms and treatment of the most common problems likely to be encountered and should seek early veterinary intervention where necessary.

Food and water of adequate quality and quantity are by far the most important ingredients in keeping an animal healthy. However, other factors will interact to affect an animal's susceptibility to disease during drought but the risks can be greatly reduced by adhering to good management practices and the use of preventative treatments.

Preventative treatments recommended prior to cattle being introduced to confinement feeding include:

- drench for internal parasites (including fluke in fluke areas), especially young stock (if retained) and bulls.

- 5-in-1 vaccination to prevent clostridial diseases, which are far more likely to occur in situations where there may be sudden changes in feed type, quality or quantity
- leptospirosis vaccination (or 7-in-1 instead of 5-in-1)
- give vitamin A, D and E (either in feed or as an injection) after 2–3 months on dry feed
- lice treatment in cooler months; fly treatment in warmer months
- vaccines against rhinotracheitis (IBR) (Rhinogard<sup>®</sup>), pestivirus, botulism, anthrax, tick fever, and bovine ephemeral fever may also be required, depending on location and disease incidence and veterinary advice should be sought about their use.

Other problems likely to be encountered include:

- grain poisoning (see Primefact 330 [Grain poisoning of cattle and sheep](#))
- footrot or foot abscess
- pink eye (see Primefact 336 [Pinkeye in cattle](#))

Heat stress may become a problem when confinement feeding cattle during the summer months. When exposed to ongoing high ambient temperatures, high relative humidity and low wind speeds, cattle may accumulate heat. They may crowd over the water trough, become agitated and restless, bunch to seek shade from other animals and start panting.

If animals show symptoms of heat stress they should be released into areas with shade and given access to more water trough space.

Records should be kept of all treatments given to the cattle. Animals given individual treatment need to be identified so that withholding periods can be observed.

## Welfare

The welfare of animals is always of the utmost importance, and in drought, particular attention must be paid to protecting their welfare. Tough decisions will have to be made, and producers who have drought-affected stock will need to consider the effects of any intended actions on their animals. Any decision made must be humane and reasonable.

The welfare of livestock is protected under legislation, the *Prevention of Cruelty to Animals Act 1979* and the *Prevention of Cruelty to Animals (General) Regulation 2006*. For very weak stock or those with little value, humane destruction may

become the only option. If those responsible do not take action to address the suffering of livestock in their care, they risk being charged under the legislation. Letting nature take its course is not considered an option in these circumstances.

Model Codes of Practice set out guidelines for the husbandry and transport of livestock. The [Model Code of Practice for the Welfare of Animals: Cattle](#) is available from CSIRO publishing. Further information on animal welfare can be obtained from the NSW DPI Animal Welfare Branch.

## Releasing cattle after drought

Releasing cattle back to the paddocks following drought needs to be done with a great deal of care. Quite often more stock are lost due to problems resulting from the break in the drought than occur during the drought. Do not be in too great a hurry to release stock – feeding stock is expensive but cost of losses resulting from releasing stock too soon can be higher.

Early pasture growth following rain is high in water content but low in the dry matter content which contains the nutrients required by livestock. For dry cattle there needs to be at least 900 kg DM/ha (3–4 cm pasture height) available in the paddock. Until this amount of pasture is available, access to pasture will need to be restricted and hand feeding continued.

It is therefore important to initially keep livestock restricted to the confinement area where they will continue to eat supplied feed until sufficient paddock feed is available. A limited amount of grazing on pasture can be made available each day. This will not only benefit the stock but aid in the rehabilitation of the valuable pasture resource. The time spent each day should be increased slowly and the amount of hay/grain feeding reduced slowly until full-grazing is provided after 2–3 weeks.

New pasture growth can often be dominated by plants that can affect livestock health. Some pasture species are also toxic in their early growth phase. For example:

- rapidly-growing phalaris can induce phalaris staggers;
- rapid growth of improved grasses, cereals and broadleaf weeds such as variegated thistle can lead to nitrate/nitrite poisoning;
- legume dominant pastures can cause bloat.

It is therefore important that stock never be allowed to go onto these types of pastures when

they are hungry. Maintain a careful watch and, at any sign of abnormal behaviour, remove stock from the paddock. Unfortunately, with nitrate/nitrite poisoning you may not see abnormal behaviour before deaths occur.

The rapid movement of digestible young pasture growth through the gut can also trigger the onset of pulpy kidney. Therefore, ensure that vaccination programs are maintained. Boosters may be needed every three months for cattle.

## Further information

A substantial number of additional documents are available from the NSW Department of Primary Industries website. Clients who do not have direct Internet access are encouraged to use Internet facilities available at most public libraries. Printed copies of publications may also be available from the NSW DPI offices.

Website address: [www.dpi.nsw.gov.au/drought](http://www.dpi.nsw.gov.au/drought)

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